RICHMOND BAY SPECIFIC PLAN

Draft Environmental Impact Report

SCH NO. 2014092082

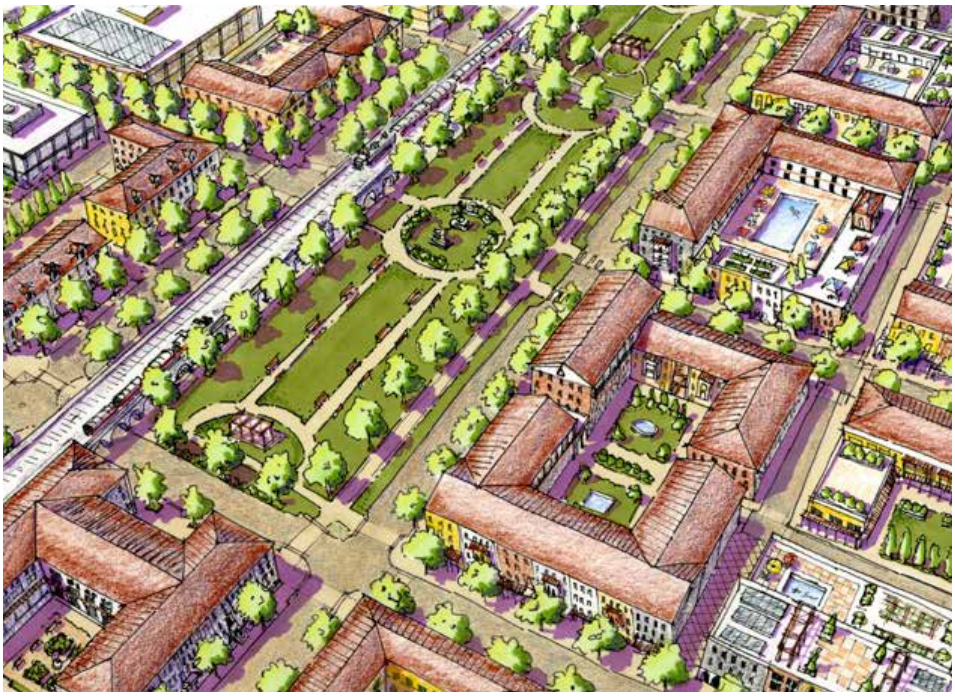
Prepared for
City of Richmond

September 2016

ESA







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TABLE OF CONTENTS

Richmond Bay Specific Plan
Draft Environmental Impact Report

Page

1. Introduction 1-1
- 1.1 Specific Plan Overview and Scope of this EIR 1-1
- 1.2 Environmental Review 1-2
- 1.3 Program and Project Analysis 1-3
- 1.4 Subsequent Environmental Review 1-4
- 1.5 NOP and EIR Scoping 1-5
- 1.6 Public Review 1-5
- 1.7 Mitigation Monitoring and Reporting Program 1-6
- 1.8 Organization of this EIR 1-6

2. Summary 2-1
- 2.1 Project Overview 2-1
- 2.2 Alternatives 2-3
- 2.3 Areas of Controversy and Scoping Comments 2-4

3. Project Description 3-1
- 3.1 Introduction 3-1
- 3.2 Specific Plan Location and Context 3-2
- 3.3 Plan Purpose and Overview 3-10
- 3.4 Specific Plan CEQA Objectives 3-14
- 3.5 Foreseeable Maximum Development Scenario 3-17
- 3.6 Sea Level Rise Adaptation 3-18
- 3.7 Specific Plan Multimodal Access and Connectivity 3-18
- 3.8 Proposed Utilities 3-25
- 3.9 Lark Drive Variant of Specific Plan 3-29
- 3.10 Sub-Area 4 Project 3-29
- 3.11 Required Approvals and Actions 3-40
- 3.12 Subsequent Activities, Implementation and Development 3-44

4. Environmental Setting, Impacts, and Mitigation Measures
- 4.0 Introduction to the Environmental Analysis 4.0-1
- 4.1 Aesthetics 4.1-1
- 4.2 Air Quality 4.2-1
- 4.3 Biological Resources 4.3-1
- 4.4 Cultural and Paleontological Resources 4.4-1
- 4.5 Geology, Soils, and Mineral Resources 4.5-1
- 4.6 Climate Change, Greenhouse Gas Emissions, and Energy 4.6-1

Page

4. Environmental Setting, Impacts, and Mitigation Measures (continued)
4.7 Hazards and Hazardous Materials 4.7-1
4.8 Hydrology and Water Quality 4.8-1
4.9 Land Use and Planning 4.9-1
4.10 Noise 4.10-1
4.11 Population, Housing, and Employment 4.11-1
4.12 Public Services 4.12-1
4.13 Transportation and Traffic 4.13-1
4.14 Utilities and Service Systems 4.14-1
4.15 Energy 4.15-1

5. Alternatives to the Proposed Project 5-1
5.1 CEQA Requirements 5-1
5.2 Factors in the Selection of Alternatives 5-2
5.3 Alternatives Considered but Rejected for Further Evaluation 5-14
5.4 Description of Alternatives Selected for Analysis 5-20
5.5 Comparative Analysis of the Alternatives 5-29
5.6 Environmentally Superior Alternatives to the Specific Plan 5-50

6. Other Statutory Sections 6-1
6.1 Growth-Inducing Impacts 6-1
6.2 Significant Irreversible Environmental Effects 6-6
6.3 Cumulative Impacts 6-7
6.4 Significant and Unavoidable Environmental Impacts 6-7
6.5 Effects Found Not To Be Significant 6-12

7. Report Preparers 7-1

8. Acronyms 8-1
8.1 Acronyms and Abbreviations Used in This EIR 8-1

Appendices (*provided on CD*)

A. Notice of Preparation and Scoping Summary
B. Air Quality and Greenhouse Gas Emissions Technical Data
C. Special-status Species and Biology Supporting Information
D. Cultural Resources Supporting Information
E. Transportation and Traffic Technical Reports
F. 2014 Water Supply Assessment for the Richmond South Shoreline Specific Plan (Richmond Bay Specific Plan) and Related Supporting Information

List of Figures

3-1 Location and Regional Context 3-3
3-2 Land Uses Within and Surround Plan Area 3-5
3-3 Specific Plan Illustrative Plan 3-13
3-4 Transect Zone Regulating Plan 3-16
3-5 Thoroughfare Regulating Plan 3-20
3-6 Existing (2014) and Proposed (2030) Bicycle Facility Network 3-23
3-7 Specific Plan Civic Space Regulating Plan 3-27

Page

List of Figures (continued)

4.1-1a Specific Plan Area Photo Locations 4.1-4
4.1-1b Specific Plan Area Photos (A1 thru A4) 4.1-5
4.1-1c Specific Plan Area Photos (A5 and A6) 4.1-6
4.1-1d Specific Plan Area Photos (B1 thru B4) 4.1-7
4.1-1e Existing Site Photos (B5 and B6) 4.1-8
4.1-2a Visibility of Plan Area from Nearby Parks and Trail 4.1-11
4.1-2b C1 View toward Plan Area from Booker T. Anderson Park and C2 View toward Plan Area from Marina Park Looking East Toward Plan Area 4.1-12
4.1-2c C3 View of Plan Area from Baxter Creek Trail 4.1-13
4.1-3a Google Earth Wireframe Photo Locations 4.1-25
4.1-3b Existing (Google Earth) Views and Specific Plan Massing/Wireframe Views 4.1-26
4.1-3c Existing (Google Earth) Views and Specific Plan Massing/Wireframe Views 4.1-27
4.1-3d Existing (Google Earth) Views and Specific Plan Massing/Wireframe Views 4.1-28
4.1-3e Existing (Google Earth) Views and Specific Plan Massing/Wireframe Views 4.1-29
4.1-3f Existing (Google Earth) Views and Specific Plan Massing/Wireframe View 4.1-30
4.1-3g Existing (Google Earth) Views and Specific Plan Massing/Wireframe Views 4.1-31
4.3-1a CNDDB Occurrences (Plants) within 3 Miles of the Plan Area 4.3-14
4.3-1b CNDDB Occurrences (Animals) within 3 Miles of the Plan Area 4.3-15
4.5-1 Regional Faults and Earthquakes between 15 and 7.0 between 1970 and 2003 ..... 4.5-3
4.7-1 Environmental Contamination Sites 4.7-8
4.8-1 Existing FEMA FIRM for Plan Area 4.8-7
4.8-2 3-foot Sea Level Rise + MHHW + 100 Year Storm Event 4.8-10
4.8-3 5.5-foot Sea Level Rise + MHHW + 100 Year Storm Event 4.8-11
4.8-4 Plan Area and Tsunami Inundation Zone 4.8-38
4.9-1 Existing and Long-Term Rail Track Alignment 4.9-5
4.9-2 General Plan Land Use for the Plan Area 4.9-7
4.9-3 Existing Zoning for the Plan Area 4.9-9
4.10-1 Noise Measurement Locations 4.10-7
4.13-1 Site Vicinity and Study Intersection Locations 4.13-5
4.13-2 Existing Transit Service 4.13-7
4.13-3 Existing and Planned Bicycle Facilities 4.13-11

List of Tables

2-1 Specific Plan Conceptual Program and Maximum Theoretical Buildout under the Specific Plan 2-2
2-2 Summary of Impacts, Mitigation Measures, and Residual Effects 2-5
3-1 Specific Plan Sub-Areas 3-6
3-2 Richmond Bay Transect Zones and Special Planning Area 3-15
3-3 Specific Plan Conceptual Program and Foreseeable Maximum Theoretical Buildout under the Specific Plan 3-17
3-4 Thoroughfare Locations and Development Standards 3-21

Page

List of Tables (continued)

3-5 Foreseeable Maximum Theoretical Buildout under Richmond Bay Specific Plan for Sub-Area 4 and the Sub-Area 4 Project 3-32
3-6 Thoroughfare Locations and Development Standards Applicable to Sub-Area 4 3-35
4.0-1 Cumulative Projects 4.0-6
4.1-1 Changes in Development Standards Under the Proposed Specific Plan General Plan Amendment 4.1-23
4.2-1 San Pablo-Rumrill Station Air Quality Data Summary (2013-2015) 4.2-7
4.2-2 Air Quality Index Statistics for the San Francisco Bay Area Air Basin 4.2-8
4.2-3 Stationary Sources of TACS within and within 1,000 Feet of the Plan Area A 4.2-9
4.2-4 Ambient Air Quality Standards and Bay Area Attainment Status 4.2-12
4.2-5 Transportation Control Measures in the 2010 Clean Air Plan 4.2-24
4.2-6 Average Daily Construction-Related Emissions 4.2-29
4.2-7 Average Daily Operational Emissions of the Specific Plan 4.2-31
4.2-8 Maximum Annual Operational Emissions 4.2-31
4.2-9 Stationary Sources of TACS Exceeding a Fenceline Cancer Risk of 10 in One Million within and within 1,000 Feet of the Plan Area a 4.2-35
4.2-10 Uncontrolled Project Construction-Related Emissions 4.2-43
4.2-11 Operational Emissions of the Sub-Area 4 Project 4.2-44
4.2-12 Estimated Unmitigated Health Impacts for Existing Receptors, Sub-Area 4 Project 4.2-48
4.2-13 Estimated Mitigated Health Impacts for Existing Receptors, Sub-Area 4 Project 4.2-49
4.2-14 Estimated Mitigated Health Impacts for Receptors, Sub-Area 4 Project 4.2-50
4.2-15 Cumulative Projects within 1,000 Feet of the Specific Plan Boundaries 4.2-53
4.2-16 Estimated Mitigated Health Impacts for Sub-Area 4 Project Site Receptors 4.2-55
4.4-1 Paleontological Potential Criteria 4.4-7
4.4-2 Parcel Data for Built Environment Resources 45 Years or Older within the Specific Plan Area 4.4-8
4.4-3 Built Environment Resources 45 Years or Older within Sub-Area 4 ..... 4.4-9
4.5-1 Active Faults in the Plan Area Vicinity 4.5-4
4.5-2 Modified Mercalli Intensity Scale 4.5-7
4.6-1 Estimated Operational GHG Emissions from Development under the Specific Plan (2040) 4.6-30
4.6-2 GHG Emissions Inventory from Development of the Specific Plan under 1990 Business As Usual Scenario 4.6-33
4.6-3 Specific Plan Consistency with Applicable Policies and Actions of the Energy and Climate Change Element of the General Plan 4.6-36
4.6-4 Estimated GHG Emissions Generated by the Sub-Area 4 Project 4.6-40
4.6-5 GHG Emissions Inventory from Development of the Sub-Area 4 Project under 1990 Business As Usual Scenario 4.6-42
4.7-1 Regulatory (Cleanup) Sites Listed in the Plan Area and Vicinity 4.7-6
4.7-2 Federal Laws and Regulations Related to Hazardous Materials Management 4.7-21
4.8-1 Existing Weighted Coefficient of Runoff in the Plan Area 4.8-29
4.8-2 Weighted Coefficient of Runoff in the Plan Area under Specific Plan Buildout 4.8-29
4.8-3 Existing Weighted Coefficient of Runoff in the Sub-Area 4 Project Site 4.8-40

Page

List of Tables (continued)

4.8-4 Weighted Coefficient of Runoff under Sub-Area 4 Project Buildout 4.8-40
4.9-1 General Plan Land Use Classifications within the Plan Area 4.9-8
4.9-2 Specific Plan Consistency with Applicable General Plan Land Use Policies Adopted for the Purpose of Avoiding or Mitigating An Environmental Effect 4.9-25
4.10-1 Typical Sound Levels Measured in the Environment 4.10-2
4.10-2 Decibel Addition Relationships 4.10-4
4.10-3 Monitored Noise Environments within the Plan Area and Project Site 4.10-6
4.10-4 Schools, Daycare Centers, Nursing Homes, Churches, Residential Neighborhoods, and Recreational Areas in the Vicinity of the Plan Area 4.10-8
4.10-5 Acceptable Noise Levels 4.10-11
4.10-6 Stationary Source Noise Performance Standards of the City of Richmond Municipal Code 4.10-13
4.10-7 Typical Construction Noise Levels 4.10-16
4.10-8 Typical Maximum Noise Levels from Construction Equipment 4.10-17
4.10-10 Vibration Velocities for Construction Equipment 4.10-21
4.10-11 Traffic Noise Levels in and Around the Plan Area 4.10-27
4.11-1 Estimated Demographic Data for City of Richmond, Contra Costa County and Bay Area – 2010 to 2040 ..... 4.11-3
4.11-2 Plan Area CCTA Traffic Analysis Zones 4.11-4
4.11-3 Changes in Housing Units and Vacancy Rate – Richmond and Contra Costa County 2000, 2010 and 2015 ..... 4.11-5
4.11-4 Recent Employment Trends, Oakland and Alameda County – 2010 to 2040 ..... 4.11-5
4.11-5 City of Richmond Anticipated 2008-2030 Growth under General Plan 2030 and 2015-2040 ABAG “Projections 2013” Regional Projections 4.11-7
4.11-6 Project Housing Development and Estimated Direct Population Growth under the Specific Plan and Sub-Area 4 Project 4.11-8
4.11-7 Non-Residential Space and Projected Employment Growth under the Specific Plan and Sub-Area 4 Project 4.11-8
4.11-8 Population and Job Growth Anticipated Under the Specific Plan Compared to Future Projections for Richmond 4.11-13
4.11-9 Population and Job Growth Anticipated Under the Sub-Area 4 Project Compared to Future Projections for Richmond 4.11-17
4.12-1 West Contra Costa Unified School District Enrollment, 2014-2015 ..... 4.12-3
4.12-2 Local School Summary 4.12-4
4.12-3 School-Age Children Estimated for the Plan Area and Sub-Area 4 Project 4.12-4
4.13-1 Bus Service Summary 4.13-9
4.13-2 Definitions for Intersection Level of Service 4.13-12
4.13-3 Definitions for Freeway Section Level of Service 4.13-13
4.13-4 Existing Conditions Intersection LOS Summary 4.13-14
4.13-5 Existing Conditions – Freeway LOS Summary 4.13-17
4.13-6 Richmond Bay Specific Plan – Land Use by Sub-Area 4.13-23
4.13-7 Richmond Bay Specific Plan Trip Generation Summary 4.13-30
4.13-8 Sub-Area 4 Project Trip Generation 4.13-32
4.13-9 Existing Plus Specific Plan Conditions Intersection LOS Summary 4.13-37
4.13-10 Existing Plus Specific Plan Conditions Freeway LOS Summary 4.13-41
4.13-11 2040 Intersection LOS Summary (Specific Plan) 4.13-52

Page

List of Tables (continued)

4.13-12 2040 Conditions – Freeway LOS Summary (Specific Plan) 4.13-56
4.13-13 Richmond Bay Specific Plan Project Trip Generation Accounting for SRTCP Improvements 4.13-72
4.13-14 Existing Plus Sub-Area 4 Project Conditions Intersection LOS Summary..... 4.13-76
4.13-15 Existing Plus Sub-Area 4 Project Conditions – Freeway LOS Summary..... 4.13-79
4.13-16 2040 Intersection LOS Summary (Sub-Area 4 Project)..... 4.13-82
4.13-17 2040 Conditions – Freeway LOS Summary (Sub-Area 4 Project)..... 4.13-86
4.13-18 2040 with Lark Drive Extension Intersection LOS Summary (Specific Plan)..... 4.13-105
4.13-19 2040 with Lark Drive Extension Intersection LOS Summary (Sub-Area 4 Project)..... 4.13-106
4.14-1 Existing Weighted Coefficient of Stormwater Runoff..... 4.14-8
4.14-2 Estimated Potable Water Demands 4.14-18
4.14-3 Estimated Sanitary Sewer Generation (Gallons per Day) 4.14-20
4.14-4 Proposed Weighted Coefficient of Stormwater Runoff 4.14-21
4.15-1 PG&E-Owned Electricity Generating Sources..... 4.15-4
4.15-2 PG&E Renewable Energy Sources..... 4.15-4

CHAPTER 1
Introduction

The City of Richmond has prepared this Draft Environmental Impact Report (EIR) for the proposed Richmond Bay Specific Plan ("Specific Plan"). In addition, this EIR analyzes the effects caused by the Sub-Area 4 Project.[1] This EIR has been prepared pursuant to the California Environmental Quality Act (CEQA) (Public Resources Code Section 21000, *et seq*. and Section 15000, *et seq*.) and the state CEQA *Guidelines* (California Code of Regulations) promulgated thereunder (together "CEQA"), as well as the City of Richmond *Guidelines and Procedures for the Implementation of the California Environmental Quality Act* (City of Richmond, 2003). CEQA requires that an EIR be prepared by the agency with primary responsibility over the approval of a project (the Lead Agency). The City of Richmond is the Lead Agency for this EIR.

1.1 Specific Plan Overview and Scope of this EIR

This EIR analyzes the potential significant environmental effects caused by implementation of the Specific Plan. This EIR analyzes development of a foreseeable maximum theoretic buildout scenario that contains: up to 5.7 million square feet (msf) of uses described as Research and Development (R&D)/Business/Service use; up to 720,000 square feet of retail use; up to 5,700 residences; and approximately 32.7 acres of open space uses.[2] The Specific Plan was developed through a City-led process that included extensive citywide and regional community and stakeholder participation. The Specific Plan presents a vision and specific regulations to improve the public and private realms along Richmond's waterfront (Southern Shoreline), as directed by the Richmond General Plan 2030 (General Plan).

This EIR also analyzes the potential significant environmental impacts caused by development of the Sub-Area 4 Project, which represents a likely future scenario for redevelopment of currently vacant and/or underutilized properties within this part of the Specific Plan. The Sub-Area 4

[1] Impacts of the environment on a project or plan (as opposed to impacts of a project or plan on the environment) are generally beyond the scope of required CEQA review. The California Supreme Court has stated, "CEQA analysis is concerned with a project's impact on the environment, rather than with the environment's impact on a project and its users or residents." (*California Building Industry Association v. Bay Area Air Quality Management District*, [S213478, Dec. 17, 2015] ["*CBIA v. BAAQMD*"]). As the Court observed, certain considerations involving schools, residential developments and whether the project may exacerbate existing impacts must be analyzed. However, to the extent that the impacts discussed in this EIR relate to the pre-existing environment's effects (whether on or off-site) on the project or potential site users, except for those exceptions identified in *CBIA v. BAAQMD*, they are included for informational purposes. For the purpose of a thorough analysis, all thresholds for determining the significance of impacts in accordance with the CEQA *Guidelines*, including Appendix G, requirements have been evaluated.

[2] The Specific Plan identifies a conceptual buildout. For the sake of a thorough, conservative analysis, this EIR analyzes a "foreseeable maximum theoretical buildout scenario" that is consistent with the General Plan land use designation for the Plan Area, and with the Specific Plan itself.

Project would develop up to 2.1 million square feet of R&D/Business/Service uses; up to 320,000 square feet of retail use, up to 2,530 residences, and approximately 7.6 acres of new open space uses within a portion of Sub-Area 4.

The area encompassed by the Specific Plan is referred to herein as the Plan Area. The area encompassed by the Sub-Area 4 Project is referred to herein as the Sub-Area 4 Project site. Both proposals are described in more detail in Chapter 3, *Project Description*.

The potential effects of the Specific Plan and the Sub-Area 4 Project are evaluated separately as well as combined throughout this EIR.[3] As discussed further below, the Specific Plan is analyzed in this EIR at a program-level, and the Sub-Area 4 Project is analyzed at a site-specific project level.

1.2 Environmental Review

1.2.1 Purpose and Use

This EIR is intended as an informational document that in and of itself does not determine whether the Specific Plan or the Sub-Area 4 Project will be approved. In conformance with CEQA, this EIR provides objective information for the City, other public agency decision-makers, and the public, addressing the environmental consequences of the Specific Plan and the Sub-Area 4 Project and identifies feasible ways of reducing or avoiding significant impacts of each where feasible. The CEQA *Guidelines*, Section 15382, define a significant effect (or impact) of a project on the environment as "a substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the *project*…." (emphasis added). Therefore, in identifying the significant impacts of the Specific Plan and of the Sub-Area 4 Project, this EIR concentrates on substantial physical effects and on mitigation measures to avoid or reduce those effects.

The information contained in this EIR is subject to review and consideration by the City of Richmond and any other responsible agency prior to the City's decision to approve, reject or modify the Specific Plan or the Sub-Area 4 Project. If the City, as Lead Agency, approves a *project* that will result in the occurrence of significant adverse impacts that cannot be reduced or mitigated to less-than-significant levels, the City must state the reasons for its action in writing, demonstrate that its action is based on the EIR or other information in the record, and adopt a Statement of Overriding Considerations with specific findings.

The CEQA *Guidelines* include guidance for preparation of the EIR, indicating that the document should be prepared with a sufficient degree of analysis to provide decision-makers with information that enables them to make a decision that intelligently takes account of environmental consequences. An evaluation of the environmental effects of a proposed project

[3] The combined effects of the Specific Plan and the Sub-Area 4 Project are evaluated in an Alternative Specific Plan scenario addressed in Chapter 5, *Alternatives*; and in the analysis of cumulative effects throughout Chapter 4, *Environmental Setting, Impacts, and Mitigation Measures*, and summarized in Chapter 6, *Impact Overview, Growth Inducement, and Other CEQA Considerations*.

need not be exhaustive, but the sufficiency of an EIR is to be reviewed in the light of what is reasonably feasible. Disagreement among experts does not make an EIR inadequate, but the EIR should summarize the main points of disagreement among the experts. The courts have looked not for perfection but for adequacy, completeness, and a good faith effort at full disclosure (CEQA *Guidelines* Section 15151).

1.2.2 City's Determination to Prepare an EIR

The City of Richmond Planning Division is responsible for administering the environmental review on behalf of the Lead Agency, the City of Richmond. The City determined that preparation of an EIR was warranted to evaluate potentially significant effects that could result from implementation of the Specific Plan. Subsequent to that decision, the City determined that analysis of a reasonably foreseeable project that would take place within Sub-Area 4 of the Plan Area was also prudent to include in the EIR, based on Sub-Area 4's development potential. As CEQA permits, the City has prepared this EIR to evaluate the two proposals concurrently, based on the direct relationship between the Specific Plan and the Project, as discussed further below.

The City elected not to prepare an Initial Study Checklist to reduce the scope of the EIR, as permitted by Section 15060(d) of the CEQA *Guidelines*.

1.3 Program and Project Analysis

This EIR contains both program-level and project-level environmental analysis, often referred to as a hybrid analysis or EIR. Each analysis in this EIR is described below. Where appropriate, the analysis is based on the most reasonably conservative assumptions so as to not understate the overall environmental effects of the Specific Plan or the Sub-Area 4 Project – individually or combined.

1.3.1 Program-level Analysis

An EIR containing a program-level analysis is appropriate for a *project* (e.g., a specific plan) that will involve a series of actions that are (1) related geographically, (2) logical parts in a chain of contemplated actions, (3) connected as part of a continuing program, and (4) carried out under the same authorizing statute or regulatory authority and have similar environmental impacts that can be mitigated in similar ways (CEQA *Guidelines* Section 15168). As stated in the Guidelines, the use of a program EIR allows the Lead Agency to provide an occasion for a more exhaustive consideration of effects and alternatives than would be practical in an EIR on an individual action; ensures consideration of cumulative impacts that might be slighted in a case-by-case analysis; avoids duplicative reconsideration of basic policy considerations; allows the Lead Agency to consider broad policy alternatives and program-wide mitigation measures at an early time, when the agency has greater flexibility to deal with basic problems or cumulative impacts; and allows for a reduction in paperwork.

Accordingly, this EIR studies the proposed Specific Plan at a programmatic level of review, presenting reasonable assumptions about the overall types and levels of activities envisioned to occur under the Specific Plan (as described in Chapter 3, *Project Description*, and Chapter 4, *Environmental Setting, Impacts, and Mitigation Measures*) and describing their associated environmental impacts. Of note, where there is sufficient design detail available about some aspect of the Specific Plan, those elements are evaluated to the greatest level of detail feasible. Subsequent activities and discretionary approvals required to implement the Specific Plan will be subject to environmental review as required by CEQA. (See *Project-level Analysis* and *Subsequent Environmental Review*, below.)

1.3.2 Project-level Analysis

This EIR also includes a project-level analysis of the Sub-Area 4 Project. The Sub-Area 4 Project, as described further in this EIR, is not a sponsor-proposed development proposal; rather, it represents a likely program of development for the Sub-Area 4 site that is analyzed at project level in this EIR, in order to facilitate the City's review and approval of one or more applications for development of the Sub-Area 4 Project site. At a project level, the EIR contains more detailed analysis where appropriate to specifically address the effects associated with the Sub-Area 4 program of development. CEQA *Guidelines* Section 15161 states that a project-level analysis in an EIR examines in detail the site-specific and cumulative environmental impacts of a specific development project. Here, the Sub-Area 4 Project is based on a foreseeable maximum development scenario, consistent with the Specific Plan.

1.4 Subsequent Environmental Review

Under CEQA, future project-level environmental analyses may be tiered from or incorporate by reference the program analysis in this EIR. The City intends to use the tiering provisions of CEQA to the maximum feasible extent, so that future environmental review of specific projects may be expeditiously undertaken without the need for repetition and redundancy, as provided in CEQA *Guidelines* Section 15162 and elsewhere. Specifically, pursuant to CEQA *Guidelines* Section 15183, a project that is consistent with the development density established by zoning, a community plan, a specific plan, or general plan policies for which an EIR was certified is not subject to duplicative environmental analysis, unless the project would have environmental impacts that were not anticipated or are otherwise peculiar or unique. Likewise, Public Resources Code Section 21094.5 and CEQA *Guidelines* Section 15183.3 provide for streamlining of certain qualified, infill projects, facilitating development that would result in lower emissions of greenhouse gases and generation of housing. In addition, CEQA *Guidelines* Sections 15162-15164 allow for the preparation of a Subsequent (Mitigated) Negative Declaration, Supplemental or Subsequent EIR, and/or Addendum, to a certified EIR when certain conditions are satisfied. Moreover, California Government Code Section 65457 and CEQA *Guidelines* Section 15182 provide that once an EIR is certified and a specific plan adopted, any residential development project, including any subdivision or zoning change that implements and is consistent with the specific plan, is generally exempt from additional CEQA review under certain circumstances. The above are merely examples of possible mechanisms that the City may pursue to facilitate

development in appropriate situations, but in no way limit potential, future environmental review of specific projects.

1.5 NOP and EIR Scoping

On September 30, 2014, the City of Richmond issued a Notice of Preparation (NOP), to inform agencies and interested parties of its intent to prepare and distribute an "Environmental Impact Report (EIR) for the Richmond South Shoreline Specific Plan."[4] The NOP was distributed to governmental agencies, organizations, and persons interested in the Specific Plan. The NOP was sent to agencies with statutory responsibilities in connection with the Specific Plan, including, among others, resource agencies such as the California Department of Fish and Wildlife, and the East Bay Municipal Utility District, and requested their input on the scope and content of the environmental information that should be addressed in the EIR.

In addition, a public notice regarding a public Scoping Session on the EIR and the availability of the NOP was mailed or emailed to interested parties on or before September 30, 2014. The 30-day period for public comments on the scope of the EIR occurred from September 30 to October 30, 2014. The development program for Sub-Area 4 and a map showing the boundary of Sub-Area 4, both of which encompass the area and development program for the Sub-Area 4 Project, were included in the NOP, and the potential impacts of the Sub-Area 4 Project were described.

The NOP and a summary of written and oral comments that the City received in response to the NOP are included as Appendix A to this EIR. Not all of the issues raised in response to the NOP are germane to analysis under CEQA. Where they are, these issues are addressed in this EIR. During the public scoping process for this EIR, no specific areas of controversy emerged relevant to this CEQA analysis. Recurring themes did occur as indicated in the Summary in Appendix A.

The Draft Specific Plan was published for public review in October 2015. Public comments received on the Draft Specific Plan are not required to be addressed in this EIR, under CEQA; however, these comments were reviewed and substantive comments were addressed as necessary in this EIR, and will also be summarized in the City's staff report to the Planning Commission for the Specific Plan.

1.6 Public Review

Upon completion of this EIR, the City filed the Notice of Completion (NOC) with the Governor's Office of Planning and Research to begin a public review period (Public Resources Code Section 21161). This EIR is available for public review and comment for the period of 45 calendar days, as identified on the Notice of Release/Availability (NOA) of Draft Environmental Impact Report accompanying this document; the 45-day period is September 2 through October 18.

[4] After the circulation of the NOP, the City changed the name of the Specific Plan, from the South Shoreline Specific Plan to the Richmond Bay Specific Plan.

During the public review and comment period, written comments on the EIR may be submitted to the City at the address indicated on the notice. Oral comments may also be stated at the public hearing on the EIR, which will be held as indicated on the above-referenced notice.

Following the public review and comment period for the EIR, the City will prepare responses that address all written and oral comments on the EIR's environmental analyses and received within the specified review period. The responses and any other revisions to the EIR will be prepared as a Response to Comments document. The EIR and its Appendices, together with the Response to Comments document, will constitute a Final EIR (commonly referred to collectively as "EIR") for implementation of the Specific Plan or the Sub-Area 4 Project.

Prior to approval of the Specific Plan and subsequent approval of a Sub-Area 4 Project that would be located within Sub-Area 4, the City must certify the Final EIR and adopt environmental findings and a mitigation monitoring and reporting program (MMRP) for mitigation measures identified in this EIR or modified by the Comments and Responses document. The Richmond City Council may take action to approve, revise, or reject the Specific Plan, accompanied by written findings in accordance with CEQA *Guidelines* Sections 15091 and 15093.

1.7 Mitigation Monitoring and Reporting Program

An MMRP would be adopted for mitigation measures that have been incorporated into or imposed upon the Specific Plan and then the Sub-Area 4 Project to reduce or avoid significant effects on the environment per Section 21081.b(a) of the CEQA *Guidelines*. The MMRP would be designed to ensure that these measures are carried out during Specific Plan implementation and Sub-Area 4 Project implementation, and would be adopted at the time of approval of the proposed Specific Plan.

1.8 Organization of this EIR

This EIR has been organized as follows, following this **Chapter 1, *Introduction***:

Chapter 2, *Summary*, includes a brief project description and an overview table of the environmental impacts identified by this EIR. The overview table lists the environmental impacts, proposed mitigation measures, and the level of significance after mitigation. This section is intended to serve as a stand-alone summary of the EIR and therefore also summarizes the Alternatives analysis.

Chapter 3, *Project Description*, describes the location and key characteristics of the Specific Plan, as summarized from the Draft Richmond Bay Specific Plan document. It also describes in detail the proposed Sub-Area 4 Project. This chapter also includes a list of the City's required approvals and other agencies that may consider aspects of the Specific Plan.

Chapter 4, *Environmental Setting, Impacts and Mitigation Measures*, presents an introductory overview of the format, nomenclature, impact classifications, environmental baseline, and

cumulative setting employed throughout this chapter. The body of the chapter presents for each environmental factor under CEQA the environmental setting (existing conditions including, as appropriate, projected future conditions, and physical and regulatory framework) and the program-level environmental impacts that could result from development that could occur under the Specific Plan. This chapter also presents the environmental setting and project-level environmental impacts that could result from implementation of the Sub-Area 4 Project. Cumulative impacts are discussed in this chapter, considering the Specific Plan and the Sub-Area 4 Project combined with other cumulative development. This chapter describes the significance criteria used to assess the environmental effects, as well as the approach to the analysis employed. As part of the impact analyses, mitigation measures that would reduce or eliminate any adverse impacts – at a program or project level - are identified. The impact discussions include the significance of each impact both with and without implementation of mitigation measures.

Chapter 5*, Alternatives*, describes and evaluates a range of alternatives to the proposed development and land use scenario of the proposed Specific Plan, including No Project scenarios, and identifies an environmentally superior alternative, consistent with the requirements of CEQA.

Chapter 6*, Impact Overview, Growth Inducement, and Other CEQA Considerations*, includes a summary of the cumulative and significant impacts identified in Chapter 4. It also describes any growth inducement that would result from the Specific Plan or the Sub-Area 4 Project, or related infrastructure improvements either envisions; identifies significant irreversible changes that would result if the Specific Plan or the Sub-Area 4 Project is implemented; and presents areas of known controversy and issues left to be resolved. This chapter also summarizes topics that were determined to be less-than-significant.

Chapter 7*, Report Preparation*, identifies the authors of the EIR, including the Lead Agency staff and primary consultants. Persons and documents consulted during preparation of the EIR are listed at the end of each analysis section in Chapter 4.

Appendices. The NOP and a summary of the comment letters received on the NOP are included in the appendices. The appendices also include excerpts from and background reports supporting the Specific Plan that are directly relevant to reducing or mitigating environmental effects. Supporting documents and technical information for the impact analyses in the EIR are presented in the appendices.

References. All documents cited in the References at the end of each analysis section in Chapter 4 are available for review by the public. Documents are available at the City of Richmond Planning Division, 450 Civic Center Plaza, Richmond, CA 94804.

References – Introduction

City of Richmond, 2003. *Guidelines and Procedures for the Implementation of the California Environmental Quality Act*. Resolution No. 125-03, Replacing Resolution No. 63-96. Adopted September 23, 2003.

CHAPTER 2
Summary

2.1 Project Overview

The City of Richmond has prepared this Draft Environmental Impact Report (EIR) for the proposed Richmond Bay Specific Plan (Specific Plan). In addition, this Draft EIR analyzes the effects of the Sub-Area 4 Project (Project).

Specific Plan and Sub-Area 4 Project

The area of the Specific Plan (Plan Area) is approximately 430 acres located in the City's South Shoreline area, on the south side of I-580, between Marina Way South to the east, and the I-580 Bayview off-ramp to the west, with the San Francisco Bay to the south. It is defined by two "change areas" as identified in the General Plan – the Regatta/Marina Bay Change Area (Change Area 15) and the Southern Gateway Change Area (Change Area 16) – and adjacent shoreline open space. These change areas form the majority, but not all, of the Plan Area. The Sub-Area 4 Project site is approximately 89 acres in size, and is bordered by I-580 to the north, the Richmond Field Station to the west, Meade Street and South 49th Street the east, and East Bay Regional Park District (EBRPD) lands, including East Stege Marsh, the Bay Trail, and the Bay to the south.

Specific Plan Framework. The City is preparing the Specific Plan as part of its implementation of the General Plan, and in accordance with General Plan Action LU3.E and General Plan Land Use Policy LU4.1. The Specific Plan proposes detailed recommendations for the Plan Area, and, through its planning framework and policies, will guide development-related decisions within the Plan Area through 2045. Specifically, the Specific Plan would provide the following elements for the Plan Area:

- Land use policies and designations, zoning, and development standards for a mix of uses including a variety of housing types and intensities that will provide a balance of jobs and housing;
- Urban and landscape design guidelines and standards;
- Physical design parameters guiding future development within the Plan Area, including the layout and design of streets and public spaces, development standards shaping new blocks and buildings, and the location and extent of land uses;
- A Form-Based Code, which includes standards organized to reinforce the development of the Richmond Bay as a walkable, sustainable, mixed-use environment. The Code

emphasizes the physical form and character of spaces, with a lesser emphasis on discrete land uses, while providing guidance for the mixing of potentially incompatible land uses. The Code would supersede the City's Zoning Ordinance for the Plan Area; and

- A framework for utilities improvements, including water supply and distribution, wastewater collection and treatment, storm drainage, telecommunications, solid waste disposal, energy, and shoreline protection, as well as estimated costs for such improvements.

The community- and stakeholder-driven Specific Plan process reviewed the industrial history of the Plan Area, plans for the adjacent University of California (UC) Richmond Field Station (Berkeley Global Campus), and existing uses and infrastructure within the Plan Area. The resulting Specific Plan focuses on opportunities for the City to capitalize on proximity to the UC property and leverage related economic investment and intensification, as well as opportunities to benefit from planned ferry service adjacent to the Plan Area and other area assets, with the goal of creating a sustainable shoreline district over time that provides jobs and housing opportunities, improved transportation and public transit options, and access to entertainment and recreation.

Sub-Area 4 Project. The Sub-Area 4 Project site represents a likely future development scenario for redevelopment of the Campus Bay site. The Sub Area 4 Project is proposed on an approximately 89- acre property that is the easternmost portion of the Specific Plan, with proximity to and views of the Bay, and direct access from I-580.

Maximum Theoretical Buildout. The table below presents the foreseeable maximum theoretical buildout development program of the Specific Plan by sub-area, which is more dense than the conceptual program envisioned and as presented in the Specific Plan. The table below also presents the foreseeable maximum theoretical buildout development program for the Sub-Area 4 Project, which is a sub-set of the development program for Sub-Area 4 as a whole. The foreseeable maximum theoretical buildout scenario is consistent with the Specific Plan standards, but would include a higher residential density than is identified in the Specific Plan conceptual, illustrative phasing diagrams.

TABLE 2-1
MAXIMUM THEORETICAL BUILDOUT UNDER THE SPECIFIC PLAN AND SUB-AREA 4 PROJECT

Sub-Area	R&D/Business/ Service (thousand square feet)	Retail (thousand square feet)	Residential (dwelling units)	Open Space (acres)
Maximum Theoretical Buildout				
Sub-Area 1	1,870	270	1,840	12.8
Sub-Area 2	140	130	1,330	12.4
Sub-Area 3	1,560	0	0	1.4
Sub-Area 4	2,120	320	2,530	7.6
Total	**5,690**	**720**	**5,700**	**145[a]**
Sub-Area 4 Project	**1,270**	**190**	**1,520**	**6.5**

[a] Includes areas of the Meeker Slough Wetlands, Stege Marsh, and Hoffman Marsh within the Plan Area (approximately 112.3 acres)

Actions. If the City decides to approve the Specific Plan, the City will take the following actions:

- Certify the Richmond Bay Specific Plan Final EIR pursuant to CEQA;
- Approve amendments to General Plan text and maps to reflect and implement new Specific Plan land use categories defined in the Specific Plan;
- Adopt a finding that the Specific Plan is consistent with the City's General Plan, pursuant to the proposed amendments, and adopt the Specific Plan itself; and
- Approve associated amendments to the City's Zoning Ordinance and map as required to reflect and implement zoning districts, development standards, and design criteria specified in the Specific Plan.

After adoption of the Specific Plan, the City would consider site-specific applications for development, such as approval of one or more Development Agreements and associated tentative and final subdivision map approvals for specific subsequent projects.

Environmental Impacts, Mitigation Measures and Residual Impacts

All impacts and mitigation measures identified in this EIR, for both the Specific Plan and the Sub-Area 4 project, are summarized in **Table 2-2**, Summary of Impacts, Mitigation Measures, and Residual Impacts, at the end of this chapter. Table ES-1 includes all impact statements, recommended mitigation measures, and the level of significance of the impact after recommended mitigation measures are implemented.

This EIR identifies significant and unavoidable impacts associated with the following:

Specific Plan

- Air Quality: Construction emissions (Plan)
- Air Quality: Operational emissions (Plan, Cumulative)
- Air Quality: Exposure to Toxic Air Contaminants (Plan, Cumulative)
- Cultural Resources: Impacts to historic resources ((Plan, Cumulative)
- Climate Change and Greenhouse Gases: Emissions of greenhouse gases (Plan, Cumulative)
- Noise: Operational traffic noise (Plan, Cumulative)
- Transportation and Traffic: Intersection operations (Plan, Cumulative)
- Transportation and Traffic: Freeway segments operations (Plan, Cumulative)
- Transportation and Traffic: Transportation hazards (railroad crossings) (Plan)
- Transportation and Traffic: Traffic queuing on off-ramps extending to freeway mainline (Plan)

Sub-Area 4 Project

- Air Quality: Operational emissions (Plan, Cumulative)

- Climate Change and Greenhouse Gases: Emissions of greenhouse gases (Plan, Cumulative)
- Noise: Operational traffic noise (Plan, Cumulative)
- Transportation and Traffic: Intersection operations (Plan, Cumulative)
- Transportation and Traffic: Freeway segments operations (Cumulative)
- Transportation and Traffic: Transportation hazards (railroad crossings) (Plan)
- Transportation and Traffic: Traffic queuing on off-ramps extending to freeway mainline (Plan)

2.2 Alternatives

Chapter 5 presents a detailed analysis of a range of reasonable alternatives to the Specific Plan, as well as a set of reasonable alternatives to the Sub-Area 4 Project. The alternatives that are analyzed in detail are listed below:

Specific Plan Alternatives

- **Specific Plan Alternative 1:** Lowest Intensity Alternative (Alternative SP-1)
- **Specific Plan Alternative 2:** Low Intensity Alternative (Alternative SP-2)
- **Specific Plan Alternative 3:** No Project / Existing Zoning Alternative (Alternative SP-3)

Environmentally Superior Alternative: Alternative SP-1 (Lowest Intensity Alternative) is identified as the CEQA-required environmentally superior alternative to the Specific Plan, after considering and rejecting Alternative SP-3 (No Project / Existing Zoning Alternative), as CEQA requires.

Sub-Area 4 Project Alternatives

- **Sub-Area 4 Project Alternative 1:** Low Intensity Alternative (Alternative SA4-1)
- **Sub-Area 4 Project Alternative 2:** No Project / Existing Zoning Alternative (Alternative SA4-2)

Environmentally Superior Alternative: Alternative SA4-1 (Low Intensity Alternative) is identified as the CEQA-required environmentally superior alternative to the Sub-Area 4 project, after considering and rejecting Alternative SA4-2 (No Project / Existing Zoning Alternative), as CEQA requires.

2.3 Areas of Controversy and Scoping Comments

As required by the state CEQA *Guidelines*, the scope of this EIR includes all environmental issues to be resolved and all areas of controversy known to the Lead Agency (City of Richmond), including those issues and concerns identified as possibly significant by the City in its preliminary environmental review of the Specific Plan and Sub-Area 4 project, and by other agencies, organizations, and individuals in response to the City's Notice of Preparation1 (dated September 30, 2014) Areas of potential controversy raised by agencies or the public include:

- Biological Resources
- Hazards and Hazardous Materials
- Flooding and Seal Level Rise
- Land Use and Planning
- Traffic and Circulation
- Alternatives

See Appendix A to this EIR for a comprehensive summary of public comments on the NOP, as well as the original correspondence received in response to the NOP.

TABLE 2-2
SUMMARY OF IMPACTS, MITIGATION MEASURES, AND RESIDUAL EFFECTS

Environmental Impact	Standard Conditions of Approval and Mitigation Measures	Level of Significance after application of Mitigation
Aesthetics (SP)		
Impact AES-1.SP: Development under the Specific Plan would not have a substantial adverse effect on a scenic vista or scenic resource. (Criteria a., b.) (*Less Than Significant, No Mitigation Required*)	None Required.	Less Than Significant
Impact AES-2.SP: Development under the Specific Plan would not degrade the existing visual character or quality of the Plan Area and its surroundings. (Criterion c.) (*Less Than Significant, No Mitigation Required*)	None Required.	Less Than Significant
Impact AES-3.SP: Development under the Specific Plan would not create a new source of substantial light or glare that would adversely affect day or nighttime views in the area. (Criterion d.) (*Less Than Significant with Mitigation*)	**Mitigation Measure BIO-1d.SP: Building Design and Lighting Strategies to Address Biological Resources Impacts.**	Less Than Significant
Aesthetics (SA4)		
Impact AES-1.SA4: Development of the Sub-Area 4 Project would not have a substantial adverse effect on a scenic vista or scenic resource. (Criteria a., b.) (*Less Than Significant, No Mitigation Required*)	None Required.	Less Than Significant
Impact AES-2.SA4: Development of the Sub-Area 4 Project would not degrade the existing visual character or quality of the site and its surroundings. (Criterion c.) (*Less Than Significant, No Mitigation Required*)	None Required.	Less Than Significant
Impact AES-3. SA4: Development of the Sub-Area 4 Project would not create a new source of substantial light or glare that would adversely affect day or nighttime views in the area. (Criterion d.) (*Less Than Significant with Mitigation*)	**Mitigation Measure BIO-1d.SP: Building Design and Lighting Strategies to Address Biological Resources Impacts.**	Less Than Significant
Aesthetics (C)		
Impact C-AES-1.SP: Development under the Specific Plan, in combination with past, present, existing, approved, pending and reasonably foreseeable future development would not result in significant cumulative impacts with respect to aesthetics. (*Less Than Significant, No Mitigation Required*)	None Required.	Less Than Significant
Impact C-AES-1.SA4: Development under the Sub-Area 4 Project, in combination with past, present, existing, approved, pending and reasonably foreseeable future development would not result in significant cumulative impacts with respect to aesthetics. (*Less Than Significant, No Mitigation Required*)	None Required.	Less Than Significant

TABLE 2-2 (Continued)
SUMMARY OF IMPACTS, MITIGATION MEASURES, AND RESIDUAL EFFECTS

Environmental Impact	Standard Conditions of Approval and Mitigation Measures	Level of Significance after application of Mitigation
Air Quality (SP)		
Impact AIR-1.SP: Development under the Specific Plan would be consistent with the primary goals of the Bay Area Clean Air Plan and would not fundamentally conflict with the Clean Air Plan because the Specific Plan demonstrates reasonable efforts to implement control measures contained in the CAP. (Criterion a.) *(Less Than Significant, No Mitigation Required)*	None Required.	Less Than Significant
Impact AIR-2.SP: Construction associated with development under the Specific Plan would result in average daily emissions of greater than 54 pounds per day of ROG, NOX, or PM2.5 or 80 pounds per day of PM10. (Criteria a., b.) *(Significant and Unavoidable)*	**Mitigation Measure AIR-2a.SP: Best Management Practices for Controlling Particulate Emissions**. All applicants proposing the development of projects within the Plan Area shall ensure the implementation of the following BAAQMD Best Management Practices for particulate control for all project construction activities. These measures will reduce particulate emissions primarily during soil movement, grading and demolition activities but also during vehicle and equipment movement on unpaved project sites 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. 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, § 2485 of California Code of Regulations [CCR]). Clear signage 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. **Mitigation Measure AIR-2b.SP: Require Tier 4 engines on Construction Equipment.** All applicants proposing development of projects within the Plan Area shall require their contractors, as a condition of contract, to further reduce construction-related exhaust emissions by ensuring that all off-road equipment greater than 25 horsepower (hp) and operating for more than 20 total hours over the entire duration of construction activities shall operate on a USEPA-approved Tier 4 engine. Construction equipment with Tier 4 engines currently comprise 22 percent of the statewide construction equipment fleet and CARB Regulations will result in the	Significant and Unavoidable

TABLE 2-2 (Continued)
SUMMARY OF IMPACTS, MITIGATION MEASURES, AND RESIDUAL EFFECTS

Environmental Impact	Standard Conditions of Approval and Mitigation Measures	Level of Significance after application of Mitigation
Air Quality (SP) – (cont.)		
Impact AIR-2.SP (cont.)	percentage increasing over the next several years. Alternatively, future project sponsors could have a construction air quality assessment performed which, if the results warrant and the City approves, would obviate the need for implementation of Mitigation Measure AIR-2b.SP. **Mitigation Measure AIR-2c.SP:** Require Construction Fleet to Use Renewable Diesel. All applicants proposing development of projects within the Plan Area shall require their contractors, as a condition of contract, to reduce construction-related exhaust emissions by ensuring that all off-road equipment greater than 25 horsepower (hp) and operating for more than 20 total hours over the entire duration of construction activities shall operate on renewable diesel (such as Diesel HPR). Renewable diesel is currently commercially available in Berkeley and Oakland. Alternatively, future project sponsors could have a construction air quality assessment performed which, if the results warrant and the City approves, would obviate the need for implementation of Mitigation Measure AIR-2c.SP.	Significant and Unavoidable
Impact AIR-3.SP: Adoption and development under the Specific Plan would result in operational average daily emissions that could violate any air quality standard, contribute substantially to an existing or projected air quality violation or result in a cumulatively significant net increase of any nonattainment pollutant. (Criteria b., c.) *(Significant and Unavoidable)*	**Mitigation Measure AIR-3a.SP:** Use Super-compliant VOC Architectural Coatings in Maintaining Buildings through CC&Rs and Ground Leases. Future developer(s) of projects within the Plan Area shall require all residentially developed parcels to include within their CC&R's and/or ground leases requirements for all future interior spaces to be repainted only with "Super-Compliant" Architectural Coatings (http://www.aqmd.gov/home/regulations/compliance/architectural-coatings/super-compliant-coatings).While Regulation 8 Rule 3 of the BAAQMD places limits on the VOC content of paint and other architectural coatings, use of lower VOC coatings available to consumers can further reduce operational ROG emissions. **Mitigation Measure AIR-3b.SP: Promote use of Green Consumer Products.** To reduce ROG, NOx and PM10 emissions associated with projects developed within the Plan Area, developer(s) of such projects shall provide education for residential and commercial tenants concerning green consumer products. Prior to receipt of any certificate of final occupancy and every five years thereafter, the project sponsors shall work with the City of Richmond to develop electronic correspondence to be distributed by email annually to residential and/or commercial tenants of each building on the project site that encourages the purchase of consumer products that generate lower than typical VOC emissions. The correspondence shall encourage environmentally preferable purchasing and shall include contact information and links to vendors of low VOC consumer products. **Mitigation Measure AIR-3c.SP:** Electrification of Loading Docks. For all projects developed within the Plan Area, developer(s) shall ensure that loading docks for retail, light industrial or warehouse uses that will receive deliveries from refrigerated transport trucks incorporate electrification hook-ups for transportation refrigeration units to avoid emissions generated by idling refrigerated transport trucks.	Significant and Unavoidable

TABLE 2-2 (Continued)
SUMMARY OF IMPACTS, MITIGATION MEASURES, AND RESIDUAL EFFECTS

Environmental Impact	Standard Conditions of Approval and Mitigation Measures	Level of Significance after application of Mitigation
Air Quality (SP) – (cont.)		
Impact AIR-3.SP (cont.)	**Mitigation Measure AIR-3d.SP:** Prohibit Wood Burning Fireplaces. For all projects developed within the Plan Area, developer(s) shall ensure that building specifications for residential units preclude fireplaces, whether wood-burning or natural gas-fired. Compliance with this measure shall be verified upon plan review and prior to occupancy by the City of Richmond Building Department. **Mitigation Measure AIR-3e.SP:** Diesel Backup Generator Specifications. For all projects developed within the Plan Area, and to reduce NOx emissions associated with operation of stationary sources, the project sponsors shall implement the following actions: 1. Any new diesel backup generators shall: a. Have engines that meet or exceed CARB Tier 4 off-road emission standards which have the lowest NOx emissions of commercially available generators, and b. Be fueled with renewable diesel, if commercially available, which has been demonstrated to reduce NOx emissions by approximately 10 percent. 2. All new diesel backup generators shall have an annual maintenance testing limit of 50 hours, if feasible, and up to a maximum of 50 hours per engine, subject to any further restrictions as may be imposed by the Bay Area Air Quality Management District (BAAQMD) in its permitting process. **Mitigation Measures TRF-9.SP** through **TRF-20.SP**	Significant and Unavoidable
Impact AIR-4.SP: Adoption and development under the Specific Plan would result in new sources of toxic Air Contaminants (TACs) and could expose new receptors to existing sources of TACs. (Criterion d.) *(Significant and Unavoidable)*	**Mitigation Measure AIR-4a.SP: Diesel Particulate Matter Exposure for Residential and Other Sensitive Land Uses.** Should residences or other sensitive land use be proposed within 500 feet of the nearest traffic lane for I-580 or permitted stationary sources, to reduce DPM exposure to proposed receptors of the Specific Plan, all applicants proposing the development of projects within the Plan Area shall either: 1. Install and ensure the operation in good working order of indoor air filtration systems that meet or exceed an efficiency standard of Minimum Efficiency Reporting Value (MERV) 13 (i.e., a filter efficiency of approximately 80 percent of fine particulates in the range of 1.0 to 3.0 micrometers) to limit DPM within proposed sensitive land uses of the Specific Plan; or 2. Alternatively, the proposed project sponsor will perform a health risk assessment which, if the results warrant and the City approves, could obviate the need for filtration systems by demonstrating a less than significant exposure risk for future occupants.	Significant and Unavoidable

TABLE 2-2 (Continued)
SUMMARY OF IMPACTS, MITIGATION MEASURES, AND RESIDUAL EFFECTS

Environmental Impact	Standard Conditions of Approval and Mitigation Measures	Level of Significance after application of Mitigation
Air Quality (SP) – (cont.)		
Impact AIR-4.SP (cont.)	**Mitigation Measure AIR-4b.SP Health Risk Assessment of Future Projects under the Specific Plan.** For all projects proposed for development within the Plan Area (except the Sub-Area 4 Project), project applicants shall assess the potential cancer risk exposures to on-site residential receptors or any proposed school facilities later in the design phase, but prior to occupancy, and to prepare a project-specific HRA using updated receptor location information and a more detailed assessment of risks associated with I-580 or permitted stationary sources at that time and submit to the City for review. If the revised HRA demonstrates, to the satisfaction of the City, that the cancer risk exposures for on-site receptors will be less than BAAQMD project-level thresholds, then Mitigation Measure AIR-4a.SP would be unnecessary. If the revised HRA demonstrates, to the satisfaction of the City, that the cancer risk for on-site sensitive receptors will be less than presented in this analysis, but still over BAAQMD threshold, the mitigation effort may be proportionately reduced. **Mitigation Measure AIR-4c.SP: Risk Reduction Plan for Backup Generators or New Permitted Stationary Sources.** Applicants for projects that would include backup generators shall prepare and submit to the City a Risk Reduction Plan for City review and approval. The applicant shall implement the approved Risk Reduction Plan. The Risk Reduction Plan shall reduce cumulative localized cancer risks to the maximum feasible extent. The Risk Reduction Plan may contain, but is not limited to the following strategies: 1. Demonstration using screening analysis or a health risk assessment that project sources, when combined with local cancer risks from cumulative sources with 1,000 feet would be less than 100 in one million. 2. Installation of non-diesel fueled generators. 3. Installation of diesel generators with an EPA-certified Tier 4 engine or engines that are retrofitted with an ARB Level 3 Verified Diesel Emissions Control Strategy. **Mitigation Measures AIR-2b.SP** and **AIR-2c.SP.**	Significant and Unavoidable
Impact AIR-5.SP: Adoption and development under the Specific Plan would not contribute to carbon monoxide (CO) concentrations exceeding the California Ambient Air Quality Standards (CAAQS) of nine parts per million (ppm) averaged over eight hours and 20 ppm for one hour. (Criterion d.) *(Less Than Significant)*	None Required.	Less Than Significant
Impact AIR-6.SP: Adoption and development under the Specific Plan would not frequently and for a substantial duration, create or expose sensitive receptors to substantial objectionable odors affecting a substantial number of people. (Criterion e.) *(Less Than Significant)*	None Required.	Less Than Significant

TABLE 2-2 (Continued)
SUMMARY OF IMPACTS, MITIGATION MEASURES, AND RESIDUAL EFFECTS

Environmental Impact	Standard Conditions of Approval and Mitigation Measures	Level of Significance after application of Mitigation
Air Quality (SA4)		
Impact AIR-1.SA4: The Sub-Area 4 Project would not conflict with, or obstruct implementation of the 2010 Clean Air Plan. (Criterion a.) *(Less Than Significant)*	None Required.	Less Than Significant
Impact AIR-2.SA4: Construction activities associated with the Sub-Area 4 Project could generate fugitive dust and exceed construction criteria air pollutants emissions. (Criterion b.) *(Less Than Significant with Mitigation)*	**Mitigation Measure AIR-2.SA4:** Implement BAAQMD Basic Construction Mitigation Measures. The Sub-Area 4 Project applicant shall require construction contractors to implement the following applicable BAAQMD Basic Construction Mitigation Measures to reduce emissions of fugitive dust and equipment exhaust: • All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered two times per day. • All haul trucks transporting soil, sand, or other loose material off-site shall be covered. • 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. • All vehicle speeds on unpaved roads shall be limited to 15 mph. • All roadways, driveways, and sidewalks to be paved shall be completed as soon as possible. Building pads shall be laid as soon as possible after grading unless seeding or soil binders are used. • 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 shall be provided for construction workers at all access points. • All construction equipment shall be maintained and properly tuned in accordance with manufacturer's specifications. All equipment shall be checked by a certified visible emissions evaluator. • 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 BAAQMD's phone number shall also be visible to ensure compliance with applicable regulations.	Less Than Significant
Impact AIR-3.SA4: The Sub-Area 4 Project would result in emissions of criteria air pollutants at levels that could violate an air quality standard, or contribute to an existing or projected air quality violation. (Criterion b) *(Significant and Unavoidable)*	**Mitigation Measure AIR-3a.SP, AIR-3b.SP, AIR-3c.SP, AIR-3d.SP, AIR-3e.SP,** and **TRF-9.SP** through **TRF -20.SP**.	Significant and Unavoidable

TABLE 2-2 (Continued)
SUMMARY OF IMPACTS, MITIGATION MEASURES, AND RESIDUAL EFFECTS

Environmental Impact	Standard Conditions of Approval and Mitigation Measures	Level of Significance after application of Mitigation
Air Quality (SA4) – (cont.)		
Impact AIR-4.SA4: The Sub-Area 4 Project would generate toxic air contaminants, including diesel particulate matter, but would not expose sensitive receptors to substantial air pollutant concentrations. (Criterion d) *(Less Than Significant with Mitigation)*	**Mitigation Measure AIR-2b.SP** and **AIR-2c.SP (or)** **Mitigation Measure AIR-4a.SA4:** As an alternative to Mitigation Measures AIR-2b.SP and AIR-2c.SP, the Sub-Area 4 Project construction contractor/s shall use other measures, or in combination with use of Tier 4 equipment, to minimize diesel particulate matter emissions during the construction period, provided such measures reduce the predicted cancer risk below the threshold of (a) an incremental cancer risk level greater than 10 in one million, (b) a noncancerous risk (chronic or acute) hazard index greater than 1.0, or (c) an increase of annual average PM2.5 of greater than 0.3 micrograms per cubic meter (µg/m3) and are approved by the City. Any diesel-powered off-road and portable equipment shall meet or exceed emission standards for Tier 2 engines. For example, the construction contractor(s) may use other measures such as the use of alternative powered equipment (e.g., LPG-powered or electric lifts), alternative fuels (e.g., biofuels), added exhaust devices, or a combination of measures. **Mitigation Measure AIR-4b.SA4:** The Sub-Area 4 Project applicant/s may choose to reassess the potential off-site cancer risk and PM2.5 concentration exposures to off-site residential receptors later in the design phase, but prior to the start of construction, and prepare a revised HRA using updated receptor location information and more detailed construction plans and equipment list and submit to the City for review. If the revised HRA demonstrates, to the satisfaction of the City, that the cancer risk and exposure to PM2.5 for all potentially exposed off-site receptors will be less than BAAQMD project-level threshold of (a) an incremental cancer risk level greater than 10 in one million, (b) a noncancerous risk (chronic or acute) hazard index greater than 1.0, or (c) an increase of annual average PM2.5 of greater than 0.3 micrograms per cubic meter (µg/m3), then Mitigation Measure AIR-4a is unnecessary. If the revised HRA demonstrates, to the satisfaction of the City, that the cancer risk or exposure to PM2.5 for off-site sensitive receptors will be less than presented in this analysis but still over BAAQMD thresholds, then the mitigation effort may be proportionately adjusted.	Less Than Significant
Impact AIR-5.SA4: The Sub-Area 4 Project would not create objectionable odors that would affect a substantial number of people. (Criterion e) *(Less Than Significant)*	None Required.	Less Than Significant
Air Quality (C)		
Impact C-AIR-1.SP: The Specific Plan, in combination with past, present, and reasonably foreseeable future development would contribute to cumulative regional air quality impacts. *(Significant and Unavoidable)*	**Mitigation Measures AIR-3a.SP, AIR-3b.SP, AIR-3c.SP, AIR-3d.SP, AIR-3e.SP,** and **Mitigation Measures TRF-9.SP** through **TRF -20.SP.**	Significant and Unavoidable
Impact C-AIR-2SP: The Specific Plan, in combination with past, present, and reasonably foreseeable future development would contribute to cumulative health risk impacts on sensitive receptors. *(Significant and Unavoidable)*	**Mitigation Measure AIR.2b.SP, AIR.2c.SP, AIR-4a.SP, AIR-4b.SP,** and **4c.SP.**	Significant and Unavoidable

TABLE 2-2 (Continued)
SUMMARY OF IMPACTS, MITIGATION MEASURES, AND RESIDUAL EFFECTS

Environmental Impact	Standard Conditions of Approval and Mitigation Measures	Level of Significance after application of Mitigation
Air Quality (C) – (cont.)		
Impact C-AIR-1.SA4: The Sub-Area 4 Project, in combination with past, present, and reasonably foreseeable future development of cumulative projects would contribute to cumulative regional air quality impacts. *(Significant and Unavoidable)*	**Mitigation Measure AIR-3a.SP, AIR-3b.SP, AIR-3c.SP, AIR-3d.SP, AIR-3e.SP,** and **Mitigation Measure TRF-9.SP** through **TRF -20.SP.**	Significant and Unavoidable
Impact C-AIR-2.SA4: The Sub-Area 4 Project, in combination with past, present, and reasonably foreseeable future development of cumulative projects would contribute to cumulative health risk impacts on sensitive receptors. *(Less Than Significant with Mitigation)*	**Mitigation Measure AIR-4b.SP** and **AIR-4c.SP.**	Less Than Significant
Biological Resources (SP)		
Impact BIO-1.SP: Development facilitated by the Specific Plan would have a substantial adverse effect, either directly or through habitat modifications, on species identified as candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or the United States Fish and Wildlife Service. (Criterion a.) *(Less Than Significant with Mitigation)*	**Mitigation Measure BIO-1a.SP: Avoidance and Minimization Measures for Western Pond Turtle.** For any project proposed for development adjacent to the existing Upper Lagoon and/or Lower Lagoon, or in the area of Meeker Slough and Meeker Creek, project applicants shall determine the presence or absence of western pond turtle by conducting a preconstruction survey in areas of suitable habitat. If western pond turtle is present, the following measures shall be implemented: a) A qualified biologist shall supervise the installation of exclusion fencing along the boundaries of the work area adjacent to occupied and/or suitable habitat, as the biologist deems necessary to prevent western pond turtles from entering the work area. The construction contractor shall install species exclusion fencing, with a minimum height of 3 feet above ground surface and with an additional 4 to 6 inches of fence material buried such that species cannot crawl under the fence. b) A qualified biologist shall survey the project site within 48 hours before the onset of initial ground-disturbing activities and shall be present during initial vegetation clearing and ground-disturbing activities. (A qualified biologist is an individual who shall have a minimum of five years of academic training and professional experience in biological sciences and related resource management activities with a minimum of two years conducting surveys for each species that may be present within the project site.) The biological monitor shall monitor the exclusion fencing weekly to confirm proper maintenance and inspect for turtles. If western pond turtles are found, the City shall halt activities in the vicinity that pose a threat to the individual turtle or turtles as determined by the qualified biologist. If possible, the turtle or turtles shall be allowed to move out of the project site of their own volition (e.g., if it is near the exclusion fence that can be temporarily removed to let it pass). The qualified biologist shall relocate turtles to the nearest suitable habitat should they not leave the work area of their own accord. Construction shall resume after the turtles are out of harm's way. If western pond turtles occur repeatedly onsite after the exclusion fencing has been installed, a qualified biologist shall initiate preconstruction sweeps of the project site for this species prior to start of construction on a daily basis and thereafter throughout the duration of the project.	Less Than Significant

TABLE 2-2 (Continued)
SUMMARY OF IMPACTS, MITIGATION MEASURES, AND RESIDUAL EFFECTS

Environmental Impact	Standard Conditions of Approval and Mitigation Measures	Level of Significance after application of Mitigation
Biological Resources (SP) – (cont.)		
Impact BIO-1.SP (cont.)	c) During project construction or other ground-disturbing activities, excavations deeper than 6 inches shall have a sloping escape ramp of earth or a wooden plank installed at a 3:1 rise; openings, such as pipes, where western pond turtles might seek refuge shall be covered when not in use; and all trash that may attract predators or hide western pond turtles shall be properly contained each day, removed from the worksite, and disposed of regularly. Following the completion of activities, the construction contractor shall remove all trash and construction debris from the work areas. **Mitigation Measure BIO-1b.SP: Worker Environmental Awareness Program Training.** For any project proposed for development within the area of the Specific Plan, a project-specific Worker Environmental Awareness Program (WEAP) training shall be developed and implemented by a qualified biologist and attended by all project personnel prior to beginning work onsite. The WEAP training shall generally include but not be limited to education about the following: • Applicable state and federal laws, environmental regulations, Specific Plan permit conditions, and penalties for non-compliance; • Special-status plant and animal species with potential to occur at or in the vicinity of the project site, avoidance measures, and a protocol for encountering such species including a communication chain; • Preconstruction surveys and biological monitoring requirements associated with each phase of work and at each project site as biological resources and protection measures will vary depending on the land managers; • Known sensitive resource areas in the project vicinity that are to be avoided and/or protected as well as approved project work areas, access roads, and staging areas; and • Best management practices (BMPs) and their location at various project sites for erosion control, species exclusion, in addition to general housekeeping requirements. **Mitigation Measure BIO-1c.SP: Preconstruction Nesting Bird Surveys.** For any project proposed for development within the Plan Area, the City shall require the project applicant to conduct preconstruction nesting bird surveys in areas containing, or likely to contain, habitat for nesting birds as a condition of approval for any development-related permit. Specific measures to avoid and minimize impacts on nesting birds include, but are not limited to, those described below. • To the extent practicable, construction activities including building demolition, vegetation and tree removal, and new site construction shall be performed between September 1 and January 31 in order to avoid the avian nesting season.	Less Than Significant

TABLE 2-2 (Continued)
SUMMARY OF IMPACTS, MITIGATION MEASURES, AND RESIDUAL EFFECTS

Environmental Impact	Standard Conditions of Approval and Mitigation Measures	Level of Significance after application of Mitigation
Biological Resources (SP) – (cont.)		
Impact BIO-1.SP (cont.)	• If construction activities cannot be completed between September 1 and January 31, a preconstruction survey for nesting birds shall be conducted by a qualified biologist. During the avian nesting season (February 1 through August 31), a qualified biologist shall survey construction areas within and in the vicinity of the Plan Area for nesting raptors and passerine birds not more than 30 days prior to any ground-disturbing activity or vegetation removal. All accessible potential nesting habitat, including bare ground, in the Plan Area and within a 500 feet (for raptors) and 250 feet (for all other species) around any construction activity will be surveyed. • If active nests are found either within the project site or within the 500-foot survey buffer surrounding the project site, "no-work" buffer zones shall be established around the nests by a qualified biologist in coordination with CDFW as necessary depending on the specific species encountered. No demolition, vegetation removal, or ground-disturbing activities shall occur within the no-work buffer zone until young have fledged or the nest is otherwise abandoned as determined by the qualified biologist. If work during the nesting season stops for 14 days or more and then resumes, then nesting bird surveys shall be repeated, to ensure that no new birds have begun nesting in the area. • Typically, the size of individual buffers ranges from a minimum of 250 feet for raptors to a minimum of 50 feet for other birds but can be adjusted based on an evaluation of the site by a qualified biologist in cooperation with the USFWS and/or CDFW as necessary (i.e., in the case of protected species). Buffer distances may also be modified if obstacles such as buildings or trees obscure the construction area from active bird nests, or existing disturbances create an ambient background disturbance similar to the proposed disturbance. • Birds that establish nests after construction starts are assumed to be habituated to and tolerant of the indirect impacts resulting from construction noise and human activity. However, direct take of nests, eggs, and nestlings is still prohibited and a buffer must be established to avoid nest destruction. • Results of the surveys shall be forwarded to CDFW (if required by state law based on the species observed) and avoidance procedures shall be adopted, if necessary, on a case-by-case basis. These may include construction buffer areas (up to several hundred feet in the case of raptors) or seasonal avoidance. • A construction lighting plan for each project under the Specific Plan shall be prepared detailing measures to minimize light spillover outside of each project site.	Less Than Significant

TABLE 2-2 (Continued)
SUMMARY OF IMPACTS, MITIGATION MEASURES, AND RESIDUAL EFFECTS

Environmental Impact	Standard Conditions of Approval and Mitigation Measures	Level of Significance after application of Mitigation
Biological Resources (SP) – (cont.)		
Impact BIO-1.SP (cont.)	• **Burrowing Owls:** The following measures shall be implemented to address construction or other ground-disturbing activities that could take place within burrowing owl nesting habitat in Sub-Area 4. All accessible potential nesting habitat, including bare ground, in the project site that could be affected by construction activity will be surveyed per guidance provided in Appendix C of the Staff Report on Burrowing Owl Mitigation (CDFG, 2012). These guidelines shall determine timing and survey methodology, and reporting requirements. Preconstruction surveys to determine absence or presence of active burrowing owl nesting sites within the project site shall generally be completed as follows, or as modified by any subsequent approved protocol: a) Two surveys shall occur no more than 30 days prior to ground disturbing activity: one no less than 14 days prior to ground disturbing activity, and one within 24 hours prior to ground disturbing activity. Habitat assessments shall be conducted per guidelines provided in Appendix C of the Staff Report on Burrowing Owl Mitigation (CDFG, 2012). If no burrows are observed during the first survey, the second survey is not required. b) Conduct the survey/s between morning civil twilight and 10:00 AM and two hours before sunset until evening civil twilight to provide the highest detection probabilities. c) A survey for burrows and owls shall be conducted by walking through suitable habitat in the project site and in areas within 150 meters (approximately 500 feet) of the project site. This 150-meter buffer zone is included to account for adjacent burrows and foraging habitat outside the project site and impacts from factors such as noise and vibration due to heavy equipment which could impact resources outside the project site. d) Pedestrian survey transects shall be spaced to allow 100 percent visual coverage of the ground surface. The distance between transect center lines should be no more than 30 meters (approximately 100 feet), and should be reduced to account for differences in terrain, vegetation density, and ground surface visibility. To efficiently survey projects larger than 100 acres, it is recommended that two or more surveyors conduct concurrent surveys. Surveyors should maintain a minimum distance of 50 meters (approximately 160 feet) from any owls or occupied burrows. It is important to minimize disturbance near occupied burrows during all seasons. e) A report of the burrow survey stating absence or presence of burrows shall be prepared and submitted to the City and, if results are positive for birds, CDFW.	Less Than Significant

TABLE 2-2 (Continued)
SUMMARY OF IMPACTS, MITIGATION MEASURES, AND RESIDUAL EFFECTS

Environmental Impact	Standard Conditions of Approval and Mitigation Measures	Level of Significance after application of Mitigation
Biological Resources (SP) – (cont.)		
Impact BIO-1.SP (cont.)	**Mitigation Measure BIO-1d.SP: Building Design and Lighting Strategies to Address Biological Resources Impacts.** For any project proposed for development within the area of the Specific Plan, and prior to the issuance of the first building permit for each new building, the City of Richmond (City) shall require that the project applicant retain a qualified biologist experienced with bird strike issues to review and approve the design of the building windows and lighting to ensure that it sufficiently minimizes the potential for bird strikes. The City may also consult with applicable resource agencies with jurisdiction such as CDFW, USFWS, or others, as it determines to be appropriate during this review. ***Building Design.*** Prior to issuance of a building permit, The project applicant shall provide documentation to the satisfaction of the Planning Director identifying the measures and features of the building design that are intended to reduce potential impacts on birds. The building design may include, but is not limited to, some of the following measures: • Employ design techniques that create "visual noise" via cladding or other design features that make it easy for birds to identify buildings as such and not mistake buildings for open sky or trees; • Decrease continuity of reflective surfaces using "visual marker" design techniques, which may include: a) Patterned or fritted glass, with patterns at most 28 centimeters apart; b) One-way films installed on glass, with any picture or pattern or arrangement that can be seen from the outside by birds but appear transparent from the inside; c) Geometric fenestration patterns that effectively divide a window into smaller panes of at most 28 centimeters; and/or d) Decals with patterned or abstract designs, with the maximum clear spaces at most 28 centimeters square. • Up to 60 feet high on building facades facing the shoreline, decrease reflectivity of glass, using design techniques such as plastic or metal screens, light-colored blinds or curtains, frosting of glass, angling glass towards the ground, UV-A glass, or awnings and overhangs; • Eliminate the use of clear glass on opposing or immediately adjacent faces of the building without intervening interior obstacles such that a bird could perceive its flight path through the glass to be unobstructed; • Mute reflections in glass using strategies such as angled glass, shades, internal screens, and overhangs; and • Place new vegetation sufficiently away from glazed building facades so that no reflection occurs. Alternatively, if planting of landscapes near a glazed building façade is desirable, situate trees and shrubs immediately adjacent to the exterior	Less Than Significant

TABLE 2-2 (Continued)
SUMMARY OF IMPACTS, MITIGATION MEASURES, AND RESIDUAL EFFECTS

Environmental Impact	Standard Conditions of Approval and Mitigation Measures	Level of Significance after application of Mitigation
Biological Resources (SP) – (cont.)		
	• glass walls, at a distance of less than 3 feet from the glass. Such close proximity will obscure habitat reflections and will minimize fatal collisions by reducing birds' flight momentum. • A construction lighting plan for each project under the Specific Plan shall be prepared detailing measures to minimize light spillover outside of each project site. ***Lighting Design.*** The project applicant shall ensure that the design and specifications for buildings implement design elements to reduce lighting usage, change light direction, and confine light exposure. These may include, but are not limited to, the following general considerations that should be applied wherever feasible throughout the proposed project to reduce night lighting impacts on fish, marine mammals, and avian species: a) Avoid installation of lighting in areas where not required for public safety; b) Examine and adopt alternatives to bright, all-night, floor-wide lighting when interior lights would be visible from the exterior or exterior lights must be left on at night, including: i. Installing motion-sensitive lighting; ii. Installing task lighting; iii. Installing programmable timers; and, iv. Installing fixtures that use lower-wattage, sodium, and yellow-red spectrum lighting; and, c) Where exterior lights are to be left on at night, install fully shielded lights to contain and direct light away from the sky. ***Educating Residents and Occupants.*** The City shall ensure, as a condition of approval for every building permit, that the project applicant agrees to provide educational materials to building tenants, occupants, and residents encouraging them to minimize light transmission from windows, especially during peak spring and fall migratory periods, by turning off unnecessary lighting and/or closing window coverings at night. The City Planning and Building Services Division shall administratively review and approve the educational materials prior to building occupancy. ***Documentation.*** The City shall document undertaking the activities described in this mitigation measure and maintain records that include, among others, the written descriptions provided by the building developer of the measures and features of the design for each building that are intended to address potential impacts on birds, and the recommendations and memoranda prepared by the qualified biologist experienced with bird strikes who reviews and approves the design of any proposed projects to ensure that they sufficiently minimize the potential for bird strikes.	Less Than Significant

TABLE 2-2 (Continued)
SUMMARY OF IMPACTS, MITIGATION MEASURES, AND RESIDUAL EFFECTS

Environmental Impact	Standard Conditions of Approval and Mitigation Measures	Level of Significance after application of Mitigation
Biological Resources (SP) – (cont.)		
Impact BIO-1.SP (cont.)	**Mitigation Measure BIO-1e.SP: Salt Marsh Harvest Mouse and Salt Marsh Wandering Shrew Measures**. The following measures shall be implemented within occupied, or presumed-occupied, salt marsh harvest mouse and/or salt marsh wandering shrew habitat to avoid, minimize, and mitigate impacts to these species and their habitat. 1. A qualified, CDFW and/or USFWS-approved biological monitor will be present during all project-related activities within habitat determined suitable for salt marsh harvest mouse and/or salt marsh wandering shrew, or within 100 feet of such habitat. The biological monitor will present supplemental Worker Environmental Awareness Program information as needed for construction personnel to provide guidance about listed species and their habitats. The biological monitor will monitor all activities to ensure that no salt marsh harvest mouse or salt marsh wandering shrew is harassed, killed, or injured, and to ensure that the project conforms to the conservation measures outlined in the EIR. The biological monitor will notify the construction management lead when any aspect of the project might result in unauthorized take of special-status wildlife. 2. Vegetation within 100 feet of potential salt marsh harvest mouse and salt marsh wandering shrew habitat shall be removed using hand-tools prior to the installation of the exclusion fencing under the supervision of the qualified biological monitor. If animals of either species are observed within the work area, a biologist, with the appropriate federal and state permits, will remove and relocate the species to the nearest appropriate habitat. 3. To avoid potential impacts to salt marsh harvest mouse and salt marsh wandering shrew, exclusion fencing shall be installed by hand in all locations containing pickleweed, fat hen, and alkali heath vegetation or suitable foraging or nesting habitat and all natural/undeveloped uplands within a minimum of 100 feet of these habitats to prevent these species from entering the active work area, to protect habitat from earthmoving activities or accidental spills, and to exclude workers from sensitive habitat. The fence shall be made of a heavy plastic sheeting material that does not allow salt marsh harvest mouse and salt marsh wondering shrew to pass through or climb, and the bottom shall be buried to a depth of at least four inches so that the mouse and shrew cannot crawl under the fence. Fence height shall be at least 12 inches higher than the highest adjacent vegetation with a maximum height of four feet. All supports for the exclusion fencing shall be placed on the inside of the work area. A two-foot buffer will be maintained clear of vegetation along the outside of the exclusion fencing. Exclusion fencing shall be installed above the maximum high tide to prevent trapping animals between the fencing and rising tide waters. The fencing shall be installed under the supervision of the qualified biological monitor. Installation shall not occur during winter high tides, as determined by the biological monitor, when marsh habitats are submerged and these species are pushed to upland habitats.	Less Than Significant

TABLE 2-2 (Continued)
SUMMARY OF IMPACTS, MITIGATION MEASURES, AND RESIDUAL EFFECTS

Environmental Impact	Standard Conditions of Approval and Mitigation Measures	Level of Significance after application of Mitigation
Biological Resources (SP) – (cont.)		
Impact BIO-1.SP (cont.)	**Mitigation Measure BIO-1g.SP: Special-Status Bat Protection Measure.** For any project proposed for development within the area of the Specific Plan that would involve the removal of trees or buildings or the renovation of buildings, a preconstruction survey for special-status bats shall be conducted by a qualified biologist in advance of tree and structure removal to characterize potential bat habitat and identify active roost sites. Should the preconstruction survey find no bat habitat or bat roosting sites, then no further action is required. Should potential roosting habitat or active bat roosts be found in trees and/or structures to be removed under the project, the following measures shall be implemented: a) Removal of trees and structures shall be initiated when bats are active, approximately between the periods of March 1 to April 15 and August 15 to October 15; outside of bat maternity roosting season (approximately April 15 – August 31) and outside of months of winter torpor (approximately October 15 – February 28), to the extent feasible. b) If removal of trees and structures during the periods when bats are active is not feasible and active bat roosts being used for maternity or hibernation purposes are found on or in the immediate vicinity of the project site where tree and structure removal is planned, a no disturbance buffer of 100 feet shall be established around these roost sites until they are determined to be no longer active by the qualified biologist. The extent of this buffer may be modified by the qualified biologist depending on existing screening around the roost site (such as dense vegetation or a building) as well as the type of construction activity which would occur around the roost site. c) The qualified biologist shall be present during tree and structure removal if potential bat roosting habitat or active bat roosts are present. Trees and structures with active roosts shall be removed only when no rain is occurring or is forecast to occur for 3 days and when daytime temperatures are at least 50°F. d) Removal of trees with potential bat roosting habitat or active bat roost sites shall follow a two-step removal process: i. On the first day of tree removal and under supervision of the qualified biologist, branches and limbs not containing cavities or fissures in which bats could roost, shall be cut only using chainsaws. ii. On the following day and under the supervision of the qualified biologist, the remainder of the tree may be removed, either using chainsaws or other equipment (e.g. excavator or backhoe). e) Removal of structures containing or suspected to contain potential bat roosting habitat or active bat roosts shall be dismantled under the supervision of the qualified biologist in the evening and after bats have emerged from the roost to forage. Structures shall be partially dismantled to significantly change the roost conditions, causing bats to abandon and not return to the roost. Removal of structures shall occur within the allowed construction hours detailed under the City's Municipal Code (Section 9.52.110) weekdays between 7:00 a.m. to 7:00 p.m. and between 9:00 a.m. to 8:00 p.m. on weekends and holidays. If demolition/removal activities are expected to occur outside	Less Than Significant

TABLE 2-2 (Continued)
SUMMARY OF IMPACTS, MITIGATION MEASURES, AND RESIDUAL EFFECTS

Environmental Impact	Standard Conditions of Approval and Mitigation Measures	Level of Significance after application of Mitigation
Biological Resources (SP) – (cont.)		
Impact BIO-1.SP (cont.)	of the City's allowed construction hours, the applicant shall apply for a conditional use permit from the City of Richmond Planning and Building Division. All demolition/removal activities shall implement all feasible measures outline in **Mitigation Measure NOI-1a.SP** in Chapter 4.10, Noise, of this EIR. **Mitigation Measures NOI-1a.SP, NOI-1b.SP, and NOI-4b.SP.**	Less Than Significant
Impact BIO-2.SP: Development under the Specific Plan could have an adverse effect on riparian habitat or other sensitive natural communities identified in local or regional plans, policies, regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service. (Criterion b.) *(Less Than Significant with Mitigation)*	**Mitigation Measure BIO-2a.SP: Restoration of Northern Coastal Saltmarsh, Riparian, and Wetlands.** For any project proposed for development within the area of the Specific Plan that may remove the habitat functions and services of northern coastal saltmarsh, riparian habitat, or freshwater emergent wetlands, these habitats shall be restored in-place to pre-project conditions, if possible, or an equivalent area of these habitats shall be established (ratio of 1:1) at suitable off-site locations along the Richmond shoreline. A habitat-specific Restoration and Monitoring Plan shall be prepared by the project applicant for each development project that removes the respective habitat, and shall contain the same principles as the existing Berkeley Global Campus Wetland Restoration Monitoring Plan for affected areas, subject to approval by the appropriate regulatory agencies, and shall generally include, but not be limited, to the following: • A final grading plan for the affected northern coastal saltmarsh, riparian habitat, and/or wetlands, which would restore the topography of the affected habitat areas to pre-project conditions, or to conditions that will achieve long-term stability, and will support site-appropriate habitat; • A planting plan, composed of native plant species appropriate to the target restored habitat; • A management plan, including provisions for weed control to prevent the spread of invasive non-native plant species in the restoration area; • Performance criteria for the revegetated areas that establish success thresholds over a specific amount of time (typically five years) as determined by the regulatory agencies with jurisdiction over the affected areas; • A monitoring and reporting program under which progress of the revegetated areas shall be tracked to ensure survival of the mitigation plantings. The program shall document overall health and vigor of mitigation plantings throughout the monitoring period and provide recommendations for adaptive management as needed to ensure the site is successful, according to the established performance criteria. An annual report documenting monitoring results and providing recommendations for improvement throughout the year shall be provided to the regulatory agencies; and • A best management practices element describing erosion control measures to be installed around the affected areas following mitigation planting in order to avoid sediment runoff into adjacent waters.	Less Than Significant

TABLE 2-2 (Continued)
SUMMARY OF IMPACTS, MITIGATION MEASURES, AND RESIDUAL EFFECTS

Environmental Impact	Standard Conditions of Approval and Mitigation Measures	Level of Significance after application of Mitigation
Biological Resources (SP) – (cont.)		
Impact BIO-1.SP (cont.)	**Mitigation Measure BIO-2b.SP: Restoration of Coastal Terrace Prairie**. For the Lark Avenue Variant, road construction within the coastal prairie that removes this sensitive plant community shall be restored according to UC Berkeley's Coastal Terrace Prairie Management Plan (Stromberg, 2014). To facilitate construction of the Lark Avenue Variant on UC land, the City would enter into a Memorandum of Understanding (MOU) with UC, and would adopt and implement the Coastal Terrace Prairie Management Plan, which would result in net ecological benefit for the prairie community. Implementation of the Plan in conjunction with UC would include the following (adapted from the LRDP FEIR): • UC shall commence initial phase implementation of the 2014 Richmond Bay Campus Coastal Terrace Prairie Management Plan (Appendix G of the LDRP FEIR) that addresses exotic plant removal, tree and coyote brush removal, weed management, and programs for native plant stock preservation to aid in preservation and enhancement of the grassland portion of the Natural Open Space area. • When the Lark Avenue Variant is constructed, proactive (not passive) measures to improve the quality of the native grasslands in the Natural Open Space area shall be funded and undertaken. This may take the form of support for research and education into effective restoration. Possible fund sources would be established as part of the MOU between the City and UC. • Once the Lark Avenue Variant is constructed, UC shall update its Coastal Terrace Prairie Management Plan to guide conservation and enhancement efforts, as well as the siting of boardwalks and minor access roads and structures in a resource-sensitive manner. The plan shall include weed management actions, annual monitoring and reporting, and adaptive management sufficient to maintain or improve the quality of the grasslands preserved in the designated Natural Open Space. The effectiveness of the plan shall be continually evaluated and the plan adjusted as needed. • Prior to the commencement of the construction of the Lark Creek Variant in high, medium, or low quality grasslands outside of the Natural Open Space land use zone, UC shall conduct a site-specific native plant survey. All survey results would be published to the UC environmental website for the Berkeley Global Campus/Richmond Field Station. UC would apply the results of such surveys to implement a program that would use the native plant stock from such area to aid enhancement and restoration in Natural Open Space grassland areas, and to develop or restore meadow acreage elsewhere. Possible locations include formal landscaped open areas of the Richmond Field Station, rooftops of buildings at the Richmond Field Station, demonstration meadows at UC Berkeley or in the city of Richmond that help explain the former extent of regional coastal terrace prairie grasslands. **Mitigation Measures BIO-1a.SP** through **BIO-1f.SP,** and **NOI-1a.SP, NOI-1b.SP, BIO-3.SP,** and **NOI-4b.SP.**	Less Than Significant

TABLE 2-2 (Continued)
SUMMARY OF IMPACTS, MITIGATION MEASURES, AND RESIDUAL EFFECTS

Environmental Impact	Standard Conditions of Approval and Mitigation Measures	Level of Significance after application of Mitigation
Biological Resources (SP) – (cont.)		
Impact BIO-3.SP: Development proposed under the Specific Plan could have a substantial adverse effect on federally protected wetlands, as defined by Section 404 of the Clean Water Act and state protected wetlands. (Criterion c.) (*Less Than Significant with Mitigation)*	**Mitigation Measure BIO-3.SP: Wetland Protection.** For any project proposing development within or adjacent to wetlands within the area of the Specific Plan, wetland protection measures shall be applied to protect identified state and federal jurisdictional wetlands. These measures shall include the following: a) To the extent feasible, construction projects that might affect jurisdictional drainages or wetlands shall be scheduled for dry-weather months. Avoiding ground-disturbing activities during the rainy season would further decrease the potential risk of construction-related discharges to jurisdictional waters b) A protective barrier shall be erected around any wetland feature designated for complete avoidance in project construction plans and regulatory permits to isolate it from construction or other ground-disturbing activities; c) Signage shall be installed on the fencing to identify sensitive habitat areas and restrict construction activities; d) No equipment mobilization, grading, clearing, or storage of vehicles, equipment or machinery, or similar activity shall occur at each project site until a City representative has inspected and approved the wetland protection fencing; and e) The City shall ensure that the temporary fencing is continuously maintained until all construction or other ground-disturbing activities are completed. A fencing material meeting the requirements of both water quality protection and wildlife exclusion may be used, such as heavy plastic sheeting material. Fences must be properly installed with final approval by a City representative, including adequate supports or wire backing for use in windy sites, and with the lower edge keyed in to the soil to ensure a proper barrier. **Mitigation Measures BIO-2a.SP and HYD-1.SP.**	Less Than Significant
Impact BIO-4.SP: Development under the Specific Plan would not likely 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. (Criterion d.) (*Less Than Significant with Mitigation*)	**Mitigation Measures BIO-1d.SP and BIO-2a.SP**	Less Than Significant
Impact BIO-5.SP: Implementation of the Specific Plan could conflict with existing plans, policies, or ordinances, including the City of Richmond's Tree Ordinance (City of Richmond Municipal Code Chapter 10.08). (Criterion e.) *(Less Than Significant with Mitigation)*	**Mitigation Measures BIO-1a.SP, BIO-1b.SP, BIO-1c.SP, BIO-1d.SP, BIO-1e.SP, BIO-1f.SP, BIO-2a.SP, BIO-2b.SP, and BIO-3.SP.**	Less Than Significant

TABLE 2-2 (Continued)
SUMMARY OF IMPACTS, MITIGATION MEASURES, AND RESIDUAL EFFECTS

Environmental Impact	Standard Conditions of Approval and Mitigation Measures	Level of Significance after application of Mitigation
Biological Resources (SA4)		
Impact BIO-1. SA4: Development facilitated by the Sub-Area 4 project would have a substantial adverse effect, either directly or through habitat modifications, on species identified as candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or the United States Fish and Wildlife Service. (Criterion a.) (*Less Than Significant with Mitigation*)	**Mitigation Measures BIO-1a.SP, BIO-1b.SP, BIO-1c.SP, BIO-1d.SP, BIO-1e.SP, BIO-1f.SP, NOI-1a, NOI-1b,** and **NOI-4b.SP.**	Less Than Significant
Impact BIO-2. SA4: Development under the Sub-Area 4 project could have a substantial adverse effect on riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service. (Criterion b.) (*Less Than Significant with Mitigation*)	**Mitigation Measure BIO-2a.SP, BIO-2b.SP,** and **BIO-3.SP.**	Less Than Significant
Impact BIO-3.SA4: Development of the Sub-Area 4 project could have a substantial adverse effect on federally protected wetlands, as defined by Section 404 of the Clean Water Act and state protected wetlands. (Criterion c.) (*Less Than Significant with Mitigation*)	**Mitigation Measure BIO-2a.SP, BIO-3.SP,** and **HYD-1.SP.**	Less Than Significant
Impact BIO-4.SA4: Development of the Sub-Area 4 project would not likely 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 (Criterion d). (*Less Than Significant with Mitigation*)	**Mitigation Measure BIO-1d.SP, BIO-2a.SP.**	Less Than Significant
Impact BIO-5. SA4: The Sub-Area 4 Project could conflict with existing plans, policies, or ordinances, including the City of Richmond's Tree Ordinance (City of Richmond Municipal Code Chapter 10.08). (Criterion e.) (*Less Than Significant with Mitigation*)	**Mitigation Measure BIO-1a.SP, BIO-1b.SP, BIO-1c.SP, BIO-1d.SP, BIO-1e.SP, BIO-1f.SP, BIO-2a.SP, and BIO-3.SP.**	Less Than Significant
Biological Resources (C)		
Impact C-BIO-1.SP: The Specific Plan, in conjunction with other past, current, or foreseeable development, could result in cumulative impacts on special-status species, habitats, wetlands and other waters of the U.S. *(Less Than Significant with Mitigation)*	**Mitigation Measure BIO-1a.SP, BIO-1b.SP, BIO-1c.SP, BIO-1d.SP, BIO-1e.SP, BIO-1f.SP, BIO-2a.SP, BIO-2b.SP, BIO-3.SP, HYD-1.SP,** and **NOI-1b.SP.**	Less Than Significant
Impact C-BIO-1.SA4: The Sub-Area 4 Project, in conjunction with other past, current, or foreseeable development, could result in cumulative impacts on special-status species, habitats, wetlands and other waters of the U.S. *(Less Than Significant with Mitigation)*	**Mitigation Measure BIO-1a.SP, BIO-1b.SP, BIO-1c.SP, BIO-1d.SP, BIO-1e.SP, BIO-1f.SP, BIO-2a.SP, BIO-3.SP,** and **HYD-1.SP.**	Less Than Significant
	Mitigation Measure BIO-1d.SP: Preconstruction Nesting Bird Surveys	Less Than Significant

TABLE 2-2 (Continued)
SUMMARY OF IMPACTS, MITIGATION MEASURES, AND RESIDUAL EFFECTS

Environmental Impact	Standard Conditions of Approval and Mitigation Measures	Level of Significance after application of Mitigation
Cultural Resources (SP)		
Impact CUL-1.SP: Implementation of the Specific Plan could cause a substantial adverse change in the significance of a historical resource. *(*Criterion a.) *(Significant; Significant and Unavoidable)*	**Mitigation Measure CUL-1: Historic Resources Evaluation.** During the preliminary design for each project proposed for development within the Plan Area, and prior to submittal of a project application to the City of Richmond Planning Division, the project applicant shall undertake the following: **1. Historic Resources Survey.** The historic resources survey shall include, at a minimum: a. An updated records search at the Northwest Information Center; b. An intensive historical resources survey, documenting and evaluating resources within the project footprint (area of ground disturbance) and located on adjacent parcels within 200 feet of the project footprint, that are 45 years or older for listing in the California Register and local Richmond Historic Inventory; c. Recommendations for any additional measures that are required to resolve adverse impacts to recorded historical resources; and d. A report documenting the results of this research and recommendations, for submittal to the City. The survey shall be carried out by a qualified historian or architectural historian meeting the Secretary of the Interior's Standards for Architectural History. Site-specific surveys and evaluations that are more than 5 years old shall be updated to account for changes which may have occurred over time. For all historic resources identified as a result of site-specific surveys and evaluations, the project applicant shall undertake the following: **2. Historic Resources Treatment Plan.** The historic resources treatment plan shall be prepared by a qualified historian or architectural historian, and shall discuss, but not be limited to, the following options for the resource: a. *Avoidance.* The City shall ensure, where feasible, that all future development activities allowable under the Specific Plan, including demolition, alteration, and new construction, would avoid historical resources (i.e., those listed on federal, state, and local registers). b. *Adaptive Reuse.* If avoidance is not feasible, adaptive reuse and rehabilitation of historical resources shall occur in accordance with the Secretary of Interior's Standards for the Treatment of Historic Properties.	Significant (if avoidance is achieved or if adaptive reuse, rehabilitation, or relocation may also be sufficient to reduce impacts to a less-than-significant level); Significant and Unavoidable (if demolition occurs, or if adaptive reuse, rehabilitation, or relocation is not sufficient to reduce impacts to a less-than-significant level).

TABLE 2-2 (Continued)
SUMMARY OF IMPACTS, MITIGATION MEASURES, AND RESIDUAL EFFECTS

Environmental Impact	Standard Conditions of Approval and Mitigation Measures	Level of Significance after application of Mitigation
Cultural Resources (SP) – (cont.)		
Impact CUL-1.SP (cont.)	c. *Appropriate Relocation.* If avoidance or adaptive reuse in situ is not feasible, the project applicant shall make a good faith effort to relocate the affected building(s) to a site acceptable to the City. Projects that relocate the affected historical property to a location consistent with its historic or architectural character could reduce the impact less than significant, unless the property's location is an integral part of its significance, e.g., a contributor to a historic district. For all historic resources identified as a result of site-specific surveys and evaluations which cannot be feasibly avoided (and including resources that would be adaptively reused, or appropriately relocated) the project applicant shall undertake the following: **3. Recordation and Public Interpretation.** A qualified historian or architectural historian shall evaluate the feasibility and appropriateness of recordation and public interpretation of identified resources prior to any construction activities which would directly affect them. Should City staff decide recordation and or public interpretation is required, the following activities would be performed: • *Recordation*. Recordation shall follow the standards provided in the National Park Service's Historic American Building Survey (HABS) program, which requires photo-documentation of historic structures, a written report, and/or measured drawings (or photo reproduction of original plans if available). The photographs and report would be archived at the Richmond Planning Department and local repositories, such as public libraries, historical societies, and/or the Northwest Information Center at Sonoma State University. The recordation efforts shall occur prior to demolition, alteration, or relocation of any historic resources identified in the Plan Area. Additional recordation could include (as appropriate) oral history interviews or other documentation (e.g., video) of the resource. *Public Interpretation*. A public interpretation or art program shall be developed by a qualified historic consultant or local artist in consultation with City staff, based on a City-approved scope of work and submitted to the City for review and approval. The program could take the form of plaques, commemorative markers, or artistic or interpretive displays which explain the historical significance of the properties to the general public. Such displays would be incorporated into project plans as they are being developed, and would typically be located in a publicly accessible location on or near the site of the former historical resource(s). Public interpretation displays shall be installed prior to completion of any construction projects in the Plan Area. Photographic recordation and public interpretation of historically significant properties does not typically mitigate the loss of resources to a less-than-significant level (CEQA *Guidelines* Section 15126.4[b][2]).	

TABLE 2-2 (Continued)
SUMMARY OF IMPACTS, MITIGATION MEASURES, AND RESIDUAL EFFECTS

Environmental Impact	Standard Conditions of Approval and Mitigation Measures	Level of Significance after application of Mitigation
Cultural Resources (SP) – (cont.)		
Impact CUL-2.SP: Implementation of the Specific Plan could cause a substantial adverse change in the significance of a unique archaeological resource. (Criterion b.) (*Less Than Significant with Mitigation*)	**Mitigation Measure CUL-2a.SP: Archaeological Resources Evaluation.** During the preliminary design for each project proposed for development within the Plan Area and the Lark Drive Variant, and prior to submittal of a building permit application to the City of Richmond Planning Division as needed, the project applicant (or City, in the case of the Lark Drive Variant) shall undertake the following: **1. Archeological Resources Survey.** The archeological resources survey shall be completed by a qualified archeologist, and shall include, at a minimum: a. An updated records search at the Northwest Information Center (per Mitigation Measure CUL-1.SP); b. A cultural resources survey of the project site that meets industry standards, including subsurface presence/absence studies; c. Recommendations for any additional measures that are required to resolve potential adverse impacts to recorded and/or undiscovered archaeological resources, with a preference for preservation in place for historical resources of an archaeological nature, where feasible; and d. A report documenting the results of this research and recommendations, for submittal to the City. If the results of the initial survey indicate the presence of or high likelihood for archaeological resources, the City shall require additional measures as outlined below. If the archeologist determines that a significant archaeological resource that could be adversely impacted by a project is present at the site, the project applicant shall undertake the following: **2. Preservation in Place.** If the find is determined to be potentially significant, a qualified archaeologist, in consultation with the Planning Director or designee at the City of Richmond, the project applicant, and the appropriate Native American representative, where applicable, shall determine whether preservation in place is feasible. Consistent with CEQA *Guidelines* Section 15126.4(b)(3), this may be accomplished through: planning construction to avoid the resource; incorporating the resource within open space; capping and covering the resource; or deeding the site into a permanent conservation easement. If the archeologist determines that preservation in place is not feasible for the resource and another type of mitigation would better serve the interests protected by CEQA, mitigation shall include data recovery through archaeological investigations and the project applicant shall undertake the following: **3. Archaeological Research Design and Treatment Plan (ARDTP).** If avoidance/preservation in place is not feasible for the identified resource, the project applicant (or City, in the case of the Lark Drive Variant) shall hire a Secretary of the	Less Than Significant

TABLE 2-2 (Continued)
SUMMARY OF IMPACTS, MITIGATION MEASURES, AND RESIDUAL EFFECTS

Environmental Impact	Standard Conditions of Approval and Mitigation Measures	Level of Significance after application of Mitigation
Cultural Resources (SP) – (cont.)		
Impact CUL-2.SP (cont.)	Interior-qualified archaeological consultant who shall prepare a detailed ARDTP that shall be submitted to the City for review and approval. The ARDTP shall identify a proposed data recovery program, and how the data recovery program would preserve the significant information the archaeological resource is expected to contain. Treatment of unique archaeological resources shall follow the applicable requirements of Public Resources Code Section 21083.2. Treatment for most resources would consist of (but would not be not limited to) sample excavation, artifact collection, site documentation, and historical research, with the aim of targeting the recovery of important scientific data contained in the portion(s) of the significant resource to be impacted by the project. The ARDTP shall include provisions for analysis of data in a regional context; reporting of results within a timely manner and subject to review and comments by the appropriate Native American representative, where applicable, before being finalized; curation of artifacts and data at a local facility acceptable to the City and appropriate Native American representative, if applicable; and dissemination of final confidential reports to the appropriate Native American representative, if applicable, the Northwest Information Center of the California Historical Resources Information System and the City. **Mitigation Measure CUL-2b.SP: Inadvertent Discovery of Archaeological Resources.** During construction of each project proposed for development within the Plan Area and/or the Lark Drive Variant, if prehistoric or historic-era cultural materials are encountered, all construction activities within 100 feet shall halt and the City shall be notified. Prehistoric archaeological materials might include obsidian and chert flaked-stone tools (e.g., projectile points, knives, scrapers) or toolmaking debris; culturally darkened soil ("midden") containing heat-affected rocks, artifacts, or shellfish remains; and stone milling equipment (e.g., mortars, pestles, handstones, or milling slabs); and battered stone tools, such as hammerstones and pitted stones. Historic-period materials might include stone, concrete, or adobe footings and walls; filled wells or privies; and deposits of metal, glass, and/or ceramic refuse. The project applicant (or City, in the case of the Lark Drive Variant) shall ensure that a Secretary of the Interior-qualified archaeologist shall inspect the find within 24 hours of discovery. If the find is determined to be potentially significant, the archaeologist, shall follow the guidelines provided in Mitigation Measure CUL-2a.SP above.	
Impact CUL-3.SP: Implementation of the Specific Plan could disturb human remains, including those interred outside of formal cemeteries. (Criterion c.) (*Less Than Significant with Mitigation*)	**Mitigation Measure CUL-3.SP: Inadvertent Discovery of Human Remains.** Pursuant to Section 7050.5 of the Health and Safety Code, and Section 5097.94 of the Public Resources Code of the State of California, and for each project-level development proposal submitted to the City of Richmond for approval (and for construction of the Lark Drive Variant), the project applicant (or City, in the case of the Lark Drive Variant) shall ensure the following:	Less Than Significant

TABLE 2-2 (Continued)
SUMMARY OF IMPACTS, MITIGATION MEASURES, AND RESIDUAL EFFECTS

Environmental Impact	Standard Conditions of Approval and Mitigation Measures	Level of Significance after application of Mitigation
Cultural Resources (SP) – (cont.)		
Impact CUL-3.SP (cont.)	1. In the event of the discovery of human remains during construction, work shall stop in that area and within 100 feet of the find. The Contra Costa County Coroner shall be notified and shall make a determination as to whether the remains are Native American. If the Coroner determines that the remains are not subject to their authority, they shall notify the Native American Heritage Commission who shall attempt to identify descendants of the deceased Native American. If no satisfactory agreement can be reached as to the disposition of the remains pursuant to this State law, then the project applicant shall re-inter the human remains and items associated with Native American burials on the property in a location not subject to further ground disturbance. 2. Project construction personnel shall be informed of the potential of encountering human remains during construction, and the proper procedures to follow as described above under 1., in the event of the discovery of human remains during construction.	Less Than Significant
Impact CUL-4.SP: Implementation of the Specific Plan could directly or indirectly destroy a unique paleontological resource or site or unique geologic feature. (Criterion d.) *(Less Than Significant with Mitigation)*	**Mitigation Measure CUL-4.SP: Paleontological Resources Mitigation Program.** For each project-level development proposal submitted to the City of Richmond for approval and the Lark Drive Variant, and prior to initial ground disturbance, the project applicant (or City, in the case of the Lark Drive Variant) will retain a qualified paleontologist or a California Registered Professional Geologist (California RPG) with appropriate paleontological expertise to carry out all mitigation measures related to paleontological resources. The qualified paleontologist or geologist will be available on-call to the project applicant (or City) throughout the duration of ground-disturbing activities. The project applicant (or City) will also ensure the following measures are undertaken: 1. All construction forepersons and field supervisors conducting or overseeing subsurface excavations will be trained in the recognition of potential fossil materials prior to ground disturbing activities. A pre-construction training on paleontological resources will also be provided to all other construction workers, but may include videotape of the initial training and/or the use of written materials rather than in-person training by the qualified paleontologist/California RPG. In addition to fossil recognition, the training will convey procedures to follow in the event of a potential fossil discovery. If potential fossils are discovered during construction, all earthwork or other types of ground disturbance within 100 feet of the find will stop until the qualified paleontologist/California RPG can assess the nature and importance of the find. Based on the scientific value or uniqueness of the find, the paleontologist/California RPG may record the find and allow work to continue, or recommend salvage and recovery of the fossil. If treatment and salvage is required, recommendations will be consistent with current professional standards. If required, treatment for fossil remains may include preparation and recovery of fossil materials so that they can be housed in an appropriate museum or university collection.	Less Than Significant

TABLE 2-2 (Continued)
SUMMARY OF IMPACTS, MITIGATION MEASURES, AND RESIDUAL EFFECTS

Environmental Impact	Standard Conditions of Approval and Mitigation Measures	Level of Significance after application of Mitigation
Cultural Resources (SP) – (cont.)		
Impact CUL-4.SP (cont.)	2. If found to be warranted based on experience during construction, the qualified paleontologist/California RPG, or paleontological monitor working under the supervision of the qualified paleontologist/California RPG, will monitor ground-disturbing activities. This monitoring will consist of periodically inspecting disturbed, graded, and excavated surfaces, as well as soil stockpiles and disposal sites. The frequency of monitoring will be determined by the qualified paleontologist/California RPG. If the monitor encounters a paleontological resource, it will be assessed and recorded or salvaged it as described above.	Less Than Significant
Cultural Resources (SA4)		
Impact CUL-1.SA4: Development of the Sub-Area 4 Project could cause a substantial adverse change in the significance of a historical resource. (Criterion a.) *(Less Than Significant, No Mitigation Required)*	None Required.	Less Than Significant
Impact CUL-2. SA4: Development of the Sub-Area 4 Project could cause a substantial adverse change in the significance of a unique archaeological resource. (Criterion b.) (Less than Significant with Mitigation)	**Mitigation Measure CUL-2.SP (Archaeological Resources Evaluation).**	Less Than Significant
Impact CUL-3. SA4**:** Development of the Sub-Area 4 Project could disturb human remains, including those interred outside of formal cemeteries. (Criterion c.) (Less than Significant with Mitigation)	**Mitigation Measure CUL-3.SP (Inadvertent Discovery of Human Remains).**	Less Than Significant
Impact CUL-4. SA4**:** Development of the Sub-Area 4 Project could directly or indirectly destroy a unique paleontological resource or site or unique geologic feature. (Criterion d.) (*Less than Significant with Mitigation*)	**Mitigation Measure CUL-4.SP (Paleontological Resources Mitigation Program).**	Less Than Significant
Cultural Resources (C)		
Impact C-CUL-1.SP: Construction activity and development under the Specific Plan, in combination with past, present, existing, approved, pending and reasonably foreseeable future projects within and in the vicinity of the Plan Area, would contribute to an adverse cumulative impact to cultural resources, but the contribution would not be considerable. *(Significant and Unavoidable)*	**Mitigation Measures CUL-1.SP, CUL-2.SP**, **CUL-3.SP** and **CUL-4.SP.**	Significant and Unavoidable
Impact C-CUL-1.SA4: Construction activity and development of the Sub-Area 4 Project, in combination with past, present, existing, approved, pending and reasonably foreseeable future projects within and in the vicinity of the Project site, would contribute to an adverse cumulative impact to cultural resources, but the contribution would not be considerable. (*Less than Significant with Mitigation*)	**Mitigation Measure CUL-2.SP**, **CUL-3.SP**, and **CUL-4.SP.**	Less Than Significant

TABLE 2-2 (Continued)
SUMMARY OF IMPACTS, MITIGATION MEASURES, AND RESIDUAL EFFECTS

Environmental Impact	Standard Conditions of Approval and Mitigation Measures	Level of Significance after application of Mitigation
Geology (SP)		
Impact GEO-1.SP: Development under the Specific Plan could expose people or structures to seismic hazards such as ground shaking and seismic-related ground failure such as liquefaction, differential settlement, and landslides. (Criteria a.2, a.3, and a.4) *(Less than Significant, No Mitigation Required)*	None Required.	Less Than Significant
Impact GEO-2.SP: Development under the Specific Plan could result in soil erosion during excavation, grading, and construction activities. (Criterion b.) *(Less than Significant, No Mitigation Required)*	None Required.	Less Than Significant
Impact GEO-3.SP: Development under the Specific Plan could result in on- or off-site slope failure, (lateral spreading), subsidence, liquefaction, or collapse from placement of improvements on unstable geologic units or soils. (Criterion c.) *(Less than Significant, No Mitigation Required)*	None Required.	Less Than Significant
Impact GEO-4.SP Implementation of the Specific Plan could result in development on expansive soils, creating risks to life and property. (Criterion d.) (*Less than Significant, No Mitigation Required*)	None Required.	Less Than Significant
Geology (SA4)		
Impact GEO-1.SA4: Development of the Sub-Area 4 project could expose people or structures to seismic hazards such as ground shaking and seismic-related ground failure such as liquefaction, differential settlement, and landslides (Criteria a.2, a.3, and a.4) (*Less than Significant, No Mitigation Required)*	None Required.	Less Than Significant
Impact GEO-2. SA4: Development under the Sub-Area 4 could result in soil erosion during excavation, grading, and construction activities. (Criterion b.) *(Less than Significant, No Mitigation Required)*	None Required.	Less Than Significant
Impact GEO-3.SA4: Sub-Area 4 development could result in on- or off-site slope failure, (lateral spreading), subsidence, liquefaction, or collapse from placement of improvements on unstable geologic units or soils. (Criterion c.) *(Less Than Significant, No Mitigation Required)*	None Required.	Less Than Significant
Impact GEO-4.SA4: Implementation of the Specific Plan could result in development on expansive soils, creating risks to life and property. (Criterion d) *(Less than Significant, No Mitigation Required)*	None Required.	Less Than Significant
Geology (CU)		
Impact C-GEO-1: Development of the Specific Plan, in conjunction with past, present and reasonably foreseeable future projects, would not result in significant cumulative impacts with respect to geology, soils or seismicity. (*Less than Significant, No Mitigation Required*)	None Required.	Less Than Significant

TABLE 2-2 (Continued)
SUMMARY OF IMPACTS, MITIGATION MEASURES, AND RESIDUAL EFFECTS

Environmental Impact	Standard Conditions of Approval and Mitigation Measures	Level of Significance after application of Mitigation
Climate Change and Greenhouse Gasses (SP)		
Impact GHG-1.SP: Construction and operation of development under the Specific Plan would generate greenhouse gas emissions that may have a significant impact on the environment. (Criterion a). (*Significant and Unavoidable*)	**Mitigation Measure GHG-1.SP: GHG Prevention and Control.** The City will continue to work proactively with the Bay Area Air Quality Management District, the California Air Resources Board, and the United States Environmental Protection Agency to help these agencies implement and enforce GHG prevention and control mandates within the City, and will work with the community to identify and advocate for GHG measures that are within the jurisdiction of these agencies and can and should be implemented to further reduce GHG emissions from the Richmond Bay Specific Plan and Sub-Area 4 Project.	Significant and Unavoidable
Impact GHG-2.SP: Adoption and development under the Specific Plan would not conflict with an applicable plan, policy or regulation of an appropriate regulatory agency adopted for the purpose of reducing greenhouse gas emissions. (Criterion b.) (*Less Than Significant, No Mitigation Required*)	None Required.	Less than Significant
Climate Change and Greenhouse Gasses (SA4)		
Impact GHG-1.SA4: Development under the Sub-Area 4 Project would produce greenhouse gas emissions that could have a significant impact on the environment. (Criterion a.) (*Significant and Unavoidable*)	**Mitigation Measure GHG-1.SP.**	Significant and Unavoidable
Impact GHG-2.SA4: Development of the Sub-Area 4 Project would not conflict with an applicable plan, policy or regulation of an appropriate regulatory agency adopted for the purpose of reducing greenhouse gas emissions. (Criterion b.) (*Less Than Significant, No Mitigation Required)*	None Required.	Less than Significant
Climate Change and Greenhouse Gasses (C)		
Impact C-GHG-1.SP: Development under the Specific Plan, combined with cumulative development, including past, present, existing, approved, pending, and reasonably foreseeable future development in the Plan Area and its vicinity, would result in cumulative impacts regarding GHG emissions and climate change. (Criteria a., b.) (*Significant and Unavoidable*)	**Mitigation Measure GHG-1.SP.**	Significant and Unavoidable
Impact C-GHG-1.SA4: Development under the Sub-Area 4 Project, combined with cumulative development, including past, present, existing, approved, pending, and reasonably foreseeable future development in the vicinity of the Sub-Area 4 Project site, would result in cumulative impacts regarding GHG emissions and climate change. (Criteria a., b.) (*Significant and Unavoidable)*	**Mitigation Measure GHG-1.SP.**	Significant and Unavoidable

TABLE 2-2 (Continued)
SUMMARY OF IMPACTS, MITIGATION MEASURES, AND RESIDUAL EFFECTS

Environmental Impact	Standard Conditions of Approval and Mitigation Measures	Level of Significance after application of Mitigation
Hazards and Hazardous Materials (SP)		
Impact HAZ-1.SP: Construction and demolition associated with development under the Specific Plan as well as operational land uses could create a significant hazard to the public or the environment through the routine transport, use or disposal of hazardous materials. (Criterion a.) *(Less Than Significant with Mitigation)*	**Mitigation Measure HAZ-1a.SP: Protection of Human Health From Environmental Contamination.** Prior to issuance of a building permit for any new project proposed within the Plan Area at a location where previous hazardous materials releases have occurred or resulted in environmental impacts, the City shall ensure the project will be developed under the supervision of an environmental agency of applicable jurisdiction (e.g., Department of Toxic Substances Control, Regional Water Quality Control Board, Contra Costa County Department of Human Health Services) such that health-based goals appropriate for the proposed new use are achieved, and soil management plans and/or environmental land use covenants are observed. Measures to protect environmental health shall include one or more of the following strategies and approaches: removal of environmental contaminants from the subject area (e.g., excavation and off-site disposal, use of soil vapor extraction equipment); separation of site users from contamination (e.g., engineering or institutional controls), or treatment of environmental contamination (e.g., in situ chemical oxidation). Prior to issuance of a certificate of occupancy or similar operating permit for such new project, the project proponent shall provide evidence to the City of successful implementation of protective measures through a certificate of completion, finding of suitability for the project's intended use or similar documentation issued by the environmental agency having jurisdiction over the project. **Mitigation Measure HAZ-1b.SP: Health and Safety Plan.** Prior to issuance of a building or grading permit for a new project proposed within the Plan Area at a location where previous hazardous materials releases have occurred, the City shall document that a Health and Safety Plan (HASP) has been prepared and will be implemented for the protection of workers, the public and the environment. Such HASP shall be prepared by a California licensed professional of applicable expertise (e.g., certified industrial hygienist, professional engineer). The HASP shall include measures consistent with customary protocols and applicable regulations (including, but not limited to Title 8 of the California Code of Regulations) for the protection of workers, site users, the public, and the environment (e.g., management of impacted soil; use of personal protective equipment; management, use and or treatment of water associated with construction activities; dust mitigation) and to address the discovery of any suspect soils (e.g., petroleum odor and/or discoloration) during construction activities, including notification of appropriate oversight agencies and investigation, removal, and disposal of soils as appropriate under agency directives and local, state, and Federal regulations). Prior to the issuance of a certificate of occupancy or similar operating permit for activities covered by the grading or building permit, a completion report documenting the implementation of the HASP and any deviations shall be submitted to and approved by the City. **Mitigation Measure HAZ-1c.SP: Hazardous Building Material Assessment (ACM, LBP, PCBs, other hazardous building materials).** For any project proposed for development within the Plan Area (or in the area of the Lark Drive Variant) that would require building demolition, and prior to issuance of any demolition permit, the project applicant (or, in the case of the Lark Drive Variant, the City) shall submit to the City and/or the Contra Costa	Less than Significant

TABLE 2-2 (Continued)
SUMMARY OF IMPACTS, MITIGATION MEASURES, AND RESIDUAL EFFECTS

Environmental Impact	Standard Conditions of Approval and Mitigation Measures	Level of Significance after application of Mitigation
Hazards and Hazardous Materials (SP) – (cont.)		
Impact HAZ-1.SP (cont.)	Health Services Department, according to relevant jurisdiction, a hazardous building material assessment prepared by qualified licensed contractors for any structure intended for demolition indicating whether asbestos containing materials (ACM), lead-based paint (LBP) or lead-based coatings, polychlorinated biphenyl (PCB)-containing equipment, and/or other hazardous building materials are present. **Mitigation Measure HAZ-1d.SP: Hazardous Building Materials Removal Plan (ACM, LBP, PCBs).** For any project proposed for development within the Plan Area (or in the area of the Lark Drive Variant), if the assessment required by Mitigation Measure HAZ-1c indicates the presence of ACM, LBP, PCBs, or other hazardous building materials, prior to issuance of any demolition permit the project applicant (or, in the case of the Lark Drive Variant, the City) shall submit and implement a hazardous building materials removal plan in accordance with local, state, and federal requirements to protect demolition and construction workers and the public from risks associated with such hazardous materials during demolition or renovation of affected structures.	Less Than Significant
Impact HAZ-2.SP: Development under the Specific Plan could 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. (Criterion b.) *(Less Than Significant with Mitigation)*	**Mitigation Measure HAZ-2a.SP: Safety Management Techniques and Practices.** The City shall make an additional finding for any use permit for any facility within the Plan Area that may pose a risk to human health or safety to the public due to the potential for an accidental release of hazardous substances, as follows: the applicant has demonstrated to the satisfaction of the City of Richmond Fire Department that risk of accidental release and any off-site consequences to the public have been minimized to the extent feasible using best safety management techniques and practices and will not result in any unacceptable risk to human health or safety to the public, as determined by the City of Richmond Fire Department based on accepted industry standards. Such safety management techniques and practices may include among others: training; emergency notification systems; substitution to equipment subject to less risk of upset condition; substitution of chemicals that pose less risk to members of the public; equipment (e.g., safety shutoff valves, secondary containment) or practices to contain or lessen the off-site effect of any release. **Mitigation Measure HAZ-2b.SP: Review of New Sensitive Uses.** Prior to issuance of a use permit, design review approval, or issuance of a building permit for new construction of, major renovation of, expansion of, or addition to a project within the Plan Area that includes sensitive land uses, the applicant shall demonstrate to the satisfaction of the City of Richmond Fire Department that the risk to: (1) on-site sensitive land uses (e.g., residential, schools, daycare) from an off-site accidental release of hazardous substances will not result in any unacceptable risk to human health or safety to the public once mitigated (e.g., evacuation and shelter-in-place procedures), as determined by the City of Richmond Fire Department based on accepted industry standards; and (2) off-site members of the public from an on-site release of hazardous substances will not result in any unacceptable risk to human health or safety to the public once mitigated, (e.g., best safety management techniques and practices, as described above), as determined by the City of Richmond Fire Department based on accepted industry standards.	Less Than Significant

TABLE 2-2 (Continued)
SUMMARY OF IMPACTS, MITIGATION MEASURES, AND RESIDUAL EFFECTS

Environmental Impact	Standard Conditions of Approval and Mitigation Measures	Level of Significance after application of Mitigation
Hazards and Hazardous Materials (SP) – (cont.)		
Impact HAZ-2.SP (cont.)	**Mitigation Measure HYD-1.SP.**	Less Than Significant
Impact HAZ-3.SP: Development under the Specific Plan could result in the use of hazardous materials within 0.25 miles of a school. (Criterion c.) (*Less Than Significant, No Mitigation Required*)	None Required.	Less Than Significant
Impact HAZ-4.SP: Development under the Specific Plan could be located on sites which are included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, create a significant hazard to the public or environment. (Criterion d.) (*Less Than Significant with Mitigation*)	**Mitigation Measure HAZ-4.SP: O&M Plan.** Prior to issuance of a certificate of occupancy or similar operating permit for any project within the area of the Specific Plan at a location where a cleanup plan is being implemented, as provided under HAZ-1a.SP, where an operation and maintenance (O&M) plan is required by an agency of applicable jurisdiction, the applicant shall demonstrate that an O&M plan has been approved by the agency and will be implemented to ensure the long-term protection of environmental health of site users. The O&M plan shall ensure the maintenance of health-based goals by periodic inspection of the remedy and taking such actions (e.g., repairing any deficiencies in durable covers that cap residual environmental contamination, performing maintenance on remedial equipment). Evidence of such an O&M plan and its implementation may be demonstrated by a document issued by an agency of applicable jurisdiction. **Mitigation Measure HAZ1a.SP** and **HAZ-1b.SP.**	Less Than Significant
Impact HAZ-5.SP: Development under the Specific Plan would not impair the implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan. (Criterion g.) (*Less Than Significant, No Mitigation Required*)	None Required.	Less Than Significant
Hazards and Hazardous Materials (SA4)		
Impact HAZ-1.SA4: Construction and demolition associated with development of the Sub-Area 4 Project as well as operational land uses could create a significant hazard to the public or the environment through the routine transport, use or disposal of hazardous materials. (Criterion a.) (*Less Than Significant with Mitigation*)	**Mitigation Measure HAZ-1a, HAZ-1b, HAZ-1c,** and **HAZ-1d,**	Less Than Significant
Impact HAZ-2.SA4: Development of the Sub-Area 4 Project could 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. (Criterion b) (*Less Than Significant with Mitigation*)	**Mitigation Measure HYD-1.SP.**	Less Than Significant

TABLE 2-2 (Continued)
SUMMARY OF IMPACTS, MITIGATION MEASURES, AND RESIDUAL EFFECTS

Environmental Impact	Standard Conditions of Approval and Mitigation Measures	Level of Significance after application of Mitigation
Hazards and Hazardous Materials (SA4) – (cont.)		
Impact HAZ-3.SA4: Development of the Sub-Area 4 Project could be located on sites which are included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, create a significant hazard to the public or environment. (Criterion d.) (*Less Than Significant with Mitigation*)	**Mitigation Measures HAZ-1a.SP, HAZ-1b.SP** and **HAZ-4.SP.**	Less Than Significant
Impact HAZ-4.SA4: The Sub-Area 4 Project would not impair the implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan. (Criterion g.) (*Less Than Significant, No Mitigation Required*)	None Required.	Less Than Significant
Hazards and Hazardous Materials (C)		
Impact C-HAZ-1.SP: Development under the Specific Plan, combined with cumulative development in the Plan Area and citywide, including past, present, existing, approved, pending, and reasonably foreseeable future development, could contribute considerably to cumulative impacts related to hazards and hazardous materials. (*Less Than Significant with Mitigation*)	**Mitigation Measures HAZ-1a.SP, HAZ-1b.SP, HAZ-1c.SP, HAZ-1d.SP, HAZ-2a.SP, HAZ-2b.SP, HAZ-4.SP,** and **Mitigation Measure HYD-1.SP.**	Less Than Significant
Impact C-HAZ-1.SA4: Development under the Sub-Area 4 Project, combined with cumulative development in the Plan Area and citywide, including past, present, existing, approved, pending, and reasonably foreseeable future development, could contribute considerably to cumulative impacts related to hazards and hazardous materials. (*Less Than Significant with Mitigation*)	**Mitigation Measures HAZ-1a.SP, HAZ-1b.SP, HAZ-1c.SP, HAZ-1d.SP, HAZ-2a.SP, HAZ-2b.SP, HAZ-4.SP, and Mitigation Measure HYD-1.SP.**	Less Than Significant
Hydrology and Water Quality (SP)		
Impact HYD-1.SP: The Specific Plan could result in an increase of stormwater pollutants due to construction activities and/or the introduction of new impervious surfaces with development but would not violate any water quality standards or waste discharge requirements. (Criterion a.) *(Less than Significant with Mitigation)*	**Mitigation Measure HYD-1.SP: Water Quality Best Management Practices for All Construction Activities**. All applicants for projects proposed for development within the area of the Specific Plan shall ensure that best management practices consistent with the most recent version of the California Stormwater Quality Association (CASQA) Construction BMP Handbook are included in the Stormwater Pollution Prevention Plan (SWPPP) prepared in accordance with the NPDES Construction General Stormwater Permit. BMPs may include without limitation: 1. The Straw bales, wattles, fiber rolls, gravel bags, or equivalent devices shall be installed around the perimeter of stockpiled materials and construction sites adjacent to water bodies (i.e., Meeker Channel and Slough, Baxter Creek, and Stege Marsh), to prevent debris from being transported to any receiving waters or open channel via runoff; 2. The use of hazardous materials during construction shall be minimized to the extent practical, and the amount of hazardous materials stored adjacent to waterbodies shall be limited to what is needed to immediately support construction activities.	Less Than Significant

TABLE 2-2 (Continued)
SUMMARY OF IMPACTS, MITIGATION MEASURES, AND RESIDUAL EFFECTS

Environmental Impact	Standard Conditions of Approval and Mitigation Measures	Level of Significance after application of Mitigation
Hydrology and Water Quality (SP) – (cont.)		
Impact HYD-1.SP (cont.)	Hazardous materials shall be centrally stored safely and securely in approved containers, under cover or in an approved storage shed, and in adequate secondary containment. Fueling of generators and other equipment shall be conducted in a central location with secondary containment, and adequate spill cleanup materials shall be provided during all fueling operations; 3. Well-maintained equipment shall be used to perform the construction work, and, except in the case of a failure or breakdown, equipment maintenance shall be performed off site. Equipment shall be inspected daily by the operator for leaks or spills. If leaks or spills are encountered, the source of the leak shall be identified, leaked material will be cleaned up, and the cleaning materials shall be collected and properly disposed; 4. Inactive material stock piles must be covered at all times; 5. Construction material shall be covered in anticipation of any rainfall event; 6. Active debris boxes shall be covered during rain events to prevent contact with rainwater; 7. Non-stormwater discharges to the Bay shall be prohibited unless specified in the SWPPP and approved by the City; and 8. A Materials Management and Disposal Plan (MMDP) shall be prepared to prevent any debris from falling into waterbodies in the Plan Area during construction to the maximum extent practicable and also ensure the appropriate disposal of all construction-related materials. The MMDP shall be submitted to the San Francisco Bay Regional Water Quality Control Board for review and approval. The measures identified in the MMDP shall be based on Best Available Technology, and will include, but not be limited to, the following: - During construction, in the event that debris does reach the Bay or a tributary, personnel within the work area shall immediately retrieve the debris for proper handling and disposal. All debris shall be disposed of at an authorized upland disposal site; - Construction waste shall be collected and transported to an authorized upland disposal area, per federal, State, and local laws and regulations; and, - All construction material, wastes, debris, sediment, rubbish, trash, fencing, etc., shall be removed from the project site once project construction is completed, and transported offsite in compliance with applicable federal, State, and local laws and regulations.	

TABLE 2-2 (Continued)
SUMMARY OF IMPACTS, MITIGATION MEASURES, AND RESIDUAL EFFECTS

Environmental Impact	Standard Conditions of Approval and Mitigation Measures	Level of Significance after application of Mitigation
Hydrology and Water Quality (SP) -- (cont.)		
Impact HYD-3.SP: The Impact HYD-2.SP: The Specific Plan could increase impervious surfaces which would incrementally increase the amount of stormwater runoff available for recharge but not to the extent that it would substantially deplete groundwater supplies or interfere substantially with groundwater recharge. (Criterion b) (*Less Than Significant, No Mitigation Required)*	None Required.	Less Than Significant
Impact HYD-3.SP: The Specific Plan would not alter the drainage pattern of the Plan Area such that it would result in substantial erosion or siltation on or off the site. (Criterion c.) *(Less Than Significant with Mitigation)*	**Mitigation Measure HYD-1.SP.**	Less Than Significant
Impact HYD-4: Development under the Specific Plan would not alter the drainage pattern of the site such that it would result in a flooding on- or off-the Plan Area. (Criterion d.) (*Less Than Significant, No Mitigation Required)*	None Required.	Less Than Significant
Impact HYD-5.SP: The Specific Plan would not create or contribute runoff water which would exceed the capacity of existing drainage systems or provide additional sources of polluted runoff. (Criterion e.) *(Less Than Significant with Mitigation)*	**Mitigation Measure HYD-1.SP.**	Less Than Significant
Impact HYD-7.SP: Development under the Specific Plan could expose people or structures to a significant risk of loss, injury or death involving flooding related to sea level rise. (Criterion i.) (*Less Than Significant with Mitigation)*	**Mitigation Measure HYD-7a.SP: Sea Level Rise Measures.** All applicants for projects proposed for development within the area of the Specific Plan will ensure that the project design includes the installation of appropriate stormwater inlet infrastructure, and/or the installation of back flow prevention devices on storm drain lines, and/or the design of the stormwater infrastructure to accommodate the future installation of back flow prevention devices on an as-needed basis. Stormwater infrastructure shall be designed to address up to 3 feet of sea level rise, as well as include capacity to adapt to up to 5.5 feet of sea level rise. **Mitigation Measure HYD-7b.SP: Sea Level Rise Adaptation.** Prior to issuance of building permits, all projects proposed for development within areas of the Plan Area shown on Figure 4.8-3 of the EIR to be affected by up to 3 feet of sea level rise, including the 100-year flood event and wave overtopping, shall submit an Adaptive Flood Risk Management Plan to the City for approval. The City shall require implementation of such plan as a condition of approval for entitlement approvals and/or building permits as applicable. The Adaptive Flood Risk Management Plan shall be consistent with City efforts to plan for sea level rise under General Plan Action Item EC6.g and Specific Plan Action Item A1.8, and shall include an Adaptive Flood Risk Management Strategy to address 100-year flood impacts associated with a rise in sea level of greater than 3 feet including the 100-year flood event and wave overtopping. Adaptive flood risk management strategies may include development setbacks, regrading, construction of raised berms or a wall, or other measure to protect future development from a rise in sea level above 3 feet. Consistent with General Plan Action Item EC6.g, the Adaptive Flood Risk Management Plan shall include discussion of financing mechanisms for sea level rise adaptations.	Less than Significant

TABLE 2-2 (Continued)
SUMMARY OF IMPACTS, MITIGATION MEASURES, AND RESIDUAL EFFECTS

Environmental Impact	Standard Conditions of Approval and Mitigation Measures	Level of Significance after application of Mitigation
Hydrology and Water Quality (SP) -- (cont.)		
Impact HYD-8.SP: The Specific Plan could result in or cause inundation by tsunami, seiches, or mudflows. (Criterion j.) *(Less than Significant, No Mitigation Required)*	None Required.	Less Than Significant
Hydrology and Water Quality (SA4)		
Impact HYD-1.SA4: The proposed Project could result in an increase of stormwater pollutants due to construction activities and/or the introduction of new impervious surfaces with development but would not violate any water quality standards or waste discharge requirements. (Criterion a.) *(Less Than Significant with Mitigation)*	**Mitigation Measure HYD-1.SP.**	Less Than Significant
Impact HYD-2.SA4: The Sub-Area 4 Project could increase impervious surfaces which would reduce the amount of stormwater runoff available for recharge but not to the extent that it would substantially deplete groundwater supplies or interfere substantially with groundwater recharge. (Criterion b.) *(Less Than Significant, No Mitigation Required*	None Required.	Less Than Significant
Impact HYD-3.SA4: The project would not alter the drainage pattern of the site such that it would result in substantial erosion or siltation on or off the site. (Criterion c.) (*Less Than Significant, No Mitigation Required*)	**Mitigation Measure HYD-3.SA4: Pre-project stormflow levels.** Prior to issuance of a grading permit, project applicants shall demonstrate, to the satisfaction of the City of Richmond Director of the Public Works Department, one the following: 1. Upon completion of construction activities, there will be sufficient detention capacity on the Project site to detain the incremental increase in stormflow volume that occurs during the 24-hour, 10-year design storm, which incremental increase is due to the increase in impervious surface above pre-project levels. This standard could be met with one or more detention vaults, tanks or other facilities, or through other means; 2. Upon completion of such construction, the total square footage of impervious surface area throughout the Project site will remain at or below pre-project levels; or 3. The proposed development has met the requirements of Provision C.3.g by demonstrating through compliance of CCCWP that any increases in stormwater flows are unlikely to cause downstream erosion or off-site siltation. **Mitigation Measure HYD-1.SP.**	Less Than Significant
Impact HYD-4.SA4: The Project would not alter the drainage pattern of the site such that it would result in a 100-year flood event on- or off- the site. (Criterion d.) (*Less Than Significant, No Mitigation Required*)	None Required.	Less Than Significant

TABLE 2-2 (Continued)
SUMMARY OF IMPACTS, MITIGATION MEASURES, AND RESIDUAL EFFECTS

Environmental Impact	Standard Conditions of Approval and Mitigation Measures	Level of Significance after application of Mitigation
Hydrology and Water Quality (SA4) – (cont.)		
Impact HYD-5.SA4: The Project would not create or contribute runoff water which would exceed the capacity of existing drainage systems or provide additional sources of polluted runoff. (Criterion e.) *(Less Than Significant with Mitigation)*	**Mitigation Measure HYD-1.SP.**	Less Than Significant
Impact HYD-6.SA4: The project could place housing or structures within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map; or place within a 100-year flood hazard area structures which would impede or redirect flood flows. (Criteria g., h.) (*Less Than Significant, No Mitigation Required)*	None Required.	Less Than Significant
Impact HYD-7.SA4: The Project could expose people or structures to a significant risk of loss, injury or death involving flooding related to sea level rise. (Criterion i.) (*Less Than Significant with Mitigation)*	**Mitigation Measure HYD-7a.SP** and **HYD-7b.SP**.	Less Than Significant
Impact HYD-8.SA4: The Specific Plan could result in or cause inundation by tsunami, seiches, or mudflows. (Criterion j.) (*Less Than Significant, No Mitigation Required)*	None Required.	Less Than Significant
Hydrology (CU)		
Impact C-HYD-1.SP: Development of the Specific Plan, in conjunction with past, present and reasonably foreseeable future projects, would not result in significant cumulative impacts with respect to hydrology, water quality, or sea level rise and flooding. (*Less Than Significant, No Mitigation Required)*	None Required.	Less Than Significant
Impact C-HYD-1.SA4: Development of the Project, in conjunction with past, present and reasonably foreseeable future projects, would not result in significant cumulative impacts with respect to hydrology, water quality, or sea level rise and flooding. (*Less than Significant, No Mitigation Required)*	None Required.	Less Than Significant
Land Use and Planning (SP)		
Impact LU-1.SP: Adoption of and development under the Specific Plan would not result in the physical division of an established community. (Criterion a.) (*Less Than Significant, No Mitigation Required*)	None Required.	Less Than Significant
Impact LU-2.SP: Adoption of and development under the Specific Plan would not conflict with any applicable land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect. (Criterion b.) (*Less Than Significant, No Mitigation Required*)	None Required.	Less Than Significant

TABLE 2-2 (Continued)
SUMMARY OF IMPACTS, MITIGATION MEASURES, AND RESIDUAL EFFECTS

Environmental Impact	Standard Conditions of Approval and Mitigation Measures	Level of Significance after application of Mitigation
Land Use and Planning (SA4)		
Impact LUP-1.SA4: Impact LUP-1.SA4: Adoption and development of the Sub-Area 4 Project would not result in the physical division of an established community or conflict with adjacent or nearby land uses. (Criterion a.) (*Less Than Significant, No Mitigation Required*)	None Required.	Less Than Significant
Impact LUP-2.SA4: Development under the Sub-Area 4 Project would not conflict with applicable land use plans and policies adopted for the purpose of avoiding or mitigating an environmental effect. (Criterion b.) (*Less Than Significant, No Mitigation Required)*	None Required.	Less Than Significant
Land Use and Planning (C)		
Impact C-LUP-1.SP: Adoption of and development under the Specific Plan, in combination with past, present, existing, approved, pending and reasonably foreseeable future projects within and in the vicinity of the Plan Area, would not result in significant cumulative impacts to land use and planning*. (Less Than Significant, No Mitigation Required)*	None Required.	Less Than Significant
Impact C-LUP-1.SA4: Adoption of and development under the Sub-Area 4 Project, in combination with past, present, existing, approved, pending and reasonably foreseeable future projects within and in the vicinity of the Sub-Area 4 Project site, would not result in significant cumulative impacts to land use and planning. *(Less Than Significant, No Mitigation Required)*	None Required.	Less Than Significant
Noise (SP)		
Impact NOI-1.SP: Construction of development under the Specific Plan could result in substantial temporary or periodic increases in ambient noise levels in the Plan Area. (Criteria a. and d.) (*Less Than Significant with Mitigation*)	**Mitigation Measure NOI-1a.SP: Construction Noise Control Measures and Noise Control Plan.** For any project proposed for development within the area of the Specific Plan, the applicant shall employ site-specific noise attenuation measures during project construction to reduce the generation of construction noise, including pile-driving noise. These measures shall be included in a Noise Control Plan that shall be submitted for review and approval by the City of Richmond Planning and Building Services Department to ensure that construction noise is consistent with the standards set forth in the City's Noise ordinance and other standards as appropriate. Measures specified in the Noise Control Plan and implemented during project construction shall include, at a minimum, the following noise control strategies: • Equipment and trucks used for construction shall use the best available noise control techniques (e.g., improved mufflers, equipment redesign, use of intake silencers, ducts, engine enclosures, and acoustically attenuating shields or shrouds);	Less Than Significant

TABLE 2-2 (Continued)
SUMMARY OF IMPACTS, MITIGATION MEASURES, AND RESIDUAL EFFECTS

Environmental Impact	Standard Conditions of Approval and Mitigation Measures	Level of Significance after application of Mitigation
Noise (SP) – (cont.)		
Impact NOI-1.SP (cont.)	• Impact tools (e.g., jack hammers, pavement breakers, and rock drills) used for construction shall be hydraulically or electrically powered wherever possible to avoid noise associated with compressed air exhaust from pneumatically powered tools. Where use of pneumatic tools is unavoidable, an exhaust muffler on the compressed air exhaust shall be used; this muffler can lower noise levels from the exhaust by up to approximately 10 dBA. External jackets on the tools themselves shall be used where feasible; this could achieve a reduction of 5 dBA. Quieter procedures, such as use of drills rather than impact tools, shall be used; • Stationary noise sources shall be located as far from adjacent receptors as possible, and they shall be muffled and enclosed within temporary sheds, incorporate insulation barriers, or include other measures; and • Noise-reducing pile-driving techniques shall be performed as specified in Mitigation Measure NOI-1b. **Mitigation Measure NOI-1b.SP: Pile Driving Noise-Reducing Techniques and Muffling Devices.** For any project proposed for development within the area of the Specific Plan that would require pile-driving during construction, noise-reducing pile-driving techniques shall be employed. These techniques shall include: • Limiting pile driving or other impact-related noise-generating activity to 9:00 AM to 5:00 PM, Monday through Friday. No pile driving or other extreme noise-generating activity is permitted on Saturdays, Sundays, and holidays; • Installing intake and exhaust mufflers on pile-driving equipment; • Vibrating piles into place when feasible; • Installing shrouds around the pile-driving hammer where possible; • Implementing “quiet” pile-driving technology (such as drill and cast-in-place methods), where possible, in consideration of geotechnical and structural requirements and conditions; • Implementing the use of more than one pile driver to shorten the total pile driving duration, where possible; • Using cushion blocks to dampen impact noise, if feasible based on soil conditions. Cushion blocks are blocks of material that are used with impact hammer pile drivers, and placed atop a piling during installation to minimize noise generated when driving the pile. Materials typically used for cushion blocks include wood, nylon and micarta (a composite material); and • At least 48 hours prior to pile-driving activities, the applicant shall notify building owners and occupants within a minimum of 600 feet of the project site of the dates, hours, and expected duration of such activities.	Less Than Significant

TABLE 2-2 (Continued)
SUMMARY OF IMPACTS, MITIGATION MEASURES, AND RESIDUAL EFFECTS

Environmental Impact	Standard Conditions of Approval and Mitigation Measures	Level of Significance after application of Mitigation
Noise (SP) – (cont.)		
Impact NOI-2.SP: Construction of development under the Specific Plan could result in exposure of persons to or generation of, excessive groundborne vibration or groundborne noise levels in the Plan Area above existing levels without the Specific Plan. (Criterion b.) (*Less Than Significant with Mitigation*)	**Mitigation Measure NOI-2.SP: Construction Vibration.** For any project proposed for development within the area of the Specific Plan, and prior to the issuance of any building permit for each phase of project development, the project applicant shall conduct a historic survey of the project site, and a 200-foot buffer extending around the project site, to determine the locations of historic structures. If historic structures are identified, the project applicant shall develop a Vibration Reduction Plan (Plan) in coordination with an acoustical consultant, geotechnical engineer, and construction contractor, and submit the Plan to the City Chief Building Official for approval. The Plan shall include measures and/or controls to ensure that buildings within 200 feet of the project site will be exposed to less than 80 VdB and 83 VdB where people sleep and work, respectively, and less than 0.25 PPV for historic buildings to prevent building damage. Measures and controls shall be identified based on project-specific final design plans, and may include, but are not limited to, either or both of the following: 1. Implementation of buffers and the use of specific types of equipment to minimize vibration impacts during construction at nearby receptors in order to meet the specified standards. 2. Implementation of a vibration, crack, and line and grade monitoring program for identified historic buildings located within 50 feet of construction activities, in coordination with a geotechnical engineer and qualified architectural historian. The following elements shall be included in this program: a) Prior to construction, a qualified architectural historian shall conduct a thorough survey of identified historic resources to identify, measure the dimensions of, and document (photographs and text) any existing cracks in the historic buildings. b) During construction activities: i. The construction contractor shall identify, and regularly inspect and photograph, crack gauges and include records of these inspections in construction reporting. Gauges shall be inspected every two weeks, or more frequently during periods of construction activity in close proximity to identified crack gauges. ii. The construction contractor shall collect vibration data from receptors and report vibration levels to the City Chief Building Official on a monthly basis. The reports shall include annotations regarding project activities as necessary to explain changes in vibration levels, along with proposed corrective actions to avoid vibration levels approaching or exceeding the established threshold. iii. With regards to historic buildings, if vibration levels exceed the threshold and monitoring or inspection indicates that the project may damage or is damaging the building, the building shall be provided additional protection or stabilization. If necessary and with approval by the City Chief Building	Less Than Significant

TABLE 2-2 (Continued)
SUMMARY OF IMPACTS, MITIGATION MEASURES, AND RESIDUAL EFFECTS

Environmental Impact	Standard Conditions of Approval and Mitigation Measures	Level of Significance after application of Mitigation
Noise (SP) – (cont.)		
Impact NOI-2.SP (cont.)	iv. Official, the construction contractor shall install temporary shoring or stabilization to help avoid permanent impacts. Stabilization may involve structural reinforcement or corrections for deterioration that would minimize or avoid potential structural failures or avoid accelerating damage to the historic structure. Stabilization shall be conducted following the Secretary of Interior Standards Treatment of Preservation. This treatment shall ensure retention of the historic building's character-defining features. Stabilization may temporarily impair the historic integrity of the building's design, material, or setting, and as such, the stabilization must be conducted in a manner that will not permanently impair a building's ability to convey its significance. Measures to shore or stabilize the building shall be installed in a manner that when they are removed, the historic integrity of the building remains, including integrity of material. Post-construction: i. The applicant (and its construction contractor) shall provide a report to the City Chief Building Official regarding crack and vibration monitoring conducted during demolition and construction. In addition to a narrative summary of the monitoring activities and their findings, this report shall include photographs illustrating the post-construction state of cracks and material conditions that were presented in the pre-construction assessment report, along with images of other relevant conditions showing the impact, or lack of impact, of project activities. The photographs shall sufficiently illustrate damage, if any, caused by the project and/or show how the project did not cause physical damage to the historic and non-historic buildings. The report shall include annotated analysis of vibration data related to project activities, as well as summarize efforts undertaken to avoid vibration impacts. Finally, a post-construction line and grade survey shall also be included in this report. ii. The project applicant (and its construction contractor) shall be responsible for repairs from damage to historic and non-historic buildings if damage is caused by vibration or movement during demolition and/or construction activities. Repairs may be necessary to address, for example, cracks that expanded as a result of the project, physical damage visible in post-construction assessment, or holes or connection points that were needed for shoring or stabilization. Repairs shall be directly related to project impacts and will not apply to general rehabilitation or restoration activities of the buildings. If necessary for historic structures, repairs shall be conducted in compliance with the Secretary of Interior Standards Treatment of Preservation. The project applicant shall provide the City Chief Building Official and City Preservation Officer for review and comment both a work plan for the repairs and a completion report to ensure compliance with the Secretary of Interior Standards.	Less Than Significant

TABLE 2-2 (Continued)
SUMMARY OF IMPACTS, MITIGATION MEASURES, AND RESIDUAL EFFECTS

Environmental Impact	Standard Conditions of Approval and Mitigation Measures	Level of Significance after application of Mitigation
Noise (SP) – (cont.)		
Impact NOI-2.SP (cont.)	**Mitigation Measure NOI-2b.SP:** Exposure to Rail Vibration. For any project proposed for development within the area of the Specific Plan that involves new residential buildings or new dwelling units located adjacent to or within 200 feet of an active rail line, and prior to the approval of a construction-related permit, the project applicant shall submit a Vibration Reduction Plan (Plan) prepared by a qualified acoustical consultant for City review and approval that contains vibration reduction measures to reduce groundborne vibration to acceptable levels per Federal Transit Administration guidance (Federal Transit Administration, 2006, Transit Noise and Vibration Impact Assessment, May 2006). The applicant shall implement the approved Plan during construction. Potential vibration reduction measures include isolation of foundation and footings using resilient elements such as rubber bearing pads or springs, such as a "spring isolation" system that consists of resilient spring supports that can support the podium or residential foundations. The specific system shall be selected so that it can properly support the structural loads, and provide adequate filtering of groundborne vibration to the residences above. **Mitigation Measures NOI-1a.SP; Mitigation Measure NOI-1b.SP;**	Less Than Significant
Impact NOI-3.SP: Operational activities associated with the Specific Plan would not increase long-term noise levels in the Plan Area to levels in excess of standards established in the Richmond General Plan. (Criteria a., c.) (*Less than Significant, with Required*)	**Improvement Measure NOI-3.SP: Project-Specific Noise Study.** For any project proposed for development within the Plan Area, applicants shall conduct a project-specific noise study to determine compatibility of the proposed use with the existing noise environment based on land use/noise compatibility guidelines in the City's General Plan. If the noise environment is found to be "conditionally acceptable" or "normally unacceptable" for the proposed use, a detailed acoustical analysis shall be conducted to specify the noise insulation measures needed to reduce noise exposure to "normally acceptable" levels, and these measures will be implemented. Measures may include, but are not limited to, appropriate site design to achieve maximum sound attenuation, use of enhanced noise insulation features in the form of appropriate sound-rated assemblies and/or other features/measures to reduce interior noise levels to meet Title 24 requirements.	Less Than Significant
Impact NOI-4.SP: Traffic generated by development under the Specific Plan could substantially increase traffic noise levels in the Plan Area. (Criterion c.) (*Significant and Unavoidable*)	None Feasible.	Significant and Unavoidable
Noise (SA4)		
Impact NOI-1.SA4: Construction activities associated with the Sub-Area 4 Project would result in substantial temporary or periodic increases in ambient noise levels in the Project site vicinity (Criteria a., d). (*Less Than Significant with Mitigation*)	**Mitigation Measures NOI-1a.SP** and **NOI-1b.SP.**	Less Than Significant

TABLE 2-2 (Continued)
SUMMARY OF IMPACTS, MITIGATION MEASURES, AND RESIDUAL EFFECTS

Environmental Impact	Standard Conditions of Approval and Mitigation Measures	Level of Significance after application of Mitigation
Noise (SA4) – (cont.)		
Impact NOI-2.SA4: Construction activities associated with the Sub-Area 4 Project would not result in exposure of persons to or generation of, excessive groundborne vibration or groundborne noise levels in the Project vicinity above levels existing without the project. (Criterion b.) *(Less Than Significant with Mitigation)*	**Mitigation Measures NOI-1a.SP, NOI-1b-SP, NOI-2a.SP,** and **NOI-2b.SP**	Less Than Significant
Impact NOI-3.SA4: Operational activities associated with the Sub-Area 4 Project would not increase long term noise levels in the Project vicinity to levels in excess of standards established in the Richmond Noise Ordinance and General Plan. (Criteria a., c.) (*Less Than Significant, with Mitigation)*	**Mitigation Measure NOI-3.SP.**	Less Than Significant
Impact NOI-4.SA4: Traffic generated by the Sub-Area 4 Project would not substantially increase traffic noise levels in the Project vicinity (Criterion c.). *(Less Than Significant, No Mitigation Required)*	None Required.	Less Than Significant
Noise (C)		
Impact C-NOI-1.SP: Construction noise levels generated by development under the Specific Plan, in combination with past, present, existing, approved, pending and reasonably foreseeable future developments could contribute considerably to cumulative noise impacts. (Criteria a. and d.) *(Significant and Unavoidable)*	**Mitigation Measures NOI-1a.SP** and **NOI-1b.SP.**	Significant and Unavoidable
Impact C-NOI-2.SP: Construction vibration levels generated by the Specific Plan, in combination with past, present, existing, approved, pending and reasonably foreseeable future developments could contribute to cumulative vibration impacts. (Criterion c.) (*Less than Significant with Mitigation*)	**Mitigation Measures NOI-1a.SP, NOI-1b.SP,** and **NOI-2.SP.**	Less Than Significant
Impact C-NOI-3.SP: Traffic generated by development under the Specific Plan in combination with traffic from cumulative development could contribute considerably to cumulative noise impacts. (Criterion c.) *(Significant and Unavoidable)*	None Feasible.	Significant and Unavoidable
Impact C-NOI-1.SA4: Construction noise levels generated by development under the Sub-Area 4 Project, in combination with past, present, existing, approved, pending and reasonably foreseeable future developments could contribute considerably to cumulative noise impacts. (Criteria a. and d.) (*Less than Significant with Mitigation*)	**Mitigation Measures NOI-1a.SP,** and **NOI-1b.SP.**	Less Than Significant
Impact C-NOI-2.SA4: Construction vibration levels generated by the Sub-Area 4 Project, in combination with past, present, existing, approved, pending and reasonably foreseeable future developments could contribute to cumulative vibration impacts. (Criterion c.) *(Less than Significant with Mitigation)*	**Mitigation Measures NOI-1a.SP, NOI-1b.SP,** and **NOI-2.SP**	Less Than Significant

TABLE 2-2 (Continued)
SUMMARY OF IMPACTS, MITIGATION MEASURES, AND RESIDUAL EFFECTS

Environmental Impact	Standard Conditions of Approval and Mitigation Measures	Level of Significance after application of Mitigation
Noise (C) – (cont.)		
Impact C-NOI-3.SA4: Operational noise including traffic generated by development under the Sub-Area 4 Project, in combination with cumulative development could contribute considerably to cumulative noise impacts. (Criterion c.) *(Less than Significant with Mitigation)*	None Required.	Less Than Significant
Population, Housing, and Employment (SP)		
Impact POP-1.SP: Adoption of and development under the Specific Plan could induce substantial population growth, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure). (Criterion a.) (*Less Than Significant, No Mitigation Required)*	None Required.	Less Than Significant
Population, Housing, and Employment (SA4)		
Impact POP-1.SA4: Development of the Sub-Area 4 Project would not induce substantial population growth in the area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure. (Criterion a.) (*Less Than Significant, No Mitigation Required*)	None Required.	Less Than Significant
Population, Housing, and Employment (C)		
Impact C-POP-1.SP: Adoption of and development under the Specific Plan, in combination with past, present, existing, approved, pending and reasonably foreseeable future projects within and in the vicinity of the Plan Area, would not result in a significant effect to population, housing, and employment. (*Less Than Significant, No Mitigation Required*)	None Required.	Less Than Significant
Impact C-POP-1.SA4: Development under the Sub-Area 4 Project, in combination with past, present, existing, approved, pending and reasonably foreseeable future projects within and in the vicinity of the Sub-Area 4 Project site, would not result in a significant effect to population, housing, and employment. *(Less Than Significant, No Mitigation Required)*	None Required.	Less Than Significant

TABLE 2-2 (Continued)
SUMMARY OF IMPACTS, MITIGATION MEASURES, AND RESIDUAL EFFECTS

Environmental Impact	Standard Conditions of Approval and Mitigation Measures	Level of Significance after application of Mitigation
Public Services (SP)		
Impact PUB-1.SP: The Specific Plan would not result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services. (Criteria a., b., c.) (*Less than Significant with Mitigation [Fire Protection]*)	**Mitigation Measure PUB-1.SP: Fire Protection Services and Facilities.** Not later than achieving 20 percent implementation of the foreseeable maximum theoretical buildout of the Specific Plan, the City of Richmond shall document the scope of additional fire protection services and facilities necessary to maintain a six minute response time required at the complete buildout of the Specific Plan. The City shall issue no building permits for new or expanded projects after 20 percent implementation of the foreseeable maximum theoretical buildout has been achieved unless an analysis with conclusions regarding the scope of these additional fire protection services and facilities has been prepared and approved by the City of Richmond Fire Department. The City shall also identify a fair share funding mechanism to support the cost of completing the identified improvements, and shall establish a program to collect funds and guarantee they are used for these improvements. Not later than achieving 50 percent implementation of the foreseeable maximum theoretical buildout of the Specific Plan, the City shall document the implementation of fire protection services and facilities necessary to maintain a six minute response time. The City shall issue no building permits for new or expanded projects after 50 percent implementation of the foreseeable maximum theoretical buildout has been achieved unless such implementation has been certified by the City of Richmond Fire Department.	Less Than Significant
Public Services (SA4)		
Impact PUB-1.SA4: Development of the Sub-Area 4 project would not result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services. (Criteria a., b., c.) (*Less than Significant with Mitigation*)	**Mitigation Measure PUB-1.SP.**	Less Than Significant
Public Services (SP)		
Impact C-PUB.SP: Construction activity and operations for development under the Specific Plan, in combination with past, present, existing, approved, pending, and reasonably foreseeable future projects with the vicinity of the Plan Area, would not contribute considerably to a cumulative impact to public services and recreation. (*Less than Significant*)	None Required.	Less Than Significant
Impact C-PUB.SA4: Construction activity and operations for development under the Sub-Area 4 Project, in combination with past, present, existing, approved, pending, and reasonably foreseeable future projects with the vicinity of the Project site, would not contribute considerably to a cumulative impact to public services and recreation. (*Less than Significant*)	None Required.	Less Than Significant

TABLE 2-2 (Continued)
SUMMARY OF IMPACTS, MITIGATION MEASURES, AND RESIDUAL EFFECTS

Environmental Impact	Standard Conditions of Approval and Mitigation Measures	Level of Significance after application of Mitigation
Transportation and Circulation (SP)		
Impact TRF-1.SP: Operations at the unsignalized Wright Avenue/Harbour Way South intersection (#7) would deteriorate due to traffic generated under the Specific Plan, and would warrant the installation of a traffic signal under Existing Plus Specific Plan conditions. (*Less Than Significant with Mitigation)*	**Mitigation Measure TRF-1.SP: Wright Avenue/Harbour Way South Intersection Signalization and Channelization Improvements.** All applicants proposing the development of projects within the Plan Area and meeting the trigger and funding criteria specified below shall be responsible for implementing the following improvements: a) Signalize intersection and provide warning lights and gates for the at-grade railroad crossing. b) Restripe the southbound Harbour Way South approach to provide an exclusive left-turn lane and a shared right/through lane within the current right-of-way. Signalization of the intersection is consistent with the mitigation measure proposed at this intersection by the Richmond Ferry Terminal Project Initial Study/Mitigated Negative Declaration (May 2014). If this improvement is implemented prior to the trigger identified in this mitigation measure, then it would not be required as a mitigation measure for the Specific Plan. It is estimated that the mitigation measure at this intersection may be required when about 55 percent of the Specific Plan area is developed (which corresponds to 50 percent of Specific Plan development excluding the Sub-Area 4 Project). At that time, the development project that triggers the impact shall either fully fund or implement the mitigation measure. Alternatively, the City of Richmond may implement this mitigation measure prior to or at the time the 55 percent buildout trigger occurs, the mitigation measure would not be required to be implemented by an individual project and the City may collect fair-share contributions from the projects in the Plan Area to support implementation. After implementation of this measure, the intersection would improve to LOS A during the AM peak hour and LOS B during the PM peak hour and reduce the impact to a less-than -significant level. No secondary significant impacts would result from implementation of this measure.	Less Than Significant
Impact TRF-2.SP: Operations at the signalized Wright Avenue/Marina Way South intersection (#9) would deteriorate to an unacceptable LOS due to traffic generated by the Specific Plan under Existing Plus Specific Plan conditions. *(Less Than Significant with Mitigation)*	**Mitigation Measure TRF-2.SP: Wright Avenue/Marina Way South Intersection Improvements.** All applicants proposing the development of projects within the Plan Area and meeting the trigger and funding criteria specified below shall be responsible for implementing the following improvement: a) Restripe the westbound Wright Avenue approach to provide an exclusive right-turn lane and a shared left/through lane within the current right-of-way. It is estimated that the mitigation measure at this intersection may be required when about 40 percent of the Plan Area is developed (which corresponds to 40 percent of Specific Plan development excluding the Sub-Area 4 Project). At that time, the development project that triggers the impact shall either fully fund or implement the mitigation measure. Alternatively, the City of Richmond may implement this mitigation measure prior to or at the time the 40 percent buildout trigger occurs, the mitigation	Less Than Significant

TABLE 2-2 (Continued)
SUMMARY OF IMPACTS, MITIGATION MEASURES, AND RESIDUAL EFFECTS

Environmental Impact	Standard Conditions of Approval and Mitigation Measures	Level of Significance after application of Mitigation
Transportation and Circulation (SP) – (cont.)		
Impact TRF-2.SP (cont.)	measure would not be required to be implemented by an individual project and the City may collect fair-share contributions from the projects in the Plan Area to support implementation. After implementation of this measure, the intersection would improve to LOS C during the AM peak hour and LOS D during the PM peak hour and reduce the impact to a less-than -significant level. No secondary significant impacts would result from implementation of this measure.	
Impact TRF-3.SP: Operations at the unsignalized Westbound I-580 Ramps/Juliga Woods Street intersection (#17) would deteriorate due to traffic generated by the Specific Plan and would warrant the installation of a traffic signal under Existing Plus Specific Plan conditions. *(Significant and Unavoidable)*	**Mitigation Measure TRF-3.SP: Westbound I-580 Ramps/Juliga Woods Street Intersection Signalization**. All applicants proposing the development of projects within the Plan Area and meeting the trigger and funding criteria specified below shall be responsible for implementing the following improvement: a) Install an actuated signal at the intersection with protected phasing on all approaches. The proposed signalization of this intersection is consistent with the mitigation measure proposed at this intersection by the Richmond Bay Campus Long Range Development Plan Draft EIR (November 2013). If this improvement is implemented prior to the trigger identified in this mitigation measure, then it would not be required as a mitigation measure for the Specific Plan. It is estimated that the mitigation measure at this intersection may be required when about 45 percent of the Specific Plan area is developed (which corresponds to 35 percent of Specific Plan development excluding the Sub-Area 4 Project). At that time, the development project that triggers the impact shall either fully fund or implement the mitigation measure. Alternatively, the City of Richmond may implement this mitigation measure prior to or at the time the 45 percent buildout trigger occurs, the mitigation measure would not be required to be implemented by an individual project and the City may collect fair-share contributions from the projects in the Plan Area to support implementation. After implementation of this measure, the intersection would improve to LOS C during both AM and PM peak hours and reduce the impact to a less-than-significant level. It is not certain that this mitigation measure could be implemented because the intersection is under the jurisdiction of Caltrans. The City of Richmond, as lead agency, does not have jurisdiction to implement Measure TRF-3.SP and the mitigation would need to be approved and implemented by Caltrans. Therefore, the impact is conservatively considered significant and unavoidable because the City cannot ensure its implementation. No secondary significant impacts would result from implementation of this measure.	Significant and Unavoidable

TABLE 2-2 (Continued)
SUMMARY OF IMPACTS, MITIGATION MEASURES, AND RESIDUAL EFFECTS

Environmental Impact	Standard Conditions of Approval and Mitigation Measures	Level of Significance after application of Mitigation
Transportation and Circulation (SP) – (cont.)		
Impact TRF-4.SP: Operations at the signalized Meade Street/Regatta Boulevard/Eastbound I-580 Ramps intersection (#18) would deteriorate to an unacceptable LOS due to traffic generated by the Specific Plan under Existing Plus Specific Plan conditions. *(Significant and Unavoidable)*	**Mitigation Measure TRF-4.SP: Meade Street/Regatta Boulevard/Eastbound I-580 Ramps Intersection Improvements.** All applicants proposing the development of projects within the Plan Area and meeting the trigger and funding criteria specified below shall be responsible for implementing the following improvements: a) Restripe westbound Meade Street to provide one exclusive right-turn lane and a shared left/through lane. b) Upgrade signal to actuated operations, convert the phasing for the east and west intersection approaches from protected phasing to split-phasing, and coordinate signal timings with the adjacent Regatta Boulevard/Meade Street intersection and the at-grade railroad crossing. It is estimated that the mitigation measure at this intersection may be required when about 25 percent of the Plan Area is developed (which corresponds to 20 percent of Specific Plan development excluding the Sub-Area 4 Project). At that time, the development project that triggers the impact shall either fully fund or implement the mitigation measure. Alternatively, the City of Richmond may implement this mitigation measure prior to or at the time the 25 percent buildout trigger occurs, the mitigation measure would not be required to be implemented by an individual project and the City may collect fair-share contributions from the projects in the Plan Area to support implementation. The implementation of this measure would improve conditions at the intersection; however, the intersection would continue to operate at LOS F during both AM and PM peak hours. Traffic operations at the intersection can be further improved by providing additional automobile travel lanes, such as a second left-turn lane on the southbound Regatta Boulevard approach and a second through lane on the northbound Regatta Boulevard approach. However, these modifications cannot be accommodated within the available automobile right-of-way and would require additional right-of-way, and/or loss of planned bicycle and/or pedestrian facilities, and are considered to be infeasible because they would be in conflict with the Specific Plan and General Plan goals to promote pedestrian, bicycle, and transit trips. Therefore, the impact would remain significant and unavoidable. Furthermore, it is not certain that this mitigation measure could be implemented because the intersection is under the jurisdiction of Caltrans. The City of Richmond, as lead agency, does not have jurisdiction to implement Measure TRF-4.SP and the mitigation would need to be approved and implemented by Caltrans. No other secondary significant impacts would result from implementation of this measure.	Significant and Unavoidable

TABLE 2-2 (Continued)
SUMMARY OF IMPACTS, MITIGATION MEASURES, AND RESIDUAL EFFECTS

Environmental Impact	Standard Conditions of Approval and Mitigation Measures	Level of Significance after application of Mitigation
Transportation and Circulation (SP) – (cont.)		
Impact TRF-5.SP: Operations at the unsignalized Regatta Boulevard/Meade Street intersection (#19) would deteriorate due to traffic generated by the Specific Plan and would warrant the installation of a traffic signal under Existing Plus Specific Plan conditions. *(Less Than Significant with Mitigation)*	**Mitigation Measure TRF-5.SP: Regatta Boulevard/Meade Street Intersection Signalization.** All applicants proposing the development of projects within the Plan Area and meeting the trigger and funding criteria specified below shall be responsible for implementing the following improvement: a) Install an actuated signal at the intersection with protected phasing on all approaches. Coordinate signal timings with the adjacent Meade Street/Regatta Boulevard/ Eastbound I-580 Ramps intersection and the at-grade railroad crossing. The proposed improvements at this intersection are consistent with the mitigation measure proposed at this intersection by the Richmond Bay Campus Long Range Development Plan Draft EIR (November 2013). If this improvement is implemented prior to the trigger identified in this mitigation measure, then it would not be required by the Specific Plan developments. It is estimated that the mitigation measure at this intersection may be required when about 25 percent of the Plan Area is developed (which corresponds to 15 percent of Specific Plan development excluding the Sub-Area 4 Project). At that time, the development project that triggers the impact shall either fully fund or implement the mitigation measure. Alternatively, the City of Richmond may implement this mitigation measure prior to or at the time the 25 percent buildout trigger occurs, the mitigation measure would not be required to be implemented by an individual project and the City may collect fair-share contributions from the projects in the Plan Area to support implementation. After implementation of this measure, the intersection would improve to LOS C during the AM peak hour and LOS D during PM peak hour and reduce the impact to a less-than -significant level. No secondary significant impacts would result from implementation of this measure.	Less Than Significant
Impact TRF-6.SP: Operations at the unsignalized Bayview Avenue/51st Street/Seaport Avenue/Eastbound I-580 Ramps intersection (#25) would deteriorate due to traffic generated by the Specific Plan and would warrant the installation of a traffic signal under Existing Plus Specific Plan conditions. *(Significant and Unavoidable)*	**Mitigation Measure TRF-6.SP: Bayview Avenue/51st Street/Seaport Avenue/Eastbound I-580 Ramps Intersection Signalization and Channelization Improvements.** All applicants proposing the development of projects within the Plan Area and meeting the trigger and funding criteria specified below shall be responsible for implementing the following improvements: a) Install an actuated signal at the intersection with protected left-turn phasing on all approaches. b) Restripe southbound 51st Street to provide two left-turn lanes and a shared right/ through lane. The proposed improvements at this intersection are consistent with the mitigation measure proposed at this intersection by the Richmond Bay Campus Long Range Development Plan Draft EIR (November 2013). If this improvement is implemented prior to the trigger identified in this mitigation measure, then it would not be required as a mitigation measure for the Specific Plan.	Significant and Unavoidable

TABLE 2-2 (Continued)
SUMMARY OF IMPACTS, MITIGATION MEASURES, AND RESIDUAL EFFECTS

Environmental Impact	Standard Conditions of Approval and Mitigation Measures	Level of Significance after application of Mitigation
Transportation and Circulation (SP) – (cont.)		
Impact TRF-6.SP (cont.)	It is estimated that the mitigation measure at this intersection may be required when about 35 percent of the Sub-Area 4 is developed. At that time, the development project that triggers the impact shall either fully fund or implement the mitigation measure. Alternatively, the City of Richmond may implement this mitigation measure prior to or at the time the 35 percent buildout trigger occurs, the mitigation measure would not be required to be implemented by an individual project and the City may collect fair-share contributions from the projects in the Plan Area to support implementation. After implementation of this measure, the intersection would improve to LOS D during the AM peak hour and operate at LOS E during the PM peak hour. Traffic operations at the intersection can be further improved by providing additional automobile travel lanes, such as an additional through lane on the northbound Bayview Avenue and southbound 51st Street approaches. However, these modifications cannot be accommodated within the available automobile right-of-way and would require additional right-of-way, and/or loss of planned bicycle and/or pedestrian facilities, and are considered to be infeasible because they would be in conflict with the Specific Plan and General Plan goals to promote pedestrian, bicycle, and transit trips. Furthermore, it is not certain that this mitigation measure could be implemented because the intersection is under the jurisdiction of Caltrans. The City of Richmond, as lead agency, does not have jurisdiction to implement Measure TRF-6.SP and the mitigation would need to be approved and implemented by Caltrans. No other secondary significant impacts would result from implementation of this measure.	
Impact TRF-7.SP: Operations at the unsignalized Central Avenue/Eastbound I-580 Ramps intersection (#36) would deteriorate due to traffic generated by the Specific Plan and would warrant the installation of a traffic signal under Existing Plus Specific Plan conditions. *(Significant and Unavoidable)*	**Mitigation Measure TRF-7.SP: Central Avenue/Eastbound I-580 Ramps Intersection Signalization.** All applicants proposing the development of projects within the Plan Area and meeting the trigger and funding criteria specified below shall be responsible for implementing the following improvement: a) Install a signal at the intersection. The proposed improvement at this intersection is consistent with the planned and funded project to signalize the I-580/Central Avenue ramp intersections. If this improvement is implemented prior to the trigger identified in this mitigation measure, then it would not be required as a mitigation measure for the Specific Plan. It is estimated that the mitigation measure at this intersection may be required when about 40 percent of the Plan Area is developed (which corresponds to 20 percent of Specific Plan development excluding the Sub-Area 4 Project). At that time, the development project that triggers the impact shall either fully fund or implement the mitigation measure. Alternatively, the City of Richmond may implement this mitigation measure prior to or at the time the 40 percent buildout trigger occurs, the mitigation measure would not be required to be implemented by an individual project and the City may collect fair-share contributions from the projects in the Plan Area to support implementation.	Significant and Unavoidable

TABLE 2-2 (Continued)
SUMMARY OF IMPACTS, MITIGATION MEASURES, AND RESIDUAL EFFECTS

Environmental Impact	Standard Conditions of Approval and Mitigation Measures	Level of Significance after application of Mitigation
Transportation and Circulation (SP) – (cont.)		
Impact TRF-7.SP (cont.)	After implementation of this measure, the intersection would improve to LOS B during the AM peak hour and LOS A during the PM peak hour and reduce the impact to a less-than-significant level. It is not certain that this mitigation measure could be implemented because the intersection is under the jurisdiction of Caltrans. The City of Richmond, as lead agency, does not have jurisdiction to implement Measure TRF-7.SP and the mitigation would need to be approved and implemented by Caltrans. Therefore, the impact is conservatively considered significant and unavoidable because the City cannot ensure its implementation. No secondary significant impacts would result from implementation of this measure.	
Impact TRF-8.SP: Operations at the unsignalized Central Avenue/Westbound I-580 Ramps intersection (#37) would deteriorate due to traffic generated by the Specific Plan and would warrant the installation of a traffic signal under Existing Plus Specific Plan conditions. (*Significant and Unavoidable*)	**Mitigation Measure TRF-8: Central Avenue/Westbound I-580 Ramps Intersection Signalization**. All applicants proposing the development of projects within the Plan Area and meeting the trigger and funding criteria specified below shall be responsible for implementing the following improvement: a) Install a signal at the intersection. The proposed improvement at this intersection is consistent with the planned and funded project to signalize the I-580/Central Avenue ramp intersections. If this improvement is implemented prior to the trigger identified in this mitigation measure, then it would not be required as a mitigation measure for the Specific Plan. It is estimated that the mitigation measure at this intersection may be required when about 40 percent of the Plan Area is developed (which corresponds to 20 percent of Specific Plan development excluding the Sub-Area 4 Project). At that time, the development project that triggers the impact shall either fully fund or implement the mitigation measure. Alternatively, the City of Richmond may implement this mitigation measure prior to or at the time the 40 percent buildout trigger occurs, the mitigation measure would not be required to be implemented by an individual project and the City may collect fair-share contributions from the projects in the Plan Area to support implementation. After implementation of this measure, the intersection would improve to LOS B during both AM and PM peak hours and reduce the impact to a less-than-significant level. It is not certain that this mitigation measure could be implemented because the intersection is under the jurisdiction of Caltrans. The City of Richmond, as lead agency, does not have jurisdiction to implement Measure TRF-8.SP and the mitigation would need to be approved and implemented by Caltrans. Therefore, the impact is conservatively considered significant and unavoidable because the City cannot ensure its implementation. No secondary significant impacts would result from implementation of this measure.	Significant and Unavoidable

TABLE 2-2 (Continued)
SUMMARY OF IMPACTS, MITIGATION MEASURES, AND RESIDUAL EFFECTS

Environmental Impact	Standard Conditions of Approval and Mitigation Measures	Level of Significance after application of Mitigation
Transportation and Circulation (SP) – (cont.)		
Impact TRF-9.SP: Signalized intersection operations at Cutting Boulevard/Harbour Way South (#5) would deteriorate to an unacceptable LOS due to traffic generated by the Specific Plan under 2040 Plus Specific Plan conditions. *(Significant and Unavoidable)*	**Mitigation Measure TRF-9.SP: Cutting Boulevard/Harbour Way South Intersection Improvements**. All applicants proposing the development of projects within the Plan Area and meeting the trigger and funding criteria specified below shall be responsible for implementing the following improvements: a) The multi-modal improvement projects as outlined in the SRTCP and detailed on page 4.13-75, which would reduce the overall automobile trip generation and reduce the project contribution at this intersection. Specifically, the Cutting Boulevard improvement would eliminate one through lane along both directions of both Cutting Boulevard and Harbour Way South to provide enhanced bicycle facilities. b) Convert the signal phasing for the north and south intersection approaches from split-phasing to protected phasing and coordinate signal timings with adjacent signals along Cutting Boulevard. It is estimated that the mitigation measure at this intersection may be required when about 40 percent of the Specific Plan area is developed. At that time, the development project that triggers the impact shall either fully fund or implement the mitigation measure. Alternatively, the City of Richmond may implement this mitigation measure prior to or at the time the 40 percent buildout trigger occurs, the mitigation measure would not be required to be implemented by an individual project and the City may collect fair-share contributions from the projects in the Plan Area to support implementation. After implementation of this measure, the intersection would continue to operate at LOS E during the AM peak hour and LOS F during the PM peak hour. Traffic operations at the intersection can be further improved by providing additional automobile travel lanes, such as a second through lane on eastbound and westbound Cutting Boulevard. However, these modifications cannot be accommodated within the available automobile right-of-way and would require additional right-of-way, and/or loss of planned bicycle and/or pedestrian facilities, and are considered to be infeasible because they would be in conflict with the Specific Plan and General Plan goals to promote pedestrian, bicycle, and transit trips. Therefore, the impact would remain significant and unavoidable. No other secondary significant impacts would result from implementation of this measure.	Significant or Unavoidable
Impact TRF-10.SP: Unsignalized intersection operations at Wright Avenue/Harbour Way South (#7) would deteriorate due to traffic generated by the Specific Plan and would warrant the installation of a traffic signal under 2040 Plus Specific Plan conditions. *(Less Than Significant with Mitigation)*	**Mitigation Measure TRF-10.SP:** Wright Avenue/Harbour Way South Intersection Signalization, Channelization, and Safety Improvements. All applicants proposing the development of projects within the Plan Area and meeting the trigger and funding criteria specified below shall be responsible for implementing the following improvements: a) The multi-modal improvement projects as outlined in the SRTCP and detailed on page 4.13-75, which would reduce the overall automobile trip generation and reduce the project contribution at this intersection. Specifically at this intersection, the Harbour Way South/Wright Avenue intersection improvement would signalize intersection and provide warning lights and gates for the at-grade railroad crossing.	Less Than Significant

TABLE 2-2 (Continued)
SUMMARY OF IMPACTS, MITIGATION MEASURES, AND RESIDUAL EFFECTS

Environmental Impact	Standard Conditions of Approval and Mitigation Measures	Level of Significance after application of Mitigation
Transportation and Circulation (SP) – (cont.)		
Impact TRF-10.SP (cont.)	b) Mitigation Measure TRF-1.SP, which would consist of signalizing intersection and restriping the southbound Harbour Way South approach to provide an exclusive left-turn lane and a shared right/through lane within the current right-of-way. After implementation of this measure, the intersection would improve to LOS C during the AM peak hour and LOS D during the PM peak hour and reduce the impact to a less-than -significant level. No secondary significant impacts would result from implementation of this measure.	
Impact TRF-11.SP: Signalized intersection operations at *Wright Avenue/Marina Way South* (#9) would deteriorate to an unacceptable LOS due to traffic generated by the Specific Plan under 2040 Plus Specific Plan conditions. (*Less Than Significant with Mitigation*)	**Mitigation Measure TRF-11: Wright Avenue/Marina Way South Intersection Improvements**. All applicants proposing the development of projects within the Plan Area and meeting the trigger and funding criteria specified below shall be responsible for implementing the following improvements: a) The multi-modal improvement projects as outlined in the SRTCP and detailed on page 4.13-75, which would reduce the overall automobile trip generation and reduce the project contribution at this intersection. Specifically, the Marina Way South between Cutting Boulevard and Hall Avenue improvement would eliminate one through traffic lane along both directions of Marina Way South to provide enhanced bicycle facilities. b) Mitigation Measure TRF-2.SP, which would consist of restriping the westbound Wright Avenue approach to provide an exclusive right-turn lane and a shared left/ through lane within the current right-of-way. After implementation of this measure, the intersection would improve to LOS C during the AM peak hour and LOS D during the PM peak hour and reduce the impact to a less-than -significant level. No secondary significant impacts would result from implementation of this measure.	Less Than Significant
Impact TRF-12.SP: Signalized intersection operations at Cutting Boulevard/23rd Street (#11) would deteriorate to an unacceptable LOS due to traffic generated by the Specific Plan under 2040 Plus Specific Plan conditions. *(Significant and Unavoidable)*	**Mitigation Measure TRF-12.SP: Cutting Boulevard/23rd Street Intersection Improvements**. All applicants proposing the development of projects within the Plan Area and meeting the trigger and funding criteria specified below shall be responsible for implementing the following improvements: a) The multi-modal improvement projects as outlined in the SRTCP and detailed on page 4.13-75, which would reduce the overall automobile trip generation and reduce the project contribution at this intersection. Specifically the Cutting Boulevard improvement would eliminate one through traffic lane along both directions of Cutting Boulevard to provide enhanced bicycle facilities. b) Update signal to actuated-coordinated operations and coordinate signal timings with adjacent intersection along Cutting Boulevard. It is estimated that the mitigation measure at this intersection may be required when about 45 percent of the Plan Area is developed. At that time, the development project that triggers the impact shall either fully fund or implement the mitigation measure. Alternatively, the City of Richmond may implement this mitigation measure prior to or at	Significant and Unavoidable

TABLE 2-2 (Continued)
SUMMARY OF IMPACTS, MITIGATION MEASURES, AND RESIDUAL EFFECTS

Environmental Impact	Standard Conditions of Approval and Mitigation Measures	Level of Significance after application of Mitigation
Transportation and Circulation (SP) – (cont.)		
Impact TRF-12.SP (cont.)	the time the 45 percent buildout trigger occurs, the mitigation measure would not be required to be implemented by an individual project and the City may collect fair-share contributions from the projects in the Plan Area to support implementation. After implementation of this measure, the intersection would improve to LOS E during the AM peak hour and continue to operate at LOS F during the PM peak hour. Traffic operations at the intersection can be further improved by providing additional automobile travel lanes, such as a second through lane on eastbound and westbound Cutting Boulevard. However, these modifications cannot be accommodated within the available automobile right-of-way and would require additional right-of-way, and/or loss of planned bicycle and/or pedestrian facilities, and are considered to be infeasible because they would be in conflict with the Specific Plan and General Plan goals to promote pedestrian, bicycle, and transit trips. Therefore, the impact would remain significant and unavoidable. No other secondary significant impacts would result from implementation of this measure.	
Impact TRF-13.SP: Signalized intersection operations at *Meeker Avenue/Marina Bay Parkway* (#14) would deteriorate to an unacceptable LOS due to traffic generated by the Specific Plan under 2040 Plus Specific Plan conditions. (*Less Than Significant with Mitigation*)	**Mitigation Measure TRF-13.SP: Meeker Avenue/Marina Bay Parkway Intersection Signal and Channelization Improvements**. All applicants proposing the development of projects within the Plan Area and meeting the trigger and funding criteria specified below shall be responsible for implementing the following improvements: a) The multi-modal improvement projects as outlined in the SRTCP and detailed on page 4.13-75, which would reduce the overall automobile trip generation and reduce the project contribution at this intersection. The SRTCP would not make any specific modifications at this intersection. b) Restripe the eastbound Meeker Avenue approach to provide an exclusive left-turn lane and a shared right/through lane within the current right-of-way. c) Update signal to actuated-coordinated operations and convert the phasing for the east and west intersection approaches from split-phasing to protected phasing. Coordinate signal timings with adjacent signal timings along Marina Bay Parkway. It is estimated that the mitigation measure at this intersection may be required when about 20 percent of the Specific Plan area is developed. At that time, the development project that triggers the impact shall either fully fund or implement the mitigation measure. Alternatively, the City of Richmond may implement this mitigation measure prior to or at the time the 20 percent buildout trigger occurs, the mitigation measure would not be required to be implemented by an individual project and the City may collect fair-share contributions from the projects in the Plan Area to support implementation. After implementation of this measure, the intersection would improve to LOS D during both AM and PM peak hours and reduce the impact to a less-than-significant level. No secondary significant impacts would result from implementation of this measure.	Less than Significant

TABLE 2-2 (Continued)
SUMMARY OF IMPACTS, MITIGATION MEASURES, AND RESIDUAL EFFECTS

Environmental Impact	Standard Conditions of Approval and Mitigation Measures	Level of Significance after application of Mitigation
Transportation and Circulation (SP) – (cont.)		
Impact TRF-14.SP: Unsignalized intersection operations at Westbound I-580 Ramps/Juliga Woods Street (#17) would deteriorate due to traffic generated by the Specific Plan would warrant the installation of a traffic signal under 2040 Plus Specific Plan conditions. *(Significant and Unavoidable)*	**Mitigation Measure TRF-14.SP: Westbound I-580 Ramps/Juliga Woods Street Intersection Signalization.** All applicants proposing the development of projects within the Plan Area shall be responsible for implementing the following improvements: a) The multi-modal improvement projects as outlined in the SRTCP and detailed on page 4.13-75, which would reduce the overall automobile trip generation and reduce the project contribution at this intersection. The SRTCP would not make any specific modifications at this intersection. b) Mitigation Measure TRF-3.SP, which would consist of installing an actuated signal at the intersection with protected phasing on all approaches. After implementation of this measure, the intersection would improve to LOS D during the AM peak hour and LOS C during the PM peak hour and reduce the impact to a less-than -significant level. It is not certain that this mitigation measure could be implemented because the intersection is under the jurisdiction of Caltrans. City of Richmond, as lead agency, does not have jurisdiction to implement Measure TRF-14.SP and the mitigation would need to be approved and implemented by Caltrans. Therefore, the impact is conservatively considered significant and unavoidable because the City cannot ensure its implementation. No secondary significant impacts would result from implementation of this measure.	Significant and Unavoidable
Impact TRF-15.SP: Signalized intersection operations at Meade Street/Regatta Boulevard/ Eastbound I-580 Ramps (#18) would deteriorate to an unacceptable LOS due to traffic generated by the Specific Plan under 2040 Plus Specific Plan conditions. *(Significant and Unavoidable)*	**Mitigation Measure TRF-15.SP: Meade Street/Regatta Boulevard/Eastbound I-580 Ramps Intersection Signal and Channelization Improvements.** All applicants proposing the development of projects within the Plan Area shall be responsible for implementing the following improvements: a) The multi-modal improvement projects as outlined in the SRTCP and detailed on page 4.13-75, which would reduce the overall automobile trip generation and reduce the project contribution at this intersection. The SRTCP would not make any specific modifications at this intersection. b) Mitigation Measure TRF-4.SP, which would consist of restriping westbound Meade Street to provide one exclusive right-turn lane and a shared left/through lane, upgrading the signal to actuated operations, changing the signal phasing for the east and west intersection approaches from protected phasing to split-phasing, and coordinating signal timings with the adjacent Regatta Boulevard/ Meade Street intersection and the at-grade railroad crossing. After implementation of this measure, the intersection would continue to operate at LOS F during both AM and PM peak hours. Therefore, the impact would remain significant and unavoidable. No other secondary significant impacts would result from implementation of this measure.	Significant and Unavoidable

TABLE 2-2 (Continued)
SUMMARY OF IMPACTS, MITIGATION MEASURES, AND RESIDUAL EFFECTS

Environmental Impact	Standard Conditions of Approval and Mitigation Measures	Level of Significance after application of Mitigation
Transportation and Circulation (SP) – (cont.)		
Impact TRF-16.SP: Unsignalized intersection operations at Regatta Boulevard/Meade Street (#19) would deteriorate due to traffic generated by the Specific Plan and would warrant the installation of a traffic signal under 2040 Plus Specific Plan conditions. (*Less Than Significant with Mitigation*)	**Mitigation Measure TRF-16.SP: Regatta Boulevard/Meade Street Intersection Signalization.** All applicants proposing the development of projects within the Plan Area shall be responsible for implementing the following improvements: a) The multi-modal improvement projects as outlined in the SRTCP and detailed on page 4.13-75, which would reduce the overall automobile trip generation and reduce the project contribution at this intersection. The SRTCP would not make any specific modifications at this intersection. b) Mitigation Measure TRF-5.SP, which would consist of installing an actuated signal at the intersection with protected phasing on all approaches, and coordinating signal timings with the adjacent Meade Street/Regatta Boulevard/Eastbound I-580 Ramps intersection and the at-grade railroad crossing. After implementation of this measure, the intersection would improve to LOS D during both AM and PM peak hours and reduce the impact to a less-than-significant level. No secondary significant impacts would result from implementation of this measure.	Less Than Significant
Impact TRF-17.SP: Unsignalized intersection operations at Bayview Avenue/ 51st Street/Seaport Avenue/Eastbound I-580 Ramps (#25) would deteriorate due to traffic generated by the Specific Plan and would warrant the installation of a traffic signal under 2040 Plus Specific Plan conditions. *(Significant and Unavoidable)*	**Mitigation Measure TRF-17.SP: Bayview Avenue/ 51st Street/Seaport Avenue/Eastbound I-580 Ramps intersection Signalization and Channelization Improvements.** All applicants proposing the development of projects within the Plan Area shall be responsible for implementing the following improvements: a) The multi-modal improvement projects as outlined in the SRTCP and detailed on page 4.13-75, which would reduce the overall automobile trip generation and reduce the project contribution at this intersection. The SRTCP would not make any specific modifications at this intersection. b) Mitigation Measure TRF-6.SP, which would consist of installing an actuated signal at the intersection with protected signal phasing (i.e., vehicles turning left do not have to yield to oncoming traffic) on all approaches, and restriping southbound 51st Street to provide two left-turn lanes and a shared right/through lane. After implementation of this measure, the intersection would continue to operate at LOS E during the AM peak hour and LOS F during the PM peak hour. Therefore, the impact would remain significant and unavoidable. No other secondary significant impacts would result from implementation of this measure.	Significant and Unavoidable
Impact TRF-18.SP: Signalized intersection operations at Bayview Avenue/Carlson Boulevard (#26) would deteriorate to an unacceptable LOS due to traffic generated by the Specific Plan under 2040 Plus Specific Plan conditions. (*Significant and Unavoidable)*	**Mitigation Measure TRF-18.SP: Bayview Avenue/Carlson Boulevard intersection Signal and Channelization Improvements.** All applicants proposing the development of projects within the Plan Area and meeting the trigger and funding criteria specified below shall be responsible for implementing the following improvements: a) The multi-modal improvement projects as outlined in the SRTCP and detailed on page 4.13-75, which would reduce the overall automobile trip generation and reduce the project contribution at this intersection. Specifically the Carlson Boulevard between Broadway and Tehama Avenue and Bayview Avenue Overcrossing I-580	Significant and Unavoidable

TABLE 2-2 (Continued)
SUMMARY OF IMPACTS, MITIGATION MEASURES, AND RESIDUAL EFFECTS

Environmental Impact	Standard Conditions of Approval and Mitigation Measures	Level of Significance after application of Mitigation
Transportation and Circulation (SP) – (cont.)		
Impact TRF-18.SP (cont.)	improvements would eliminate one through traffic lane along both directions of both Bayview Avenue and Carlson Boulevard to provide enhanced bicycle facilities, provide marked pedestrian crossings across all intersection approaches, and replace the northbound slip right-turn with a dedicated right-turn lane. b) Convert the signal phasing for the east and west intersection approaches from split-phasing to protected phasing and provide an overlap phase for the northbound right-turn movement. It is estimated that the mitigation measure at this intersection may be required when about 30 percent of the Specific Plan area is developed. At that time, the development project that triggers the impact shall either fully fund or implement the mitigation measure. Alternatively, the City of Richmond may implement this mitigation measure prior to or at the time the 30 percent buildout trigger occurs, the mitigation measure would not be required to be implemented by an individual project and the City may collect fair-share contributions from the projects in the Plan Area to support implementation. After implementation of this measure, the intersection would continue to operate at LOS E during the AM peak hour and improve to LOS D during the PM peak hour. Traffic operations at the intersection can be further improved by providing additional automobile travel lanes, such as a second through lane on eastbound and westbound Carlson Boulevard. However, these modifications cannot be accommodated within the available automobile right-of-way and would require additional right-of-way, and/or loss of planned bicycle and/or pedestrian facilities, and are considered to be infeasible because they would be in conflict with the Specific Plan and General Plan goals to promote pedestrian, bicycle, and transit trips. Therefore, the impact would remain significant and unavoidable. No other secondary significant impacts would result from implementation of this measure.	
Impact TRF-19.SP: Signalized intersection operations at Carlson Boulevard/Westbound I-80 Ramps (#28) would worsen the already unacceptable LOS F conditions due to traffic generated by the Specific Plan under 2040 Plus Specific Plan conditions. *(Significant and Unavoidable)*	**Mitigation Measure TRF-19.SP: Carlson Boulevard/Westbound I-80 Ramps Intersection Widening and Channelization Improvements**. All applicants proposing the development of projects within the Plan Area and meeting the trigger and funding criteria specified below shall be responsible for implementing the following improvements: a) The multi-modal improvement projects as outlined in the SRTCP and detailed on page 4.13-75, which would reduce the overall automobile trip generation and reduce the project contribution at this intersection. Specifically, the Carlson Boulevard between Broadway and Tehama Avenue improvement would eliminate one through lane along both directions of Carlson Boulevard to provide enhanced bicycle facilities.	Significant and Unavoidable

TABLE 2-2 (Continued)
SUMMARY OF IMPACTS, MITIGATION MEASURES, AND RESIDUAL EFFECTS

Environmental Impact	Standard Conditions of Approval and Mitigation Measures	Level of Significance after application of Mitigation
Transportation and Circulation (SP) – (cont.)		
Impact TRF-19.SP (cont.)	b) Widen the southbound Westbound I-80 Off-Ramp to provide one right-turn lane and one shared through/left turn lane. The proposed improvement (item b) at this intersection is consistent with the mitigation measure proposed at this intersection by the Richmond Bay Campus Long Range Development Plan Draft EIR (November 2013). It is estimated that the mitigation measure at this intersection may be required when about 60 percent of the Specific Plan area is developed. At that time, the development project that triggers the impact shall either fully fund or implement the mitigation measure. Alternatively, the City of Richmond may implement this mitigation measure prior to or at the time the 60 percent buildout trigger occurs, the mitigation measure would not be required to be implemented by an individual project and the City may collect fair-share contributions from the projects in the Plan Area to support implementation. After implementation of this measure, the intersection would continue to operate at LOS F during both AM and PM peak hours. Traffic operations at the intersection can be further improved by providing additional automobile travel lanes, such as second through lanes on eastbound and westbound Carlson Boulevard. However, these modifications cannot be accommodated within the available automobile right-of-way and would require additional right-of-way, and/or loss of planned bicycle and/or pedestrian facilities, and are considered to be infeasible because they would be in conflict with the Specific Plan and General Plan goals to promote pedestrian, bicycle, and transit trips. Furthermore, it is not certain that this mitigation measure could be implemented because the intersection is under the jurisdiction of Caltrans. City of Richmond, as lead agency, does not have jurisdiction to implement Measure TRF-19.SP and the mitigation would need to be approved and implemented by Caltrans. Therefore, the impact would remain significant and unavoidable. No other secondary significant impacts would result from implementation of this measure.	
Impact TRF-20.SP: Signalized intersection operations at Carlson Boulevard/Eastbound I-80 Ramps (#29) would worsen the already unacceptable LOS F conditions due to traffic generated by the Specific Plan under 2040 Plus Specific Plan conditions. *(Significant and Unavoidable)*	**Mitigation Measure TRF-20.SP: Carlson Boulevard/Eastbound I-80 Ramps Intersection Improvements.** All applicants proposing the development of projects within the Plan Area and meeting the trigger and funding criteria specified below shall be responsible for implementing the following improvement: a) The multi-modal improvement projects as outlined in the SRTCP and detailed on page 4.13-75, which would reduce the overall automobile trip generation and reduce the project contribution at this intersection. Specifically, the Carlson Boulevard between Broadway and Tehama Avenue improvement would eliminate one through lane along both directions of Carlson Boulevard to provide enhanced bicycle facilities.	Significant and Unavoidable

TABLE 2-2 (Continued)
SUMMARY OF IMPACTS, MITIGATION MEASURES, AND RESIDUAL EFFECTS

Environmental Impact	Standard Conditions of Approval and Mitigation Measures	Level of Significance after application of Mitigation
Transportation and Circulation (SP) – (cont.)		
Impact TRF-20.SP (cont.)	It is estimated that the mitigation measure at this intersection may be required when about 40 percent of the Specific Plan area is developed. At that time, the development project that triggers the impact shall either fully fund or implement the mitigation measure. Alternatively, the City of Richmond may implement this mitigation measure prior to or at the time the 40 percent buildout trigger occurs, the mitigation measure would not be required to be implemented by an individual project and the City may collect fair-share contributions from the projects in the Plan Area to support implementation. After implementation of this measure, the intersection would continue to operate at LOS F during the PM peak hour. Traffic operations at the intersection can be further improved by providing additional automobile travel lanes, such as second through lanes on eastbound and westbound Carlson Boulevard. However, these modifications cannot be accommodated within the available automobile right-of-way and would require additional right-of-way, and/or loss of planned bicycle and/or pedestrian facilities, and are considered to be infeasible because they would be in conflict with the Specific Plan and General Plan goals to promote pedestrian, bicycle, and transit trips. Therefore, the impact would remain significant and unavoidable. Furthermore, it is not certain that this mitigation measure could be implemented because the intersection is under the jurisdiction of Caltrans. City of Richmond, as lead agency, does not have jurisdiction to implement Measure TRF-6.SP and the mitigation would need to be approved and implemented by Caltrans. No other secondary significant impacts would result from implementation of this measure.	
TRF-21.SP: Signalized intersection operations at MacDonald Way/Harbour Way (#34) would deteriorate to an unacceptable LOS due to traffic generated by the Specific Plan under 2040 Plus Specific Plan conditions. *(Less Than Significant with Mitigation*)	**Mitigation Measure TRF-21.SP: MacDonald Way/Harbour Way Intersection Signal and Channelization Improvements.** All applicants proposing the development of projects within the Plan Area and meeting the trigger and funding criteria specified below shall be responsible for implementing the following improvements: a) The multi-modal improvement projects as outlined in the SRTCP and detailed on page 4.13-75, which would reduce the overall automobile trip generation and reduce the project contribution at this intersection. The SRTCP would not make any specific modifications at this intersection. b) Restripe the southbound Harbour Way approach to provide an exclusive left-turn lane and a shared right/through lane within the current right-of-way. c) Upgrade intersection signal equipment to convert the signal phasing for the north and south intersection approaches from split-phasing to protected phasing. It is estimated that the mitigation measure at this intersection may be required when about 50 percent of the Plan Area is developed. At that time, the development project that triggers the impact shall either fully fund or implement the mitigation measure. Alternatively, the City of Richmond may implement this mitigation measure prior to or at the time the 50 percent buildout trigger occurs, the mitigation measure would not be	Significant and Unavoidable

TABLE 2-2 (Continued)
SUMMARY OF IMPACTS, MITIGATION MEASURES, AND RESIDUAL EFFECTS

Environmental Impact	Standard Conditions of Approval and Mitigation Measures	Level of Significance after application of Mitigation
Transportation and Circulation (SP) – (cont.)		
TRF-21.SP (cont.)	required to be implemented by an individual project and the City may collect fair-share contributions from the projects in the Plan Area to support implementation. After implementation of this measure, the intersection would improve to LOS D during both AM and PM peak hours and reduce the impact to a less-than-significant level. No secondary significant impacts would result from implementation of this measure.	
Impact TRF-22.SP: Traffic generated by the Specific Plan would cause a significant impact on the following freeway segments under 2040 Plus Project conditions because they would operate at LOS F and the Specific Plan would increase the freeway segment volumes by more than five percent: Westbound I-580 between Central Avenue and I-80 during both AM and PM peak hours and Eastbound I-580 between I-80 and Central Avenue during the PM peak hour. *(Significant and Unavoidable)*	None Feasible.	Significant and Unavoidable
Impact TRF-23.SP: Traffic generated by the Specific Plan combined with the implementation of the proposed SRTCP mitigation measures (specifically, eliminating one travel lane in both directions of both Cutting and Carlson Boulevards) would cause the signalized Cutting Boulevard/Carlson Boulevard intersection (#16) to degrade from LOS D during both AM and PM peak hours under 2040 Plus Specific Plan conditions to LOS E during the AM peak hour and LOS F during the PM peak hour under the 2040 Plus Specific Plan and SRTCP conditions. (*Significant and Unavoidable)*	None Feasible.	Significant and Unavoidable
Impact TRF-24.SP: Traffic generated by the Specific Plan combined with the implementation of the proposed SRTCP mitigation measures (specifically, eliminating one travel lane in both directions of Cutting Boulevard) would cause the signalized Cutting Boulevard/I-80 Westbound Off-Ramp intersection (#20) to degrade from LOS D under 2040 Plus Specific Plan conditions to LOS F during under the 2040 Plus Specific Plan and SRTCP conditions during both AM and PM peak hours. (*Significant and Unavoidable)*	None Feasible.	Significant and Unavoidable
Impact TRF-25.SP: The Specific Plan would not substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment). (*Less Than Significant*)	None Required.	Less Than Significant
Impact TRF-26.SP: Buildout of the proposed Specific Plan would generate substantial multi-modal traffic traveling across at-grade railroad crossings that cause or expose roadway users (e.g., motorists, pedestrians, bicyclists) to a permanent and substantial transportation hazard. *(Significant and Unavoidable)*	None Feasible.	Significant and Unavoidable

TABLE 2-2 (Continued)
SUMMARY OF IMPACTS, MITIGATION MEASURES, AND RESIDUAL EFFECTS

Environmental Impact	Standard Conditions of Approval and Mitigation Measures	Level of Significance after application of Mitigation
Transportation and Circulation (SP) – (cont.)		
Impact TRF-27.SP: Buildout of the proposed Specific Plan would generate automobile traffic that would result in automobile queues on off-ramps extending to the I-580 freeway mainline at the Regatta Boulevard/Meade Street and Bayview Avenue interchanges. (*Significant and Unavoidable*)	None Feasible.	Significant and Unavoidable
Impact TRF-28.SP: The Specific Plan would not result in inadequate emergency access. (*Less Than Significant, No Mitigation Required*)	None Required.	Less Than Significant
Impact TRF-29.SP: The Specific Plan would not conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities. (*Less Than Significant, No Mitigation Required*)	None Required.	Less Than Significant
Impact TRF-30.SP and **TRF-15.SA-4:** Project construction would result in a substantial, though temporary, adverse effect on the circulation system during the project construction period. (*Less Than Significant, No Mitigation Required)*	None Required.	Less Than Significant
Transportation and Circulation (SA4)		
Impact TRF-1.SA4: Unsignalized intersection operations at Bayview Avenue/51st Street/Seaport Avenue/Eastbound I-580 Ramps (#25) would deteriorate to an unacceptable LOS due to traffic generated by the Sub-Area 4 Project and would warrant the installation of a traffic signal under Existing Plus Sub-Area 4 Project conditions. (*Significant and Unavoidable*)	**Mitigation Measure TRF-1.SA4: Bayview Avenue/51st Street/Seaport Avenue/Eastbound I-580 Ramps Intersection Signalization and Channelization Improvements**. All applicants proposing the development of projects within Sub-Area 4 and meeting the trigger and funding criteria specified below shall be responsible for implementing the following improvement: a) Mitigation Measure TRF-6.SP, which would consist of installing an actuated signal at the intersection with protected phasing on all approaches, and restriping southbound 51st Street to provide two left-turn lanes and a shared right/through lane. It is estimated that the mitigation measure at this intersection may be required when about 60 percent of the Sub-Area 4 Project is developed. At that time, if the improvement has not already been implemented, the individual Sub-Area 4 Project development project that triggers the impact shall either fully fund or implement the mitigation measure. Alternatively, the City of Richmond may implement this mitigation measure prior to or at the time the 60 percent buildout trigger occurs, the mitigation measure would not be required to be implemented by an individual project and the City may collect fair-share contributions from the projects in Sub-Area 4 to support implementation. After implementation of this measure, the intersection would improve to LOS D during the AM peak hour and LOS E during the PM peak hour. Traffic operations at the intersection can be further improved by providing additional automobile travel lanes, such as an additional through lane on the northbound Bayview Avenue and southbound 51st	Significant and Unavoidable

TABLE 2-2 (Continued)
SUMMARY OF IMPACTS, MITIGATION MEASURES, AND RESIDUAL EFFECTS

Environmental Impact	Standard Conditions of Approval and Mitigation Measures	Level of Significance after application of Mitigation
Transportation and Circulation (SA4) – (cont.)		
Impact TRF-1.SA4 (cont.)	Street approaches. However, these modifications cannot be accommodated within the available automobile right-of-way and would require additional right-of-way, and/or loss of planned bicycle and/or pedestrian facilities, and are considered to be infeasible because they would be in conflict with the Specific Plan and General Plan goals to promote pedestrian, bicycle, and transit trips. Furthermore, it is not certain that this mitigation measure could be implemented because the intersection is under the jurisdiction of Caltrans. The City of Richmond, as lead agency, does not have jurisdiction to implement Mitigation Measure TRF-1.SA4 and the mitigation would need to be approved and implemented by Caltrans. No other secondary significant impacts would result from implementation of this measure. **Mitigation Measure TRF-6.SP**	
Impact TRF-2.SA4: Signalized intersection operations at Cutting Boulevard/23rd Street (#11) would worsen the already unacceptable LOS F conditions due to traffic generated by the Sub-Area 4 Project under 2040 Plus Sub-Area 4 Project conditions. (*Less Than Significant with Mitigation*)	**Mitigation Measure TRF-2.SA4: Cutting Boulevard/23rd Street Intersection Signal Improvements.** All applicants proposing the development of projects within Sub-Area 4 and meeting the trigger and funding criteria specified below shall be responsible for implementing the following improvement: a) Mitigation Measure TRF-12.SP, item b, which would update the signal to actuated-coordinated operations and coordinate signal timings with adjacent intersection along Cutting Boulevard. It is estimated that the mitigation measure at this intersection may be required when about 90 percent of the Sub-Area 4 Project is developed. At that time, the development project that triggers the impact shall either fully fund or implement the mitigation measure. Alternatively, the City of Richmond may implement this mitigation measure prior to or at the time the 90 percent buildout trigger occurs, the mitigation measure would not be required to be implemented by an individual project and the City may collect fair-share contributions from the projects in Sub-Area 4 to support implementation. After implementation of this measure, the intersection would improve to LOS E during the AM peak hour and continue to operate at LOS F during the PM peak hour with less delay than under 2040 No Sub-Area 4 Project conditions. The mitigation measure would reduce the impact to a less-than-significant level. No secondary significant impacts would result from implementation of this measure. **Mitigation Measure TRF-12.SP**	Less Than Significant

TABLE 2-2 (Continued)
SUMMARY OF IMPACTS, MITIGATION MEASURES, AND RESIDUAL EFFECTS

Environmental Impact	Standard Conditions of Approval and Mitigation Measures	Level of Significance after application of Mitigation
Transportation and Circulation (SA4) – (cont.)		
Impact TRF-3.SA4: Signalized intersection operations at Meeker Avenue/Marina Bay Parkway (#14) would worsen the already unacceptable LOS F conditions due to traffic generated by the Sub-Area 4 Project under 2040 Plus Sub-Area 4 Project conditions. (*Less Than Significant with Mitigation)*	**Mitigation Measure TRF-3.SA4: Meeker Avenue/Marina Bay Parkway Intersection Signal and Channelization Improvements**. All applicants proposing the development of projects within Sub-Area 4 and meeting the trigger and funding criteria specified below shall be responsible for implementing the following improvements: a) Mitigation Measure TRF-12.SP, items b and c, which would restripe the eastbound Meeker Avenue approach to provide an exclusive left-turn lane and a shared right/through lane within the current right-of-way, update the signal to actuated-coordinated operations, convert the phasing for the east and west intersection approaches from split-phasing to protected phasing, and coordinate signal timings with adjacent signal timings along Marina Bay Parkway. It is estimated that the mitigation measure at this intersection may be required when about 90 percent of the Sub-Area 4 Project is developed. At that time, the development project that triggers the impact shall either fully fund or implement the mitigation measure. Alternatively, the City of Richmond may implement this mitigation measure prior to or at the time the 90 percent buildout trigger occurs, the mitigation measure would not be required to be implemented by an individual project and the City may collect fair-share contributions from the projects in Sub-Area 4 to support implementation. After implementation of this measure, the intersection would improve to LOS E during the AM peak hour and continue to operate at LOS F during the PM peak hour with less delay than under 2040 No Sub-Area 4 Project conditions. The mitigation measure would reduce the impact to a less-than-significant level. No secondary significant impacts would result from implementation of this measure. **Mitigation Measure TRF-12.SP**	Less Than Significant
Impact TRF-4.SA4: Unsignalized intersection operations at Westbound I-580 Ramps/Juliga Woods Street (#17) would worsen the already unacceptable LOS F conditions due to traffic generated by the Sub-Area 4 Project and would warrant the installation of a traffic signal under 2040 Plus Sub-Area 4 Project conditions. (*Significant and Unavoidable)*	**Mitigation Measure TRF-4.SA4: Westbound I-580 Ramps/Juliga Woods Street Intersection Signalization.** All applicants proposing the development of projects within Sub-Area 4 and meeting the trigger and funding criteria specified below shall be responsible for implementing the following improvement: a) Mitigation Measure TRF-3.SP, which would install an actuated signal at the intersection with protected phasing on all approaches. It is estimated that the mitigation measure at this intersection may be required when about 10 percent of the Sub-Area 4 Project is developed. At that time, the development project that triggers the impact shall either fully fund or implement the mitigation measure. Alternatively, the City of Richmond may implement this mitigation measure prior to or at the time the 10 percent buildout trigger occurs, the mitigation measure would not be required to be implemented by an individual project and the City may collect fair-share contributions from the projects in Sub-Area 4 to support implementation.	Significant and Unavoidable

TABLE 2-2 (Continued)
SUMMARY OF IMPACTS, MITIGATION MEASURES, AND RESIDUAL EFFECTS

Environmental Impact	Standard Conditions of Approval and Mitigation Measures	Level of Significance after application of Mitigation
Transportation and Circulation (SA4) – (cont.)		
Impact TRF-4.SA4 (cont.)	After implementation of this measure, the intersection would continue to operate at LOS F during the AM peak hour with less delay than under 2040 No Sub-Area 4 Project conditions, and would improve to LOS E during the AM peak hour. The mitigation measure would reduce the impact to a less-than-significant level. However, the City cannot ensure implementation of this mitigation measure because the intersection is under the jurisdiction of Caltrans. The City of Richmond, as lead agency, does not have jurisdiction to implement Measure TRF-4.SA4 and the mitigation would need to be approved and implemented by Caltrans. Therefore, the impact is conservatively considered significant and unavoidable because the City cannot ensure its implementation. No secondary significant impacts would result from implementation of this measure.	
Impact TRF-5.SA4: Signalized intersection operations at Meade Street/Regatta Boulevard/ Eastbound I-580 Ramps (#18) would worsen the already unacceptable LOS F conditions due to traffic generated by the Sub-Area 4 Project under 2040 Plus Sub-Area 4 Project conditions. *(Significant and Unavoidable*)	**Mitigation Measure TRF-5.SA4: Meade Street/Regatta Boulevard/Eastbound I-580 Ramps Intersection Signal and Channelization Improvements.** All applicants proposing the development of projects within Sub-Area 4 and meeting the trigger and funding criteria specified below shall be responsible for implementing the following improvement: a) Mitigation Measure TRF-4.SP, which would restripe westbound Meade Street to provide one exclusive right-turn lane and a shared left/through lane, upgrade the signal to actuated operations, convert the signal phasing for east and west intersection approaches from protected phasing to split-phasing, and coordinate signal timings with the adjacent Regatta Boulevard/Meade Street intersection and the at-grade railroad crossing. It is estimated that the mitigation measure at this intersection may be required when about 75 percent of the Sub-Area 4 Project is developed. At that time, the development project that triggers the impact shall either fully fund or implement the mitigation measure. Alternatively, the City of Richmond may implement this mitigation measure prior to or at the time the 75 percent buildout trigger occurs, the mitigation measure would not be required to be implemented by an individual project and the City may collect fair-share contributions from the projects in Sub-Area 4 to support implementation. After implementation of this measure, the intersection would continue to operate at LOS F during both AM and PM peak hour with less delay than under 2040 No Sub-Area 4 Project conditions. The mitigation measure would reduce the impact to a less-than-significant level. However, the City cannot ensure implementation of this mitigation measure because the intersection is under the jurisdiction of Caltrans. The City of Richmond, as lead agency, does not have jurisdiction to implement Measure TRF-5.SA4 and the mitigation would need to be approved and implemented by Caltrans. Therefore, the impact is conservatively considered significant and unavoidable because the City cannot ensure its implementation. No secondary significant impacts would result from implementation of this measure.	Significant and Unavoidable

TABLE 2-2 (Continued)
SUMMARY OF IMPACTS, MITIGATION MEASURES, AND RESIDUAL EFFECTS

Environmental Impact	Standard Conditions of Approval and Mitigation Measures	Level of Significance after application of Mitigation
Transportation and Circulation (SA4) – (cont.)		
Impact TRF-6.SA4: Unsignalized intersection operations at Regatta Boulevard/Meade Street (#19) would worsen the already unacceptable LOS F conditions due to traffic generated by the Sub-Area 4 Project and would warrant the installation of a traffic signal under 2040 Plus Sub-Area 4 Project conditions. *(Less Than Significant with Mitigation)*	**Mitigation Measure TRF-6.SA4: Regatta Boulevard/Meade Street Intersection Signalization.** All applicants proposing the development of projects within Sub-Area 4 and meeting the trigger and funding criteria specified below shall be responsible for implementing the following improvement: a) Mitigation Measure TRF-5.SP, which would install an actuated signal at the intersection with protected phasing on all approaches, and coordinate signal timings with the adjacent Meade Street/Regatta Boulevard/Eastbound I-580 Ramps intersection and the at-grade railroad crossing. It is estimated that the mitigation measure at this intersection may be required when about 85 percent of the Sub-Area 4 Project is developed. At that time, the development project that triggers the impact shall either fully fund or implement the mitigation measure. Alternatively, the City of Richmond may implement this mitigation measure prior to or at the time the 85 percent buildout trigger occurs, the mitigation measure would not be required to be implemented by an individual project and the City may collect fair-share contributions from the projects in Sub-Area 4 to support implementation. After implementation of this measure, the intersection would continue to operate at LOS F during both AM and PM peak hour with less delay than under 2040 No Sub-Area 4 Project conditions. The mitigation measure would reduce the impact to a less-than-significant level. No secondary significant impacts would result from implementation of this measure. **Mitigation Measure TRF-5.SP**	Less Than Significant
Impact TRF-7.SA4: Unsignalized intersection operations at Bayview Avenue/51st Street/Seaport Avenue/Eastbound I-580 Ramps (#25) would worsen the already unacceptable LOS F conditions due to traffic generated by the Sub-Area 4 Project and would warrant the installation of a traffic signal under 2040 Plus Sub-Area 4 Project conditions. (*Significant and Unavoidable)*	**Mitigation Measure TRF-7.SA4: Bayview Avenue/51st Street/Seaport Avenue/Eastbound I-580 Ramps Intersection Signalization and Channelization Improvements**. All applicants proposing the development of projects within Sub-Area 4 shall be responsible for implementing the following improvements: a) Mitigation Measure TRF-6.SP, which would install an actuated signal at the intersection with protected signal phasing on all approaches, and restripe southbound 51st Street to provide two left-turn lanes and a shared right/through lane. After implementation of this measure, the intersection would continue to operate at LOS F during both AM and PM peak hours. Therefore, the impact would remain significant and unavoidable. No other secondary significant impacts would result from implementation of this measure. **Mitigation Measure TRF-6.SP.**	Significant and Unavoidable

TABLE 2-2 (Continued)
SUMMARY OF IMPACTS, MITIGATION MEASURES, AND RESIDUAL EFFECTS

Environmental Impact	Standard Conditions of Approval and Mitigation Measures	Level of Significance after application of Mitigation
Transportation and Circulation (SA4) – (cont.)		
Impact TRF-8.SA4: Signalized intersection operations at Bayview Avenue/Carlson Boulevard (#26) would deteriorate to an unacceptable LOS due to traffic generated by the Sub-Area 4 Project under 2040 Plus Sub-Area 4 Project conditions. (*Significant and Unavoidable*)	**Mitigation Measure TRF-8.SA4: Bayview Avenue/Carlson Boulevard Intersection Signal Improvements.** All applicants proposing the development of projects within Sub-Area 4 and meeting the trigger and funding criteria specified below shall be responsible for implementing the following improvements: a) Mitigation Measure TRF-18.SP, item b, which would convert the signal phasing for the east and west intersection approaches from split-phasing to protected phasing and provide an overlap phase for the northbound right-turn movement. It is estimated that the mitigation measure at this intersection may be required when about 30 percent of the Sub-Area 4 Project is developed. At that time, the development project that triggers the impact shall either fully fund or implement the mitigation measure. Alternatively, the City of Richmond may implement this mitigation measure prior to or at the time the 30 percent buildout trigger occurs, the mitigation measure would not be required to be implemented by an individual project and the City may collect fair-share contributions from the projects in Sub-Area 4 to support implementation. After implementation of this measure, the intersection would continue to operate at LOS F during the AM peak hour and improve to LOS D during the PM peak hour. Traffic operations at the intersection can be further improved by providing additional automobile travel lanes, such as a third through lane on eastbound or westbound Carlson Boulevard. However, these modifications cannot be accommodated within the available automobile right-of-way and would require additional right-of-way, and/or loss of planned bicycle and/or pedestrian facilities, and are considered to be infeasible because they would be in conflict with the Specific Plan and General Plan goals to promote pedestrian, bicycle, and transit trips. Therefore, the impact would remain significant and unavoidable. No other secondary significant impacts would result from implementation of this measure. **Mitigation Measure TRF-18.SP.**	Significant and Unavoidable
Impact TRF-9.SA4: Signalized intersection operations at Carlson Boulevard/ Westbound I-80 Ramps (#28) would worsen the already unacceptable LOS F conditions due to traffic generated by the Sub-Area 4 Project under 2040 Plus Sub-Area 4 Project conditions. (*Significant and Unavoidable*)	**Mitigation Measure TRF-9.SA4: Carlson Boulevard/ Westbound I-80 Ramps Intersection Widening.** All applicants proposing the development of projects within Sub Area 4 and meeting the trigger and funding criteria specified below shall be responsible for implementing the following improvement: a) Mitigation Measure TRF-19.SP, item b, which would widen the southbound Westbound I-80 Off-Ramp to provide one right-turn lane and one shared through/left turn lane. It is estimated that the mitigation measure at this intersection may be required when about 80 percent of the Sub-Area 4 Project is developed. At that time, the development project that triggers the impact shall either fully fund or implement the mitigation measure. Alternatively, the City of Richmond may implement this mitigation measure	Significant and Unavoidable

TABLE 2-2 (Continued)
SUMMARY OF IMPACTS, MITIGATION MEASURES, AND RESIDUAL EFFECTS

Environmental Impact	Standard Conditions of Approval and Mitigation Measures	Level of Significance after application of Mitigation
Transportation and Circulation (SA4) – (cont.)		
Impact TRF-9.SA4 (cont.)	prior to or at the time the 80 percent buildout trigger occurs, the mitigation measure would not be required to be implemented by an individual project and the City may collect fair-share contributions from the projects in Sub-Area 4 to support implementation. After implementation of this measure, the intersection would continue to operate at LOS F during both AM and PM peak hours. Traffic operations at the intersection can be further improved by providing additional automobile travel lanes, such as second through lanes on eastbound and westbound Carlson Boulevard. However, these modifications cannot be accommodated within the available automobile right-of-way and would require additional right-of-way, and/or loss of planned bicycle and/or pedestrian facilities, and are considered to be infeasible because they would be in conflict with the Specific Plan and General Plan goals to promote pedestrian, bicycle, and transit trips. Furthermore, it is not certain that this mitigation measure could be implemented because the intersection is under the jurisdiction of Caltrans. The City of Richmond, as lead agency, does not have jurisdiction to implement Measure TRF-9.SA4 and the mitigation would need to be approved and implemented by Caltrans. Therefore, the impact would remain significant and unavoidable. No other secondary significant impacts would result from implementation of this measure. **Mitigation Measure TRF-19.SP**	
Impact TRF-10.SA4: Signalized intersection operations at Carlson Boulevard/ Eastbound I-80 Ramps (#29) would worsen the already unacceptable LOS F conditions due to traffic generated by the Sub-Area 4 Project under 2040 Plus Sub-Area 4 Project conditions. *(Significant and Unavoidable)*	None Feasible.	Significant and Unavoidable
Impact TRF-11.SA4: Traffic generated by the Sub-Area 4 Project would cause a significant impact on the following freeway segments under 2040 Plus Sub-Area 4 Project conditions because they would operate at LOS F and the Sub-Area 4 Project would increase the freeway segment volumes by more than five percent: Westbound I-580 between Central Avenue and I-80 during both AM and PM peak hours and Eastbound I-580 between I-80 and Central Avenue during the PM peak hour. (*Significant and Unavoidable)*	None Feasible.	Significant and Unavoidable
Impact TRF-12.SA4: The Sub-Area 4 Project would not substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment). (*Less Than Significant, No Mitigation Required*)	None Required.	Less Than Significant
Impact TRF-13.SA4: The Sub-Area 4 Project would not result in inadequate emergency access. (*Less Than Significant, No Mitigation Required)*	None Required.	Less Than Significant

TABLE 2-2 (Continued)
SUMMARY OF IMPACTS, MITIGATION MEASURES, AND RESIDUAL EFFECTS

Environmental Impact	Standard Conditions of Approval and Mitigation Measures	Level of Significance after application of Mitigation
Transportation and Circulation (SA4) – (cont.)		
Impact TRF-14.SA4: The proposed Sub-Area 4 Project would not conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities. *(Less Than Significant, No Mitigation Required)*	None Required.	Less Than Significant
Impact TRF-15.SA-4 and **TRF-30.SP:** Project construction would result in a substantial, though temporary, adverse effect on the circulation system during the project construction period. (*Less Than Significant, No Mitigation Required)*	None Required.	Less Than Significant
Utilities and Service Systems (SP)		
Impact UTL-1.SP: The Specific Plan would not require or result in the construction of new water treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects. (Criteria b.) *(Less Than Significant)*	None Required.	Less Than Significant
Impact UTL-2.SP: The water demand generated by development under the Specific Plan would not exceed water supplies available from existing entitlements and resources, or need expanded entitlements. (Criteria d.) (*Less Than Significant)*	None Required.	Less Than Significant
Impact UTL-3.SP: Adoption and development under the Specific Plan would not exceed the wastewater treatment requirements of the San Francisco Bay Regional Water Quality Control Board, but could result in a determination that new or expanded wastewater treatment facilities would be required. (Criteria a., e.) *(Less Than Significant with Mitigation)*	**Mitigation Measure UTL-3a.SP: Confirmation of Sanitary Sewer System Capacity.** For each project developed within the Plan Area, the project applicant shall ensure that a qualified civil engineer confirm the capacity of the surrounding sanitary sewer system to accommodate the proposed project, prior to the issuance of final certificate of occupancy or equivalent permit to operate or occupy. As part of project plan review, the project applicant shall provide a plan to the City that shows how any necessary stormwater and sanitary sewer infrastructure improvements would be implemented to accommodate the proposed project, and commit to funding improvements that are not otherwise funded through City programs, and/or to implementing the improvements, which may include onsite treatment of stormwater to reduce demand on the sanitary sewer system due to Infiltration/Inflow. **Mitigation Measure UTL-3b.SP: Determine Upgrades to Water Pollution Control Plant.** For each project developed within the Plan Area, the City Planning and Building Division shall review the sanitary sewer system capacity study prepared per Mitigation Measure UTL-3a.SP, and additionally confirm whether improvements planned for the Water Pollution Control Plant (WPCP) in the most current Wastewater Treatment Plant Facility Plan are required to be operational prior to project operation, and shall ensure that any required improvements are completed prior to issuance of a building permit for the project. The City shall also identify a fair share funding mechanism to support the implementation of the identified required improvements, and shall establish a program to collect funds and guarantee they are used for these improvements.	Less Than Significant

TABLE 2-2 (Continued)
SUMMARY OF IMPACTS, MITIGATION MEASURES, AND RESIDUAL EFFECTS

Environmental Impact	Standard Conditions of Approval and Mitigation Measures	Level of Significance after application of Mitigation
Utilities and Service Systems (SP) – (cont.)		
Impact UTL-4.SP: Development under the Specific Plan could result in a determination that new or expanded wastewater treatment facilities would be required. (Criterion b.) (Less than Significant with Mitigation)	**Mitigation Measure UTL-4.SP: ICI Pump Station Upgrades.** For any development proposed within the Plan Area, prior to the recordation of a Final Map, the issuance of a grading permit, the issuance of a building permit, or utility extension approval, whichever is sooner, the project developer shall submit written verification from the City's Utility Planning Division (or Engineer) that the ICI Pump Station is adequately improved to provide service to the proposed development. Alternatively, project applicants may construct equivalent improvements to ensure the facility's function to the satisfaction of the City Public Works Department.	Less Than Significant
Impact UTL-4.SP: Development under the Specific Plan would not require or result in construction of new stormwater drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects. (Criterion c.) (*Less Than Significant, No Mitigation Required)*	None Required.	Less Than Significant
Impact UTL-5.SP: Development under the Specific Plan could violate applicable federal, state, and local statutes and regulations related to solid waste; or generate solid waste that would exceed the permitted capacity of the landfills serving the area. (Criteria f., g.) *(Less than Significant, No Mitigation Required)*	None Required.	Less Than Significant
Utilities and Service Systems (SA4)		
Impact UTL-1.SA4: The Sub-Area 4 Project would not require or result in the construction of new water treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects. (Criteria b.) (*Less than Significant, No Mitigation Required*)	None Required.	Less Than Significant
Impact UTL-2.SA4: The water demand generated by development under the Sub-Area 4 Project would not exceed water supplies available from existing entitlements and resources, or need expanded entitlements (Criteria d.). (*Less than Significant, No Mitigation Required*)	None Required.	Less Than Significant
Impact UTL-3.SA4: Development of the Sub-Area 4 Project could exceed the wastewater treatment requirements of the San Francisco Regional Water Quality Control Board or result in a determination that new or expanded wastewater treatment facilities would be required (Criteria a., b., and e.). (*Less than Significant with Mitigation)*	**Mitigation Measure UTL-3a.SP, UTL-3b.SP,** and **UTL-4.SP.**	Less than Significant
Impact UTL-4.SA4: Development of the Sub-Area 4 Project would require or result in construction of new onsite stormwater drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects. (Criterion c.) (*Less than Significant, No Mitigation* Required)	None Required.	Less Than Significant

TABLE 2-2 (Continued)
SUMMARY OF IMPACTS, MITIGATION MEASURES, AND RESIDUAL EFFECTS

Environmental Impact	Standard Conditions of Approval and Mitigation Measures	Level of Significance after application of Mitigation
Utilities and Service Systems (SA4) – (cont.)		
Impact UTL-5.SA4: Development of the Sub-Area 4 Project would not violate applicable federal, state, and local statutes and regulations related to solid waste; or generate solid waste that would exceed the permitted capacity of the landfills serving the area. (Criteria g. and h.) (*Less than Significant, No Mitigation Required)*	None Required.	Less Than Significant
Utilities (CU)		
Impact C-UTL-1.SP: Construction activity and operations for the development under the Specific Plan in combination with past, present, existing, approved, pending, and reasonably foreseeable future projects in the vicinity of the Plan Area, would not contribute considerably to cumulative impacts to utilities and service systems. *(Less Than Significant with Mitigation)*	**Mitigation Measure UTL-3a.SP, UTL-3b.SP,** and **UTL-4.SP.**	Less Than Significant
Impact C-UTL-1.SA4: Construction activity and operations for the development under the Sub-Area 4 Project in combination with past, present, existing, approved, pending, and reasonably foreseeable future projects in the vicinity of the Plan Area, would not contribute considerably to cumulative impacts to utilities and service systems. *(Less Than Significant with Mitigation)*	**Mitigation Measure UTL-3a.SP, UTL-3b.SP,** and **UTL-4.SP.**	Less Than Significant
Energy (SP)		
Impact ENE-1.SP: Development under the Specific Plan would not result in wasteful, inefficient and unnecessary use of energy and would not require substantial additional capacity. (Criteria a. and b.) (*Less than Significant, No Mitigation Required)*	None Required.	Less Than Significant
Energy (SP)		
Impact ENE-1.SA4: Construction and operation of the Sub-Area 4 Project would not result in wasteful, inefficient and unnecessary use of energy and the Sub-Area 4 Project would not require substantial additional capacity. (Criterion a. and b.) *(Less than Significant)*	None Required.	Less Than Significant

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CHAPTER 3
Project Description

3.1 Introduction

This chapter describes the Specific Plan and the Sub-Area 4 Project that are evaluated in this EIR, pursuant to CEQA *Guidelines* Section 15124(c).[1] This chapter specifically describes the following existing conditions and proposed characteristics of both the Specific Plan and the Project: location, boundaries, and characteristics of the Specific Plan Area (Plan Area) and the Sub-Area 4 Project site; project objectives of both the Specific Plan and the Project; proposed land uses and development characteristics; and circulation and public realm elements. For the Specific Plan, this chapter describes the guiding principles, vision, and use and development standards, particularly those relevant to the physical environmental and existing General Plan policies.

This chapter describes the Specific Plan in its entirety, followed by a description of the Sub-Area 4 Project, a specific development project located within a portion of Specific Plan Sub-Area 4. The Sub-Area 4 Project description starts in Section 3.10.

The end of this chapter describes the jurisdictional approvals required to approve and implement development that could occur under the Specific Plan, including the Sub-Area 4 Project.

3.1.1 Specificity

As introduced in Chapter 1, *Introduction*, this EIR presents reasonable assumptions about the overall types of activities envisioned to occur under the Specific Plan, as described in this chapter and in Chapter 4, *Environmental Setting, Impacts, and Mitigation Measures*. The descriptions of the activities proposed or envisioned are suitable for the program-level analysis of the Specific Plan and the project-level analysis of the Sub-Area 4 Project. Some of the proposed improvements, actions, and approaches described in the Specific Plan and this EIR include planning and design for sea level rise adaptation infrastructure, and development of open spaces and parks/recreation fields. The analysis in this EIR considers the potential environmental effects of these types of Specific Plan elements commensurate with the conceptual descriptions and/or illustrations provided. When detailed objectives, designs, and engineering for such improvements, actions, and approaches described in the Specific Plan are proposed, the City, in cooperation with

[1] CEQA *Guidelines* Section 15124(c) requires that the EIR project description generally address the project's economic characteristics, among other physical and technical aspects. Economic factors of implementing the Specific Plan are not analyzed in this EIR, as they are not considered part of the physical environment.

other relevant agencies, shall conduct the required review and analyses for each through processes separate from and subsequent to the completion and certification of this EIR and the adoption of the proposed Specific Plan.[2]

3.1.2 Legal Context for the Specific Plan

California State law authorizes cities with adopted general plans to prepare and adopt specific plans (in accordance with Government Code Section 65450 *et seq*.), if so directed by their legislative bodies, to use as tool for the systematic implementation of the general plan and to provide a more specific planning framework for individual development proposals. A specific plan normally combines land use regulations, proposed capital improvements, development standards, design guidelines, and other regulations or policies tailored to meet the needs of a specific planning area.

The specific plan must, by law, include a description of the following:

1. The distribution, location, and extent of the uses of land, including open space, within the area covered by the plan.
2. The proposed distribution, location, extent and intensity of major components of public and private transportation, sewage, water, drainage, solid waste disposal, energy, and other essential facilities proposed to be located within the area covered by the plan and needed to support the land uses described in the plan.
3. Standards and criteria by which development will proceed, and standards for the conservation, development, and utilization of natural resources, where applicable.
4. A program of implementation measures including regulations, programs, public works projects, and financing measures necessary to carry out paragraphs (1), (2), and (3).

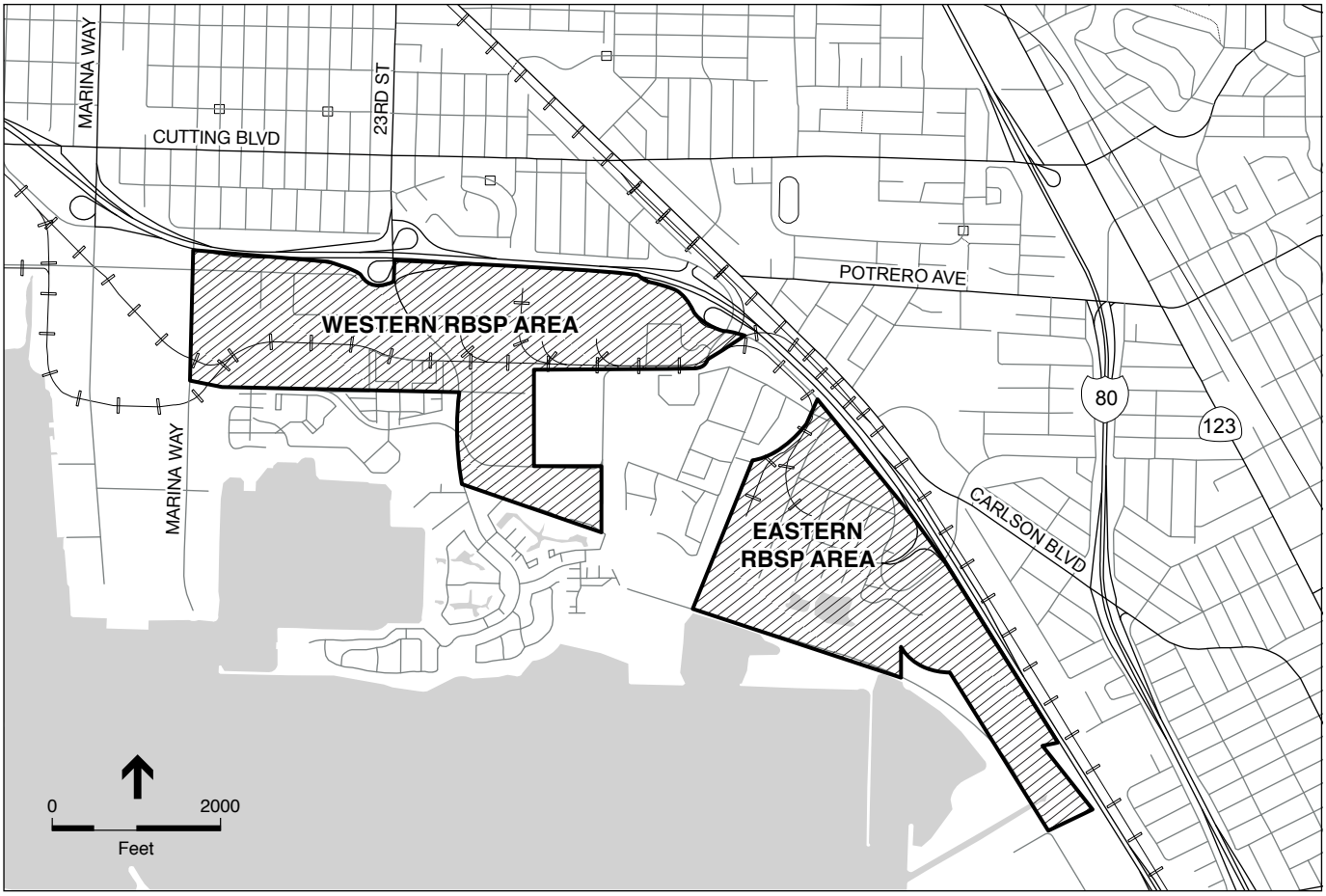
This chapter of the EIR summarizes the above components from the draft proposed Specific Plan document.

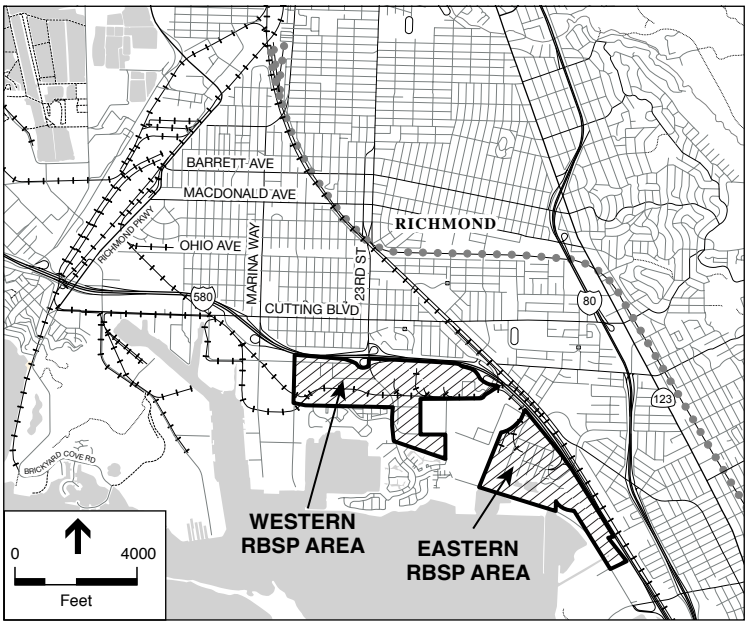
3.2 Specific Plan Location and Context

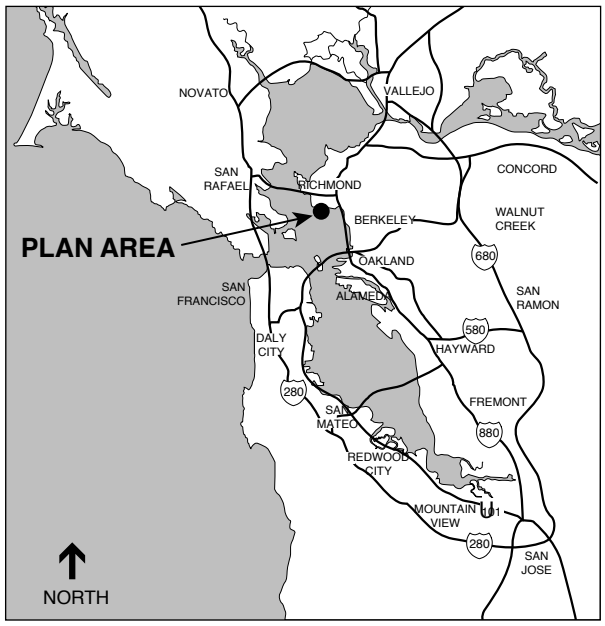
3.2.1 Regional and Local Setting

The City of Richmond is located in western Contra Costa County, adjacent to the San Francisco Bay, as shown in **Figure 3-1**. It is bordered by the cities of San Pablo, Albany, El Cerrito and Pinole; Interstate 80 (I-80) runs along the eastern side of the city. Richmond's boundaries encompass approximately about 52 square miles, comprising 30 square miles of land and 22 square miles of water.

[2] The Specific Plan includes an implementation strategy (in Specific Plan Chapter 6), which summarizes specific actions identified in the Specific Plan by topical area and provides the potential phasing/timeframe for each action.







SOURCE: ESA

Richmond Bay Specific Plan EIR . 120834

Figure 3-1
Location and Regional Context

3.2.2 Plan Area

The Plan Area is approximately 430 acres located on the south side of I-580, with the San Francisco Bay to the south. It is defined by two "change areas" in the General Plan and adjacent shoreline open space. The General Plan identifies 16 Change Areas, or parts of the city that are targeted for more substantial change in land uses and development character. The Plan Area is defined largely by the Regatta/Marina Bay Change Area (CA-15), and the Southern Gateway Change Area (CA-16). These change areas form the majority, but not all, of the Plan Area. Change Area 15 encompasses all of Sub-Areas 1, 2, and 3, with the exception of a portion of Regatta Boulevard along the southern part of Sub-Area 3. Change Area 16 encompasses most of Sub-Area 4, but does not include the portion of Sub-Area 4 southeast of Bayview Avenue.

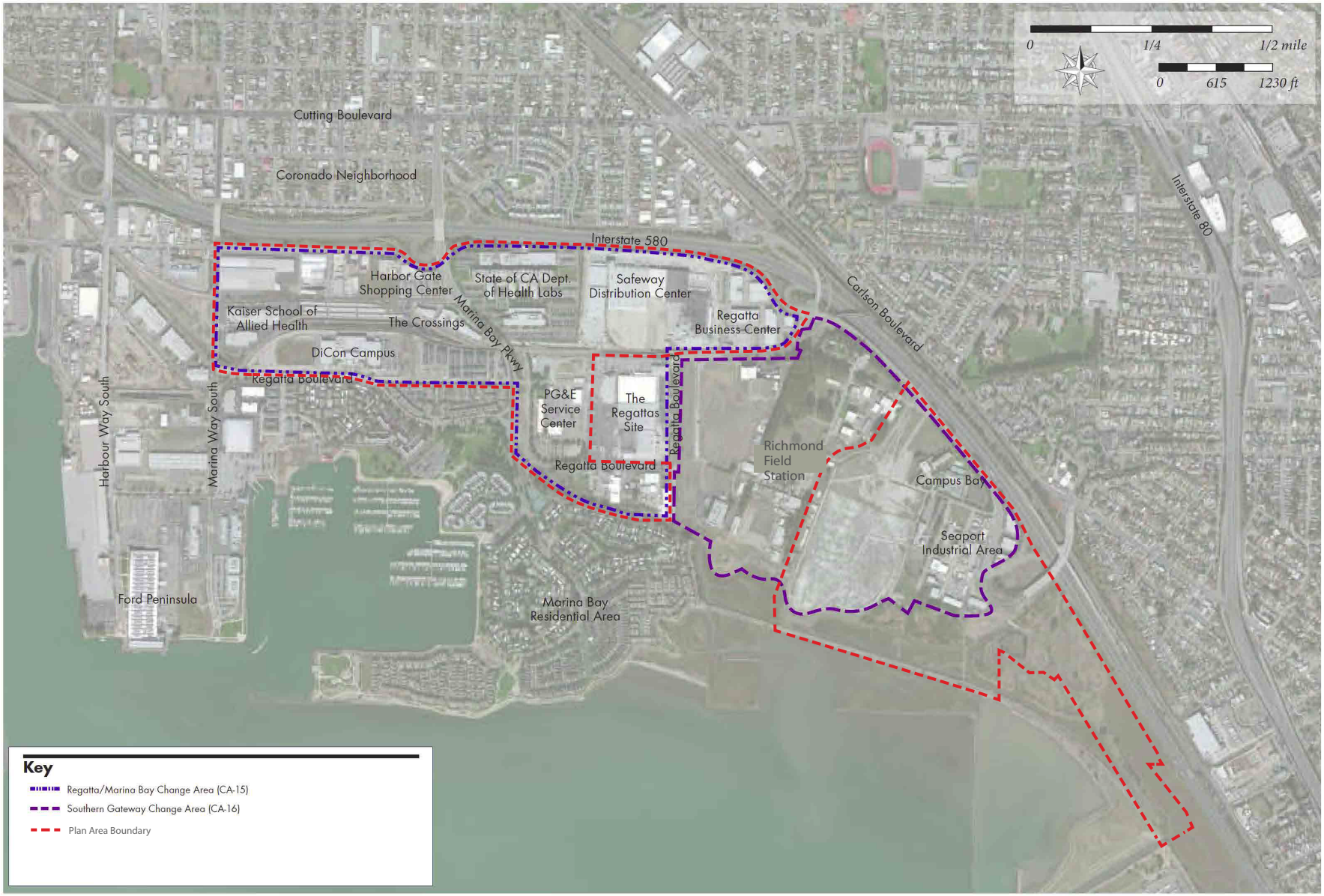
As shown in **Figure 3-2**, the Regatta/Marina Bay Change Area portion of the Plan Area is generally bounded by Regatta Boulevard to the south, I-580 to the north, Marina Way South to the west and I-580 and Regatta Boulevard to the east. This area is presently characterized by large-scale office, light industrial and some commercial development. This change area is envisioned as part of a new, transit-oriented, mixed-use community node with access to I-580 to the north and proximity to the waterfront and proposed ferry terminal to the south (City of Richmond, 2012).

The Southern Gateway Change Area portion of the Plan Area is located to the south and west of I-580 and east of 32nd Street. This area includes the Campus Bay Business Park and the Harbor Front Tract. The Campus Bay Business Park includes approximately 89 acres of vacant brownfield sites previously used by chemical manufacturing companies.

The 136-acre Richmond Field Station site that had been planned for the University of California (UC) Berkeley Global Campus at Richmond Bay is adjacent to the Campus Bay Business Park but not located within the Plan Area. The Richmond Field Station site includes existing research facilities and undeveloped land supporting natural resource conservation. While the Chancellor of the University of California has announced that UC Berkeley is indefinitely suspending plans to develop the Berkeley Global Campus, UC Berkeley has affirmed its commitment to continue to explore options for this site that reflect new priorities for the campus around enrollment growth and housing, including, potentially, finding an anchor tenant for the site.

This change area is envisioned as a revitalized area that would include high-intensity light industrial and commercial uses anchored by large-scale university and research uses, as well as ecologically-sensitive areas, Bay views, and connections to I-580, I-80, and the Bay Trail (City of Richmond, 2012).

As a policy matter, the General Plan identifies that redevelopment of the Southern Gateway Change Area should minimize the impacts of development on the shoreline and provide a mix of residential and recreation uses. Recognizing the changing nature of this area, the General Plan calls for the development of a specific plan to merge existing and proposed development into a mixed-use community including education, research and development, light industrial, residential, and other sensitive uses. The General Plan also identifies that the specific plan should maintain and improve public access to the shoreline including a mix of uses along the shoreline to activate the area throughout the day.



SOURCE: City of Richmond, 2015

Figure 3-2

Land Uses Within and Surrounding Plan Area

Existing Land Uses

The Plan Area boundary and existing land uses are shown in Figure 3-2. The Plan Area currently encompasses varying levels of industrial, office, open space and recreational uses.

Much of the Plan Area is made up of former tidal wetlands that were converted to upland uses. Some of the Plan Area consists of open water and wetlands that receive tidal inundation, especially in Sub-Area 4.

As discussed earlier, parts of the Plan Area are within CA-15 (Regatta/Marina Bay), and CA-16 (Southern Gateway). The western part of the Plan Area (part of which is within CA-15) is approximately 240 acres in size; the eastern part of the Plan Area (part of which is within CA-16) is approximately 190 acres in size. The Plan Area also comprises four distinct sub-areas, including Sub-Areas 1, 2 and 3 within the western part of the Plan Area, and Sub-Area 4 within the eastern part of the Plan Area. Consistent with **Table 3-1**, Sub-Area 1 is approximately 91 acres in size; Sub-Area 2 is approximately 45 acres in size; Sub-Area 3 is approximately 60 acres in size; and Sub-Area 4 is approximately 170 acres in size.

TABLE 3-1
SPECIFIC PLAN SUB-AREAS

	Sub-Area 1	Sub-Area 2	Sub-Area 3	Sub-Area 4	Total
Applicable General Plan Change Area	CA-15	CA-15	CA-15	CA-16	NA
Approximate Developable Area (Acres)	91	45	60	170	370
Approximate Total Area (Acres)	***240***			***190***	**430**

Change Area 15: Regatta/Marina Bay

The Regatta/Marina Bay Change Area (Figure 3-2; CA-15) is located south of I-580 and north of Regatta Boulevard. Three of the Specific Plan Sub-Areas are included in this change area. Sub-Area 1 is bounded by Marina Way South on the west, I-580 to the north, Marina Bay Parkway on the east and Regatta Boulevard to the south. Sub-Area 1 includes medium-intensity mixed uses, including light industrial, large-scale office, and commercial uses.

Sub-Area 2 is bounded by Marina Bay Parkway on the west, the Richmond Field Station on the east, the Burlington Northern and Santa Fe (BNSF) Railway corridor to the north, and Meeker Slough to the south. This sub-area comprises light industrial and some commercial development.

Sub-Area 3 is located north of the Safeway rail switching yard, and is bounded to the north by I-580, to the south by the Richmond Field Station and the Regatta Business Park, and to the west by the California Department of Health Services facility. The site currently hosts the Safeway/Dreisbach distribution facility west of South 34th Street as well as the Blue Apron distribution site.

Change Area 16: Southern Gateway

The Southern Gateway area (Figure 3-2; CA-16) is located south of I-580 and east of Regatta Boulevard. The western part of Sub-Area 4 is located within the Southern Gateway area, and generally comprises several large-scale parcels with established industrial and office uses, including the Campus Bay Business Park and the Harbor Front Tract.

Existing General Plan Designations

The General Plan identifies the following existing land use designations in the Plan Area:

- Business/Light Industrial
- Medium-Intensity-Mixed-Use (Commercial Emphasis)
- Open Space

The actions and policies identified in the General Plan (e.g., Policy LU4.1, Action LU3.E, Housing Element), however, envision substantial redevelopment of the area to include mixed-use community uses including education, research and development, light industrial, residential and other sensitive uses. The intent and description of each of these land use designations are presented in Section 4.9, *Land Use and Planning,* and the map delineating these land use designations is presented as Figure 4.9-1, both in Chapter 4 of this EIR.

Existing Zoning

The Plan Area includes the following existing zoning designations:

- C-2: General Commercial
- M-1: Research and Manufacturing
- M-2: Light Industrial
- M-3: Heavy Industrial
- PA: Planned Area District
- CRR: Community and Regional Recreational District

These zoning designations vary in their consistency with the General Plan designations within the Plan Area. In some cases, the zoning and General Plan designations are not fully consistent. It is intended that the proposed Specific Plan will reconcile inconsistencies that currently exist between the zoning and General Plan land use designations within the Plan Area. The existing zoning map for the Plan Area is presented as Figure 4.9-2 in Chapter 4 of this EIR.

Knox Freeway/Cutting Boulevard Specific Plan

The Plan Area was initially studied as part of the Knox Freeway/Cutting Boulevard Specific Plan, which was adopted in 1991 to guide development across an 1,895- acre portion of South Richmond. Upon adoption of the Specific Plan, the Plan's policies and standards would apply to parcels

within the Plan Area and supersede those found in the Knox Freeway/Cutting Boulevard Specific Plan, and the City will formally repeal the Knox Freeway/Cutting Boulevard Specific Plan.

Existing Access and Circulation

Primary regional auto access to the Plan Area is provided by I-580, via the Bayview Avenue Interchange, South 51st Street, and Meade Street; via the Regatta Boulevard Interchange and Regatta Boulevard; and via the Marina Bay Parkway Interchange and Marina Bay Parkway.

A portion of the Bay Trail extends along the shoreline south of the Plan Area, and forms the southern land-based boundary of Sub-Area 4. The Alameda Contra Costa Transit District (AC Transit) operates three lines in and around the Plan Area, and shuttles connect riders from within the Plan Area to the Richmond and El Cerrito Del Norte BART stations. The San Francisco Bay Area Water Emergency Transportation Authority plans to construct the new Richmond Ferry Terminal southwest of the Plan Area, on the Ford Peninsula.

Barriers and discontinuous street networks impact existing access and circulation for vehicles, bicyclists, and pedestrians within the Plan Area. Active railroad lines bisect Sub-Area 1 from east to west, and border Sub-Area 2 to the north and Sub-Area 3 to the south, limiting north-south travel throughout the Plan Area for vehicles as well as other transportation modes. Pedestrian, bicycle, and accessible access and infrastructure are limited in the Plan Area.

Existing Utility Infrastructure

Potable Water and Recycled Water

The Plan Area is currently served by four water mains, each 12-inch diameter steel, crossing I-580 and entering the Plan Area at Marina Way South, Marina Bay Parkway, Regatta Boulevard, and South 47th Street (NCE, 2015). A fifth main enters the Plan Area from the west on Regatta Boulevard at Marina Way South, and another crosses I-580 and enters the Plan Area at South 19th Ave. Recycled water is not currently available for use within the Plan Area, and there are currently no plans to develop new sources of recycled water for the Plan Area. The closest available recycled water to the Plan Area is approximately 1.5 miles from the area.

Sanitary Sewer

The City's existing sanitary sewage collection system and wastewater treatment plant (WWTP) have adequate capacity during dry weather to accommodate existing sanitary sewage generated from within the Plan Area (NCE, 2015). However, in the event of heavy rain, system facilities south of I-580 would be heavily surcharged and could not accept additional flow from the Plan Area. In 2015, the City completed a wet weather diversion structure to address this issue.

The Plan Area includes a gravity sewer flowing to the west along Wright Avenue. Two gravity sewers flowing to the west serve the center of the Plan Area, including the Campus Bay/Seaport industrial district and existing users along the northern and southern edges of the Plan Area. Another gravity sewer flowing north collects the remaining wastewater from the western edge of

the Plan Area, along Marina Way South. Wastewater is conveyed to the ICI Pump Station located at Seaport Avenue and 49th Street and is then pumped through a force main and gravity trunk main at a connection near the intersection of Meade Street and South 47th Street. A gravity sewer collects wastewater from a residential community (the Anchorage) inside the Plan Area, and then joins the gravity sewer flowing north along South 27th Street at Pierson Avenue. Wastewater flows to and is treated at the WWTP, located at 601 Canal Boulevard.

Stormwater Facilities

The Plan Area is located within five existing drainage areas (sub-watersheds within the Wildcat Creek Watershed) that discharge directly or indirectly into the San Francisco Bay (NCE, 2015). The Richmond Harbor drainage basin collects stormwater runoff from the northwest corner of the Plan Area. The Richmond Marina drainage basin collects stormwater runoff from the south portion of the Plan Area. The majority of the stormwater runoff within the Plan Area collects within the Meeker Creek drainage basin, and drains into Meeker Slough, which flows into the Bay. Within the Baxter Creek drainage basin, stormwater collects from existing developments along the eastern edge of the Plan Area. Stormwater within the Plan Area is serviced by a combination of overland flow, gravity mains, force mains, and pump stations. Pumping is required because of tidal action and low elevation.

The Plan Area is located adjacent to the San Francisco Bay and includes low-lying undeveloped lands to the south and east that are prone to seasonal flooding. The majority of the Plan Area is located outside of the FEMA-designated 100-year and 500-year floodplains; however, some parts of the Plan Area are located within the 100-year flood zone, and the proximity of these areas to creeks, sloughs, and the San Francisco Bay makes them vulnerable to both floodwater and anticipated sea level rise. Areas designated by FEMA as Zone VE within the Plan Area are subject to inundation by the 100-year flood and are also subject to hazards related to wave action, due to proximity to the Bay. Localized flooding in the Plan Area can occur; however, existing pump stations have sufficient capacity for a 100-year storm event, and existing stormwater facilities have sufficient capacity for a 10-year storm event.

Dry Utilities

Natural gas is supplied to the Plan Area by underground, 12-kV feeder lines crossing I-580 at Marina Way South, Marina Bay Parkway, Regatta Boulevard, and South 47th street. AT&T and Comcast provide broadband service to the City. Both broadband networks comprise copper and fiber-optic cable and are located both overhead and underground throughout the Plan Area.

A more detailed description of utilities facilities in and around the Plan Area is presented in Section 4.13, *Utilities and Service Systems*, in Chapter 4 of this EIR.

Tidelands Trust / State Lands

Part of the Plan Area may consist of submerged tidelands, including land designated as “public trust lands” pursuant to the Tidelands Trust doctrine of the State of California. Tidelands Trust

lands legislatively granted to the City of Richmond are subject to the public trust, and are managed "in trust" by the City.

Existing Land Uses Surrounding the Plan Area

Figure 3-2 shows existing land uses surrounding the Plan Area. Overall, local land uses include a mix of light and heavy industrial, commercial, residential, and open space uses. I-580, a four-lane freeway in the vicinity, is located directly north of the Plan Area. North of I-580, the predominant land use is low/medium density residential neighborhoods with some institutional uses, including schools and churches.

West of the Plan Area, across Marina Way South, are industrial/office uses, including the Ford Assembly Plant, and Port of Richmond facilities. Additionally, the Rosie the Riveter World War II Home Front National Historical Park is located west of Marina Way South.

Residential uses (both detached single family homes and townhomes) are located south of the Plan Area, near or on the southern shoreline. Point Isabel, which includes open space (Point Isabel Regional Shoreline) and a Costco Wholesale club retail use, is located south of Sub-Area 4. The Richmond Field Station site is located between Sub-Area 4, to the east, and Sub-Areas 2 and 3 to the west. The approximately 134-acre site comprises two UC-owned parcels; 110 acres divided into 97 acres of uplands and 13 acres of the Western Stege Marsh, and a 24-acre property along Regatta Boulevard.

An active, BNSF Railway corridor runs through the Plan Area and parallel to the eastern boundary of Sub Area-4 and I-580. The rail corridor connects the Port of Richmond to areas west of the Plan Area.

The City of Albany is located less than a mile south of the southern boundary of Sub-Area 4. The City of El Cerrito is located east of Sub-Area 4 and I-580.

3.3 Plan Purpose and Overview

As part of its implementation of the General Plan, and in accordance with General Plan Action LU3.E (which calls for the development of a specific plan in the Southern Gateway Change Area to merge existing and proposed development into a mixed-use community including education, research and development, light industrial, residential and other sensitive uses) and General Plan Land Use Policy LU4.1 (which calls for a mix of residential and recreational uses in the Southern Gateway change area), the City has prepared the Specific Plan for an area within a part of the city known as the Southern Shoreline (the Plan Area). The Specific Plan documents the long-term vision, and proposes detailed recommendations, for the Plan Area, and its planning framework and objectives would regulate development-related decisions in the Plan Area until the planning horizon year of 2045 and beyond.

The development standards within the Specific Plan would establish the zoning regulations for the Plan Area. The Specific Plan is also designed to be consistent with and implement the South

Richmond Priority Development Area (PDA) established under the San Francisco Bay Area's Sustainable Communities Strategy, "Plan Bay Area." Plan Bay Area was adopted by the San Francisco Bay Area Metropolitan Transportation Commission (MTC) and Association of Bay Area Governments (ABAG) pursuant to Senate Bill 375 to help achieve region-wide greenhouse gas reduction targets by locating new population centers near jobs and mass transit. Further, the Specific Plan, as described in the General Plan Housing Element, is designed to provide the land use plan and development standards for a mix of uses, including a variety of housing types and intensities that will provide a balance of jobs and housing. As anticipated in the Housing Element, overall, the Specific Plan provides for over 4,000 units of housing at complete build out.

The community- and stakeholder-driven Specific Plan process included review of the industrial history of the Plan Area, plans for the adjacent Richmond Field Station, and existing uses and infrastructure within the Plan Area. The resulting Specific Plan focuses on opportunities for the City to capitalize on the planned Berkeley Global Campus/Richmond Field Station and leverage related economic investment and intensification, as well as opportunities to benefit from planned ferry service adjacent to the Plan Area and other area assets, with the goal of creating a sustainable shoreline district over time that provides jobs and housing opportunities, improved transportation and public transit options, and access to entertainment and recreation.

3.3.1 Specific Plan Characteristics

Consistent with California State law (described in 3.1.2), the Specific Plan includes the following chapters:

Chapter 1: Introduction – This chapter of the Specific Plan provides an overview of the Specific Plan, a summary of the Specific Plan objectives, and a description of the planning process and information regarding this Specific Plan's relationship to other local and regional planning initiatives.

Chapter 2: Background and Setting – Chapter 2 gives an historic context for the Plan Area, and categorizes the challenges and opportunities presented by existing conditions.

Chapter 3: Plan Area Vision – Chapter 3 documents the vision for the Plan Area created through the community participation process. It includes a discussion of the framework and open space principles guiding the design, descriptions of the planned neighborhoods, and details of the Recommended Land Use Map with the development program and a phasing strategy.

Chapter 4: Development Standards – Chapter 4 describes physical design parameters guiding future development within the Plan Area, including the layout and design of streets and public spaces, the development standards shaping new blocks and buildings, and the location and extent of land uses. This chapter also describes the Specific Plan's Form-Based Code, which includes standards organized to reinforce the development of the Richmond Bay as a walkable, sustainable, mixed-use environment. The Code emphasizes the physical form and character of spaces, with a lesser emphasis on discrete land uses, while providing guidance for the mixing of potentially incompatible land uses. The Code supersedes the City's Zoning Ordinance for the Plan Area.

Chapter 5: Infrastructure – Chapter 5 provides a summary of infrastructure systems and public services necessary to support the development described in the Specific Plan in various phases of implementation, including water supply and distribution, wastewater collection and treatment, storm drainage, telecommunications, solid waste disposal, energy, and shoreline protection, as well as estimated costs for such improvements.

Chapter 6: Implementation and Financing – Chapter 6 provides guidance on the implementation of the Specific Plan, with financing strategies and potential funding sources identified for infrastructure improvements described in Chapter 5.

The Specific Plan also includes Chapter 7 (Appendix), which includes definitions and other background and supporting information.

3.3.2 Specific Plan Guiding Design Principles

The Specific Plan is organized around four guiding design principles:

- **Principle 1: Organize Complete Neighborhoods with Neighborhood Centers and 5-minute Walksheds.** The Specific Plan emphasizes the creation of complete neighborhoods, rather than individual development projects. Complete neighborhoods would be designed around locating services and amenities in close proximity to homes and workplaces.
- **Principle 2: Strengthen North-South and East-West Connections for Improved and Enhanced Connectivity.** A central focus of the Specific Plan is to establish and strengthen connections between the Plan Area and Central Richmond, and the Plan Area and public transit nodes such as the El Cerrito Del Norte Bay Area Rapid Transit (BART) train station and the planned Richmond Ferry Terminal.
- **Principle 3: Develop and Maintain a "Town-Gown" Relationship with the Berkeley Global Campus/Richmond Field Station.** The Specific Plan emphasizes the importance of physical connections and complementary interfaces between the Richmond Field Station and the parts of the Plan Area that are adjacent to the campus, and the encouragement of synergy between the private sector and campus and sharing of public amenities (such as parking and open space). The Specific Plan's inclusion of significant housing opportunities is designed to help alleviate anticipated housing demand that if not met through new housing would lead to increasing housing prices and rent increases.
- **Principle 4: Encourage Flexibility that Accommodates Existing Businesses and Supports Incremental Development Patterns.** Because market conditions for land within the Plan Area are anticipated to change over the long term, the Specific Plan provides a flexible physical framework for new development, including a street grid of large blocks that may be divided into smaller blocks.

3.3.3 Specific Plan Sub-Areas

As discussed above and in keeping with Principle 1 of the Specific Plan, four potential neighborhoods within the Plan Area were identified, as distinct sub-areas. With input from stakeholders and the community design process, the future physical form of each sub-area was designed around the idea that a flexible mix of uses could be developed, and that services and amenities would be located within walking distance of homes and workplaces. Each sub-area is shown in illustrative form on **Figure 3-3**. Table 3-1 describes each of the four sub-areas.



SOURCE: City of Richmond, 2015

Richmond Bay Specific Plan EIR . 120834

Figure 3-3
Specific Plan Illustrative Plan

3.3.4 Specific Plan Transect Zones

The standards for new development within the Plan Area include the use of a form-based code, which uses physical form, rather than a separation of uses, as an organizing principle. Form-based codes include regulations and standards that are used to encourage development that is more compact, walkable, and mixed-use, facilitating reduced personal vehicle use. The Specific Plan would supersede the City's zoning designations for the Plan Area.

The Specific Plan identifies and describes three primary transect zones and two additional sub-zones, as well as a Special Planning Area, as described in **Table 3-2** and shown in **Figure 3-4**.

3.4 Specific Plan CEQA Objectives

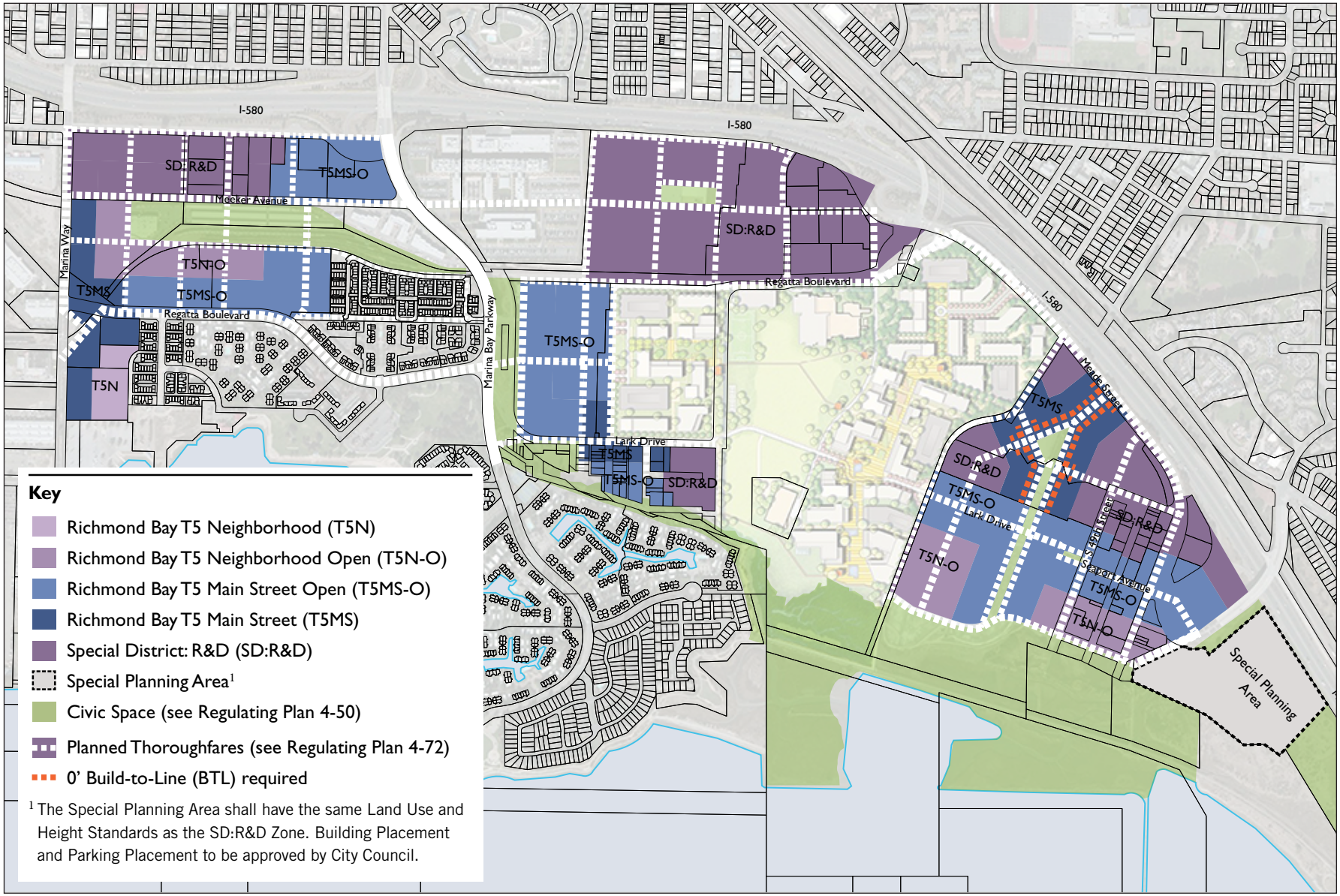
The CEQA project objectives of the Specific Plan are as follows:

1. **Revitalize South Shoreline Area.** Provide a framework for planning that will facilitate investment and productive evolution of underutilized and underserved land in the South Shoreline area, and redevelopment of brownfield sites consistent with General Plan Policy LU6.1.
2. **Develop Flexible Range of Land Uses.** Develop a Specific Plan that provides a flexible range of uses that could be developed to appropriately address future development of the Richmond Field Station site and that may include uses that will help UC manage enrollment growth and housing needs, and/or accommodate an anchor tenant.
3. **Create Complete Neighborhoods.** Facilitate the creation of complete neighborhoods with pedestrian and bicycle networks, accessible to transit (including the new Richmond Ferry Terminal) and regional transportation networks, and connected via the transportation network to other parts of the City.
4. **Develop Complementary Uses Adjacent to the Richmond Field Station.** Provide for development of the Plan Area that is complementary with the nature of development of the Richmond Field Station as described in the LRDP, as amended over time (transit- and alternative transportation-friendly, to accommodate visitors and workers).
5. **Create and Enhance Access to Shoreline.** Provide new and enhance existing access to waterfront open space for public use, including public recreation and parks areas and shoreline connections through the Plan Area.
6. **Generate Tax Revenues and Employment Opportunities.** Generate tax revenues and employment opportunities for the City of Richmond and the region.
7. **Reduce Greenhouse Gas Emissions.** Contribute to regional efforts to reduce greenhouse gas emission through transit-oriented development in the South Richmond PDA as provided by Plan Bay Area.

TABLE 3-2
RICHMOND BAY TRANSECT ZONES AND SPECIAL PLANNING AREA

	T5N(RB)	T5N-O(RB)	T5MS(RB)	T5MS-O(RB)	SD:R&D	Special Planning Area
Name of Zone	*Richmond Bay T5 Neighborhood*	*Richmond Bay T5-Open Neighborhood*	*Richmond Bay T5 Main Street*	*Richmond Bay T5-Open Main Street*	*Research and Development Special District*	*Special Planning Area*
Intent	Provide medium- to high-density housing in building types such as townhomes, apartment houses, courtyard buildings, and mid-rise buildings that transition from surrounding lower-density neighborhoods to higher-density mixed-use neighborhoods.	Provides the same building form as T5N(RB) but allows for a more diverse mix of uses including light industrial and R&D uses.	Provide a vibrant, walkable urban main street commercial area that provides locally- and regionally-serving commercial, retail, entertainment uses, and civic and public uses, as well as a variety of urban housing choices.	Provides the same building form as T5MS(RB) but allows for a more diverse mix of uses including light industrial and R&D uses.	Provide opportunities for research and development facilities that can build upon a synergistic relationship with the Berkeley Global Campus/Richmond Field Station and existing light industrial uses.	Same Land Use and Height Standards as the SD:R&D Zone. Building Placement and Parking Placement would be approved by City Council.
Footprint Range	Small-to-Large	Small-to-Large	Small-to-Large	Small-to-Large	Medium-to-Large	Medium-to-Large
Building Height	5-8 Stories Up to 55 ft (85 ft with bonuses)	5-8 Stories Up to 55 ft (85 ft with bonuses)	5-8 Stories Up to 55 ft (85 ft with bonuses)	5-8 Stories Up to 55 ft (85 ft with bonuses)	5-8 Stories Up to 55 ft (85 ft with bonuses)	5-8 Stories Up to 55 ft (85 ft with bonuses)

NOTES: Ft = feet



SOURCE: City of Richmond, 2015

Figure 3-4
Transect Zone Regulating Plan

3.5 Foreseeable Maximum Development Scenario

The purpose of the EIR analysis is to disclose all reasonably foreseeable environmental effects that could result from development under the Specific Plan. Therefore, the development scenario presented in this section and evaluated throughout the rest of this EIR represents the most impactful (from an environmental perspective), foreseeable development plan that could occur with buildout of the Specific Plan. The Foreseeable Maximum Theoretical Buildout is that scenario, and is shown in **Table 3-3**.

TABLE 3-3
SPECIFIC PLAN CONCEPTUAL PROGRAM AND
FORESEEABLE MAXIMUM THEORETICAL BUILDOUT UNDER THE SPECIFIC PLAN

Sub-Area	R&D/Business/ Service (Thousand Square Feet)	Retail (Thousand Square Feet)	Residential (Dwelling Units)[b]	Open Space (acres)
Specific Plan Conceptual Program[a]				
Sub-Area 1	1,870	270	1,160	12.8
Sub-Area 2	140	130	1,330	12.4
Sub-Area 3	1,560	0	0	1.4
Sub-Area 4	2,120	320	1,590	7.6
Total	**5,690**	**720**	**4,080**	**34.2**
Foreseeable Maximum Theoretical Buildout[c]				
Sub-Area 1	1,870	270	1,840	12.8
Sub-Area 2	140	130	1,330	12.4
Sub-Area 3	1,560	0	0	1.4
Sub-Area 4[d]	2,120[d]	320[d]	2,530[d]	7.6[d]
Total	**5,690**	**720**	**5,700**	**145**[e]

[a] Per the Specific Plan (section 3.4), the conceptual program presented in this table is illustrative in nature and demonstrates one way that the Specific Plan may be built out.
[b] Residential buildout assumes a mix of mixed-use buildings incorporating residential uses on upper floors as well as residential buildings with residential on the ground floor.
[c] The Foreseeable Maximum Theoretical Buildout is the program analyzed in this EIR.
[d] The development program for the Sub-Area 4 Project is presented in Table 3-5.
[e] Includes areas of the Meeker Slough Wetlands, Stege Marsh, and Hoffman Marsh within the Plan Area (approximately 112.3 acres)

3.5.1 Foreseeable Maximum Theoretical Buildout

The Foreseeable Maximum Theoretical Buildout scenario for the Specific Plan was formulated through the City's consideration of various land use scenarios that emerged from the community planning process, and the City's evaluation of the environmental effects of a combined scenario which would likely encompass or exceed those effects that could likely occur in any one of the land use scenarios envisioned through the planning process.

Table 3-3 presents the foreseeable maximum theoretical buildout development program of the Specific Plan by sub-area that is used in this EIR analysis, which is more dense than the conceptual program envisioned in the Specific Plan (the Specific Plan conceptual development program is also included for the sake of comparison and illustration only). The foreseeable maximum theoretical buildout scenario is consistent with the Specific Plan standards, but would

include a higher residential density than is identified in the Specific Plan conceptual, illustrative phasing diagrams.

The analysis of the Foreseeable Maximum Theoretical Buildout scenario represents a conservative scenario from an environmental impact standpoint. Table 3-3 presents a possible distribution of the foreseeable maximum theoretic development across the Plan Area.

3.6 Sea Level Rise Adaptation

Per Municipal Code requirements, each project developed within the Plan Area would be required to obtain a development permit for all project plans that would be reviewed to ensure that projects are safe from flooding and do not impede flood flows. Chapter 12.56 of the Richmond Municipal Code includes detailed standards of construction for building within designated flood zones. A development permit is required for any construction or other development within any area designated on a FEMA FIRM map as subject to a 100-year flood hazard or a 500-year flood hazard. The City of Richmond Public Works Department reviews all development permits to confirm that proposed development is reasonably safe from flooding.

Further measures to be taken under the Specific Plan to adapt to sea level rise are presented in Chapter 4.8, *Hydrology and Water Quality*, of this EIR.

3.7 Specific Plan Multimodal Access and Connectivity

A key goal of the Specific Plan is the improvement of the Plan Area's vehicular, pedestrian, bicycle, and transit circulation system to facilitate safe and efficient movement and connections to the Berkeley Global Campus/Richmond Field Station site, the Ford Peninsula, Marina Bay, the Cutting Avenue corridor, and Richmond neighborhoods such as the Richmond Annex, Park View, and Laurel Park neighborhoods. The intent of the Specific Plan is to accommodate growth while minimizing vehicle traffic by shifting travel demand to non-auto modes of transportation. The methods outlined in the Specific Plan to achieve this goal include transit, bicycle and pedestrian facilities and services along with comprehensive parking and transportation demand management and a Thoroughfare Regulating Plan. The Thoroughfare Regulating Plan establishes a network of primary thoroughfares that represent a minimum grid of streets providing connectivity within the Plan Area, as well as standards for a system of minor streets to subdivide "superblocks" into smaller, pedestrian-scaled development blocks. Thoroughfares described in the Specific Plan reflect the multimodal goals of the Specific Plan by including sidewalks and bicycle lanes.

The Thoroughfare Regulating Plan is intended to establish binding requirements; for example, while the location of new thoroughfares is subject to interpretation at the discretion of the City, the City would ensure, through the development review process, that the perimeter of development blocks does not exceed 2,000 feet in length. Standards apply to the Primary Thoroughfare Assemblies that have been mapped on the Thoroughfare Regulating Plan, and also apply to Secondary Thoroughfare Assemblies to provide additional streets to those shown on the Thoroughfare Regulating Plan, in order to create smaller blocks for development.

3.7.1 Proposed Roadway Network

The Specific Plan includes the modification of the existing roadway network within the Plan Area, with a focus on existing street network improvements to serve vulnerable low-impact road users. To that end, the Specific Plan would increase the density of intersections, and implement the Thoroughfare Regulating Plan to align new streets with the original street grid serving the current site of the Richmond Field Station (Berkeley Global Campus) and the adjacent Seaport neighborhood (refer to Specific Plan Section 4.6). The new streets would bisect existing "super-blocks" (large lots or large assemblies of lots) in the Plan Area, and provide new multimodal connections across major barriers to access, including I-580 and railway corridors. Refer to **Figure 3-5**, Specific Plan Thoroughfare Regulating Plan for the layout of the future roadway network buildout under the Specific Plan.[3] The Specific Plan also contemplates a future connection between Lark Drive and freeway interchange improvements; this connection is not evaluated as part of the Specific Plan development program presented in this EIR, but is described and evaluated as a cumulative project in Chapter 4 of this EIR.

The Thoroughfare Regulating Plan includes 12 standard thoroughfare assemblies identified using a key coded title to reflect the frontage type, right-of-way width, pavement width, and additional transportation lanes. Section 4.6 of the Specific Plan provides individual schematics of these thoroughfare cross-sections. **Table 3-4** summarizes thoroughfare locations and standards within the Plan Area.

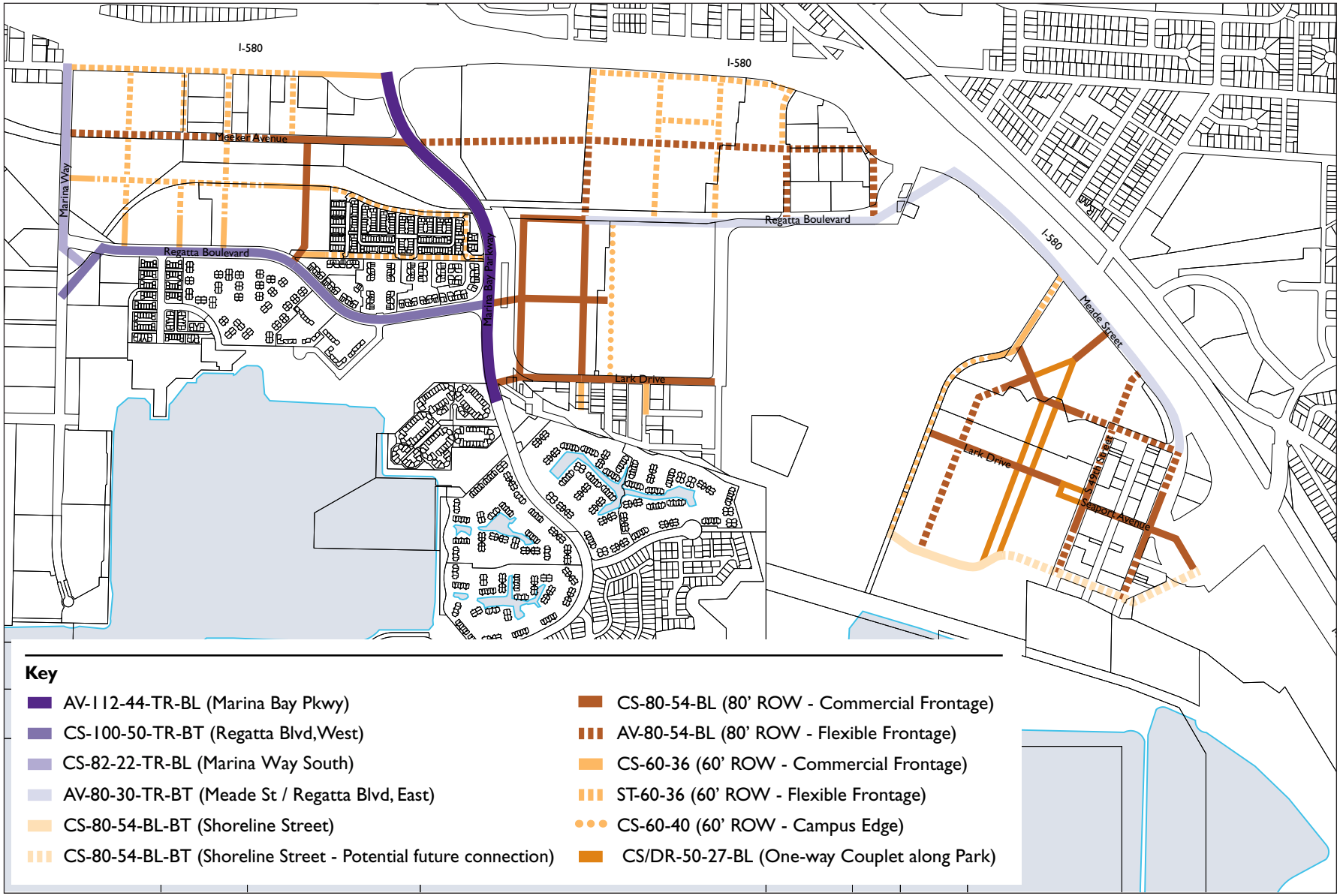
3.7.2 Pedestrian and Bicycle Circulation Improvements

The Specific Plan includes pedestrian and bicycle improvements to the existing circulation system within and in proximity to the Plan Area to remove barriers to circulation, which can include modifications to rail crossings, wide arterial roadways with limited crossing opportunities (i.e. Marina Bay Parkway), and I-580, to enhance off-site connectivity, improve internal circulation, and facilitate long-term changes in land use.

Pedestrian Improvements

The Specific Plan proposes that all roadways in the Plan Area include sidewalks or other accessible pedestrian accommodations, directional curb ramps and/or high visibility crossings at intersections (where warranted), and the provision of ample, pedestrian-scaled street lighting. In addition to these core pedestrian improvements, the Specific Plan also proposes that all new streets be constructed according to the best practices in complete streets design, with ample sidewalks buffered from vehicle traffic by a planter strip, street furniture, and in many cases a row of parked cars. Other common treatments proposed for use include mid-block crossings, median refuge islands to shorten the crossing distance on arterial streets such as at Regatta Boulevard, Marina Bay Parkway, and Marina Way South, as well as sensor triggered in-pavement warning or flashing beacons to alert

[3] Note: According to Specific Plan page 4-71, the location of new thoroughfares is subject to interpretation at the discretion of the Director, provided that the perimeter of development blocks does not exceed 2,000 feet.



SOURCE: City of Richmond, 2015

Richmond Bay Specific Plan EIR . 120834

Figure 3-5
Thoroughfare Regulating Plan

TABLE 3-4
THOROUGHFARE LOCATIONS AND DEVELOPMENT STANDARDS

Thoroughfare Name[a]	Type (Primary or Secondary)	Location(s)	Frontage Type	Right-of-Way Width (ft)	Pavement Width (ft)	Transportation
AV-113-44-TR-BL	Primary	Marina Bay Parkway	Avenue	113	44	Transit Route/ Bicycle Lane
CS-100-50-TR-BT	Primary	Regatta Boulevard (West)	Commercial Street	100	50	Transit Route/ Bicycle Trail
CS-82-22-TR-BL	Primary	Marina Way	Commercial Street	82	22	Transit Route/ Bicycle Lane
AV-80-30-TR-BT	Primary	Regatta Boulevard (East), and Meade Street	Avenue	80	30	Transit Route/ Bicycle Trail
CS-80-54-BL-BT	Primary	Shoreline Street, and potential future connection [b]	Commercial Street	80	54	Bicycle Lane/ Bicycle Trail
CS-80-54-BL	Primary	80' ROW - Commercial Frontage [b]	Commercial Street	80	54	Bicycle Lane
AV-80-54-BL	Primary	80' ROW - Flexible Frontage [b]	Avenue	80	54	Bicycle Lane
CS-60-36	Primary/ Secondary	60' ROW- Commercial Frontage [b]	Commercial Street	60	36	NA
ST-60-36	Primary/ Secondary	60' ROW- Flexible Frontage [b]	Street	60	36	NA
CS-60-40	Primary	Campus Edge [b]	Commercial Street	60	27	NA
CS/DR-50-27-BL	Primary	One-Way Couplet along Park [b]	Commercial Street/ Drive	50	27	Bicycle Lane
CS-40-20	Secondary	40' ROW, No Parking (no proposed location)	Commercial Street	40	20	NA
ST-40-24	Secondary	Yield Street, Parking one Site (no proposed location)	Street	40	24	NA
ST-40-28	Secondary	Yield Street, Parking Two Site (no proposed location)	Street	40	28	NA
ST-40-22	Secondary	Yield Street, Alternating Parking One Site (no proposed location)	Street	40	22	NA
RA-24-21	Secondary	Rear Alley	Rear Alley	24	21	NA

NOTES:

Frontage Types: Boulevard (BV), Avenue (AV), Commercial Street (CS), Drive (DR), Street (ST), Road (RD), Rear Alley (RA)
Transportation Alternatives: Bicycle Trail (BT) described as *bike lane* below, Bicycle Lane (BL), Bicycle Route (BR), Transit Route (TR)

[a] Thoroughfare name: Frontage Type - Right of Way Width (feet) - Pavement Width (Feet) - Transportation Alternative
[b] Thoroughfare shown on Figure 3-5 is conceptual in nature.

drivers of crossing pedestrians and cyclists at trail crossing of major streets and selected intersections. Specific Plan Figure 3.18 details typical pedestrian safety improvements to be developed under the Specific Plan.

Bicycle Access and Circulation

Proposed bicycle improvements to the Plan Area network would provide increased on-site connectivity to key destinations, including BART/Amtrak stations, the future Richmond Ferry Terminal, the Bay Trail, and local businesses and nearby neighborhoods. These improvements consist of new bikeways, crossings, wayfinding signage, and increased bicycle parking, as well as newly available bike sharing facilities. These improvements are summarized below from Chapter 3 of the Specific Plan and are shown in **Figure 3-6**.

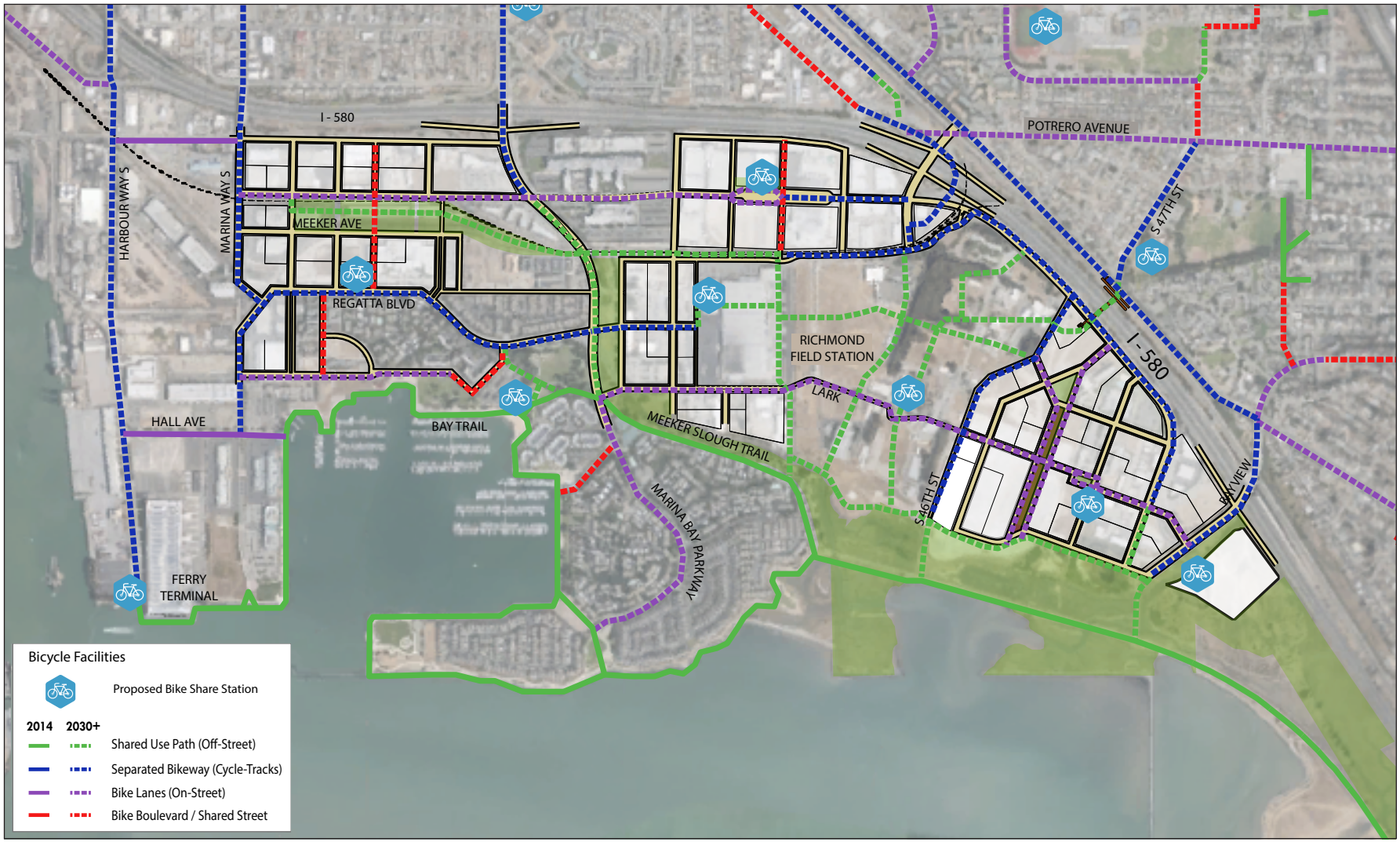
As shown in Figure 3-6, the Specific Plan proposes numerous bikeway improvements, which consist of:

- **Shared-Use Paths (Off-Street):** also referred to as Class I bike facilities, are separate bicycle paths shared with pedestrians, wheelchair users, and other non-motorized traffic. Shared-use paths within the Plan Area would be marked with high-visibility trail crossing pavement markings;
- **Separated Bikeway (Cycle-Tracks)**: are bikeways that are separated from traffic with vertical physical barriers (curbs, planters, bollards, parking, etc.);
- **Bicycle Lanes (On-Street)**: also referred to as Class II paths, utilize pavement markings to demarcate lanes within existing streets, and are typically found along the right side of the street; and
- **Bicycle Boulevards / Neighborhood Greenways:** are typically low-traffic streets which install traffic calming/ speed management or other measures to promote the function of the street as a public space and bikeway.

Proposed Specific Plan bicycle improvements also include eight on-site bike share stations with an additional three in nearby off-site Richmond neighborhoods, arranged to provide short-term bicycle parking within each neighborhood. The Specific Plan also proposes the addition of bike parking and terminal facilities, in general requiring new buildings or building redesigns of greater than 1,000 square feet to include bicycle facilities (refer to Table 4.8.B: Bicycle Parking Standards, in Section 4.8.5 on page 4-106 of the Specific Plan).

3.7.3 Transit

The Specific Plan includes goals for establishing a fast, frequent and reliable transit service to enable a highly-connected, multimodal, accessible area. In order to realize this vision, the Specific Plan describes two long-term alternatives for transit service in the Plan Area. Figures 3.20 and 3.21 of the Specific Plan portray these long-term network options, which include primary transit corridors with service every 15 minutes, 18 hours a day on weekdays, and secondary transit corridors with local service provided at 20 to 60 minute intervals, also at least 18 hours a day on weekdays. (It should be noted that these transit service alternatives are not binding requirements of the Specific Plan, as described further in Section 4.13, *Transportation and Traffic*, of this EIR. Accordingly, the EIR's analysis does not assume construction of these transit improvements in the existing, Project, or cumulative scenarios.)



SOURCE: City of Richmond, 2015

Figure 3-6

Existing (2014) and Proposed (2030) Bicycle Facility Network

3.7.4 Truck Access

The Specific Plan proposes measures to protect and enhance Port of Richmond and goods movement activities, which include the increased use of commercial and residential development in the Plan Area. Refer to Figures 3-22 and 3-23 in the Specific Plan (Existing [2014] and Future [2030] Truck Routes in South Richmond, and Proposed Goods Movement Corridors), for the layout of the proposed truck access modifications. Proposed modifications of the truck access within the Plan Area will include specific street design for freight and busses, provide separation for freight and vulnerable uses, provide designated curb spaces for short-term commercial loading/unloading, and establish commercial parking permit zones.

3.7.5 Rail Alignment

The long-term vision for the Plan Area provides land use direction in the event that the 23rd Street switching yard (BNSF) and 8th Street switching yard (Safeway) are voluntarily relocated. The Specific Plan anticipates the consolidation of rail lines into one corridor, which would follow the northern track alignment of BNSF's Siberia Lead, as shown on Figure 3-27 in the Specific Plan. Future study will be required prior to this consolidation, to ensure that the needs of rail and freight operations in the Plan Area are met.

3.7.6 Parking

The Specific Plan proposes no minimum off-street parking requirement for proposed uses within the Plan Area, but rather, in order to reduce the drive-alone mode for commute trips to the Plan Area to 50 percent or less, proposes the establishment of a maximum parking allowance for all uses, and the phasing of parking requirements and ratios (spaces per square feet of buildout) over time. Surface parking would be allowed in early phases of development. Table 4.8.A of the Specific Plan presents the maximum off-street parking supply for non-residential uses, and thresholds at which parking ratios would change.

3.7.7 Transportation Demand Management

The Specific Plan includes the establishment of the Transportation Management Association (TMA). Under the Specific Plan, the City would work with private employers and property owners to establish a TMA with authority to implement the Specific Plan requirements pertaining to trip reduction via transportation demand management (TDM). The City would oversee the effectiveness of TMA programs, including TDM programs and services, and would set measurable goals and evaluate TMA performance. All property owners or operators of projects greater than 5,000 square feet will be required to join the TMA, to ensure the tenants are members for the first 25 years, and to submit building-specific TDM plans to the TMA for approval.

The TDM strategies identified in the Specific Plan are based on best practices for TDM programs and are not an exhaustive list of all potential specific measures. Baseline measures required for all new projects, as well as existing uses are detailed in Chapter 4 of the Specific Plan and include, but would not be limited to:

- Provide travel choice information to new employees
- Parking cashout
- Multimodal Wayfinding
- AC Transit Eco-Pass
- Pre-tax Transit Pass Sales
- Carpool/Vanpool Parking
- Share bicycles
- Telework/flexible work schedule program
- Guaranteed ride home program
- Carpool matching services

3.8 Proposed Utilities

3.8.1 Potable Water and Recycled Water

The Specific Plan proposes expanding the existing water distribution system throughout each Sub-Area to provide reliable potable and fire protection water. A network of interconnected water mains ranging in size from 8 inches to 12 inches would be installed as part of the expansion, and would connect to the existing East Bay Municipal Utility District (EBMUD) water facilities.

No system improvements are proposed for recycled water at this time. However, the size and nature of the Plan Area in combination with the adjacent Berkeley Global Campus/Richmond Field Station site presents several opportunities to use recycled water for landscape irrigation, commercial and industrial processes, toilet and urinal flushing in non-residential buildings, and cooling towers. EBMUD may consider expansion of the existing recycled water infrastructure, and the construction of a localized satellite facility that would utilize on-site water and rain water treatment to provide recycled water to the Plan Area.

3.8.2 Stormwater Quality and Drainage

The proposed Plan Area stormwater system would include gravity storm drain pipes and drainage inlets installed within the new roadways to collect and convey runoff generated from the new and redeveloped portions of the Plan Area. Existing storm drain facilities would remain in place.

3.8.3 Sanitary Sewer

The sanitary sewer distribution system within the Plan Area would require improvements to meet future demands and address existing deficiencies. The recommended improvements include: 1) removal or relocation of sewer facilities due to conflicts with the proposed land use areas and roadway alignments, 2) system upgrades to support the increased intensity of land use and to be compatible with the City's latest standards; and 3) expansion of facilities to service new development areas or redevelopment areas where there are no current facilities. Further details

regarding improvements to the sanitary sewer system are presented in Section 4.14, *Utilities and Service Systems*, of this EIR.

3.8.4 Dry Utilities

New underground electrical conduits and cables would be installed along the proposed streets in the Plan Area to service new buildings. Joint (gas and electrical) trenches would be installed to support supply lines. In addition, conduit may be installed in the near term and the utility company may install cables later as another option. Other infrastructure throughout the Plan Area includes transformers, switches, and primary and secondary boxes as required by land uses. Portions of existing aboveground electrical power lines within the Plan Area may be relocated underground to comply with PG&E Rule 20A.

Detailed assessments of utility demands and infrastructure are provided in Section 4.13, *Utilities and Service Systems*, in Chapter 4 of this EIR.

3.8.5 Civic Space Regulating Plan

The Specific Plan also includes Civic Space and Open Space regulations for the Plan Area, including a Regulating Plan that designates civic space types within each sub-area, as shown on **Figure 3-7**. The Specific Plan designates approximately 106 acres of parks and open space to be created, improved, or protected within the Plan Area. Standards for civic space include general character, typical size, and typical uses. Similar to the Thoroughfare Regulating Plan, the Civic Space Regulating Plan is intended to establish binding requirements (standards), while the location and disposition of civic spaces are subject to interpretation at the discretion of the City.

Civic space types and standards for their development described in the Specific Plan include:

- Community parks
  - Minimum width: 50 feet
  - Minimum depth: 100 feet
- Neighborhood squares
  - Minimum dimensions (typical): 80 feet by 200 feet
- Linear parks
  - Minimum width: 50 feet (typical)
  - Maximum width: 100 feet (typical)
  - Must front at least one street
- Shoreline promenades
  - As established by BCDC, the Bay Trail Project, and other regulatory agencies



SOURCE: City of Richmond, 2015

Richmond Bay Specific Plan EIR . 120834

Figure 3-7

Specific Plan Civic Space Regulating Plan

- Creekside greenways
  - Bay Trail minimum and maximum dimensions per regulatory agencies
    - Other minimum and maximum dimensions based on location
    - Applicable regulatory requirements for stormwater quality treatment systems
- Bay Trail
  - Minimum and maximum dimensions per regulatory agencies
  - As established by BCDC, the Bay Trail Project, and other regulatory agencies (including requirements for stormwater quality treatment systems)
- Natural preserve areas
  - Per regulatory agencies
- Pocket Plaza
  - Maximum width: 50 feet
  - Maximum depth: 50 feet
- Playgrounds/tot lots
  - No size requirements
  - As described by civic space type in which playground is located
  - Protected from traffic
  - No service or mechanical equipment
- Community gardens
  - No minimum or maximum width
  - As described by civic space type in which garden is located
  - Fencing and storage structures

The Civic Space Regulating Plan also includes Berkeley Global Campus Connection Standards, which are measures to provide connectivity between the Plan Area and the Berkeley Global Campus/Richmond Field Station, and the following guidance regarding stormwater quality treatment:

- To the extent feasible, stormwater quality treatment will follow the guidelines and standards as required by Contra Costa County, described in the *Stormwater C.3 Guidebook*.
- Urban standards for other communities should also be consulted, including *The Stormwater Guidelines for Green, Dense Redevelopment*, produced for the City of Emeryville (adopted December 6, 2005).
- Infiltration solutions should be equipped with underdrains connected to the storm sewer system.
- Integrated pest management will be required on all landscaping. Pest-resistance plants and those adapted to the local climate will be used.

For more discussion of the Civic Space Regulating Plan, see Section 4.9, *Land Use and Planning*.

3.9 Lark Drive Variant of Specific Plan

The City has identified a need for flexibility in planning traffic circulation in the Plan Area, and has included as a "project variant" to the Specific Plan the widening and extension of an approximately 700-foot extent of Lark Drive through the Richmond Field Station to connect to Regatta Boulevard (Lark Drive Variant). Lark Drive (shown on some maps as Commodore Drive) is an east-west oriented, two-lane paved road that extends approximately 1,250 feet and has a right-of-way (ROW) of approximately 20 feet. The Lark Drive Variant would widen the street to a ROW of approximately 80 feet along a portion of the street approximately 400 feet long, and would construct approximately 300 feet of new road (two traffic lanes with sidewalks and parking lanes) with an 80-foot ROW through grassland areas. The widening and extension of Lark Drive would disturb up to approximately 2 acres of land and up to approximately 0.8 acres of grassland habitat.[4] The Lark Drive Variant is anticipated to be constructed over the longer term, rather than in the first few years of Plan Area buildout.

Access to and construction of new uses on the Richmond Field Station site is subject to the control of the UC. Construction of the Lark Drive Variant would not take place prior to the City and UC entering into a Memorandum of Understanding which would describe the action of widening and extending the road, and allow the City to act under some existing UC plans and policies, including the UC's Coastal Terrace Prairie Management Plan.

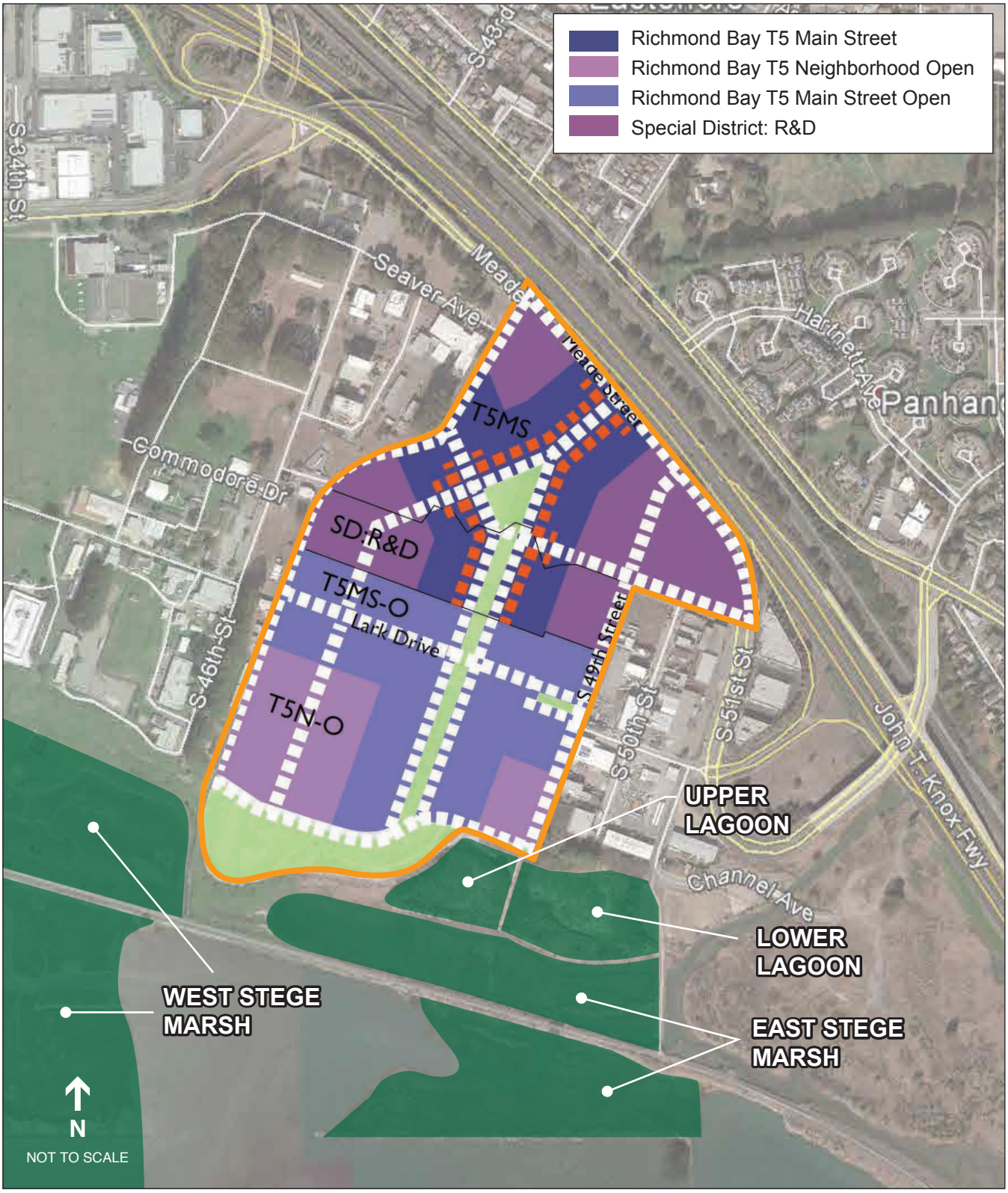
3.10 Sub-Area 4 Project

3.10.1 Sub-Area 4 Project Location and Context

Along with an analysis of the environmental impacts of the Specific Plan, this EIR also includes a project-level analysis of development within Sub-Area 4, referred to in this document as the Sub-Area 4 Project. The Sub-Area 4 Project represents a likely future development scenario for redevelopment of a portion of the developable area of Sub-Area 4, consistent with the Specific Plan. At 170 acres, Sub-Area 4 is the largest sub-area within the Plan Area and can be accessed from I-580 via the Bayview interchange. **Figure 3-8** shows the Sub-Area 4 Project site boundaries.

The Sub-Area 4 Project site is approximately 89 acres in size, and is bordered by I-580 to the north, the Richmond Field Station to the west, Meade Street and South 49th Street the east, and East Bay Regional Park District (EBRPD) lands, including East Stege Marsh, the Bay Trail, and the Bay to the south. The largest part of the Sub-Area 4 Project site is vacant and consists of the

[4] The Richmond Bay Campus Long Range Development Plan EIR (Tetra Tech, 2014) includes the evaluation of widening and extension of Lark Drive. The EIR describes a narrower ROW (60 feet).



SOURCE: City of Richmond, 2015

Richmond Bay Specific Plan EIR . 120834

Figure 3-8

Sub-Area 4 Project Site Transect Zone Map

former Zeneca Inc. manufacturing site (approximately 40 acres). Sub-Area 4 comprises two distinct attributes – a developable "upland" and the wetland/habitat area along the San Francisco Bay and Bay Trail as shown on Figure 3-8. These areas include the following:

- **Uplands:** Vacant industrial and office buildings within the former Campus Bay Business Park, vacant (though disturbed) grassland areas west and south of the former Campus Bay Business Park, and the capped portion of the Zeneca site; and
- **Wetlands/habitat areas:** Areas identified in Department of Toxic Substances Control (DTSC) documents as Habitat Area 1, which includes the 10.3-acre, tidally influenced East Stege Marsh and Habitat Area 2, which includes two wetlands lagoons (the Upper Lagoon and Lower Lagoon) comprising approximately 8.5 acres that receive stormwater flow from upland areas, and adjacent transitional habitat and habitat buffer area. A conservation easement is recorded for Habitat Areas 1 and 2 in favor of the East Bay Regional Park District (EBRPD).

South 49th Street forms the eastern boundary of the Sub-Area 4 Project site. Adjacent to the Sub-Area 4 Project site to the east of South 49th Street, the Harbor Front Tract site includes active industrial uses, such as the Allied Propane Service facility, Heliodyne facility, and Uni Marble Inc.

The 36-acre area designated as a Special Planning Area, located south of the Bayview interchange and along Harbor Boulevard, is further east of the Sub-Area 4 Project site. The Specific Plan indicates that the land uses and height limits in this area shall conform to the R&D Special District, but also that due to the ecologically sensitive nature of this site, the placement of all roads, buildings, and parking areas require approval by the City Council.

Detail about vehicular access and egress to/from the Sub-Area 4 Project site is discussed in Section 4.14, *Transportation and Traffic*, in Chapter 4 of this EIR.

3.10.2 Sub-Area 4 Project Characteristics

Site Development Overview

As noted above, the Sub-Area 4 Project would include redevelopment of the Zeneca site, consistent with the Specific Plan. The Sub-Area 4 Project presents substantial development potential due to its proximity to the Richmond Field Station, proximity to and views of the Bay, direct access from I-580, and status as a large vacant and underutilized site under single ownership. The Specific Plan encourages a phased approach (but does not provide a specific phasing program) to establishing a vibrant, mixed-use neighborhood in this location. Consistent with General Plan actions and policies and Plan Bay Area, development is anticipated to include a mix of R&D/Business/Service, retail, residential, and open space uses.

Based on its acreage relative to the total Sub-Area 4 acreage, the Sub-Area 4 Project is anticipated to comprise approximately 60 percent of the Specific Plan's foreseeable maximum theoretical buildout within Sub-Area 4 and 85 percent of the Specific Plan's estimate of open space within Sub-Area 4. Specifically, **Table 3-5** below identifies the conceptual buildout of the Sub-Area 4 Project.

TABLE 3-5
FORESEEABLE MAXIMUM THEORETICAL BUILDOUT UNDER RICHMOND BAY SPECIFIC PLAN FOR SUB-AREA 4 AND THE SUB-AREA 4 PROJECT

Development Program	R&D/Business/ Service (Thousand Square Feet)	Retail (Thousand Square Feet)	Residential (Dwelling Units)	Open Space / Parks (acres)
Sub-Area 4[a]	2,120	320	2,530	7.6
Sub-Area 4 Project[b]	**1,270**	**190**	**1,520**	**6.5**
	(60% of SA4 Program)[a]	*(60% of SA4 Program)*[a]	*(60% of SA4 Program)*[a]	*(85% of SA4 Program)*[a]

NOTES: R&D = research and development SF = square feet

[a] Represents the Specific Plan's foreseeable maximum theoretical buildout for the entire footprint of Sub-Area 4.
[b] The Sub-Area 4 Project represents 60 percent of the Specific Plan's foreseeable maximum theoretical buildout for R&D/Business/Service, Retail, and Residential within Sub-Area 4, and 85 percent of the Specific Plan's foreseeable maximum theoretical buildout for open space and parks.

The Sub-Area 4 Project foreseeable maximum theoretical buildout analyzed in this EIR is not intended to serve as a cap on development within the Sub-Area 4 Project site. The Specific Plan is designed to permit flexibility in adjusting the mix, density, and intensity of uses within the Specific Plan as a whole, and within the Sub-Area 4 Project site, to reflect market demand. Transfer of development from constrained sites supports the City's policy goals of creating vibrant, walkable, mixed-use neighborhoods within the Plan Area, as set forth in Section 3.3-2 above. Accordingly, adjustments to increase or decrease the number of residential units and commercial and retail square footage identified in the foreseeable maximum theoretical buildout scenario analyzed in this EIR are permitted, as long as the proposed use is consistent with applicable transect zone regulations and overall density and intensity comply with the General Plan land use designation. Additionally, the commercial and retail square footage and number of dwelling units within the Sub-Area 4 Project site may be increased administratively above the foreseeable maximum theoretical buildout identified in Table 3-5 above, based upon a showing that the increased square footage and/or increased number of residential dwelling units would not result in a significant impact not identified in this EIR. If the increased square footage or number of residential dwelling units would result in a significant impact not identified in this EIR, such increase is subject to review in accordance with CEQA, provided, however, that a General Plan and/or Specific Plan amendment would not be required so long as the use is consistent with applicable transect zone regulations and the density and intensity comply with the General Plan land use designation.

General Sub-Area 4 Project Characteristics

The Sub-Area 4 Project would be consistent with the following principles, set forth in the Specific Plan:

- The planned grid of streets would be oriented parallel to the existing Harbor Front Tract grid. Streets running north-west would terminate in the south at a new shoreline road running east-west, and open space including a new Bay park with a shoreline promenade.

- In the longer term, as existing properties become ready for redevelopment (i.e., as existing uses transition), mixed uses would be developed, and additional retail and residential opportunities would be added.
- The near-term configuration of the new shoreline road assumes that the existing wetlands lagoons retain their existing configuration.
- Seaport Avenue would be developed as the main thoroughfare between the Bayview interchange and the Richmond Field Station, and extended westward across the Zeneca site property to connect the Bayview interchange with Lark Drive.
- A linear green space extending north to south would cross Seaport and connect the shoreline open space with a neighborhood square that would include retail and neighborhood-serving uses.
- Buildings would be a maximum of 8 stories.
- Uses would primarily include retail and residential. Residential would include a mix of design types, ranging from townhomes to multi-family homes constructed on podium structures.
- Parking would be provided on the interior of blocks (behind buildings, oriented to perimeter streets). In the short term, parking would be provided in temporary surface lots; in the longer term, surface lots would be replaced by structured parking to allow for more intense development.

Sub-Area 4 CEQA Project Objectives

The CEQA project objectives for the Sub-Area 4 Project directly align with the Specific Plan goals that are relevant to the Sub-Area 4 Project. The Sub-Area 4 Project's CEQA project objectives include:

1. **Create and Enhance Access to Shoreline.** Promote incorporation of a variety of publicly-accessible parks, recreation facilities, and open spaces in areas near, adjacent to, or connecting to the shoreline, and support active and passive recreation facilities and open space in areas near the shoreline, which may include features that will help mitigate the future impacts of sea level rise.
2. **Establish a Vibrant Mixed-Use Neighborhood.** Redevelop vacant and/or underutilized sites within Sub-Area 4 consistent with the Specific Plan that present substantial potential due to proximity to the Richmond Field Station site, proximity to the shoreline, direct access from Interstate 580, and properties existing under single ownership, in order to create a vibrant, mixed-use neighborhood with a range of uses and building types to support commercial, residential, and other development that is responsive to market demand.
3. **Ensure Appropriate Remediation of Zeneca Site.** Work with the Department of Toxic Substances Control and other agencies as needed to ensure the remediation of contamination within the Zeneca site supports implementation of the land uses specified in the transect zone regulating plan and building types of the Specific Plan.
4. **Build New Housing in Complete Neighborhoods**. Generate new residential opportunities at a density consistent with the Specific Plan's General Plan land use designation and in complete neighborhoods, to address existing local and regional housing needs and

anticipated housing needs associated with future development at the Richmond Field Station site and to reduce potential for displacement from other, existing residential neighborhoods within the City.

5. **Generate Tax Revenues and Employment Opportunities.** Generate substantial tax revenues and employment opportunities for the City of Richmond and the region and support the City's goal of improving its jobs-housing balance.

6. **Develop Complementary Uses Adjacent to Richmond Field Station Site.** Preserve flexibility to develop uses complementary to development of the Richmond Field Station as described in the LRDP, as amended over time based on demand for such uses.

Sub-Area 4 Project Multimodal Access and Connectivity

Consistent with the goals of the Specific Plan, a key goal of the Sub-Area 4 Project is the improvement of the Sub-Area 4 Project site's vehicular, pedestrian, bicycle, and transit circulation system to facilitate safe and efficient movement and connections to areas such as the Richmond Field Station site and Richmond neighborhoods, while minimizing vehicle traffic by shifting travel demand to non-auto modes of transportation. Transit, bicycle and pedestrian facilities and services, along with comprehensive parking and transportation demand management and the Specific Plan Thoroughfare Regulating Plan (which would apply to the Sub-Area 4 Project), provide the methods to achieve this goal.

The Specific Plan Thoroughfare Regulating Plan is intended to establish binding requirements for the Sub-Area 4 Project.

Sub-Area 4 Project Site Roadway Network

The Sub-Area 4 Project would implement the Thoroughfare Regulating Plan as applicable to the Sub-Area 4 Project site, to align new streets with the original street grid serving the current site of the Richmond Field Station (Berkeley Global Campus). The new streets would bisect existing large lots in the Plan Area, and provide new multimodal connections across I-580 and railway corridors. Along the shoreline, roadways would establish a boundary between development areas and open space, passive and active recreation spaces. Refer to Figure 3-5, Specific Plan Thoroughfare Regulating Plan for the layout of the future roadway network buildout under the Sub-Area 4 Project. **Table 3-6** summarizes thoroughfare locations and standards within the Sub-Area 4 Project Site.

Pedestrian and Bicycle Circulation Improvements

The Specific Plan includes pedestrian and bicycle improvements to the existing circulation system within and in proximity to the Sub-Area 4 Project site.

Pedestrian Improvements

With Sub-Area 4 Project development, all roadways within the Sub-Area 4 Project site would include sidewalks or other accessible pedestrian accommodations, directional curb ramps and/or high visibility crossings at intersections (where warranted), and the provision of ample, pedestrian-scaled street lighting. In addition to these core pedestrian improvements, the Specific

TABLE 3-6
THOROUGHFARE LOCATIONS AND DEVELOPMENT STANDARDS APPLICABLE TO SUB-AREA 4

Thoroughfare Name[a]	Type (Primary or Secondary)	Location(s)	Frontage Type	Right-of-Way Width (ft)	Pavement Width (ft)	Transportation
AV-80-30-TR-BT	Primary	Regatta Boulevard (East), and Meade Street	Avenue	80	30	Transit Route/ Bicycle Trail
CS-80-54-BL-BT	Primary	Shoreline Street, and potential future connection[b]	Commercial Street	80	54	Bicycle Lane/ Bicycle Trail
CS-80-54-BL	Primary	80' ROW - Commercial Frontage[b]	Commercial Street	80	54	Bicycle Lane
AV-80-54-BL	Primary	80' ROW - Flexible Frontage[b]	Avenue	80	54	Bicycle Lane
CS-60-36	Primary/ Secondary	60' ROW- Commercial Frontage[b]	Commercial Street	60	36	NA
ST-60-36	Primary/ Secondary	60' ROW- Flexible Frontage[b]	Street	60	36	NA
CS-60-40	Primary	Campus Edge[b]	Commercial Street	60	27	NA
CS/DR-50-27-BL	Primary	One-Way Couplet along Park[b]	Commercial Street/ Drive	50	27	Bicycle Lane
CS-40-20	Secondary	40' ROW, No Parking (no proposed location)	Commercial Street	40	20	NA
ST-40-24	Secondary	Yield Street, Parking one Site (no proposed location)	Street	40	24	NA
ST-40-28	Secondary	Yield Street, Parking Two Site (no proposed location)	Street	40	28	NA
ST-40-22	Secondary	Yield Street, Alternating Parking One Site (no proposed location)	Street	40	22	NA
RA-24-21	Secondary	Rear Alley	Rear Alley	24	21	NA

NOTES:

Frontage Types: Boulevard (BV), Avenue (AV), Commercial Street (CS), Drive (DR), Street (ST), Road (RD), Rear Alley (RA)
Transportation Alternatives: Bicycle Trail (BT) described as *bike lane* below, Bicycle Lane (BL), Bicycle Route (BR), Transit Route (TR)

a Thoroughfare name: Frontage Type - Right of Way Width (feet) - Pavement Width (Feet) - Transportation Alternative
b Thoroughfare shown on Figure 3-5 is conceptual in nature.

Plan also proposes that all new streets be constructed according to the best practices in complete streets design, with ample sidewalks buffered from vehicle traffic by a planter strip, street furniture, and in many cases a row of parked cars. Other common treatments proposed for use include mid-block crossings, as well as sensor triggered in-pavement warning or flashing beacons to alert drivers of crossing pedestrians and cyclists at trail crossing of major streets and selected intersections. Specific Plan Figure 3.18 details typical pedestrian safety improvements to be developed under the Specific Plan.

Bicycle Access and Circulation

Proposed bicycle improvements to the Sub-Area 4 Project site network would provide increased on-site connectivity to key destinations, including BART/Amtrak stations, the future Richmond Ferry Terminal, the Bay Trail, and local businesses and nearby neighborhoods. These improvements consist of new bikeways, crossings, wayfinding signage, and increased bicycle parking, as well as newly available bike sharing facilities. These improvements are summarized above under Section 3.8.2, and are shown in Figure 3-6.

Transit

The Specific Plan includes goals for establishing a fast, frequent and reliable transit service to enable a highly-connected, multimodal, accessible area. In order to realize this vision, the Specific Plan describes two long-term alternatives for transit service within the Plan Area, as described in the goals of the Specific Plan, which would also apply to the Sub-Area 4 Project. (Again, it should be noted that these transit service alternatives are not binding requirements of the Specific Plan, as described further in Section 4.13, *Transportation and Traffic*, of this EIR.) Figures 3.20 and 3.21 of the Specific Plan portray these long-term transit network options that would apply to the Sub-Area 4 Project.

Parking

The Sub-Area 4 Project would be subject to the parking requirements outlined in the Specific Plan: there would be no minimum off-street parking requirement for proposed uses within the Sub-Area 4 Project site, but rather, in order to reduce the drive-alone mode for commute trips to the Sub-Area 4 Project site to 50 percent or less, a maximum parking allowance for all uses would apply, and parking requirements and ratios (spaces per square feet of buildout) would be phased over time. Surface parking would be allowed in early phases of development. Table 4.8.A of the Specific Plan presents the maximum off-street parking supply for non-residential uses, and thresholds at which parking ratios would change.

Sub-Area 4 Project TDM

As of the date of this document, no TDM plan has been prepared for the Sub-Area 4 Project. Future developers within Sub-Area 4 would submit TDM plans consistent with Specific Plan Section 4.8.7.

Proposed Utilities

Potable Water and Recycled Water

The existing water distribution system to the Sub-Area 4 Project site would be expanded to provide reliable potable and fire protection water. A network of interconnected water mains ranging in size from 8 inches to 12 inches would be installed as part of the expansion, and would connect to existing East Bay Municipal Utility District (EBMUD) water facilities.

No system improvements are proposed for recycled water at this time. However, the size and nature of the Sub-Area 4 Project site in combination with the adjacent Berkeley Global Campus/Richmond Field Station presents several opportunities to use recycled water for landscape irrigation, commercial and industrial processes, toilet and urinal flushing in non-residential buildings, and cooling towers. EBMUD may consider expansion of the existing recycled water infrastructure, and the construction of a localized satellite facility that would utilize on-site water and rain water treatment to provide recycled water to the Sub-Area 4 Project site.

Stormwater Drainage

The Sub-Area 4 Project site stormwater system would include gravity storm drain pipes and drainage inlets installed within the new roadways to collect and convey runoff generated from the new and redeveloped areas. Existing storm drain facilities would remain in place.

Sanitary Sewer

The sanitary sewer distribution system within the Sub-Area 4 Project site would require improvements to meet future demands and address existing deficiencies. Recommended improvements include: 1) removal or relocation of sewer facilities due to conflicts with the proposed land use areas and roadway alignments, 2) system upgrades to support the increased intensity of land use and to be compatible with the City's latest standards; and 3) expansion of facilities to service new development areas or redevelopment areas where there are no current facilities. The ICI Pump Station that would service the Sub-Area 4 Project site may not have enough capacity to receive the anticipated increase in sewage flows, and may need to be expanded. Further details regarding improvements to the sanitary sewer system are presented in Section 4.14, *Utilities and Service Systems*, of this EIR.

Dry Utilities

New underground electrical conduits and cables would be installed along the proposed streets in the Sub-Area 4 Project site to service new buildings. Joint (gas and electrical) trenches would be installed to support supply lines. In addition, conduit may be installed in the near term and the utility company may install cables later as another option. Other infrastructure throughout the Sub-Area 4 Project site includes transformers, switches, and primary and secondary boxes as required by land uses. Portions of existing aboveground electrical power lines within the Sub-Area 4 Project site may be relocated underground to comply with PG&E Rule 20A.

Detailed assessments of utility demands and infrastructure are provided in Section 4.13, *Utilities and Service Systems*, in Chapter 4 of this EIR.

Sub-Area 4 Project Site Civic Space

The Specific Plan's Civic Space and Open Space regulations for the Plan Area would also apply to the Sub-Area 4 Project site, including a Regulating Plan that designates civic space types, as shown on Figure 3-7. The Civic Space Regulating Plan is intended to establish binding requirements (standards), while the location and disposition of civic spaces within the Sub-Area 4 Project site are subject to interpretation at the discretion of the City. Civic spaces planned for the Sub-Area 4 Project site are shown on Figure 3-7, and include the following:

- A large community park at the south end of the site and south of the shoreline drive;
- The Shoreline Promenade;
- Neighborhood squares; and
- A linear park.

Civic space types and standards for their development described in the Specific Plan that would apply to the Sub-Area 4 Project include:

- Community parks
  - Minimum width: 50 feet
  - Minimum depth: 100 feet
- Neighborhood squares
  - Minimum dimensions (typical): 80 feet by 200 feet
- Linear parks
  - Minimum width: 50 feet (typical)
  - Maximum width: 100 feet (typical)
  - Must front at least one street
- Shoreline promenades
  - As established by BCDC, the Bay Trail Project, and other regulatory agencies
- Bay Trail
  - Minimum and maximum dimensions per regulatory agencies
  - As established by BCDC, the Bay Trail Project, and other regulatory agencies (including requirements for stormwater quality treatment systems)
- Natural preserve areas
  - Per regulatory agencies
- Pocket Plaza
  - Maximum width: 50 feet

  - Maximum depth: 50 feet

- Playgrounds/tot lots
  - No size requirements
  - As described by civic space type in which playground is located
  - Protected from traffic
  - No service or mechanical equipment

- Community gardens
  - No minimum or maximum width
  - As described by civic space type in which garden is located
  - Fencing and storage structures

The Civic Space Regulating Plan also includes Berkeley Global Campus Connection Standards, and the following guidance regarding stormwater quality treatment:

- To the extent possible, stormwater quality treatment will follow the guidelines and standards as required by Contra Costa County, described in the *Stormwater C.3 Guidebook*.
- Urban standards for other communities should also be consulted, including *The Stormwater Guidelines for Green, Dense Redevelopment*, produced for the City of Emeryville (adopted December 6, 2005).
- Infiltration solutions should be equipped with underdrains connected to the storm sewer system.
- Integrated pest management will be required on all landscaping. Pest-resistance plants and those adapted to the local climate will be used.

For more discussion of the Civic Space Regulating Plan, see Section 4.9, *Land Use and Planning*.

Sub-Area 4 Project Site Grading, Construction and Phasing

Demolition, Grading and Off-Haul

The Sub-Area 4 Project will demolish all existing buildings and structures on the Sub-Area 4 Project site (approximately 265,000 square feet, or 60,000 cubic yards of demolition waste) and remove approximately 17,500 cubic yards of pavement – all of which will be off-hauled from the site to an appropriate location. Assuming that approximately 50 percent of all demolition materials would be re-used or recycled on-site in accordance with City requirements,[5] the total preliminary estimate of materials that would be off-hauled from the site is approximately 30,000 cubic yards.

Control and protection of human health and the environment from hazardous materials risks associated with site demolition activities are addressed under mitigation measures identified in

[5] Per State regulations, development projects are required to comply with CalGreen, which requires construction or demolition projects to demonstrate that at least 50 percent of the construction and demolition non-hazardous debris generated on the jobsite is reused, recycled, or otherwise diverted.

Section 4.7, *Hazards and Hazardous Materials*. Cleanup of the Zeneca site will be completed pursuant to a Feasibility Study/Remedial Action Plan (FS/RAP) for the site that is currently under development and will be circulated for public review prior to approval by DTSC. Redevelopment of the property will comply with the FS/RAP as applicable.

Construction Phasing

It is anticipated that the Sub-Area 4 Project will be developed in several phases. The first phase of construction activities would involve demolition, site preparation, grading and excavation, trenching, building exteriors, interior architecture, and paving. This first phase would also focus on the development of the portion of the Campus Bay Business Park in the northern part of Sub-Area 4. Following site remediation activities at the Zeneca site, development of that site would take place.

Sub-Area 4 Project Design Elements to Address Sea Level Rise

Per Municipal Code requirements, the Sub-Area 4 Project would be required to obtain a development permit for all project plans, which would be reviewed to ensure that all parts of the Sub-Area 4 Project are safe from flooding and do not impede flood flows. Chapter 12.56 of the Richmond Municipal Code includes detailed standards of construction for building within designated flood zones. A development permit is required for any construction or other development within any area designated on a FEMA FIRM map as subject to a 100-year flood hazard or a 500-year flood hazard. The City of Richmond Public Works Department reviews all development permits to confirm that proposed development is reasonably safe from flooding.

Further measures that will be undertaken by the Sub-Area 4 Project to adapt to sea level rise are presented in Chapter 4.8, *Hydrology and Water Quality*, of this EIR.

3.11 Required Approvals and Actions

3.11.1 Specific Plan

City of Richmond

Implementation of the Specific Plan would require a series of interrelated planning and regulatory approvals by the City of Richmond as the CEQA Lead Agency. This program-level EIR is intended to provide CEQA analysis for all required discretionary actions for the activities facilitated by the Specific Plan. However, activities facilitated by the Specific Plan would be required to obtain all necessary project-specific City approvals necessary to proceed and may be required to conduct their own project-specific environmental review. At the time this EIR was prepared, the discretionary actions and other considerations and approvals anticipated to be required with respect to adoption of the Specific Plan include, but are not limited to, those listed below:

- **CEQA Approval.** Certify the Specific Plan Final EIR and make environmental findings pursuant to CEQA;

- **Adoption of the Specific Plan.** Adoption of a finding that the Specific Plan is consistent with the General Plan, pursuant to the proposed amendments thereto, and adoption of the Specific Plan itself;
- **Amendments to General Plan.** Approval of associated amendments to General Plan text and maps to reflect and implement a new General Plan land use designation indicating that land use within the Plan Area is governed by the Specific Plan; and
- **Amendments to the City of Richmond Zoning Ordinance.** Amend Zoning Ordinance text and map to incorporate the Specific Plan, including approval of associated amendments to the City's Zoning Ordinance and map to reflect and implement the Specific Plan as the applicable zoning for the Plan Area; and
- **Repeal of Knox-Cutting Specific Plan.** As discussed previously in this section, the City will repeal the 1995 Knox-Cutting Specific Plan, which includes the current area of the Richmond Bay Specific Plan, as part of required approvals.

Additionally, the Sub-Area 4 Project and other activities facilitated by the Specific Plan would be required to obtain all necessary project-specific City approvals necessary to proceed and may be required to conduct their own project-specific environmental review. At the time this EIR was prepared, the discretionary actions and other considerations and approvals anticipated to be required for activities facilitated by the Specific Plan include, but are not limited to, those listed below:

- **CEQA Approvals.** Activities could require CEQA findings or further CEQA review.
- **Development Agreements.** Projects may seek City Council approval of a Development Agreement by ordinance.
- **Use Permits.** Activities could require a Conditional Use Permit or Minor Use Permit, as required by the Specific Plan;
- **Design Review.** Activities could require major or minor design review, as required by the Specific Plan.
- **Variance.** Activities could require a minor variance or variance, as required by the Specific Plan.
- **Encroachment and Obstruction Permits.** Activities could require approval of encroachment and obstruction permits to work within and close to various public rights-of-way;
- **Demolition Permits.** Activities could require approval of demolition permits to demolish existing buildings and structures in the Plan Area;
- **Excavation Permits.** Activities could require approval of excavation permits to conduct excavation activities in the Plan Area; and
- **Other permits:** Activities could require Building permits, Creek Protection permits, Tentative Parcel Maps, Tentative Tract Maps, and Parcel Map Waivers, in addition to various other required permits and approvals pursuant to the Richmond Municipal Code, the Richmond Planning Code and applicable Building Codes.

The Specific Plan and associated General Plan amendment and rezoning would require review and recommendation by the Planning Commission to the City Council, followed by consideration and action by the City Council. This EIR is intended to provide the CEQA-required environmental documentation for use in considering these and any other City approvals required to adopt the Specific Plan. This EIR is also intended to provide the CEQA-required environmental documentation for activities facilitated by the Specific Plan, to the extent allowed by CEQA, as described below under "Subsequent CEQA Review and Streamlining."

Other Agencies

As the Lead Agency and as appropriate under CEQA, the City also intends this EIR to serve as the CEQA-required environmental documentation for consideration of the Specific Plan by other Responsible Agencies and Trustee Agencies which may have limited discretionary authority over future site-specific development proposals under the Specific Plan. Under the CEQA *Guidelines*, the term "Responsible Agency" includes all public agencies, other than the Lead Agency, which have discretionary approval power over aspects of the project for which the Lead Agency has prepared an EIR. Under the CEQA *Guidelines*, the term "Trustee Agency" means a state agency having jurisdiction by law over natural resources affected by the project which are held in trust by the people of California.

The City has notified the appropriate Responsible Agencies and Trustee Agencies according to statutory requirements, and they include, but are not limited to, the following:

Local Agencies

- **Richmond Municipal Sewer District (RMSD)** approvals will be required for sewer hookups and any upgrades to the backbone sewer system.
- **Contra Costa County Congestion Management Agency (CCCMA)** review of the traffic analysis is required because development under the Specific Plan is expected to result in an increase in peak hour traffic of more than 100 trips (see Section 4.13, *Transportation and Traffic*).
- **Contra Costa Environmental Health Department (CCEHD)** review and permits may be required, if wells or soil borings are required (for environmental cleanup, for example), or if abandoned wells or septic tanks are proposed to be destroyed during construction; and review and acceptance of an updated Hazardous Materials Management Plan and Inventory (HMMP) and the Hazardous Materials Business Plan (HMBP).
- **Contra Costa County Flood Control and Water Conservation District (CCCFCWD)** review may be required to ensure the Specific Plan complies with the County's municipal stormwater National Pollutant Discharge Elimination System (NPDES) permits.
- **East Bay Municipal Utility District (EBMUD)** approvals will be required for water hookups and water lines. EBMUD review of the Specific Plan's water needs assessment will also be required.

State and Regional Agencies

- **California Department of Fish and Wildlife (CDFW)** approval of a Section 1802 Incidental Take Permit may be required under the California Endangered Species Act if the proposed Specific Plan impacts State-listed endangered or threatened species or their habitat. CDFW consultation with the U.S. Army Corps of Engineers (USACE), U.S. Fish and Wildlife Service (USFWS), and U.S. National Marine Fisheries Service (NOAA Fisheries) may also be required with respect to Endangered Species Act Section 7 consultations and the preparation of Biological Opinions involving impacts to California-listed special status species. In addition, CDFW approval of a Section 1603 Streambed Alteration Agreement may be required if activities involve alterations to the bed, bank, or channel of a stream or drainage.

- **California Department of Transportation (Caltrans)** review and approval of plans, specifications, and estimates (including any equipment or facility upgrades) for modifications to intersections under the jurisdiction of Caltrans to accommodate signal timing changes.

- **California Department of Toxic Substances Control (DTSC)** review and oversight of remediation of contaminated soils or groundwater impacting sites within the Plan Area, and compliance with state regulations for the generation, transportation, treatment, storage, and disposal of hazardous waste may be required.

- **San Francisco Bay Regional Water Quality Control Board (RWQCB)** required approvals will include:

    - National Pollution Discharge Elimination System (NPDES) General Permit for storm water discharges associated with construction activity,

    - Clean Water Act Section 401 Water Quality Certification and Notice of Intent for construction activities,

    - Storm Water Pollution Prevention Plan (SWPPP) for on-site storm water management and pollution prevention, and

    - Review and oversight of remediation of contaminated soils or groundwater impacting sites within the Plan Area.

- **California State Lands Commission (SLC)** approvals may be required to settle title issues involving tidelands and the Public Trust Doctrine

- **Bay Area Air Quality Management District (BAAQMD)** review of the Specific Plan may be required.

- **San Francisco Bay Conservation and Development Commission (BCDC)** approvals will be required for shoreline development within 100 feet of the mean high tide line.

Federal Agencies

- **USACE** approval of a Section 404 Permit may be required under the Federal Clean Water Act for impacts to jurisdictional waters of the United States resulting from the construction of storm drain outfalls or alterations to the shoreline revetment, if any.

- **USFWS** approval involving a Section 7 Consultation/Biological Opinion may be required under the Federal Endangered Species Act for impacts to federally-listed special status species or their habitat.

- **U.S. National Marine Fisheries Service (NOAA Fisheries)** approval involving a Section 7 Consultation/Biological Opinion may be required under the Federal Endangered Species Act for impacts to federally-listed special status marine species or their marine habitat.
- **U.S. Coast Guard (USCG)** approvals may be required under Section 10 of the Federal Rivers and Harbor Act.

3.12 Subsequent Activities, Implementation and Development

3.12.1 Legal Authority and the Relationship of the Specific Plan to the General Plan

The City of Richmond would adopt the Richmond Bay Specific Plan under a procedure that is consistent with the General Plan and with the provisions of Government Code sections 65450 through 65457. As part of the Specific Plan approval, the City would also approve amendments to the General Plan text and map, and repeal the Knox-Cutting Specific Plan.

After the adoption of the proposed Specific Plan by the City of Richmond and other implementing actions, all subsequent activities and development within the Plan Area (including, for example, tentative parcel/subdivision maps, use permits, design review permits, and improvement plans) would be subject to, and must be consistent with, the policies and development standards set forth in the Specific Plan, as well as the General Plan (as proposed to be amended). The City would determine the appropriate level of review under CEQA for any subsequent discretionary approvals, as detailed in Section 3.12.2 below. Development applications and public improvements would be subject to City review and approval. Improvements to public infrastructure such as parks, roadways and drainage, sewer, water and utilities, also would be implemented according to the policies set forth in the Specific Plan. Existing uses would not be directly affected unless the occupants or owners choose to expand or change their structures, grounds or uses. However, implementation of the Specific Plan will render certain uses nonconforming with regard to the use provisions of the Specific Plan.

Relationship to General Plan

The Specific Plan facilitates future development activity within the Plan Area consistent with the General Plan. Any amendment to the General Plan requires a matching amendment to the Specific Plan. The General Plan policies regarding redevelopment within the Plan Area are primarily included in the following Elements:

- Land Use and Urban Design Element;
- Economic Development Element;
- Housing Element;
- Circulation Element; and
- Community Health and Wellness Element.

The Specific Plan complies with all of the City's land use plans and programs, including consistency with adopted or established population and employment projections. Further discussion of the Specific Plan's relationship to the General Plan is provided in Section 4.9, *Land Use and Planning*, of this EIR.

Relationship to Plan Bay Area

The Specific Plan facilitates future development activity within the Plan Area consistent with Plan Bay Area, which is the San Francisco Bay Area's Sustainable Communities Strategy. The regional governing bodies adopted Plan Bay Area pursuant to Senate Bill 375 to coordinate regional housing and transportation planning and to reduce greenhouse gas emissions. The South Richmond PDA is currently designated as a "Transit Neighborhood" and is anticipated in Plan Bay Area to add 1,380 housing units by 2040. Further discussion of the Specific Plan's relationship to and consistency with Plan Bay Area is included in Section 4.9, *Land Use and Planning*, of this EIR.

3.13.2 Tracking and CEQA Evaluation of Subsequent Proposals and Adherence to Maximum Theoretical Buildout

Development Impact Tracking

Development in the Plan Area will occur over time based on future market conditions and opportunities and pursuant to development parameters proposed in the Specific Plan. The intent of the Specific Plan is to provide as much flexibility as is feasible in terms of the actual mix of new land uses and their location within the Plan Area, while conforming to the CEQA analysis in this EIR. The Specific Plan establishes form-based zoning that is designed to retain the flexibility to allow variation in the distribution and type of development and uses throughout the Plan Area. Tracking of future development in the Plan Area would be conducted over time to ensure the environmental effects of such development fall within the parameters of the environmental effects identified in this EIR and to identify where further CEQA review may be warranted.

Traffic capacity is largely the key environmental factor constraining development in the urban development CEQA context. Therefore, the City will track and measure the Specific Plan maximum theoretical buildout by vehicle trip generation. As the Plan Area develops, the City will also track amounts of development by land use, giving foremost consideration to estimates of the net new generation of automobile trips. Any proposal for development resulting in net trip generation in excess of the amounts estimated in the Plan Area and/or each Sub-Area and analyzed in the transportation and traffic analysis in this EIR would be required to conduct a traffic impact analysis and potentially undergo additional CEQA review (in addition to any other project-specific studies required) to establish that other traffic characteristics, including remaining circulation capacity, within the Plan Area and within the traffic study area established for this EIR would not result in new or more severe environmental impacts than are analyzed and disclosed in this EIR.

Therefore, as the Plan Area develops, the City will monitor:

1. The total number of residential units and non-residential square footage for which entitlements have been granted and building permits issued;
2. The total number of residential units and non-residential square footage removed due to elimination or change of use or structure;

When totals of 1. and 2. exceed 80 percent of the estimated number of units or square footage of uses for the Plan Area as a whole and for each sub-area, an additional traffic analysis will be required demonstrating no new potentially significant impacts would result from the project.

In summary, this EIR evaluates the impacts of the Specific Plan maximum theoretical buildout, and as long as the actual development within the Plan Area stays within the impact envelope established in this EIR, there can be a mix and match between various land uses (e.g. there can be more residential if less commercial is built, and vice versa).

Subsequent CEQA Compliance

Following certification of this EIR, the City intends to use the tiering and other provisions of CEQA, as appropriate, so that future environmental review of subsequent proposals to implement the Specific Plan are expeditiously undertaken without the need for repetition and redundancy. The Specific Plan establishes form-based zoning that is designed to retain flexibility to allow variation in the distribution of development and uses throughout the Plan Area. Accordingly, this EIR analyzes a maximum foreseeable development scenario that conservatively identifies environmental impacts for a wide range of development scenarios under the Specific Plan. Specifically, it is anticipated that future proposals within the Plan Area would be evaluated for consistency with the Specific Plan and reviewed under CEQA as required through the use of findings, Addenda, or other appropriate CEQA compliance tools. This could involve preparation of an Environmental Review Checklist specifically intended for projects seeking CEQA clearance under a previously-certified EIR, in accordance with CEQA streamlining vehicles pursuant to Public Resources Code (PRC) Section 21166 and CEQA *Guidelines* sections 15183 (Projects Consistent with a Community Plan or Zoning) and/or 15183.3 (Streamlining for Infill Projects), and/or 15162 (Subsequent EIRs and Negative Declarations), and/or 15168 (Program EIR), and/or other appropriate CEQA mechanisms.

References – Project Description

City of Richmond, 2012. *Richmond General Plan 2030.* Adopted April 25, 2012.

NCE, 2015. Utility Infrastructure Analysis for South Shoreline Specific Plan and Program Environmental Impact Report. Prepared on Behalf of the City of Richmond Planning and Building Services. April 7.

Tetra Tech, 2014. Richmond Bay Campus Long Range Development Plan Final Environmental Impact Report. State Clearinghouse No. 2013012007. Prepared for University of California. April 2004.

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CHAPTER 4
Environmental Setting, Impacts, and Mitigation Measures

4.0 Overview of Analysis

This chapter contains the analysis of the potential significant environmental effects that could be caused by development under the Specific Plan and the Sub-Area 4 Project. This chapter includes an introductory overview for the reviewer and then addresses each CEQA environmental topic. Specifically, this introduction to the analysis presents an overview of the scope and organization of the analysis sections, the methods for determining what impacts are significant, and the nomenclature for impacts and mitigation measures used throughout the document.

4.0.1 Environmental Topics

The following sections in this chapter analyze the environmental topics as listed below and presented in the Table of Contents at the front of this document:

4.1 Aesthetics
4.2 Air Quality
4.3 Biological Resources
4.4 Cultural Resources
4.5 Geology, Soils, and Seismicity
4.6 Greenhouse Gas Emissions and Energy
4.7 Hazards and Hazardous Materials
4.8 Hydrology and Water Quality
4.9 Land Use and Planning
4.10 Noise
4.11 Population, Housing, and Employment
4.12 Public Services and Recreation
4.13 Utilities and Service Systems
4.14 Transportation and Traffic

Agricultural Resources and Mineral Resources were determined not to be directly relevant to the adoption of and development under the Specific Plan or the Sub-Area 4 Project, as summarized below and as discussed in Chapter 6 under *Effects Found Not to Be Significant*.

Agricultural and Forestry Resources

The majority of developed land in the City of Richmond, including the Plan Area, is designated by the California Department of Conservation's Important Farmland in California Map as urban and built-up land, or "other land" (not important farmland; Department of Conservation, 2016). Property surrounding the Plan Area is also designated as urban, built-up, or "other" land. Therefore, neither the Specific Plan nor the Sub-Area 4 Project would directly or indirectly convert Prime

Farmland, Unique Farmland, or Farmland of Statewide Importance to non-agricultural use; would not conflict with existing zoning for agricultural use, or a Williamson Act contract; and would not involve other changes in the existing environment which, due to their location or nature, could result in conversion of farmland to non-agricultural use. The Specific Plan and Project would have no impact on agricultural resources.

Likewise, neither the Specific Plan nor the Project would cause rezoning of forest land, timberland, or timberland-zoned Timberland Production. Development facilitated by the Specific Plan or Project would not result in the loss of forest land or convert forest land to non-forest use.

Mineral Resources

The California Geological Survey has classified lands within the San Francisco Bay Region into Mineral Resource Zones (MRZs) based on guidelines adopted by the California State Mining and Geology Board, as mandated by the Surface Mining and Reclamation Act (SMARA) of 1974. Much of the City, including the Plan Area, is in the MRZ-1 category with no significant mineral deposits (Department of Conservation, 1996). Therefore, development facilitated by the Specific Plan or Sub-Area 4 Project would not 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; and would not result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan. Development facilitated by the Specific Plan or Project would have no impact on mineral resources.

4.0.2 Format and Approach of Topical Analysis Sections

Each environmental topic section (4.1 through 4.14) addresses the program-level analysis of development under the Specific Plan, and the project-level analysis of the Sub-Area 4 Project. Overall, each topical section includes the following main subsections:

- *Existing Setting*, which includes the existing environmental setting and regulatory setting, which includes applicable plans and policies relevant to the Specific Plan. Setting information that is unique to the Sub-Area 4 Project is identified;

- *Significance Criteria*, which identifies the significance criteria and applicable thresholds for the particular environmental topic being addressed. This section also discusses the methodology analysis employed.

- *Impacts and Mitigation Measures*, which presents the potential resulting impacts and, where applicable, feasible mitigation measures. The program-level analysis of the Specific Plan is presented first in its entirety, followed by the project-level analysis of the Sub-Area 4 Project.

  The cumulative analysis, which considers both proposals, follows the project-level analysis in each section. The impacts analysis addresses all parts of the project action: construction and operations, project/program and cumulative, as well as secondary impacts resulting from the implementation of mitigation measures, where applicable.

Impact and Mitigation Measure Designators

This EIR identifies all potentially significant impacts with an abbreviated designation that corresponds to the environmental topic addressed (e.g., "HAZ" for hazardous materials). The topic designator is followed by a number that indicates the sequence in which the impact statement occurs within the section. For example, "Impact HAZ-1" is the first (i.e., "1") hazardous materials impact identified in the EIR. The designation is then followed by "SP" or "SA4" indicating that the impact and mitigation measure pertain to the program-level analysis of the Specific Plan or the project-level analysis of the Sub-Area 4 Project (i.e., Impact HAZ-1.SP).

Similarly, each mitigation measure is numbered to correspond with the impact that it addresses. Where multiple mitigation measures address a single impact, each mitigation measure is numbered sequentially and designated for the Specific Plan or the Project. "Mitigation Measure HAZ-1b.SP" would be the second ("i.e., "b") measure identified to address Impact HAZ.1.SP.

All impact statements and mitigation measures are presented in bold text.

Thresholds/Criteria of Significance

This EIR applies the significance criteria identified in the provisions in the CEQA Guidelines for determining the significance of environmental effects, including CEQA *Guidelines* Sections 15064, 15064.5, 15065, 15382, and Appendix G[1], as well as the City of Richmond *Guidelines and Procedures for the Implementation of the California Environmental Quality Act* (City of Richmond, 2003).

Effects of the Environment / Non-CEQA Effects

Although potential effects of the environment on a project are arguably not required to be analyzed or mitigated under CEQA, this EIR analyzes potential effects of "the environment on the project" for informational purposes in order to provide additional context to the public and decision-makers. Where a potential significant effect of the environment on the Specific Plan or the Sub-Area 4 Project is identified, this document appropriately and conservatively addresses the topic and identified mitigation measures.

Impact Classifications

The following level of significance classifications are used throughout the impact analysis in this EIR:

- **Less than Significant (LS) –** The impact of the Specific Plan or the Project does not reach or exceed the defined significance threshold. No mitigation measure is required for a LS impact.

- **Significant (S)** – The impact of the Specific Plan or the Project reaches or exceeds the defined significance threshold, which is typically quantitative so the significance can be

[1] Although no Environmental Review Checklist was prepared for this EIR, the factors listed for consideration in the Environmental Review Checklist are evaluated in this EIR.

confirmed in this document. Feasible mitigation measures may or may not be identified to reduce the significant impact to a LS impact.

- **Significant Unavoidable (SU)** – The impact of the Specific Plan or the Project is S, but no feasible mitigation measure is available to reduce an impact to LS. In these cases, feasible mitigation measures may be identified to reduce the S impact to the maximum feasible extent, but the S impact is ultimately considered SU, as it is "unavoidable." SU is an impact classification that only applies *after* consideration of possible mitigation measures.

  Impacts are also conservatively classified as SU if a feasible mitigation measure is identified that would reduce the impact to LS, but the approval and/or implementation of the mitigation measure is not within the Lead Agency's or the project sponsor's sole control, in which case the analysis cannot presume implementation of the mitigation measure and the resulting LS impact.

- **No Impact (N)** – No noticeable adverse effect on the environmental would occur, and this determination is typically made with certainty without extensive consideration based on available evidence.

The level of impact prior to the consideration of mitigation measures is stated in parentheses at the end of the bold impact statement. The level of impact after the implementation of mitigation measures is stated at the end of the discussion for each impact.

4.0.3 Cumulative Analysis

Approach

CEQA defines cumulative as "two or more individual effects which, when considered together, are considerable, or which can compound or increase other environmental impact." Section 15130 of the CEQA *Guidelines* requires that an EIR evaluate potential environmental impacts when the *project's* incremental effect is cumulatively considerable. "Cumulatively considerable" means that the incremental effects of an individual *project* are significant when viewed in connection with the effects of past, present, existing, approved, pending and reasonably foreseeable future projects. These impacts can result from a combination of a proposed project together with other projects causing related impacts. "The cumulative impact from several projects is the change in the environment which results from the incremental impact of the project when added to other closely related past, present, and reasonable foreseeable probable future projects."

CEQA Guidelines Section 15130(b)(1) identifies two approaches to cumulative impacts analysis. Specifically, cumulative impacts analysis can be based on: (1) a list of past, present, and probable future projects producing related impacts that could combine with those of a proposed project; or (2) a summary of projections contained in a general plan or related planning document. As described below, this EIR uses both a list-based approach and a projections approach, as appropriate for each impact area.

Cumulative Context

Geographic Scope

The context used for assessing cumulative impacts typically varies depending on the specific topic being analyzed to reflect the different geographic scope of different impact areas. For example, considerations for the cumulative air quality analysis are different from those used for the cumulative analysis of aesthetics. In assessing aesthetic impacts, only development within the vicinity of the Plan Area and the Sub-Area 4 Project site could contribute to a cumulative visual effect. In assessing air quality impacts, on the other hand, all development within the air basin contributes to regional emissions of criteria pollutants, and basin-wide projections of emissions is the best tool for determining the cumulative effect. Accordingly, the geographic setting and other parameters of each cumulative analysis discussion can vary.

Cumulative Land Use and Infrastructure Assumptions

The cumulative land use assumptions include, among other things, the Association of Bay Area Government's (ABAG's) projections for year 2040 with refinements in the vicinity of the Plan Area to reflect under construction, approved, and pending development projects in Richmond.

Information used to determine cumulative land use assumptions includes the Association of Bay Area Government's (ABAG's) projections for year 2040, information from the City's General Plan, and information regarding projects in the vicinity of the proposed project site that are under construction, approved, and pending based on lists of all development projects under environmental review as of the fourth quarter, 2015 prepared by Richmond as well as the cities of El Cerrito and Albany. Information on cumulative projects was also obtained from the California Office of Planning and Research (CEQANet Database). For the analyses of traffic, air, GHGs, and noise impacts, cumulative scenario projections were developed using the Contra Costa County Transportation Authority (CCTA) Countywide Travel Demand Model. Certain improvements assumed in the cumulative traffic scenario are further detailed in Section 4.13, *Transportation and Traffic*. Larger projects in the immediate vicinity of the Plan Area include the UC Berkeley's Global Campus at Richmond Bay (Global Campus), and the Baywalk Mixed Use Project.

The analysis in this EIR considers the list of cumulative projects presented in **Table 4.0-1**; in some cases, growth projections and assumptions embedded in analytical models, such as the CCTA Countywide Travel Demand Model, are also considered. Cumulative impacts are discussed throughout Chapter 4 as necessary, and discussed further and summarized in Chapter 6.

TABLE 4.0-1
CUMULATIVE PROJECTS

Project Name	Description of Project	Location Within Richmond	Environmental Review and Construction Schedule
City of Richmond Past Projects:			
Richmond Wet Weather Storage Project	Construction of a new diversion box, pump station, pipeline, and an above ground concrete tank with storage volume of approximately 5 million gallons	601 Canal Boulevard	Final CEQA Mitigated Negative Declaration approved January 2014; construction completed in 2015.
Chevron Modernization Project PLN11-089	Conditional use permit and revised EIR application.	100 Chevron Way	Approved June 9, 2014.
Harbour View Senior Housing PLN13-063	Design review permit and conditional use permit for a new 4-story, approximately 42,000 square foot building with 62 low income senior housing units.	20 Harbor Way	Approved July 11, 2013; CEQA Categorical Exemption filed. Construction completed 2015; occupancy planned for 2016.
Officer Bradley A. Moody Memorial Underpass (Marina Bay Parkway Grade Separation)	Construction of a roadway undercrossing at the intersection of Marina Bay Parkway and Burlington Northern Santa Fe/Richmond Pacific Railroad Corporation railroad tracks.	845 Marina Bay Parkway	Approved and CEQA Categorical Exemption filed in 2012. Construction completed in 2015.
Richmond Transit Village	Project consisted of 63 single aspect townhouses, 79 standard townhouses, and 89 live/work townhouses for a total of 231 dwelling units. Also includes approximately 21,000 square feet of retail space, an approximate 30,000 square foot performing arts center, a 37,000 square foot intermodal station including a police station, and a 5-level 680 (with possible 800) space parking structure.	16.7 acres centered around Richmond BART and Amtrak Stations	CEQA Mitigated Negative Declaration approved August 2002, construction completed in July 2011, and development reached 90 percent occupancy on October 3, 2011.
Honda Port of Entry at the Point Potrero Marine Terminal	Expansion of Auto Warehousing Company's (AWC) existing operations at the Port of Richmond to develop a Northern California Port of Entry for Honda automobiles. Project components included a new rail yard and improvements to ship berths.	Richmond Inner Harbor, southern terminus of Canal Boulevard	Planning approvals granted and CEQA Environmental Impact Report certified in 2008; construction completed in 2010.
Rosie the Riveter Park	Rosie the Riveter/World War II Home Front National Historical Park General Management Plan established in 2009.	1414 Harbour Way South	National Environmental Policy Act (NEPA) Finding of No Significant Impact signed in 2009.
Seacliff Estates Neighborhood	Development of approximately 150 single family residential units starting in the 2000s.	Bordered by Seacliff Drive and Seacliff Place to the east, Brickyard Cove Road to the south, and open space to the north.	CEQA Environmental Impact Report certified in 2001.
Brickyard Landing Neighborhood	Includes five, multi-story condominium buildings with over 300 units total, constructed starting in the 1980s.	North of Brickyard Cove Marina and Brickyard Cove Road, and bordered by the east, west and north by open space.	Construction complete in early 2000s.

TABLE 4.0-1 (Continued)
CUMULATIVE PROJECTS

Project Name	Description of Project	Location Within Richmond	Environmental Review and Construction Schedule
City of Richmond Past Projects (cont.):			
Miller/Knox Regional Shoreline	The East Bay Regional Parks District (EBRPD) administers the approximately 307-acre Miller/Knox Regional Shoreline park, which was dedicated in 1972. The park includes Keller Beach, many trails including Old Country Road and West Ridge Trail, as well as large picnic and barbecue areas, a model railroad museum, Ferry Point pier, and parking. The EBRPD is currently drafting a Land Use Plan Amendment for the park.	Open space adjacent to the Terminal One project site to the north, west, and northeast.	Last large-scale project within the park completed in 1997.
Miller/Knox Regional Shoreline Public Access Improvements Project	Public access improvements include five new restroom buildings, a new lawn, a new irrigation system and water supply lines, an upgraded new plaza at Ferry Point, four new picnic sites, and new drinking fountains.	Open space adjacent to the Terminal One project site to the north, west, and northeast.	Completed in January 2016.
Richmond Rail Connector	Caltrans proposes to install a new connector track between the BNSF Railway track and the UPRR tracks in the northern portion of the City of Richmond to facilitate movement of trains between the two tracks and to avoid train movements through downtown Richmond.	Northern part of Richmond	CEQA Initial Study and Mitigated Negative Declaration circulated 2012. Project completed, 2015.
Brickyard Cove Marina and Residences, and Brickyard Cove Commercial Buildings	Private marina and floating homes developed starting in the 1960s; and Brickyard Cove commercial area, which consists of three buildings that house office and commercial uses established in the late 1990s.	Brickyard Cove, south of Brickyard Cove Road and adjacent to San Francisco Bay.	Permit applications for Brickyard Cove Marina and residences submitted in 1960s; CEQA Environmental Impact Report prepared for Brickyard Cove commercial buildings in 1998.
City of Richmond Approved Projects/Projects Under Construction:			
Terminal One Project	Rezoning, Design Review permit, Environmental Impact Report and associated approvals for a project including a 323-unit planned area residential development, new shoreline park, re-purposed public pier, Bay Trail loop and other public improvements.	13.3-acre site southeast of the intersection of Dornan Drive and Brickyard Cove Road (1500 Dornan Drive)	Draft CEQA Environmental Impact Report (EIR) public review period closed March 11, 2016; Final EIR certified and project approved July 5, 2016.
Ferry Point Public Access Improvements Project	Includes Bay Area Water Trail friendly improvements.	Open space adjacent to the Terminal One project site to the west.	Scheduled for 2016.
Bottoms Residential Project (Shea Homes) PLN13-250	Design review permit, vesting tentative map, General Plan amendment, rezoning, and Environmental Impact Report for 60-unit planned area residential development.	Bounded by Seacliff Drive (west), Seacliff Estates Single-family family residential neighborhood (north), Canal Boulevard and Port of Richmond Shipyard No. 3 (east), and San Francisco Bay (south).	Planning approvals granted and CEQA Environmental Impact Report (EIR) certified on December 16, 2014. Construction begun in 2015.
Baywalk Mixed-Use Project IS/MND	Project site comprises approximately 10 acres of land in the Marina Way Neighborhood of Richmond. A total of 193 units (95 townhomes and 98 live work townhomes) are proposed as a three-story, mixed use development.	830 Marina Way South	Final CEQA Mitigated Negative Declaration approved October 2015.

TABLE 4.0-1 (Continued)
CUMULATIVE PROJECTS

Project Name	Description of Project	Location Within Richmond	Environmental Review and Construction Schedule
City of Richmond Approved Projects/Projects Under Construction (cont.):			
Hilltop Spec School PLN14-017	Design review permit and lot line adjustment for a speculative middle and high school in the Hilltop district.	3042 Hilltop Mall Road	Approved July 23, 2014; under construction as of March 7, 2015.
Central Avenue Housing Project PLN13-073	A small portion of the 2.58-acre project site lies within the City of El Cerrito, but the majority of the site is in the City of Richmond. Total of 172 below-market rate apartments proposed in a podium building with one level of above-ground parking and four levels of apartments, totaling five stories with an average building height of 61 feet.	5620 Central Avenue	Approved on February 19, 2015. Phase 1 of project underway as of February 25, 2015.
Anchorage at Marina Bay PLN14-098	Conditional use permit, re-zoning, and CEQA Environmental Impact Report for a modification of the previously approved Anchorage at Marina Bay residential development.	3400 Jetty Drive	Approved October 7, 2014.
Ferry Terminal Project proposed by Water Emergency Transportation Authority	Floating gangway and dock adjacent to Craneway. No new buildings. Generally replacing existing facility. Parking for 266 vehicles.	Ford Peninsula, adjacent to Ford Building along an existing wharf	CEQA Notice of Determination filed September 4, 2014.
Miraflores Greenbelt Project PLN13-276	A sub-project of the greater Miraflores Housing Development, the project will implement a 4-acre greenbelt which includes the daylighting and restoration of 750 linear feet of Baxter Creek, installation of a new creek connection to the city of Richmond's storm drain system, and installation of pedestrian bridge over Baxter Creek.	130 S 47th Street	Approved December 11, 2013; estimated completion date June 30, 2016.
Filbert Townhomes	Design review permit, conditional use permit, zoning ordinance amendment, and CEQA Mitigated Negative Declaration for a 43-unit residential project at 1200-1300 Filbert Street.	1300 Filbert Street	Approved November 5, 2013; estimated date of completion 2016.
Richmond-Ohlone Greenway Gap Closure	CEQA Mitigated Negative Declaration for the City's multi-use trail connection between the existing Richmond Greenway (City of Richmond) and Ohlone Greenway (City of El Cerrito). Includes a new multi-use trail, new road and pedestrian improvements, and other improvements.	San Pablo Avenue	Approved July 11, 2013. Construction anticipated to start in winter/spring 2017.
City of Richmond Projects Under Review/Foreseeable:			
Ford Building Rehabilitation Project	Redevelopment of the former Ford Assembly Plant at the foot of Harbor Way into a 460,000 square feet mixed-use facility. Uses include offices, retail centers, industrial/ research and development sites, restaurants, residential areas, the Rosie the Riveter Visitor Center, and the Craneway Pavilion event center.	1414 Harbour Way South	Ongoing.

TABLE 4.0-1 (Continued)
CUMULATIVE PROJECTS

Project Name	Description of Project	Location Within Richmond	Environmental Review and Construction Schedule
City of Richmond Projects Under Review/Foreseeable (cont.):			
Miller/Knox Regional Shoreline Land Use Plan Amendment (LUPA)	EBRPD is considering whether to refurbish one or both buildings at Ferry Point for commercial or passive interpretive use or to demolish the buildings; as well as whether to breach the lower levee of the Lagoon to the Bay, creating a tidal flow regime and a beach or to leave the Lagoon as is and schedule routine dredging.	Open space adjacent to the Terminal One project site to the north, west, and northeast.	Studies expected to be completed in 2016.
Lark Drive Extension	Extension, widening, and/or re-alignment of Lark Drive through the Richmond Field Station site.	Within Richmond Field Station site (UC Berkeley property)	CEQA Environmental Impact Report (EIR) certified 2014.
Richmond rail line consolidation	Voluntary consolidation of multiple rail operations in the South Shoreline area, such that the rail corridor would only be used to move rail cars through the area to the "Y" Connection with the UPRR.	Richmond South Shoreline area	Long-term development.
Zeneca site cleanup	Remediation of Zeneca site in South Shoreline area.	Richmond South Shoreline area	Feasibility Study/Remedial Action Plan under preparation by DTSC.
BP Neat Ethanol Upgrade PLN14-118	Design review permit for a project that would upgrade the BP Richmond terminal ethanol distribution system to accommodate ethanol with a reduced carbon content	1306 Canal Boulevard	Under review by City of Richmond.
Miraflores Housing Development Plan	Remediation and redevelopment of an approximately 14-acre site with up to 336 affordable and market-rate homes.	Wall Avenue and South 47th Street; Florida Avenue and South 45th Street	CEQA Environmental Impact Report (EIR) certified 2009; site cleanup and pre-development planning underway.
Hilltop Apartments PLN14-211	Design review permit and for a 180-unit, six-story apartment building on a 2.3-acre site.	3080 Hilltop Mall Road	Approved, 2015.
Atlas Road Industrial Building (Steelscape) Project PLN14-119	Design review permit and CEQA Mitigated Negative Declaration for a new 772,000 square foot industrial building on the former Steelscape building site.	2995 Atlas Road	Approved, 2015.
Nystrom Village	The Nystrom Village Family Public Housing and Hacienda Senior Housing sites are owned by the Richmond Housing Authority. Richmond Housing Authority plans to convert the existing housing units from public housing rental to a combination of over 400 homeownership, tax credit, market rate and public housing rentals. Estimated cost for this project is approximately $160 million with funding coming from public and private sources.	222 Marina Way South	Under review by City of Richmond. Received funding; scheduled to begin improvements in 2017.

TABLE 4.0-1 (Continued)
CUMULATIVE PROJECTS

Project Name	Description of Project	Location Within Richmond	Environmental Review and Construction Schedule
City of Richmond Projects Under Review/Foreseeable (cont.):			
Richmond Riviera Development PLN13-180	Westshore Marina Project included 300 residential condos. Richmond Riviera project included design review permit for a 60-unnit residential project on a 4-acre parcel.	1387 Marina Way South	Project on hold (went to referendum on June, 2016 ballot, and was not approved).
Marina Way Live/ Work Project	Project consists of 64 two-story live/work units and a community center in a total of seven separate buildings with roof varying from 24 to 39 feet in height, approximately 155 outdoor parking spaces. Much of the landscaping, would be designed as a swale and/or a vegetated pervious filter for stormwater management.	900 Marina Way South	CEQA Mitigated Negative Declaration adopted October 2007, construction completed. Phase I completed; Phase 2 underway; Phase 3 under review (building permit review).
Reconfiguration of I-580 freeway interchanges at Regatta Blvd/Meade St and Bayview Ave	The City has identified the reconfiguration of the I-580 freeway interchanges at Regatta Boulevard/Meade Street and Bay View Avenue as potential future improvements. These improvements are not currently approved or funded, and they are outside the jurisdiction and control of the City of Richmond.	I-580 at Regatta Boulevard/Meade Street and Bayview Avenue	Long-term improvement.
City of Richmond Studies, Plans, Transportation Projects, and Other Projects:			
South Richmond Connectivity Plan PLN13-207	Transportation and connectivity plan for the South Richmond shoreline and outlying areas.	Southern Shoreline Area	Draft plan and community workshops took place starting in 2012. Plan adopted September 15, 2015.
Housing Element Update	Per State law, the City adopted a comprehensive, long-term General Plan to guide its physical development. The Housing Element is one of seven mandated elements of the General Plan.	Citywide	Adopted May 19, 2015 and certified by State Housing and Community Development Department May 27, 2015.
University of California, Berkeley and Lawrence Berkeley National Laboratory (UCB LBNL) Richmond Field Station/Richmond Bay Campus	University of California, Berkeley "Global Campus" consolidates biosciences activities managed by Lawrence Berkeley National Laboratory. 134 acres with 5.4 million square feet over 40 years starting in 2017-2020. Estimated daily population of 10,000.	Richmond Field Station: 1301 South 46th Street	Draft CEQA Environmental Impact Report (EIR) completed; Final EIR certified at UC Regents' May 15, 2014 meeting. In August, 2016, UC Berkeley indefinitely suspended plans to develop the Berkeley Global Campus (Richmond Field Station), UC Berkeley will explore options for this site that reflect new priorities for the campus around enrollment growth and housing.
San Pablo Avenue Complete Streets Study PLN13-054	Complete streets study to improve multi-modal access, safety, and connectivity along San Pablo Avenue between Rivers Street and Hilltop Drive.	San Pablo Avenue between Rivers Street and Hilltop Drive	Construction started in 2014.
South Richmond Linkage Study PLN14-101	Affordable housing and commercial linkage study for the South Richmond Priority Development Area.	South Richmond Priority Development Area	Under review (CEQA Categorical Exemption).

TABLE 4.0-1 (Continued)
CUMULATIVE PROJECTS

Project Name	Description of Project	Location Within Richmond	Environmental Review and Construction Schedule
City of Richmond Projects Under Review/Foreseeable (cont.):			
Richmond General Plan 2030 (General Plan Update)	The General Plan provides a comprehensive framework for development within the city. Richmond's General Plan 2030 contains 15 elements addressing land use, economic development, housing, transportation, climate change, public safety, arts and culture, and open space conservation strategies, as well as a comprehensive element dedicated to community health and wellness.	Citywide	Adopted April 25, 2012. Certified, pursuant to California State Government Code Section 65350, May 25, 2012.
El Cerrito Projects:			
El Cerrito Approved Projects and Plans/Projects Under Construction:			
Portola Middle School Relocation (WCCUSD proposal)	Removal of portable buildings, minor refurbishing and repair of portable buildings, construction of new sports courts and recreation on approximately 0.5 acres of land.	1021 Navellier Street	New campus opened on March 28, 2016 (school's new name is the Fred T. Korematsu Middle School).
Active Transportation Plan	Combination of a Bikeways Master Plan and Pedestrian Master Plan and update to the Circulation Plan for Bicyclists and Pedestrians. The ATP includes a set of goals, policies, implementation programs for the bicycle and pedestrian network, and related capital projects to accomplish this vision.	Citywide	CEQA Mitigated Negative Declaration approved, Final Draft Plan as of February 2016.
2015-2023 Housing Element Update	Draft Housing Element identifies residential sites adequate to accommodate a variety of housing types for all income levels and needs of special population groups; analyzes governmental constraints to housing maintenance, improvement, and development; addresses conservation and improvement of the condition of the existing affordable housing stock; and outlines policies to promote housing opportunities for all persons.	Citywide	Adopted April 21, 2015, certified on May 18, 2015.
Urban Greening Plan	Identifies strategies to enhance El Cerrito's public places and open spaces in order to create a greener, more environmentally sustainable and livable city. The Plan seeks to advance environmental sustainability and stewardship, community identity, active living/transportation, economic vitality, and urban livability.	Citywide	CEQA Mitigated Negative Declaration adopted December 15, 2015.
Climate Action Plan	Plan quantifies existing greenhouse gas emissions associated with El Cerrito and specifies strategies for reducing emissions consistent with the reduction targets established by the City Council.	Citywide	Adopted May 21, 2013.
El Cerrito Recycling Center Project	Reconstruction of the Recycling Center, including demolition and removal of all existing structures on the site, and construction of new structures, including Recycling Center offices, Recycling and Reuse Drop-Off areas, vehicle and recycling container storage, an operations building and small shop area.	7501 Schmidt Lane, Navellier Street	CEQA Negative Declaration adopted in 2011.

TABLE 4.0-1 (Continued)
CUMULATIVE PROJECTS

Project Name	Description of Project	Location Within Richmond	Environmental Review and Construction Schedule
El Cerrito Projects (cont.):			
El Cerrito Approved Projects and Plans/Projects Under Construction (cont.):			
Circulation Plan for Bicyclists, Pedestrians, and Disabled Individuals	Plan describes a system of bicycle and pedestrian routes and associated improvements. Plan is designed to improve accessibility and mobility throughout the City for bicyclists, pedestrians, and disabled individuals.	Citywide	CEQA Negative Declaration adopted in 2007.
Windrush School Master Plan	Amendment to the existing use permit (which was amended in November 1998). The amended use permit would allow construction over a four-phase, 20 year period.	Key Boulevard, Elm Street, Hill Street	Project approved on May 16, 2007.
Mayfair Block Mixed-Use Project	Construction of a mixed-use project that would include 58 residential units, approximately 11,000 square feet of ground-floor retail space, and 88 garage parking spaces. A total of four buildings would be constructed on the site. Includes City approval of a Tentative Map, a Use Permit, a Design Review Board Application, and a Disposition and Development Agreement.	San Pablo Avenue and Knott Avenue	CEQA Mitigated Negative Declaration adopted in 2006, now the Del Norte mixed-use project.
El Cerrito Plaza Mixed Use Development / Creekside Walk	Up to 128 residential units occupying two separate condominium buildings totaling approximately 211,596 square feet on the 131,987 square-foot (3-acre) project site. The housing mix includes six units affordable to low income households and thirteen units affordable to moderate income households. Includes daylighting and restoration of an approximately 60-feet-wide by 180-feet-long portion of Cerrito Creek, currently culverted.	San Pablo Avenue, Fairmont Avenue (Southeastern Corner of the El Cerrito Plaza)	CEQA Notice of Determination issued in 2006. Permits issued July 7, 2015; project is under construction.
San Pablo Avenue Specific Plan	The San Pablo Avenue Specific Plan represents a collaborative planning effort between the cities of El Cerrito and Richmond to identify a shared vision for the future of San Pablo Avenue, identify improvement needs, and adopt implementing regulations that can be applied consistently in planning area. A major goal of the planning effort is to achieve a coordinated, cohesive environment and character in the plan are through (1) a Form-Based Code; (2) multi-modal transportation goals and policies, recommended streetscape design improvements, and design standards as part of a Complete Streets chapter of the Specific Plan; (3) community facilities; and (4) infrastructure improvements.	San Pablo Avenue from south of MacDonald Ave to south of Carlson Blvd	Adopted in 2014.

TABLE 4.0-1 (Continued)
CUMULATIVE PROJECTS

Project Name	Description of Project	Location Within Richmond	Environmental Review and Construction Schedule
El Cerrito Projects (cont.):			
El Cerrito Projects Under Review/Foreseeable:			
Eden Housing Mixed-Use Senior Apartments	63-unit mixed-use senior affordable housing community on an approximately 40,000-square-foot site. Includes a clinic, retail space, a plaza, and private open space.	San Pablo Avenue, north of Schmidt Lane	Approved Development Agreement on April 22, 2014. Currently in predevelopment.
Albany Projects Under Review/Foreseeable:			
Albany Approved Projects/Projects Under Construction:			
2035 General Plan	The City of Albany 2035 General Plan will update the existing Plan adopted in 1992, and will include an updated vision with goals, policies, and actions that anticipate 2035 build-out, reflect the needs and preferences of the community, and address climate change and sustainability	Citywide	Public Hearings held in January 2016. Approved April 18, 2016.
University Village Retail Mixed Use Project	Planned Unit Development Designation, Bonus Density and Rezoning for this project within the existing University Village at San Pablo Avenue project for which a final EIR was adopted and certified in July, 2012.	San Pablo Ave/Monroe St	CEQA Notice of Determination issued on December 9, 2015.
St. Mary's College High School	Alterations to existing structures on 12.5-acre campus.	1294 Albina Ave	Plans approved June 24, 2015 by Planning and Zoning Commission, groundbreaking expected June 2016 with completion in May 2017.
Brighton Avenue Pilot Green Street Project	Provide drainage improvements and stormwater treatment facilities using low impact development best management practices.	Brighton Avenue	CEQA Categorical Exemption granted in January 2015.
Pierce Street Park	Project includes development of a pedestrian/bike path along the west edge of the site and a park, which includes playground structures, picnic tables, a multipurpose field, and a plaza with seating, a bike rack, and fountain.	Pierce Street, Washington Avenue, Cleveland Avenue, and I-80	Opened bid process for qualified contractors in January 2015.
Active Transportation Plan	Adoption of the Albany Active Transportation Plan (ATP). The ATP is a combined Bicycle Master Plan update and Pedestrian Master Plan to fulfill the City's goals for a multi-modal active transportation network.	Citywide	CEQA Mitigated Negative Declaration approved in 2012.
Buchanan Street Bicycle/Pedestrian Path Project	Development of Class I and II bicycle facilities along both sides of Marin Avenue/Buchanan Street from Cornell Avenue to the Buchanan Street overcrossing.	Cornell Ave to Cleveland Ave	CEQA Notice of Determination issued March 15, 2010.
Albany Climate Action Plan	Adoption of the CAP, a document that provides policies and actions intended to reduce GHG emissions within the City.	Citywide	Plan adopted in April 2010.

TABLE 4.0-1 (Continued)
CUMULATIVE PROJECTS

Project Name	Description of Project	Location Within Richmond	Environmental Review and Construction Schedule
Albany Projects Under Review/Foreseeable:			
Albany Approved Projects/Projects Under Construction:			
Lower Cordornices Creek Improvements Plan	Restoration of a portion of Codornices Creek by widening the floodplain, restoring the creek meanders, approximately 1 acre of riparian habitat and construction, and approximately 900 linear feet of public access.	San Pablo Avenue / 5th Street	CEQA Mitigated Negative Declaration approved in 2008.
Safeway Store on Solano Avenue	New Safeway Store	Solano Avenue	Plans submitted in April 2012; project is constructed and open.

References – Introduction to the Environmental Analysis

California Department of Conservation (Department of Conservation), 2016. Farmland Mapping and Monitoring Program. Contra Costa County Important Farmland 2014. ftp://ftp.consrv.ca.gov/pub/dlrp/FMMP/pdf/2014/con14.pdf. Accessed July 14, 2016. Map published April, 2016.

Department of Conservation, 1996. Division of Mines and Geology. Generalized Mineral Land Classification Map of the South San Francisco Bay Production-Consumption Region. By Susan Kohler-Antablin. ftp://ftp.consrv.ca.gov/pub/dmg/pubs/ofr/OFR_96-03/OFR_96-03_Plate1.pdf. Accessed July 14, 2016.

City of Richmond, 2003. *Guidelines and Procedures for the Implementation of the California Environmental Quality Act.* Resolution No. 125-03, Replacing Resolution No. 63-96. Adopted September 23, 2003.

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4.1 Aesthetics

This section evaluates the potential for development under the Specific Plan and Sub-Area 4 Project to affect existing visual conditions of the environment, specifically scenic vistas and resources, visual character and quality, and light and glare.[1] This analysis is based on existing conditions information from field reconnaissance in and around the Plan Area, including areas throughout the City to assess potential scenic long-range views that encompass the Plan Area. The evaluation considers existing visual conditions represented by "before" photographs taken generally as of December 2014 when the City published the Notice of Preparation for this EIR, and utilizes computer-generated wireframe/architectural massing simulations illustrating the "after" conditions reflecting buildout of the Specific Plan and Project.

4.1.1 Environmental Setting

Existing Visual Character and Quality

Regional and Citywide

Richmond borders the east side of San Francisco/San Pablo Bay and is west of the Sobrante Ridge, which is a segment of the San Pablo and Potrero Hills Range in Contra Costa County. Richmond is approximately 8 miles northeast across San Francisco Bay from San Francisco (18 driving miles), approximately 6 miles northwest along San Francisco Bay (12 driving miles) from Oakland, and approximately 12 miles east of Marin County/San Rafael (across the Richmond/San Rafael Bridge).

Richmond comprises approximately 56 square miles of land and water. The City is relatively flat and low lying, with gradual elevation increases occurring towards the eastern portions of the City as it approaches the Sobrante Ridge. Richmond has a largely built-out environment with the majority of its natural open space areas limited to the City edges. Richmond's proximity to the San Francisco Bay, coupled 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.

Plan Area

The Plan Area is relatively flat at approximately 5 to 35 feet above sea level. The Plan Area is generally bounded by Interstate 580 (I-580) to the north and east; the Bay Trail, shoreline, and Marina Bay residential community to the south; and Marina Way (South) to the west.

The visual character of the Plan Area and vicinity is largely established by large-scale industrial, commercial, and office uses, as well as various residential neighborhoods. The Plan Area includes older established development and infrastructure in Sub-Areas 3 and 4 in the north and east parts of the Plan Area. More recent development and newer infrastructure occurs primarily along

[1] Reference to "Plan Area" encompasses both the Specific Plan and Sub-Area 4 Project site.

Marina Bay Parkway (the major existing thoroughfare through the west part of the Plan Area) and in the north/central part of the Plan Area in Sub-Area 1.

Development in the Plan Area is characterized by low-rise buildings that vary widely in building and lot size. Buildings within Sub-Area 1 comprise mostly two- to three-story industrial or commercial buildings, such as the recently constructed Harbor Gate Retail Center at the north approach to the Plan Area on Marina Bay Parkway from 23rd Street; the multi-use DiCon Fiberoptics campus / Richmond Police Department complex on Regatta Boulevard; and the Marina Bay and Regatta business centers on Marina Bay South.

Low-rise buildings with expansive loading and service yards are located at the southwest part of the Plan Area (Sub-Area 1) and typify Sub-Area 2, which includes the PG&E service center, and Sub-Area 3, which includes the large, one-story Dreisbach Cold Storage and Safeway Distribution Center with large truck loading areas. These large facilities are partially screened from roadways by slated fencing.

The Campus Bay Business Park at the southeast part of the Plan Area (in Sub-Area 4) also includes mainly one- to two-story industrial service and commercial buildings with large service lots and older properties.

Other parts of the Plan Area are characterized by shoreline, inlet, waterway, and marshland areas, including Meeker Creek and Slough (south of Sub-Area 2); Baxter Creek (in the eastern part of Sub-Area 4); and the marshlands (including lagoons), ponded areas, transitional habitat areas and Bay shoreline in the undeveloped, southern and southeast-most part of Sub-Area 4. Railroad corridors and associated facilities, including two major switching yards, extend throughout the Plan Area, and border Sub-Area 3 and bisect Sub-Area 1.

Vegetation throughout the Plan Area ranges from manicured landscaped frontages and street trees, particularly in the newer redeveloped areas in the west part of the Plan Area (part of Sub-Area 1); to less-managed, ruderal vegetation in the east part of the Plan Area, along South 51st Street, including near the open space areas close to watercourses and shoreline areas described above.

Infrastructure conditions also vary throughout the Plan Area; newer, improved streets and pedestrian facilities extend through most of the Plan Area, with older roadways also present in the east and along the northeast-most border fronting I-580. Existing nighttime lighting within the Plan Area is primarily security lighting associated with industrial and office uses.

Sub-Area 4 Project Site

The Sub-Area 4 Project site largely comprises the approximately 86-acre Zeneca site and the Campus Bay Business Park properties to the north and east of the Zeneca site (see **Figure 3-8** in Chapter 3, *Project Description*). Developed areas of the Project site contain one- to two-story industrial service and commercial buildings with large and/or outdoor service lots visible from the street. A single, three-story commercial building exists at the intersection of South 51st Street and Seaport Avenue. The character of the Project site is further established by relatively older and

less-maintained buildings and infrastructure, and unmanaged vegetation (compared to some of the more recently redeveloped areas in Sub-Area 1, for example), which contribute to the visual character of the approach to the Plan Area and the Sub-Area 4 Project site from Bayview Avenue and along South 51st Street. While the approach to the Project site via the Bayview Avenue overpass of I-580 gradually slopes downward, the Sub-Area 4 Project site is relatively flat, like the overall Plan Area.

Surrounding Areas

As shown in Figure 3-3 in Chapter 3 (*Project Description*), developed urban areas, including areas of relatively new development, are located immediately adjacent to the Plan Area and include areas of relatively new development. Most of these areas include low-rise industrial and commercial buildings of one- to three-stories, similar to buildings within the Plan Area. Notable is the approximately 136-acre Richmond Field Station, and properties located between Sub-Areas 2, 3 and 4. Visible from the approach to the Plan Area from 23rd Street/Marina Bay Parkway (between Sub-Areas 1 and 3) is the several-acres large, California Department of Public Health laboratory facility, with its main three-story building set behind surface parking areas and highly manicured and landscaped street frontage.

Immediately east of Sub-Area 1, southwest of the California Department of Public Health laboratory facility and across Marina Bay Parkway, is the recently-developed, two-story The Crossing at Marina Bay commercial office complex. Immediately south of Sub-Area 1 are new residential townhome and condominium neighborhoods of up to three stories in height. Also adjacent to the Plan Area and immediately east of Sub-Area 3 is the new Regatta Business Center, a complex of two- and three-story buildings.

As described below (see *Existing Scenic Vistas and Resources*), most of the Plan Area is geographically bounded by, and visually obscured from, the I-580 corridor and points beyond to the north and east. Therefore, much of the Plan Area is not within the visual context of these offsite areas. To the south of the Plan Area, however, established residential neighborhoods served by highly landscaped and tree-lined parkways are within the visual context of the Plan Area. Residences in this area generally range from two to three stories in height, with buildings up to four stories in some areas. Mostly newer commercial office and civic buildings that are one- to two-stories tall are to the west and south of the Plan Area, along and beyond Marina Way South.

Existing Plan Area Images

Figure 4.1-1a presents a location key to several photographs of the existing visual conditions of the Plan Area and its surroundings, which are shown in **Figures 4.1-1b** through **Figure 4.1-1e**. These photos illustrate the visual appearance of existing parks and open space, typical residential development in and adjacent to the Plan Area, and varied industrial and commercial developments. Figure 4.1-1a also conveys variations in building sizes, undeveloped areas (natural and previously developed), and density throughout and around the Plan Area. Figure 4.9-1 in Section 4.9, *Land Use and Planning*, also generally conveys the existing development pattern of the Plan Area and its immediately surrounding areas.

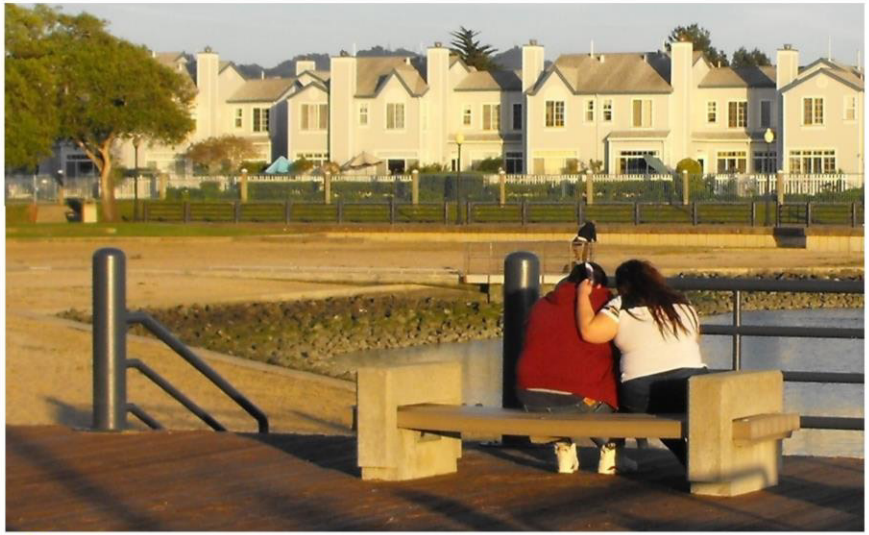


SOURCE: Google Earth, 2016

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Figure 4.1-1a

Specific Plan Area Photo Locations



A1. Marina Park



A2. Marina Park



A3. Anchorage at Marina Bay



A4. South Richmond Shoreline

SOURCE: ESA, 2016

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Figure 4.1-1b
Specific Plan Area Photos



A5. South 23rd Street Overpass



A6. View towards Richmond Field Station

SOURCE: ESA, 2016

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Figure 4.1-1c

Specific Plan Area Photos



B1. Rail Lines at Regatta Boulevard



B2. DiCon Lighting at Regatta Boulevard



B3. Industrial / Office Facade, Sub-Area 4



B4. Office Building, Sub-Area 4

Figure 4.1-1d
Specific Plan Area Photos



B5. B5. Offices and Landscaping, Marina Way South



B6. B6. Industrial Warehouse, Wright Avenue

SOURCE: ESA, 2016

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Figure 4.1-1e
Specific Plan Area Photos

Photos of locations in and adjacent to the Plan Area from *offsite* locations in Figure 4.1-1b and Figure 4.1-1c show two-story residential development southeast of Marina Park (View A1); a view northeast across Marina Park (View A2); three-story residential development immediately south of Sub-Area-1 (View A3); the Bay shoreline looking south from the Bay Trail, south of the Richmond Field Station (View A4); views of the existing Harbor Gate Retail Center (Sub-Area 1), Miller Knox Regional Shoreline bluffs approximately 0.2 miles west, and distant cross-Bay glimpses toward San Francisco and possibly Angel Island to southwest (View A5); and a second view south of the Richmond Field Station, showing the marshes south of the campus site, the site itself, and the East Bay Hills north of the campus.

Photos of the Plan Area and the Sub-Area 4 Project site from *onsite* locations are shown in Figure 4.1-1d and Figure 4.1-1e, and show the existing railroad lines along Regatta Boulevard, south of Sub-Area 3 (View B1); the three-story DiCon Fiberoptics building on Regatta Boulevard in Sub-Area 1 (View B2); examples of the one- to three-story industrial and office buildings in the Sub-Area 4 Project site (Views B3 and B4); a view of office buildings and landscaping along Marina Way South (View B5); and street-facing truck loading docks, platforms, and associated industrial buildings along Wright Avenue in Sub-Area 1 (View B6).

Existing Scenic Vistas and Resources

Scenic vistas and resources visible from public viewpoints within the Plan Area and offsite are captured in views of the San Francisco Bay and its associated baylands, sloughs, and marshes (including Meeker Creek, Meeker Slough, and Baxter Creek); the urbanized cityscape of San Francisco; the East Bay Hills and the Marin Hills; and in certain locations the Bay Bridge and Golden Gate Bridge.

Views Across the Plan Area and Sub-Area 4 Project Site

Views of identified scenic vistas and visual resources from within the Plan Area and Project site are available from public viewpoints along the length of the Bay Trail south of Sub-Area 4. Views of these vistas and resources from other public areas within and near the Plan Area are limited due to the flat topography and existing development across most of the Plan Area.

Public views across the Plan Area and Project site, toward these scenic vistas and resources, include distant viewpoints located at higher elevations to the north and east of the Plan Area, as illustrated in the selected long-range photographs (from Tehama Street, and Mira Vista Golf Course in El Cerrito) presented further in this section.

Existing public views across the Plan Area and Project site toward these scenic vistas and resources, from lower elevations and closer to the Plan Area, are also largely limited due to differences in elevation and intervening development or landscaping.

Visibility of Plan Area and Sub-Area 4 Project Site

Similar to the limited views available *across* the Plan Area or Project site toward existing scenic vistas and resources, the overall visibility of the Plan Area is also limited, given the circumstances described above. Interstate 580 is located immediately north and east of the Plan Area, and east of the Sub-Area 4 Project site. Existing views across the Plan Area or Sub-Area 4 Project site from I-580 are limited or non-existent because the viewpoints from the roadway are either lower or higher in elevation than the Plan Area, and/or screened by dense vegetation. Where the Plan Area is even partially visible from I-580, those views are fleeting, given highway travel speeds.

Figure 4.1-2a presents a location key to photographs of views toward the Plan Area (and any scenic resources beyond the Plan Area) from nearby parks and public spaces; these photographs and views are shown in **Figure 4.1-2b**, **Figure 4.1-2c,** and **Figure 4.1-2d**. Figure 4.1-2b includes views from Booker T. Anderson Jr. Park (approximately 0.25 miles east, across I-580), looking west toward the Plan Area (View C1). Figure 4.1-2b also includes View C2 from Marina Park (adjacent to Sub-Area 2), looking east toward the Plan Area. The Plan Area is not visible from these two locations, due to intervening trees and landscaping.

Figure 4.1-2c includes View C3 from the trail along Baxter Creek (bordering Sub-Area 2), looking northeast toward other parts of the Plan Area. As shown in this photo and a corresponding Google Earth wireframe image of Specific Plan architectural massing (also referred to as massing in this section)[2] in the figure, views of development in the Plan Area would be visible from this location, though somewhat obscured by trees. (Use of Google Earth wireframe images is discussed further below.)

4.1.2 Regulatory Setting

General Plan

Land Use Designation

General Plan land use designations within the Plan Area include Business/Light Industrial, Medium-Intensity-Mixed-Use (Commercial Emphasis), and Open Space, as further discussed below.

Relevant General Plan Goals and Policies

The General Plan contains several goals and policies related to aesthetics. Several scenic routes, scenic corridors, and scenic vistas have been identified by the City as having a positive aesthetic value for both visitors and residents, and constitute locally recognized scenic vistas and corridors. (See *Approach to Analysis, Scenic Views or* Resources).

[2] "Architectural massing" refers to the perception of the space occupied by a building, and to the building's general shape, size, and height.



SOURCE: Google Earth Pro, basemap, 2016; ESA, 2016

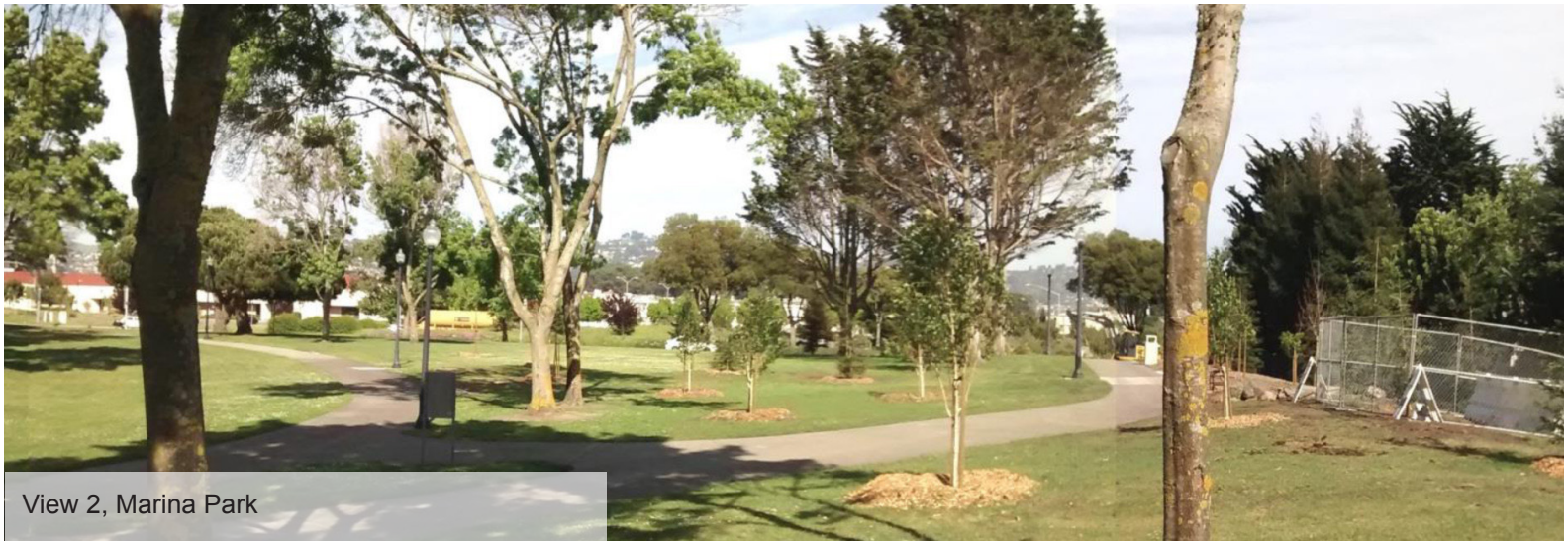
Richmond Bay Specific Plan EIR . 120834

Figure 4.1-2a

Visibility of Plan Area from Nearby Parks and Trail



Booker T. Anderson Park View Toward Plan Area



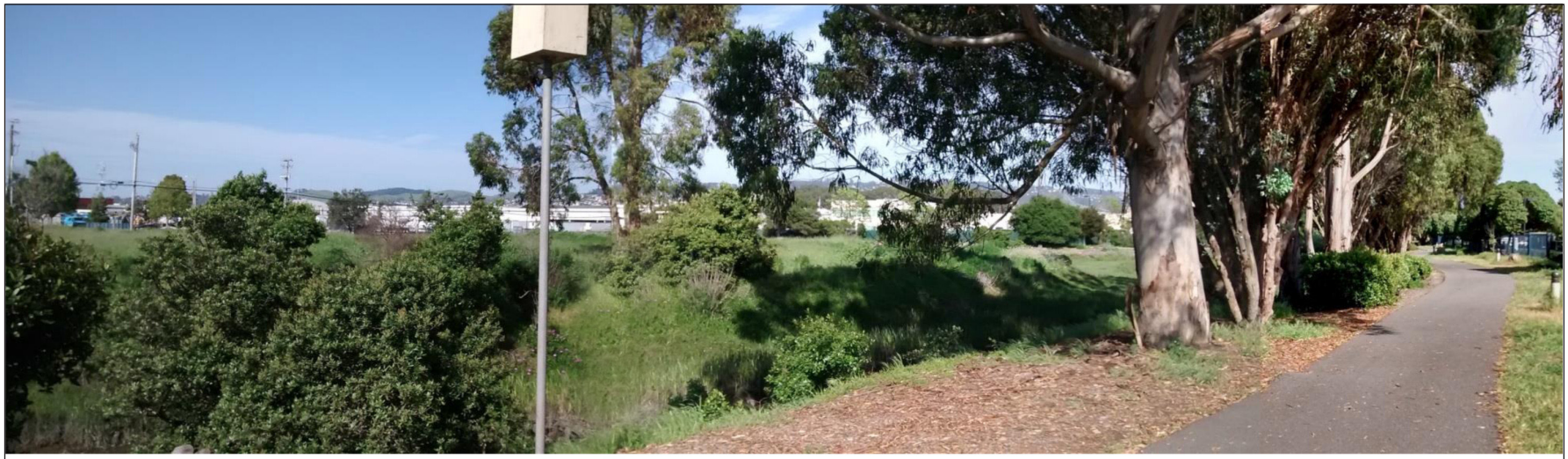
View 2, Marina Park

SOURCE: ESA, 2016

Richmond Bay Specific Plan EIR . 120834

Figure 4.1-2b

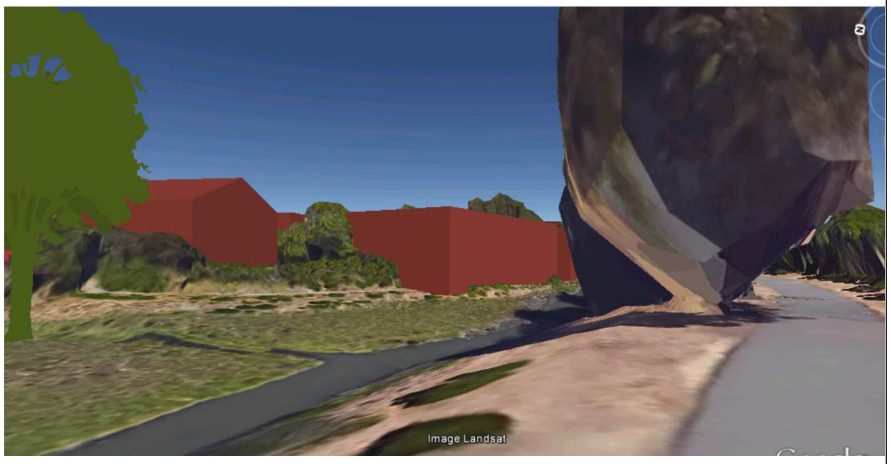
C1 View toward Plan Area from Booker T. Anderson Park and
C2 View toward Plan Area from Marina Park Looking East Toward Plan Area



View 3, Baxter Creek View



View 3, Baxter Creek: Google Earth View



View 3, Baxter Creek: Wireframe View

SOURCE: Google Earth Pro, 2016; ESA, 2016

Richmond Bay Specific Plan EIR . 120834

Figure 4.1-2c

C3 View of Plan Area from Baxter Creek Trail

General Plan land use goals and policies relevant to the Specific Plan and Sub-Area 4 Project include the following:

- **Goal LU5: Balanced and Compatible Uses.** Achieve a mix of land uses that is ecologically, economically and socially equitable and sustainable. Encourages a mix of uses in major activity centers, community nodes and gateways, in neighborhood nodes and along key corridors as well as in some industrial areas. Using this pattern and range of land uses, activate focal areas of the City throughout the day and evening, and provide convenient access to goods, services and community amenities.

  Policy LU5.3 Land Use Compatibility. …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 appropriate transitional habitat zones between wetlands, marshlands, creeks, and mudflats) and transitional uses, rerouting of truck traffic and design components that mark transitions in land use. Require sufficient visual open space and/or landscaped screening between industrial operations and adjacent residential or recreational activities in order to create adequate buffers. Require sufficient visual open space or landscaped screening between industrial operations and adjacent to residential or recreational activities to create adequate buffers.

  Action LU5.C Industrial Use Buffers – Expanded Definition. New industrial uses established adjacent to existing residential or commercial uses shall incorporate measures to minimize impacts to residential uses such as enclosure of industrial activities in buildings, use of screening for visually unattractive uses, site design, soundproofing and landscaping. New residential and commercial uses established adjacent to existing industrial uses shall incorporate measures to minimize impacts to residents from noise, exposure to toxic substance emissions, vibration, odors and truck traffic. Industrial sites may incorporate supporting office and commercial space if protected to commercial standards.

- **Goal CN2: Conserved Open Space.** Conserve open space to ensure that Richmond's expansive shoreline, network of parklands, trails, hillsides and undeveloped natural areas remain viable in supporting biological communities and providing sanctuary for future generations. Conserve open space, expand public access to open space, where appropriate, and acquire additional lands where feasible. Continue to protect surrounding hills and viewsheds as character-defining features that provide scenic backdrops, as well as publicly accessible trails and vistas.

  Policy CN2.2 Richmond Shoreline. Minimize the impacts of development on the shoreline with special attention to intensity, density, and proximity to the water. 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.

  Policy ED1.7 Richmond's Waterfront as a Community Amenity. Continue to redevelop Richmond's waterfront as a publicly accessible amenity to attract new residential and commercial development and provide expanded recreational activities

and open space. Waterfront sites with quality views can be leveraged for residential, commercial and recreational uses. The City's parks should also be maintained and enhanced to maximize their benefit to the community and as an attraction for new business.

- **Goal ED8: A Thriving Mixed-Use Neighborhood along the Southern Shoreline.** Transform the Southern Shoreline into a model mixed-use neighborhood characterized by green development, parks and open space, a fully developed university research and development campus, new employment centers, attractive residential communities, a connection to regional ferry services, an accessible shoreline and a modern port. Incorporate a range of commercial uses including industrial activities, high-technology and professional firms and a local-serving retail, as well as medium to higher-density housing outside of the Harbour Way-Marina Way South Industrial Buffer Zone (referred to in the Land Use and Urban Design Element as the Transitional Zone Overlay District) and other designated buffers. Expand public improvements along the Southern Shoreline to offer access to the Richmond waterfront for recreational activities which take advantage of impressive Bay views.

  Policy ED8.4 Public Access to Shoreline. Improve the public access to the shoreline. Support the expansion of trails, viewpoints and supporting infrastructure to fully capitalize on the shoreline's prime access to the Bay, while protecting natural resource areas such as marshlands and wetlands. Promote recreational activities, such as hiking, biking, kayaking, bird watching, and fishing, that respect the Bay and enhance the shoreline as a valuable resource for the community.

City of Richmond Zoning Ordinance / Municipal Code

The City of Richmond Municipal Code, of which the Richmond Zoning Code is Article 15, provides development standards that guide all development in the City. The Zoning Code includes standards that allow for the development of new and innovative structures that maintain established natural and man-made views that help define the City of Richmond.

City of Richmond Architectural Review Process and Design Review Board

The City's Design Review Board (DRB), as established in the City's Municipal Code (Chapter 15.04.930, Design Review), functions as the decision-making body for the design of new development projects and most exterior changes to existing buildings. The DRB provides recommendations to the Planning Commission with respect to the elements of design. It is independently authorized to approve, conditionally approve, or deny applications for design review of public and private development based on their consistency with the General Plan, the specific provisions of the base or overlay zoning district in which the project is located, and the provisions of any applicable design review guidelines.

Where appropriate, the DRB may also impose conditions related to design impacts of the project (RMC Section 15.04.930.110).

San Francisco Bay Conservation and Development Commission and Bay Plan

The San Francisco Bay Conservation and Development Corporation (BCDC) regulates development that falls within the open water, marshes and mudflats of greater San Francisco Bay, and its nine-county shoreline. The BCDC uses the McAteer-Petris Act, the San Francisco Bay Plan, its own regulations and other plans specific to other areas of the Bay in order to inform its decisions. The BCDC's Bay Plan and Public Access Design Guidelines apply to the Plan Area and Project site.

The Bay Plan / Views of the Bay

The Bay Plan contains findings and policies concerning appearance, design, and scenic views of development around the Bay (SFBCDC, 1968). In accordance with these policies, views of the Bay from vista points and public roads should be protected.

The Bay Plan directs that shoreline developments be built in clusters, leaving open area around them to permit more frequent views of the Bay. Similarly, the Bay Plan recommends structures near or over the Bay to be designed as landmarks that suggest the location of the waterfront when it is not visible, especially in flat areas, but low enough to assure the continued visual dominance of the hills around the Bay. All bayfront development should be designed to enhance the pleasure of the user or viewer of the Bay. Maximum efforts should be made to provide, enhance, or preserve views of the Bay and shoreline, especially from public areas, from the Bay itself, and from the opposite shore. Bay Plan policies and goals particularly applicable to the Plan Area and Sub-Area 4 Project, and that pertain to aesthetics include:

- To enhance the visual quality of development around the Bay and to take maximum advantage of the attractive setting it provides, the shores of the Bay should be developed in accordance with the Public Access Design Guidelines.

- All bayfront development should be designed to enhance the pleasure of the user or viewer of the Bay. Maximum efforts should be made to provide, enhance, or preserve views of the Bay and shoreline, especially from public areas, from the Bay itself, and from the opposite shore.

- Shoreline developments should be built in clusters, leaving areas open around them to permit more frequent views of the Bay. Developments along the shores of tributary waterways should be Bay-related and should be designed to preserve and enhance views along the waterway, so as to provide maximum visual contact with the Bay.

- Views of the Bay from vista points and from roads should be maintained by appropriate arrangements and heights of all developments and landscaping between the view areas and the water. In this regard, particular attention should be given to all waterfront locations, areas below vista points, and areas along roads that provide good views of the Bay for travelers, particularly areas below roads coming over ridges and providing a "first view" of the Bay (shown in Bay Plan Map No. 8, Natural Resources of the Bay).

- Vista points should be provided in the general locations indicated in the Plan maps. Access to vista points should be provided by walkways, trails, or other appropriate means and

connect to the nearest public thoroughfare where parking or public transportation is available. In some cases, exhibits, museums, or markers would be desirable at vista points to explain the value or importance of the areas being viewed.

Shoreline Space Public Access Design Guidelines

The BCDC is charged with maintaining public access, including visual public access (views to the Bay from other public spaces) within its jurisdiction. The BCDC developed public access objectives in the *Shoreline Space Public Access Design Guidelines* to provide, maintain and enhance visual access and visual quality to the Bay and shoreline by locating buildings, structures, parking lots and landscaping of new shoreline projects such that they enhance and dramatize views of the Bay and the shoreline from public thoroughfares and other public spaces, organizing shoreline development to allow Bay views and access between buildings (SFBCDC, 2005).

Per these guidelines, the design character of public access areas should relate to the scale and intensity of the proposed development. Objectives related to visual access and visual quality may be accomplished by providing visual interest and architectural variety in massing and height in new buildings along the shoreline and/or using forms, materials, colors and textures that are compatible with the Bay and adjacent development.

California State Scenic Highway Program

The California Scenic Highway Program, maintained by the California Department of Transportation (Caltrans), was created by the State Legislature in 1963. The purpose of the State Scenic Highway Program is to protect and enhance the natural scenic beauty of California highways and adjacent corridors, through special conservation treatment. The State Scenic Highway System includes a list of highways that are either eligible for designation as scenic highways or have been officially designated. Interstate 80 (I-80) and I-580 in proximity to the Plan Area and are not designated as Scenic Highways.

Title 24 Outdoor Lighting Zones

The California Energy Commission (CEC) establishes Building Energy Efficient Standards within Title 24 that address outdoor lighting for public and private uses. The standards specify outdoor lighting requirements for residential and non-residential development, and their intent is to improve the quality of outdoor lighting and help reduce the impacts of light pollution, light trespass, and glare. The standards regulate lighting characteristics, such as maximum power and brightness, shielding, and sensor controls to turn lighting on and off. Different lighting standards are set by classifying areas by lighting zone. The classification is based on population figures in the 2010 U.S. Census and the areas can be designated as LZ1 (dark), LZ2 (low), LZ3 (medium), or LZ4 (high). Lighting requirements for dark and rural areas are stricter in order to protect the areas from new sources of light pollution and light trespass. According to the U.S. Census Bureau, the Plan Area and Project site are defined as urban areas and are therefore designated as LZ3 per the CEC classification standards.

4.1.3 Significance Criteria

Based on Appendix G of the CEQA *Guidelines*, the Specific Plan and Sub-Area 4 Project would be considered to have a significant aesthetics impact if they would:

a) Have a substantial adverse effect on a scenic vista;

b) Substantially damage scenic resources, including but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway;

c) Substantially degrade the existing visual character or quality of the site and its surroundings; or

d) Create a new source of substantial light or glare that would adversely affect day or nighttime views in the area.

Approach to Analysis

Scenic Vistas

The analysis approach for criterion a. involves defining scenic vistas that could be "substantially" and adversely affected by development under the Specific Plan and development of the Sub-Area 4 Project. "Scenic vistas" provide visual access to a large geographic area for which the field of view can be quite wide and extend into the distance. Scenic vistas typically include valued resources, including mountains, valleys, cityscapes, water bodies and shorelines. The identification of specific scenic vistas to be considered in this EIR was informed by the General Plan, which consistently values views of San Francisco Bay and its relationship to the waterfront, as well as views of the East Bay Hills, Marin Hills, and other significant hillside open space. Therefore, the scenic vistas selected for consideration in this analysis include long-range views of San Francisco Bay and its shoreline, tributaries and marshes, as well as distant views of undeveloped hillsides and ridges, including across the Bay.

As previously mentioned, scenic vistas are vast and encompass a viewer's full range of vision beyond that captured by the short-range, mid-range, or long-range photographs in this document. In addition, scenic vistas may be intermittent given existing development, topography and landscaping, and as they are viewed by numerous viewers traveling along major roadways. Moreover, the perception and interpretation of visual changes vary widely among viewers and therefore are largely subjective.

This analysis considers that a substantial and adverse effect would occur if development under the Specific Plan or the Project would block or noticeably interrupt the full expanse of a scenic vista, as seen by most viewers.

Scenic Views or Resources

The analysis approach for Criterion b. addresses potential effects to scenic views or resources. The identification of scenic views or resources to be considered in this EIR was largely guided by the General Plan and General Plan EIR (City of Richmond, 2011). The General Plan EIR identifies the following scenic views and potential scenic resources, which as mentioned above, generally exist and define what are valuable scenic vistas:

- Panorama views of the San Pablo Bay
- Views of Marin Hills/Mount Tamalpais
- Views of the San Francisco Bay
- Views of Albany Hills and Albany mudflats
- Views of Marin County/San Quentin
- Views along Marina Way
- Views along Meade Street
- Views along Meeker Avenue
- Views along Regatta Boulevard

Visual Character or Quality of the Plan Area, Project Site, and Surroundings

Development under the Specific Plan and development of the Sub-Area 4 Project would substantially change the existing "visual character or quality" (collectively, visual conditions) of the Plan Area or Project site as a result of new development, infrastructure, and improved open spaces and landscaping.

Google Earth Wireframe Images

The visual analysis in this section uses Google Earth image-based screenshots and "wireframe" (building massing) images that are "pinned" (spatially accurate and tied to Google Earth ground level coordinates) to show how development under the Specific Plan and development of the Sub-Area 4 Project would affect scenic vistas and scenic resources from particular public viewpoints (discussed below). The wireframe images are based on building massing modeled to reflect the dimensions of development, including building heights, grouping, and spacing, that would be likely under development of the Specific Plan. Overall, the wireframe images are based on the foreseeable maximum theoretical buildout program as described in Chapter 3, *Project Description*, of this EIR, and also consider limitations and bonus allowances that would apply to development under the Specific Plan. The wireframe images do not show building material details or detailed landscaping.

While actual development that may occur over time in the Plan Area may be different than that conveyed in the wireframe images, what is depicted is suitable for conveying (for CEQA purposes) the effects on scenic vistas and resources based on the Specific Plan's goals, standards, and other framing elements. Further, final designs of specific development projects would be subject to City Design Review Board review and approval to ensure consistency with the City's design goals.

Selected Viewpoints. Six public viewpoints were selected in consultation with City staff and its planning consultants. These viewpoints were selected because they are accessible by the general public and considered to best illustrate the effects of possible future development on the selected scenic vistas, and scenic views or resources, as well as to convey a change in the existing visual conditions of the Plan Area and Project site and their surroundings. Three of the viewpoints are located within or adjacent to Sub-Area 4; two viewpoints are long-range viewpoint of the Plan Area from elevated locations east of the I-580; and one viewpoint is a mid-range viewpoint from the 23rd Street/I-580 overpass.

Specific Plan Goals, Standards, and Frameworks Addressing Aesthetics

The environmental assessment of aesthetic considerations factors in the Specific Plan goals, development standards, and recommended design frameworks since, taken together, they frame the physical appearance of potential future development. These elements are described below.

Specific Plan Goals

The Specific Plan goals form the foundation for the policies, standards, and design guidelines contained in the Plan. Goals in the Specific Plan that address aesthetic considerations include the following:

- **Goal 1: Complete, Pedestrian-oriented, Mixed-Use Neighborhoods.** The first goal of the Specific Plan is the creation of complete neighborhoods within the context of existing topography and infrastructure. Expected outcomes of this goal include "Development that capitalizes on its location along the Bay, including stunning views of Oakland, San Francisco and Marin."

- **Goal 2: Access to Open Space.** As stated in the Specific Plan, "park and open space resources are important character-defining elements for the Plan Area, providing….a scenic backdrop for area development." Guiding principles and elements for the development of open space within the Plan Area include:

  - Implementation of a Civic Space Regulating Plan, which provides a framework for the development of parks and open space within the Plan Area, including community parks, creekside greenways, neighborhood squares, linear parks, a shoreline promenade, and green connectors for vehicles, bicycles, and pedestrians.

  - Design of "centrally-located parks that give structure and identity to new mixed use neighborhoods," and

  - Maintenance of important view corridors through the Plan Area and connecting to the Berkeley Global Campus.

Sub-Area Goals and Features

Goals and features specific to development within each Specific Plan sub-area are presented below.

- **Sub-Area 1:** Goals for Sub-Area 1 include an improved intersection of Regatta Boulevard with Marina Way South, offering "an opportunity to create a gateway to the Plan Area from downtown."

- **Sub-Area 2:** Goals for Sub-Area 2 include the following:

  - *Gateway to Richmond Field Station/Berkeley Global Campus*. The development of an "attractive, tree-lined address" linking the linear park in this sub-area to the main entrance of the Richmond Field Station/Berkeley Global Campus; and

  - *Half-block near Richmond Field Station/Berkeley Global Campus*. The development of a half block of mixed uses adjacent to the Richmond Field Station/Berkeley Global Campus that "maximizes attractive development along a walkable street, screening the parking garage proposed on the BGC's edge."

- **Sub-Area 4:** Goals for Sub-Area 4 include the following:

  - *Half-block near Richmond Field Station/Berkeley Global Campus*. The development of a half block of mixed uses adjacent to the Richmond Field Station/Berkeley Global Campus to "provide a more public interface between the campus and the city."

Other Standards and Frameworks

Other standards and frameworks described in the Specific Plan addressing aesthetic appearance include the following:

- **Richmond Field Station/Berkeley Global Campus Connection Standards:** Standards for connection between the Plan Area and the Berkeley Global Campus and recommends the employment of design strategies to create seamless and welcoming transitions between the campus and the community.

- **Thoroughfare Regulating Plan:** Within the Thoroughfare Regulating Plan, standards for public street frontages and landscaping.

- **Frontage Type Standards:** Standards applicable to the development of frontage types, or the components of a building that provide an important transition and interface between the public and private realms. For each frontage type, design standards are provided.

- **Maximum Allowed Lighting and Glare:** The Specific Plan states that all projects shall comply with the Illuminating Engineering Society of North America's (IESNA's) recommended values for exterior lighting; that "all lighting, reflective surfaces or any other sources of illumination shall be utilized in a manner which produces no glare on public streets or on any other parcel;" and that lights "shall be shielded at lot lines so as not to be directly visible from an adjoining residential district."

- **Screening of Activities and Mechanical Equipment:** The Specific Plan confirms that all new development within the Plan Area will comply with City of Richmond Municipal Code section 15.04.840.120, Screening of Activities and Mechanical Equipment, such that all exterior mechanical equipment will be screened from public view, with appropriate screening materials that will effectively screen equipment so that it is not visible from a street or adjoining lot.

- **Design Review:** The Specific Plan also confirms that development projects within the Plan Area are subject to review by the City's Design Review Board, and describes the City review authority for design review.

Proposed Development Standards and Regulations

The land use development standards and regulations proposed in the Specific Plan will shape the form and character of development within the Plan Area as development occurs. Proposed development regulations address maximums for floor area ratio (FAR), residential density, building height, and building length, as well as minimum distance between buildings. Table 3-2 in Chapter 3, *Project Description*, of this EIR summarizes the proposed Specific Plan transect zone development standards relevant to environmental effects under CEQA, including aesthetics. In general, new uses that would be developed according to these standards could include

medium- to high-density housing, R&D uses that would be consistent with and/or complement uses on the Richmond Field Station/Berkeley Global Campus, and mixed-use complete neighborhoods, in buildings that would be 5 to 8 stories in height.

Changes to Development Standards with Proposed Specific Plan

An amendment to the General Plan is being proposed concurrently with the Specific Plan to designate a new, single General Plan land use category to the entire Plan Area, to describe the intent and vision of the Plan Area and adopt development standards that accommodate the Plan's vision. The proposed new land use category is "Richmond Bay Specific Plan" (or RBSP):

> ***Richmond Bay Specific Plan (RBSP).*** *Includes a series of pedestrian-oriented, mixed-use neighborhoods that integrate a mixture of research and development and commercial activities with medium to high density residential uses consistent with the RBSP.*

Existing General Plan land use designations within the Plan Area include Business/Light Industrial, Medium-Intensity-Mixed-Use (Commercial Emphasis), and Open Space. To illustrate the effective change in development that could occur under the Specific Plan pursuant to the General Plan, **Table 4.1-1** generally compares certain existing development standards with proposed standards under the Specific Plan by land use categories. As shown by the table, the development standards that would be put in place under the Specific Plan would generally result in a higher intensity of development – allowable FAR would increase from a maximum of 3.0 to a maximum of 5.0 – as well as a higher density of residential development, whereby maximum dwelling units per acre would generally triple (increase from 50 to 150). Maximum building heights would remain the same (55 feet); under the Specific Plan, this height limitation could be increased to 85 feet through the application of density bonuses.

Topics with No Impact or Otherwise Not Addressed in this EIR

Review and comparison of the setting circumstances and Specific Plan and the Sub-Area 4 Project with each of the six significance criteria stated above clearly show that no impacts associated with aesthetics would result for Significance Criteria b. The following discusses the reasoning supporting these conclusions.

The Plan Area and Sub-Area 4 Project site would not substantially damage scenic resources, including but not limited to, trees, rock outcroppings, and historic buildings within a State scenic highway (Criterion b.).

No officially designated or eligible State scenic highways are located in Richmond; therefore, there would be no impact to scenic resources within a State scenic highway by the Specific Plan or the Sub-Area 4 Project. Therefore, with regard to impacts to State scenic highways, Significance Criterion b. does not apply, and will not be discussed further. While Significance Criterion b. does not apply with respect to State scenic highways, other scenic resources are present within the Plan Area that may be affected by development under the Plan, as discussed below.

TABLE 4.1-1
CHANGES IN DEVELOPMENT STANDARDS UNDER THE PROPOSED SPECIFIC PLAN GENERAL PLAN AMENDMENT

Existing General Plan Land Use Designation	Intensity (Floor Area Ratio)	Density (residential dwelling units per acre)	Height (feet)	Proposed Richmond Bay Specific Plan General Plan Land Use Designation	Intensity (Floor Area Ratio)	Density (residential dwelling units per acre)	Height (feet)
Business / Light Industrial	0.25 - 3.0	-	55 feet (max.)	Richmond Bay Specific Plan	1.0 - 5.0	25 - 150	55 feet (max.), with 85 feet possible with bonuses
Medium-Intensity-Mixed-Use (Commercial Emphasis)	0.25 - 2.0	50 du/ac	55 feet (max.)				
Open Space	0.5 (max.)	-	35 feet (max.)				

NOTE: All proposed standards cited are maximums, inclusive of available incentive zoning bonuses (which allow extended height, FAR and/or density maximums in the IH-1, IH-2 or WD-2 districts). Also, all the proposed standards would be guided or restricted by the overarching development standards in the proposed new General Plan land use category for the area.

"-" indicates no standards for density, intensity or height.

SOURCE: Redwood City General Plan, 2010

4.1.4 Program-Level Impacts of the Specific Plan

Scenic Vistas and Scenic Resources (Views)

Impact AES-1.SP: Development under the Specific Plan would not have a substantial adverse effect on a scenic vista or scenic resource. (Criteria a. and b.). (*Less Than Significant, No Mitigation Required*)

The following pages present the mapped locations of the selected viewpoints and the wireframe images prepared for the analysis of development that could occur under the Specific Plan pertaining to scenic vistas or scenic resources (including views) (as well as changes to visual character or quality [visual conditions], addressed in Impact AES-2.SP). Preparation of the wireframe images and the selection of the viewpoints are described in the *Approach to Analysis* above.

Figure 4.1-3a shows the locations of the viewpoints selected. As discussed in the *Approach to Analysis*, the simulations focus on the views and scenic resources that could be most affected by development under the Specific Plan, and focus on vistas encompassing distant hillsides and bodies of water, namely San Francisco Bay and its shoreline, tributaries and marshes. **Figures 4.1-3b** through **4.1-3g** show each of the before and after images. The viewpoints are:

- Viewpoint 1 (VP1), long-range (Figure 4.1-3b): Looking west from Tehama Street, at an elevation of approximately 100 feet, and a distance of approximately 0.5 miles (pertains to views and changes to visual conditions);
- Viewpoint 2 (VP2), long-range (Figure 4.1-3c): Looking southwest from Mira Vista Golf Club, at an elevation of approximately 500 feet, and a distance of approximately 1.7 miles;
- Viewpoint 3 (VP3), Mid-range (Figure 4.1-3d): Looking west from the 23rd Street/I-580 overpass, north of Sub-Area 1;
- Viewpoint 4 (VP4) (Figure 4.1-3e): Looking east from the Bay Trail, south of the Richmond Field Station site;
- Viewpoint 5 (VP5) (Figure 4.1-3f): Looking west from the Bay Trail, south of Sub-Area 4;
- Viewpoint 6 (VP6) (Figure 4.1-3g): Looking west from the Bay Trail, from the northern point of Point Isabel Regional Shoreline.

Long-range Views of Scenic Vistas and Resources

As shown in Figures 4.1-3b and 4.1-3c, the scenic resources of the San Francisco Bay, the Marin Hills, and expansive views southward capturing Angel Island and San Francisco are visible from higher and distant viewpoints relative to the Plan Area. Views from Tehema Street (Viewpoint 1) west of I-580 and at an elevation approximately 100 feet higher than the Plan Area, and from the more distant Mira Vista Golf Club at Arlington Avenue (in El Cerrito) at an elevation approximately 500 feet higher than the Plan Area and nearly two miles northeast of the site (Viewpoint 2), both capture these uninterrupted long-range views across the lowland development of El Cerrito and Richmond, I-580, and the Bay.

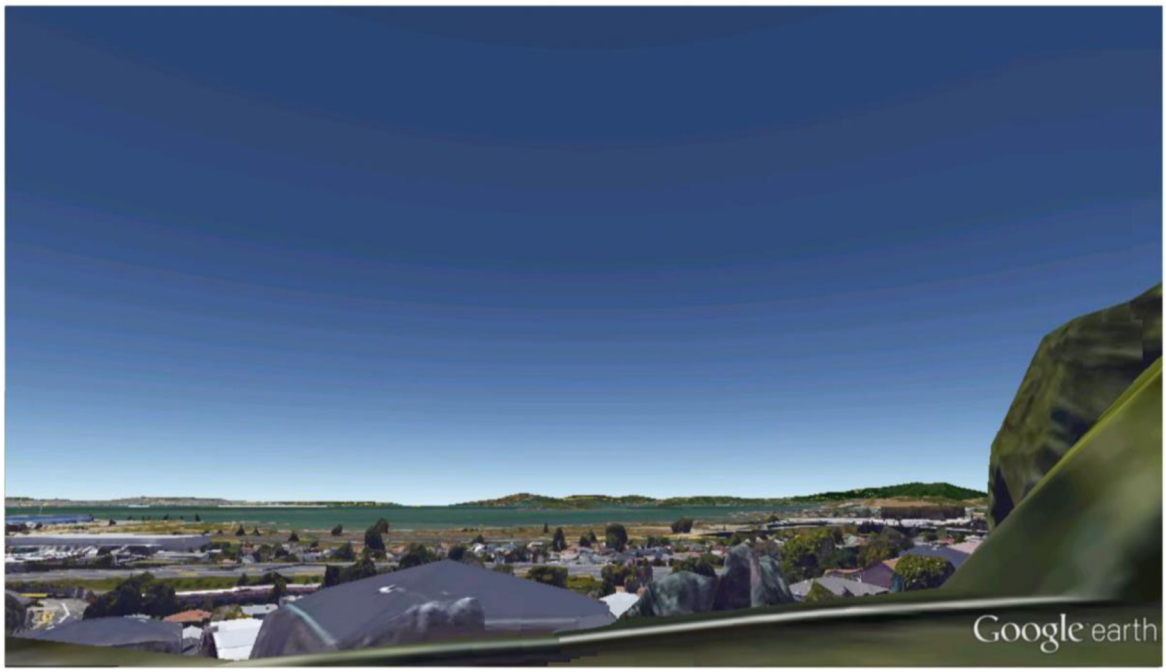


SOURCE: Google Earth, 2016

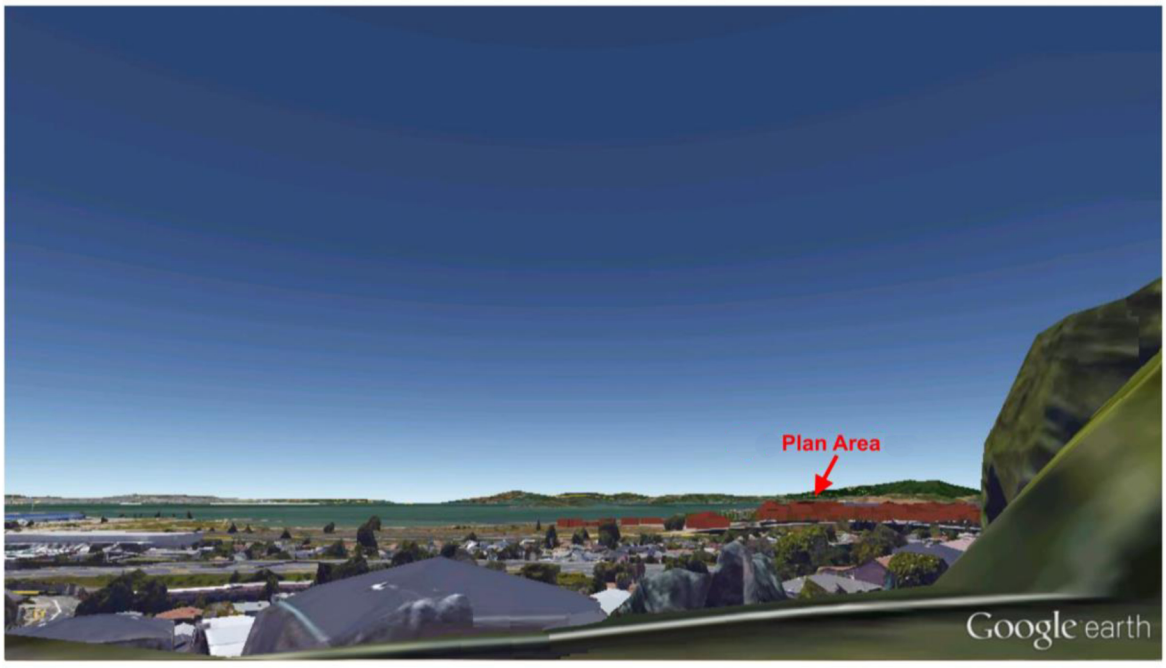
Richmond Bay Specific Plan EIR . 120834

Figure 4.1-3a

Google Earth Wireframe Photo Locations



Long-Range Viewpoint: Tehama Street (VP1)



Long-Range Viewpoint with Specific Plan Massing/Wireframes (VP1)

SOURCE: Google Earth, 2016

Figure 4.1-3b

Existing (Google Earth) Views and Specific Plan Massing/Wireframe Views



Long-Range Viewpoint: Mira Vista Golf Club (Arlington Avenue, El Cerrito) (VP2)



Long-Range Viewpoint with Specific Plan Massing/Wireframes (VP2)

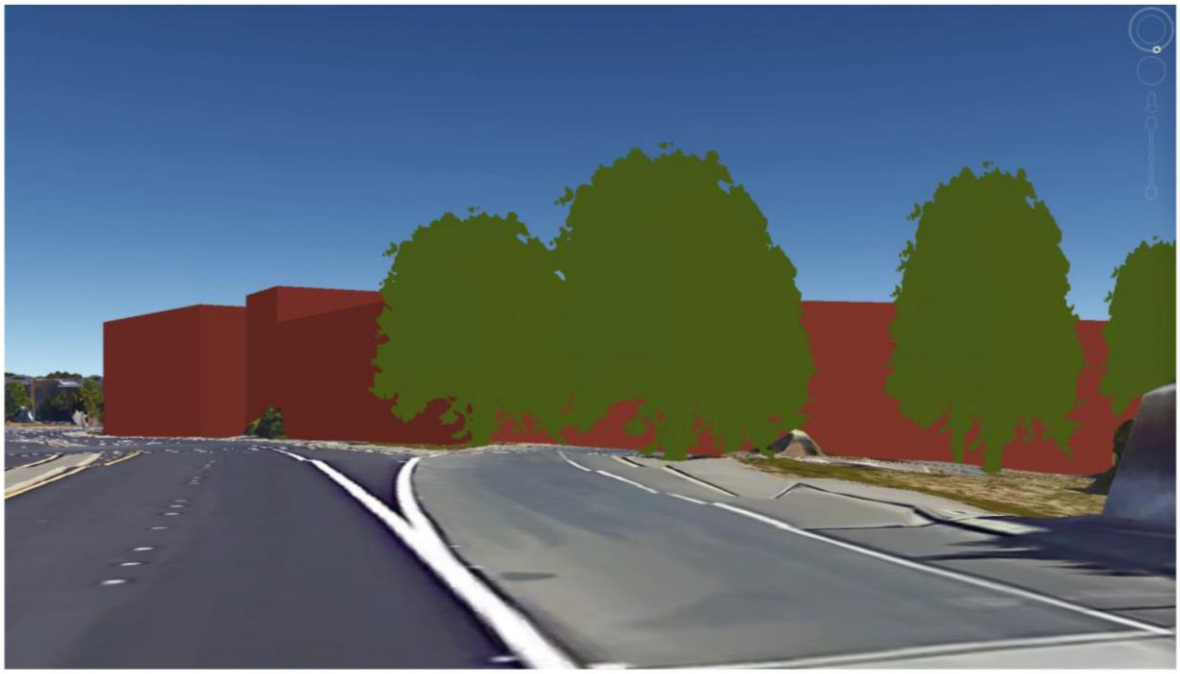
SOURCE: Google Earth, 2016

Figure 4.1-3c

Existing (Google Earth) Views and Specific Plan Massing/Wireframe Views



Mid-Range Viewpoint: 23rd Street/I-580 Overpass (VP3)



Mid-Range Viewpoint with Specific Plan Massing/Wireframes (VP3)

SOURCE: Google Earth, 2016

Figure 4.1-3d

Existing (Google Earth) Views and Specific Plan Massing/Wireframe Views



Viewpoint 4, Sub-Area 4: Bay Trail, Looking East (VP4)



Viewpoint 4, Sub-Area 4 with Specific Plan Massing/Wireframes (VP4)

SOURCE: Google Earth, 2016

Figure 4.1-3e

Existing (Google Earth) Views and Specific Plan Massing/Wireframe Views



Viewpoint 5, Sub-Area 4: Bay Trail, Looking West (VP5)



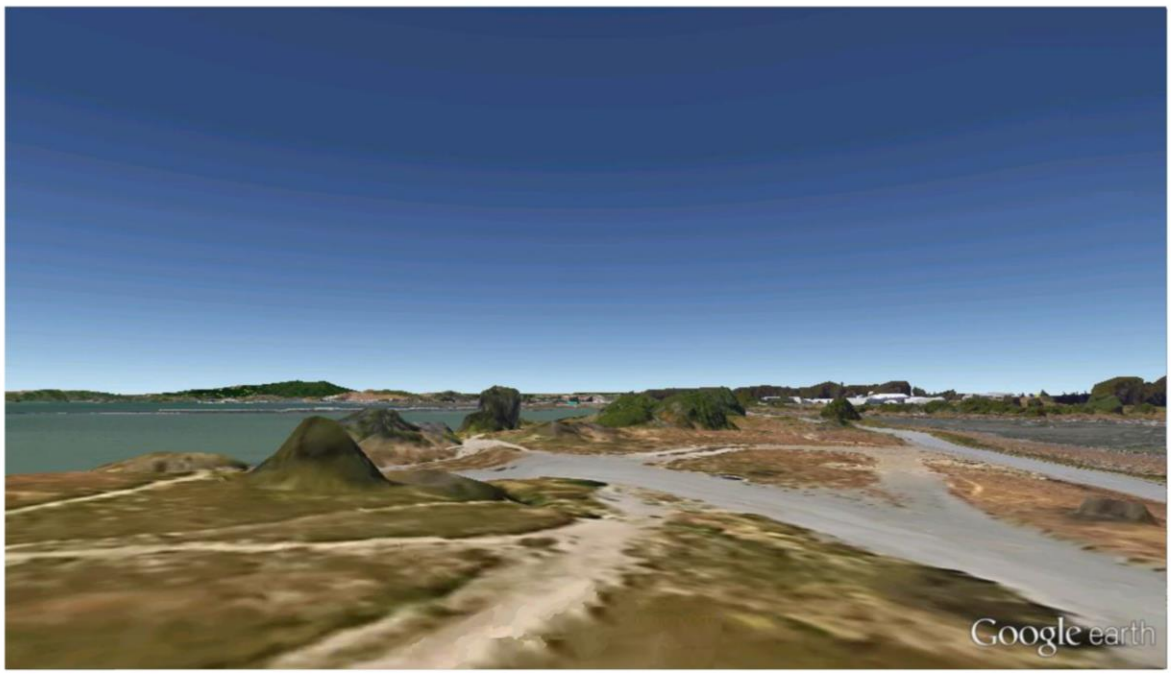
Viewpoint 5, Sub-Area 4 with Specific Plan Massing/Wireframes

SOURCE: Google Earth, 2016

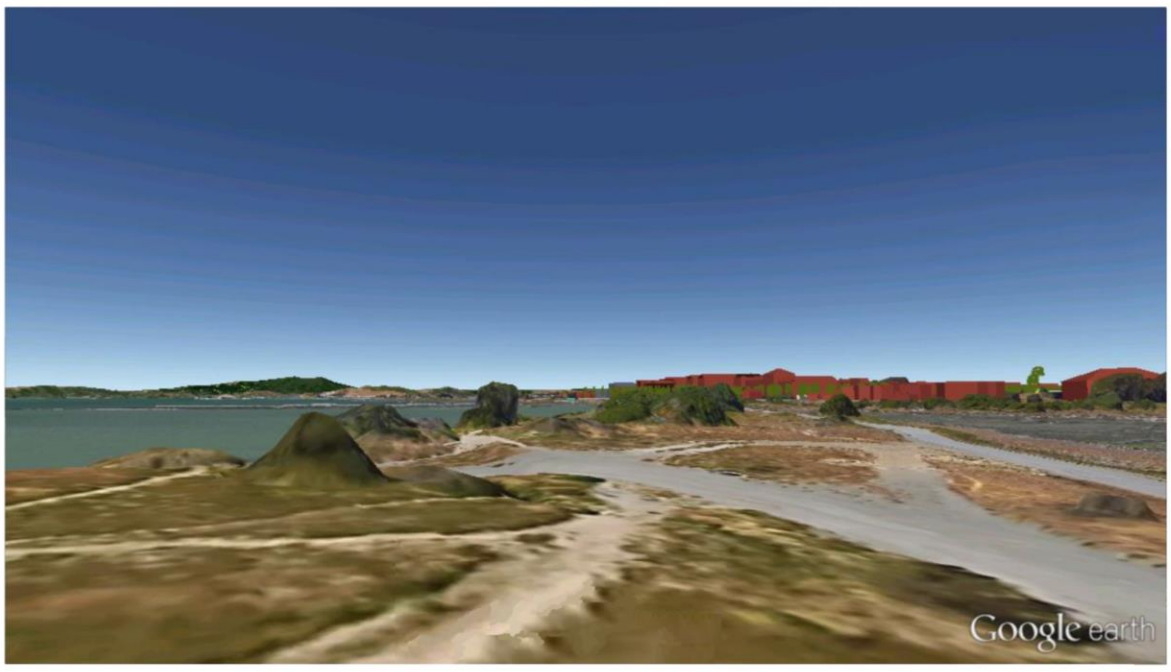
Richmond Bay Specific Plan EIR . 120834

Figure 4.1-3f

Existing (Google Earth) Views and Specific Plan Massing/Wireframe View



Viewpoint 6, Sub-Area 4: Bay Trail, Looking West (VP6)



Viewpoint 6, Sub-Area 4 with Specific Plan Massing/Wireframes

SOURCE: Google Earth, 2016

Figure 4.1-3g

Existing (Google Earth) Views and Specific Plan Massing/Wireframe Views

The wireframe images in Figures 4.1-3b and 4.13-c illustrate that development under the Specific Plan would be visible from these distant viewpoints, and would appear consistent with the existing context of urban development. Development under the Specific Plan would not interrupt the long-range scenic vistas visible from these viewpoints that capture the visual resources of the Marin Hills and San Francisco, as shown in Viewpoints 1 and 2; the viewer's range of vision would also extend beyond the view shown in these figures, in particular further south and east.

Of the two long-range viewpoints, Viewpoint 1 from Tehema Street is closer to the Plan Area than Viewpoint 2 (0.5 miles versus nearly 2 miles). Viewpoint 1 captures a long-range view showing the maximum possible massing, density and height of development under the Specific Plan; as shown in Figures 4.1-3b and 4.13-c, no notable difference in the appearance of development under the Specific Plan is distinguishable (given the existing urban development context) between Viewpoint 1 and the more distant Viewpoint 2 from the golf course, nearly 2 miles away. In both cases, development under the Specific Plan would not result in a substantial change within the context of existing urban development, and would not affect a scenic vista or resource.

The wireframe image in Figure 4.1-3d (Viewpoint 3, entering the Plan Area from the 23rd Street I-580 overpass) is from a nearer viewpoint location north of Sub-Area 1, and is included for analysis primarily to demonstrate the lack of clear scenic vistas or scenic resources visible from this key approach to the Plan Area. As shown for the existing conditions in this figure (top image), views of the Miller Knox Regional Shoreline bluffs approximately 0.2 miles west, and distant cross-Bay glimpses views toward San Francisco and Marin to the southwest are largely obscured by existing buildings and other development. As illustrated in the wireframe image in this figure, which reflects the maximum possible development allowance per the proposed development standards and regulations for the Specific Plan, development under the Specific Plan in Sub-Area 1 would appear prominent from this roadway approach, but would not result in a substantial adverse effect to any scenic vista or resources.

Views from the Bay Trail

As shown in Figure 4.1-3e, given the limited and low-rise development in the southern part of the Plan Area (specifically the existing Campus Bay Business Park and properties immediately east), distant views of the East Bay Hills are visible from the Bay Trail (Viewpoint 4). Existing development is substantially less dense and lower in height that what is currently permitted under the General Plan (see Table 4.1-1), and development under the Specific Plan shown in the wireframe image would obstruct the northern part of the view.

Similarly, Figures 4.1-3f and 4.1-3g illustrate the existing lack of substantial development in the Plan Area, as visible from the Bay Trail and the northern point of Point Isabel Regional Shoreline, looking west and northwest (Viewpoints 5 and 6, respectively). Long range views across the site are blocked by mature vegetation that exists in the western part of the Plan Area. However, views to the west (toward Marin County) from this location capture the Marin Hills, considered scenic resources. As depicted in the exhibits, development under the Specific Plan would not affect views of the Marin Hills; new, taller and more dense development visible from these viewpoints to the north would not block views of the Marin Hills to the south and west.

Overall, development under the Specific Plan would not substantially obstruct any views of the Bay, shoreline, or distant hills and ridgelines. Where development would block views of the northerly part of the East Bay Hills as seen from the Bay trail looking east (Viewpoint 4), this is not considered a substantially adverse or damaging effect, given the expansive view that remains largely unaffected from this location (it is useful to note this view is not shown comprehensively in Figure 4.1-3e, given the limitations of the size of the image in this figure). For this view, the viewer's range of vision extends uninterrupted for greater than 180 degrees, capturing the East Bay Hills as they extend to the east and south as well as views of adjacent marshes, shoreline, open spaces and across the Bay.

Summary

The wireframe images presented above show that scenic vistas and scenic resources would not be substantially degraded by development under the Specific Plan. This conclusion and the assessment above considers the proposed development standards and regulations for the Specific Plan, particularly maximum building heights and building lengths, and minimum setbacks between buildings, as depicted in the massing of the wireframe images.

The Specific Plan would also preserve most of the existing open space area along the shoreline and provide new linear parks oriented toward the Bay that would function as visual corridors connecting viewers to the shoreline and the Bay (see Figure 3-3).

Overall, development under the Specific Plan, conservatively considering the maximum allowable development standards, would not have a substantial adverse effect on a scenic vista or scenic resource. Existing scenic vistas or views toward the waterfront and San Francisco Bay, as well as toward distant hillsides to the east and west, from the selected public viewpoints represent views as seen by most viewers. The impact of development under the Specific Plan to existing scenic vistas or scenic resources (views) would be less than significant.

Significance: Less Than Significant.

Mitigation: None required.

Visual Character or Quality (Visual Conditions)

Impact AES-2.SP: Development under the Specific Plan would not degrade the existing visual character or quality of the Plan Area and its surroundings. (Criterion c.). (*Less Than Significant, No Mitigation Required*)

Plan Area

The current nature and range of the Plan Area's character are conveyed in the series of photographs in Figures 4.1-1b through 4.1-1e, and Figures 4.1-2b and 4.1-2c (presented in the *Existing Setting*). As depicted, the Plan Area primarily includes varying levels of industrial and office uses and open space. The visual character of the Plan Area is largely defined by large,

industrial lots with older, low (one- to two-story), and large buildings; adjacent residential neighborhoods; and open space and marshes in the southern portion of Sub-Area 4.

The vision, goals, standards and frameworks provided in the Specific Plan indicate the character of the Plan Area will transform from less intense (in terms of land use) and characterized by industrial uses, to a more intensely developed series of complete neighborhoods, with a more dense urban form, greater transportation connectivity, and high density residential uses. Changes in visual character within the Plan Area would result from the development of parks and open space elements, including community parks, creekside greenways, neighborhood squares, linear parks, a shoreline promenade (within Sub-Area 4), and green connectors for vehicles, bicycles, and pedestrians. As mentioned above, development under the Specific Plan would capitalize on access and views at and toward the waterfront areas of the Plan Area. In addition, as discussed above, the Specific Plan will incorporate gateways and interfaces between the Plan Area and the Richmond Field Station, as well as streetscapes, public space improvements, and other "placemaking" features that will define the Richmond Bay area.

Overall, inclusion of development standards and regulations that support the Specific Plan's clearly articulated vision, will achieve a beneficial aesthetic effect on the visual character of the Plan Area. The impact will be less than significant.

Lark Drive Variant

Development of the Lark Drive Variant would result in the construction of approximately 300 feet of road to the west of the existing Lark Drive, resulting in a minimal change to the appearance of the landscape in this part of the Richmond Field Station, consistent with the appearance of the existing road, and minimal, if any, degredation of the visual character or quality of the site in this location. In addition, the UC's LRDP for the Richmond Field Station includes standards for the design of roads on the site including Lark Drive, and would require trees and landscaping that would soften the visual impact of the road widening and extension. Impacts would be less than significant.

Significance: Less Than Significant.

Mitigation: None required.

Light and Glare

Impact AES-3.SP: Development under the Specific Plan would not create a new source of substantial light or glare that would adversely affect day or nighttime views in the area. (Criterion d.). (*Less Than Significant with Mitigation*)

As described in the *Environmental Setting* in this section, existing nighttime lighting within the Plan Area is primarily security lighting associated with industrial and office uses.

Development under the Specific Plan would result in additional nighttime lighting in the Plan Area, as the mix of land uses that includes residential and public recreational areas develops over time. New sources of light would be installed as part of new developments, such as new or improved streets, pedestrian and bicycle paths, building entries and parking areas, and sidewalks and open spaces for safety, security, and architectural purposes.

Compliance with Title 24 lighting power allowances is expected to adequately control unnecessary brightness of lighting, debilitating glare, and sky glow. As discussed above, the Specific Plan states that all projects developed within the Plan Area will comply with the IESNA's recommended values for exterior lighting; that "all lighting, reflective surfaces or any other sources of illumination shall be utilized in a manner which produces no glare on public streets or on any other parcel;" and that lights "shall be shielded at lot lines so as not to be directly visible from an adjoining residential district." New developments would also be subject to the City's design review procedure, during which proposed lighting will be evaluated for adverse effects.

Nighttime lighting can potentially adversely affect species and natural habitat areas. Section 4.3, *Biological Resources*, of this EIR includes an assessment of the potential effects that nighttime lighting or use of certain building materials that can cause glare could have on wildlife. **Mitigation Measure BIO-1d.SP: Building Design and Lighting Strategies to Address Biological Resources Impacts**, addresses impacts of light on habitats, reducing such impacts to less than significant. While development under the Specific Plan would not result in a significant impact on day or nighttime views, the implementation of Mitigation Measure BIO-1e specific to potential effects on species and natural habitat areas would further reduce impacts of development under the Specific Plan's on views.

In summary, the potential light and glare impacts from development of uses under the Specific Plan would therefore be less than significant.

Significance: Less Than Significant with Mitigation.

Mitigation: Mitigation Measure BIO-1d.SP.

4.1.5 Project-Level Impacts of the Sub-Area 4 Project

Scenic Vistas and Scenic Resources (Views)

Impact AES-1.SA4: Development of the Sub-Area 4 Project would not have a substantial adverse effect on a scenic vista or scenic resource. (Criteria a. and b.). (*Less Than Significant, No Mitigation Required*)

Scenic views or vistas that could be potentially affected by development of the Sub-Area 4 Project site are the same as those that could be affected by development under the broader Plan Area. These include scenic views of the shoreline and Bay, including wetlands, marshes, and other shoreline habitat areas; long-range views of the East Bay Hills and Marin Hills; and views

of more distant urban development across the Bay, including the San Francisco skyline, the Bay Bridge and, to a lesser extent, the Golden Gate Bridge.

As described in the *Environmental Setting* discussion of this section and in Chapter 3, *Project Description*, Sub-Area 4 is generally characterized by low-density industrial and office uses that are one and two stories in height, as well as large undeveloped parcels. The site includes the existing Zeneca cleanup site and Campus Bay Business Park, as well adjacent properties to the east.

Wireframe images depicting the massing of development under the Specific Plan, consistent with the foreseeable maximum theoretical buildout program analyzed in this EIR, are presented in the analysis of the potential effects of development under the Specific Plan on scenic vistas and resources (Impact AES-1.SP). Impacts are assessed to views from distant, long-range viewpoints (Figures 4.1-3b and 4.1-3c), a mid-range viewpoint (Figure 4.1-3d), and Bay Trail viewpoints (Figures 4.1-3e through 4.1-3g).Therefore, the discussion and conclusions above for Impact AES-1.SP apply to this discussion of the Sub-Area 4 Project impacts.

Specific to the Sub-Area 4 Project, Figures 4.1-3e through 4.1-3g (Viewpoints 4 through 6) illustrate scenic vistas that include reasonably foreseeable development under the Project. As discussed above, although the northern portion of the view of the East Bay Hills from the Bay Trail (Viewpoint 4) would be partially obstructed, this would not be a substantial adverse change given the expansive remaining view of the extent of the East Bay Hills to the east and south, and across the Bay. Views to the west (toward Marin County) along the Bay Trail (Viewpoints 5 and 6) capture expansive views of the Marin Hills, as well as views southward toward San Francisco and Angel Island, across the Bay. As shown for Viewpoints 5 and 6, development under the Project would be noticeable in views from the Bay Trail immediately south of Sub-Area 4 and open space south of the Plan Area (Point Isabel Regional Shoreline), but would not obstruct scenic vistas or resources from these viewpoints looking west. In general, as discussed above, the wireframe images in these figures show that scenic views and vistas and scenic resources would not be substantially degraded by development under the Project; adherence to the proposed development standards and regulations, particularly maximum building heights and building lengths, and minimum setbacks between buildings are factored into this conclusion and the assessment above. Views across the Sub-Area 4 Project site would not be substantially obstructed by development under the Project.

In addition, under development of the Specific Plan, open space along the shoreline and waterfront marsh would be preserved, and additional parks and open spaces, including the shoreline promenade in the southern part of Sub-Area 4, would function as visual features connecting viewers to the shoreline and improving access to views. Redevelopment of existing vacant properties and the 86-acre Zeneca site, which are currently inaccessible to the public, under the Project would likely enable new, highly scenic views of the shoreline and marshes south of Sub-Area 4, as well as the other scenic resources visible from this area, including the Bay, San Francisco skyline, East Bay Hills, and Marin Hills, providing a beneficial aesthetic effect.

Overall, development under the Sub-Area 4 Project would not have a substantial adverse effect on a scenic vista, as demonstrated by the analysis above and as shown in the figures in this

section. The full expanse of scenic vistas of the shoreline and San Francisco Bay, as well as distant hills, as seen from the selected viewpoints by most viewers would not be substantially blocked by development of the Project. The impact of development under the Project to existing scenic vistas or scenic resources would be less than significant.

Significance: Less Than Significant.

Mitigation: None required.

Visual Character or Quality (Visual Conditions)

Impact AES-2.SA4: Development of the Sub-Area 4 Project would not degrade the existing visual character or quality of the site and its surroundings. (Criterion c.). (*Less Than Significant, No Mitigation Required*)

The visual character of the Sub-Area 4 Project site is largely defined by industrial lots with older, low (one- to two-story), and large buildings; large areas of open land (primarily the Zeneca cleanup site); vacant structures and properties; and open space and marshes in the southern portion of Sub-Area 4. Scenic value within the development footprint of the Sub-Area 4 Project site is relatively low compared to other, more recently redeveloped areas of the Plan Area (e.g., Sub-Areas 1 and 3).Photos illustrating the Project site's industrial character are conveyed in Figure 4.1-1d (Views B3 and B4) in the *Existing Setting*.

The vision, goals, standards and frameworks provided in the Specific Plan indicate the character of the Plan Area, including the Project site, will transform from less intense (in terms of land use) and characterized by industrial uses, to a more intensely-developed series of complete neighborhoods, with a more dense urban form, greater transportation connectivity, and higher density of residential uses. Changes in visual character within the Project site would result from the demolition of vacant and abandoned buildings, the development of new neighborhoods and office and commercial uses, as well as the development of parks and open space elements, including a community park, a linear park, neighborhood squares, and a shoreline promenade, as well as green connectors for vehicles, bicycles, and pedestrians. As mentioned above for the Specific Plan as a whole, development under the Project would capitalize on access and views at and toward shoreline areas. In addition, as discussed above, the Project will incorporate gateways and interfaces between the Plan Area and the Richmond Field Station, as well as streetscapes, public space improvements, and other "placemaking" features that will define the Project site.

Overall, inclusion of development standards and regulations in the Specific Plan that support a clearly articulated vision for complete neighborhoods, open space, and improvements to visual character will achieve a beneficial aesthetic effect on the visual quality of the Project site. The impact will be less than significant.

Significance: Less Than Significant.

Mitigation: None required.

Light and Glare

Impact AES-3. SA4: Development of the Sub-Area 4 Project would not create a new source of substantial light or glare that would adversely affect day or nighttime views in the area. (Criterion d.). (*Less Than Significant with Mitigation*)

As described in the *Environmental Setting* in this section for the Plan Area, existing nighttime lighting within the Project site is primarily security lighting associated with industrial and office uses.

Development of the Project would result in additional nighttime lighting within the Project site, as the mix of land uses that includes residential and public recreational areas develops over time. New sources of light would be installed as part of new developments, such as new or improved streets, pedestrian and bicycle paths, building entries and parking areas, and sidewalks and open spaces for safety, security, and architectural purposes.

Compliance with Title 24 lighting power allowances is expected to adequately control unnecessary brightness of lighting, debilitating glare, and sky glow. As discussed above, the Specific Plan states that all projects developed within the Plan Area, including the Sub-Area 4 Project, will comply with the IESNA's recommended values for exterior lighting; that "all lighting, reflective surfaces or any other sources of illumination shall be utilized in a manner which produces no glare on public streets or on any other parcel;" and that lights "shall be shielded at lot lines so as not to be directly visible from an adjoining residential district." The Sub-Area 4 Project would also be subject to the City's design review procedure, during which proposed lighting will be evaluated for adverse effects.

Nighttime lighting can potentially adversely affect species and natural habitat areas. Section 4.3, *Biological Resources*, of this EIR includes an assessment of the potential effects that nighttime lighting or use of certain building materials that can cause glare could have on wildlife. **Mitigation Measure BIO-1e.SP: Building Design and Lighting Strategies to Address Biological Resources Impacts**, addresses impacts of light on habitats, reducing such impacts to less than significant. While development of the Sub-Area 4 Project would not result in a significant effect on day or nighttime views, the implementation of Mitigation Measure BIO-1e specific to potential effects on species and natural habitat areas would further reduce the Project's impacts.

In summary, the potential light and glare impacts from development of the Project would therefore be less than significant.

Significance: Less Than Significant with Mitigation.

Mitigation: Mitigation Measure BIO-1e.SP.

4.1.6 Cumulative Impacts

Impact C-AES-1.SP: Development under the Specific Plan, in combination with past, present, existing, approved, pending, and reasonably foreseeable future development would not result in significant cumulative impacts with respect to aesthetics. (*Less Than Significant, No Mitigation Required*)

The geographic scope for cumulative Specific Plan aesthetics impacts includes viewsheds that include the Plan Area, as well as areas surrounding the Plan Area with which development under the Specific Plan could combine to create visible effects.

Cumulative projects considered are those in the Specific Plan vicinity that would also involve construction activity, including approved, pending, and reasonably foreseeable future projects, most notably the Berkeley Global Campus/Richmond Field Station and the Baywalk Mixed Use Project (see Section 4.0.4 *Cumulative Analysis,* in this chapter for detail).

Plan Impacts

Impact AES-1.SP evaluates potential effects on scenic views or vistas, finding that development under the Specific Plan would not result in a substantial adverse impact. Adherence to specific design standards and regulations regarding streetscapes, building frontages, new lighting, and other elements, support the less-than-significant determinations for this impact.

Development under the Specific Plan would change and be reasonably considered to improve the overall visual quality and character of the Plan Area, as discussed above. As discussed under Impact AES-2.SP, the new development would benefit the visual character of the Plan Area by introducing new uses and strengthening the Plan Area's focus on the waterfront by introducing improvements and amenities (water-oriented promenade and open space). The Plan would also result in focused areas for new development – including the introduction of residential uses – with tailored development standards to ensure the new development is appropriate for its context; new open space and recreation areas; new lighted and landscaped access points to the waterfront; and improved internal and external connections with the Plan Area for all modes of travel. Also, the character of the Plan Area would transform while maintaining the existing water-oriented feel. Overall, the Specific Plan would achieve beneficial aesthetic effects, and Impact AES-2.SP is less than significant.

Similarly, impacts related to light and glare from the Specific Plan (Impact AES-3.SP) would be less than significant.

Cumulative Effects

Cumulative aesthetics effects normally require other cumulative projects to occur within the same viewshed and in proximity to the proposed development in order to evaluate a combined effect. Both the Berkeley Global Campus/Richmond Field Station and the Baywalk Mixed Use Project include measures and features that require design and development that would be consistent with the proposed development use and intensity proposed by the Specific Plan. Figure 4.1-3e (Viewpoint 4) captures a Google Earth wireframe view of the architectural massing of future

development of the Berkeley Global Campus/Richmond Field Station within the context of the Specific Plan. As seen from this figure, the combined effect of development under the Berkeley Global Campus/Richmond Field Station and Specific Plan affects the view of the East Bay Hills as they extend to the north and as viewed from the Bay Trail, directly south of the Richmond Field Station site. The combined effect would remain less than significant, as found for the impact discussed under Impact AES-1.SP.

The Baywalk Mixed Use Project and Berkeley Global Campus/Richmond Field Station and all other cumulative projects in the area have or will be analyzed for their potential aesthetics impacts through project-specific review and/or the environmental review process, when applicable. If potential project-level, adverse aesthetics effects are identified through these processes, the project's effects will be reduced to less than significant to the extent feasible through adherence to project-specific design measures, including design modifications, identified through those processes, in addition to required compliance with standards and regulations in the General Plan or Zoning Code. Similar to the proposed Specific Plan, standards and regulations address the location, size/scale, and appearance of new development with the intent being to avoid or reduce possible environmental effects.

In summary, development under the Specific Plan, in combination with past, present, existing, approved, pending and reasonably foreseeable development, would not result in a cumulative impact to which it would have a considerable contribution. The Specific Plan would not contribute considerably to any potential cumulative effects related to obstruction of scenic views, degradation of visual character, or generation of light and glare. Therefore, the cumulative impact is less than significant.

Significance: Less Than Significant.

Mitigation: None required.

Impact C-AES-1.SA4: Development under the Sub-Area 4 Project, in combination with past, present, existing, approved, pending, and reasonably foreseeable future development would not result in significant cumulative impacts with respect to aesthetics. (*Less Than Significant, No Mitigation Required*)

The geographic scope for cumulative Project aesthetics impacts includes viewsheds that include the Sub-Area 4 Project site, as well as areas surrounding the Sub-Area 4 Project site with which development of the Project could combine to create visible effects.

Cumulative projects considered are those in the Specific Plan vicinity that would also involve construction activity, including approved, pending, and reasonably foreseeable future projects, most notably the Berkeley Global Campus/Richmond Field Station (see Section 4.0.4 *Cumulative Analysis* in this chapter for detail).

Project Impacts

Impact AES-1.SA4 evaluates potential effects on scenic views or vistas, finding that development under the Sub-Area 4 Project would not result in a substantial adverse impact. Adherence to specific design standards and regulations regarding streetscapes, building frontages, new lighting, and other elements, support the less-than-significant determinations for this impact.

Development under the Project would change and be reasonably considered to improve the overall visual quality and character of the Project site, as discussed above. As discussed under Impact AES-2.SA4, and as would be the case for development under the Specific Plan, the new development would benefit the visual character of the Project site by introducing new uses and strengthening the site's focus on the waterfront by introducing improvements and amenities (water-oriented promenade and open space). The Project would also result in focused areas for new development – including the introduction of residential uses – with tailored development standards to ensure the new development is appropriate for its context; new open space and recreation areas; new lighted and landscaped access points to the waterfront; and improved internal and external connections with the Project site for all modes of travel. Also, the character of the Project site would transform while maintaining the existing water-oriented feel. The Project would introduce new uses that would contribute to the mixed use vision of for the area, as expressed in the General Plan. It would be a complementary addition to the uses anticipated to be developed on the Berkeley Global Campus/Richmond Field Station site. Overall, the Sub-Area 4 Project would achieve beneficial aesthetic effects, and Impact AES-2.SA4 is less than significant.

Similarly, impacts related to light and glare from the Sub-Area 4 Project (Impact AES-3.SA4) would be less than significant.

Cumulative Effects

Cumulative aesthetics effects normally require other cumulative projects to occur within the same viewshed and in proximity to the proposed development in order to evaluate a combined effect. Figure 4.1-3e (Viewpoint 4) captures a Google Earth wireframe view of the architectural massing of future development of the Richmond Field Station within the context of the Sub-Area 4 Project site. As seen from this figure, the combined effect of development under the Richmond Field Station and Sub-Area 4 Project affects the view of the East Bay Hills as they extend to the north and as viewed from the Bay Trail, directly south of the Richmond Field Station site. The combined effect would remain less than significant, as found for the impacts discussed under Impact AES-1.SA4.

The Richmond Field Station and all other cumulative projects in the area have or will be analyzed for their potential aesthetics impacts through project-specific review and/or the environmental review process, when applicable. If potential project-level, adverse aesthetics effects are identified through these processes, the project's effects will be reduced to less than significant to the extent feasible through adherence to project-specific design measures, including design modifications, identified through those processes, in addition to required compliance with standards and regulations in the General Plan or Zoning Code. Similar to the proposed Project, standards and

regulations address the location, size/scale, and appearance of new development with the intent being to avoid or reduce possible environmental effects.

In summary, development under the Sub-Area 4 Project, in combination with past, present, existing, approved, pending and reasonably foreseeable development, would not result in a cumulative impact to which it would have a considerable contribution. The Sub-Area 4 Project would not contribute considerably to any potential cumulative effects related to obstruction of scenic views, degradation of visual character, or generation of light and glare. Therefore the cumulative impact is less than significant.

Significance: Less Than Significant.

Mitigation: None required.

References – Aesthetics

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4.2 Air Quality

4.2.1 Introduction

This section addresses the potential for air quality impacts that could result from implementation of the Specific Plan or Sub-Area 4 Project, including increases in criteria air pollutants and exposure to substantial pollutant concentrations. The analysis of emissions focuses on whether implementation of the Specific Plan or Sub-Area 4 Project would cause an exceedance of State ambient air quality standards, and this section describes existing air quality, potential short-term construction related impacts, and direct and indirect operational emissions associated with development under the Specific Plan.

This section evaluates and analyzes the potential impacts of development that could occur under the Specific Plan on regional and local air quality from both stationary and mobile sources of air emissions. The analysis is consistent with methodologies set forth in the Bay Area Air Quality Management District's (BAAQMD) CEQA Guidelines. While potential effects of the environment on the project are arguably not required to be analyzed or mitigated under CEQA, for informational purposes this section nevertheless analyzes potential effects of the air quality environment on development that could occur under the Specific Plan as set forth in CEQA *Guidelines*, Appendix G, Significance Criteria, and in order to provide this supplemental information to the public and decision-makers. Mitigation measures are identified to reduce potential impacts to less-than-significant levels. This air quality analysis is closely coordinated with the analysis of potential impacts with regard to greenhouse gases and climate change, which is provided in Section 4.6, *Greenhouse Gas Emissions and Energy*, of this EIR.

This section also presents a project-level analysis of the Sub-Area 4 Project, which is located within the Plan Area.

4.2.2 Environmental Setting

Air quality is a function of both the rate and location of pollutant emissions under the influence of meteorological conditions and topographic features that influence pollutant movement and dispersal. Atmospheric conditions such as wind speed, wind direction, atmospheric stability, and air temperature gradients interact with the physical features of the landscape to determine the movement and dispersal of air pollutants, and consequently affect air quality.

Physical Setting

Climate and Meteorology

Atmospheric conditions such as wind speed, wind direction, and air temperature gradients interact with the physical features of the landscape to determine the movement and dispersal of air pollutants. The Plan Area is located in western Contra Costa County and is within the boundaries of the San Francisco Bay Area Air Basin (SFBAAB). The SFBAAB encompasses the nine-county region, including all of Alameda, Contra Costa, Santa Clara, San Francisco, San Mateo,

Marin and Napa counties, and the southern portions of Solano and Sonoma counties. The climate of the SFBAAB is determined largely by a high-pressure system that is almost always present over the eastern Pacific Ocean off the West Coast of North America. During winter, the Pacific high-pressure system shifts southward, allowing more storms to pass through the region. During summer and early fall, when few storms pass through the region, emissions generated within the Bay Area can combine with abundant sunshine under the restraining influences of topography and subsidence inversions to create conditions that are conducive to the formation of photochemical pollutants, such as ozone, and secondary particulates, such as nitrates and sulfates.

Within the SFBAAB, the Plan Area is located within the Northern Alameda and Western Contra Costa Counties climatological subregion, which is bounded by the San Francisco Bay to the west, the Oakland-Berkeley Hills to the east, the San Pablo Bay to the north and the atmospheric effects of the Golden Gate[1] to the south. The wind patterns in this subregion are influenced greatly by marine air traveling through the Golden Gate, as well as across San Francisco and through the San Bruno Gap. 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 within the City of Richmond are from the south-southwest (BAAQMD, 2012a). The average annual wind speed at the nearest BAAQMD meteorological station with data for this parameter (San Pablo-Rumrill) is 4.8 miles per hour (CARB, 1984). Air pollution potential is lowest for the parts of the subregion that are closest to the Bay, due largely to good ventilation and less influx of pollutants from upwind sources.

Air Pollutants of Concern (Criteria Air Pollutants)

The U.S. Environmental Protection Agency (USEPA) has identified criteria air pollutants that are a threat to public health and welfare. These pollutants are called “criteria” air pollutants because standards have been established for each of them to meet specific public health and welfare criteria. Below are descriptions of criteria pollutants that are a concern in the vicinity of the Plan Area.

Ozone (O_3). Ozone is a secondary air pollutant produced in the atmosphere through a complex series of photochemical reactions involving reactive organic gases (ROG, also sometimes referred to as volatile organic compounds or VOCs by some regulatory agencies) and oxides of nitrogen (NOx) in the presence of sunlight. The main sources of ROG and NOx, often referred to as ozone precursors, are combustion processes (including motor vehicle engines) and the evaporation of solvents, paints, and fuels. In the Bay Area, automobiles are the single largest source of ozone precursors. Ozone is referred to as a regional air pollutant because its precursors are transported and diffused by wind concurrently with ozone production through the photochemical reaction process.

Short-term exposure to ozone can irritate the eyes and cause constriction of the airways. Besides causing shortness of breath, ozone can aggravate existing respiratory diseases such as asthma, bronchitis, and emphysema. Ozone is not emitted directly into the atmosphere, but is created as a

[1] The Golden Gate, which is the strait that connects the San Francisco Bay with the Pacific Ocean, has an effect on local climate conditions because it allows marine air from the ocean to enter the Bay.

secondary air pollutant through a complex series of photochemical reactions involving reactive organic gases (ROG) and nitrogen oxides (NOx). ROG and NOx are known as precursor compounds for ozone. Significant ozone production generally requires ozone precursors to be present in a stable atmosphere with strong sunlight for approximately three hours. Ozone is a regional air pollutant because it is not emitted directly by sources, but is formed downwind of sources of ROG and NOx under the influence of wind and sunlight. Ozone concentrations tend to be higher in the late spring, summer, and fall, when the long sunny days combine with regional subsidence inversions to create conditions conducive to the formation and accumulation of secondary photochemical compounds, like ozone.

Carbon Monoxide (CO). CO is an odorless, colorless gas usually formed as the result of the incomplete combustion of fuels. The single largest source of CO is motor vehicles; the highest emissions occur during low travel speeds, stop-and-go driving, cold starts, and hard acceleration. Ambient CO concentrations normally are considered a local effect and typically correspond closely to the spatial and temporal distributions of vehicular traffic. Wind speed and atmospheric mixing also influence CO concentrations. Under inversion conditions,[2] CO concentrations may be distributed more uniformly over an area that may extend some distance from vehicular sources. When inhaled at high concentrations, CO combines with hemoglobin in the blood and reduces the oxygen-carrying capacity of the blood. This results in reduced oxygen reaching the brain, heart, and other body tissues. This condition is especially critical for people with cardiovascular diseases, chronic lung disease, or anemia, as well as for fetuses.

Over the past few decades, CO concentrations have declined dramatically in California due to regulatory controls and programs. Most areas of the state, including the region encompassing the Plan Area, are in full compliance with State and federal CO standards. CO measurements and modeling were important in the early 1980s when CO levels were regularly exceeded throughout California. In more recent years, CO measurements and modeling have not been a priority in most California air districts due to the retirement of older polluting vehicles, lower emissions from new vehicles, and improvements in fuels. The success in reducing CO levels is evident in the first paragraph of the executive summary of the California Air Resources Board's (CARB's) *2004 Revision to the California State Implementation Plan for Carbon Monoxide Updated Maintenance Plan for Ten Federal Planning Areas* (CARB, 2004), shown below:

> "The dramatic reduction in carbon monoxide (CO) levels across California is one of the biggest success stories in air pollution control. Air Resources Board (CARB or Board) requirements for cleaner vehicles, equipment and fuels have cut peak CO levels in half since 1980, despite growth. All areas of the state designated as non-attainment for the federal 8-hour CO standard in 1991 now attain the standard, including the Los Angeles urbanized area. Even the Calexico area of Imperial County on the congested Mexican border had no violations of the federal CO standard in 2003. Only the South Coast and Calexico continue to violate the more protective State 8-hour CO standard, with declining levels beginning to approach that standard."

[2] "Inversion conditions" refer to temperature inversion, whereby cold air lies below warmer air at higher altitudes (i.e., temperature increases with height).

Nitrogen Dioxide (NO_2). NO_2 is a reddish brown gas that is a by-product of combustion processes. Automobiles and industrial operations are the main sources of NO_2. NO_2 may be visible as a coloring component of a brown cloud on high pollution days, especially in conjunction with high ozone levels. Nitrogen dioxide is of concern for air quality because it acts as a respiratory irritant and is a precursor of ozone. Nitrogen dioxide is a major component of the group of gaseous nitrogen compounds commonly referred to as nitrogen oxides (NOx) which also includes nitric oxide (NO). Nitrogen oxides are produced by fuel combustion in motor vehicles, industrial stationary sources (such as refineries and cement kilns), ships, aircraft, and rail transit. Typically, NOx emitted from fuel combustion is in the form of NO and NO_2. NO is often converted to NO_2 when it reacts with ozone or undergoes photochemical reactions in the atmosphere. Therefore, emissions of NO_2 from combustion sources are typically evaluated based on the amount of NOx emitted from the source.

Sulfur Dioxide (SO_2). SO_2 is a colorless, acidic gas with a strong odor. It is produced by the combustion of sulfur-containing fuels such as oil, coal, and diesel. SO_2 has the potential to damage materials and can cause health effects at high concentrations. It can irritate lung tissue and increase the risk of acute and chronic respiratory disease.[3] Pollutant trends suggest that the SFBAAB currently meets and will continue to meet the state standard for SO_2 for the foreseeable future. SO_2 is also a precursor to the formation of atmospheric sulfate and particulate matter, and contributes to potential atmospheric sulfuric acid formation that could precipitate downwind as acid rain.

Particulate Matter. PM_{10} and $PM_{2.5}$ consist of particulate matter that is 10 microns or less in diameter and 2.5 microns[4] or less in diameter, respectively. PM_{10} and $PM_{2.5}$ represent fractions of particulate matter that can be inhaled into the air passages and the lungs and can cause adverse health effects. Some sources of particulate matter, such as wood burning in fireplaces, demolition, and construction activities, are more local in nature, while others, such as vehicular traffic, have a more regional effect. Very small particles of certain substances (e.g., sulfates and nitrates) can cause lung damage directly, or can contain adsorbed gases (e.g., chlorides or ammonium) that may be injurious to health. Particulates also can damage materials and reduce visibility. Large dust particles (diameter greater than 10 microns) settle out rapidly and are easily filtered by human breathing passages. This large dust is of more concern as a soiling nuisance rather than a health hazard. The remaining fraction, PM_{10} and $PM_{2.5}$, are a health concern particularly at levels above the federal and State ambient air quality standards. $PM_{2.5}$ (including diesel exhaust particles) is thought to have greater effects on health because these particles are so small and thus are able to penetrate to the deepest parts of the lungs. Scientific studies have suggested links between fine particulate matter and numerous health problems including asthma, bronchitis, and acute and chronic respiratory symptoms such as shortness of breath and painful breathing.

Recent studies have shown an association between morbidity and mortality and daily concentrations of particulate matter in the air. Children are more susceptible to the health risks of PM_{10} and $PM_{2.5}$

3 BAAQMD, *CEQA Air Quality Guidelines*, May 2011, http://www.baaqmd.gov/~/media/Files/Planning%20and%20Research/CEQA/BAAQMD%20CEQA%20Guidelines%20May%202011.ashx; p. C-16, accessed January 19, 2016.

4 A micron is one-millionth of a meter

because their immune and respiratory systems are still developing. Mortality studies since the 1990s have shown a statistically significant direct association between mortality (premature deaths) and daily concentrations of particulate matter in the air. Despite important gaps in scientific knowledge, a comprehensive evaluation of research findings provides persuasive evidence that exposure to fine particulate air pollution has adverse effects on cardiopulmonary health (Dockery and Pope, 2006).

Lead. Ambient lead concentrations meet both the federal and State standards in the SFBAAB. Lead has a range of adverse neurotoxin health effects, and was formerly released into the atmosphere primarily via leaded gasoline products. The phase-out of leaded gasoline in California resulted in decreasing levels of atmospheric lead. Projects that would be developed within the Plan Area would not introduce any new sources of lead emissions; consequently, lead emissions are not required to be quantified and are not further evaluated in this analysis.

Toxic Air Contaminants

The ambient background of toxic air contaminants (TACs) is the combined result of many diverse human activities, including gasoline stations, automobiles, dry cleaners, industrial operations, hospital sterilizers, and painting operations. In general, mobile sources contribute more significantly to health risks than do stationary sources. Both BAAQMD and the CARB operate a network of monitoring stations that measure ambient concentrations of certain TACs that are associated with strong health-related effects and are present in appreciable concentrations in the Bay Area, as in all urban areas. Ambient concentrations of TACs are similar throughout the urbanized areas of the Bay Area.

Growing evidence indicates that exposure to emissions from diesel-fueled engines, about 95 percent of which come from diesel-fueled mobile sources, may result in cancer risks that exceed those attributed to other measured TACs. In 1998, the Office of Environmental Health Hazard Assessment (OEHHA) issued a health risk assessment that included estimates of the cancer potency of diesel particulate matter (DPM) (OEHHA, 2009). Because DPM cannot be directly monitored in the ambient air, however, estimates of cancer risk resulting from DPM exposure must be based on concentration estimates made using indirect methods (e.g., derivation from ambient measurements of a surrogate compound).

Asbestos is also a TAC of concern, particularly in association with demolition of older buildings and structures. Asbestos is a fibrous mineral, which is both naturally occurring in ultramafic rock (a rock type commonly found in California) and used as a processed component of building materials. Because asbestos has been proven to cause serious adverse health effects, including asbestosis and lung cancer, it is strictly regulated based on its natural widespread occurrence and its former use as a building material. Geological mapping in California does not indicate the presence of naturally occurring asbestos in the city of Richmond (California Department of Conservation, 2000).

Existing Air Quality

The BAAQMD operates a regional monitoring network that measures the ambient concentrations of criteria air pollutants of concern within the Bay Area. Existing levels of air quality within the Plan Area can generally be inferred from ambient air quality measurements conducted by the BAAQMD at the monitoring station that collects such data nearest a given project site. The monitoring station with data closest to the Plan Area is San Pablo-Rumrill station located at 1865 Rumrill Boulevard in San Pablo, which is located approximately 2.7 miles northeast of the Plan Area. This station monitors ozone (1-hour and 8-hour), particulate matter (PM_{10} and $PM_{2.5}$), carbon monoxide, nitrogen dioxide and sulfur dioxide. **Table 4.2-1** shows a three-year summary of monitoring data (2013 through 2015) for these pollutants. The table also compares these measured concentrations with State and federal ambient air quality standards (shown in parenthesis). While attainment of State and Federal standards is based on regional air quality conditions, the values included in Table 4.2-1 include only a localized reference point, for purposes of context, as measured at the San Pablo-Rumrill station with values in excess of standards indicated in bold.

Air quality measurements gathered through the network of regional air monitoring stations are considered representative of conditions within the Plan Area for ozone, which is a regional pollutant. Localized pollutants such as particulate matter are likely lower within the Plan Area than at the San Pablo monitoring site or the region, as a whole, because the Plan Area has direct exposure to prevailing winds from San Francisco Bay.

Air Quality Index

The USEPA developed the Air Quality Index (AQI) scale to make the public health impacts of air pollution concentrations easily understandable. The AQI, much like an air quality "thermometer," translates daily air pollution concentrations into a number on a scale between 0 and 500. The numbers in the scale are divided into six color-coded ranges, with numbers 0-300 as outlined below (USEPA, 2014):

- Green (0-50) indicates "good" air quality. No health impacts are expected when air quality is in the green range.
- Yellow (51-100) indicates air quality is "moderate." Unusually sensitive people should consider limited prolonged outdoor exertion.
- Orange (101-150) indicates air quality is "unhealthy for sensitive groups." Active children and adults, and people with respiratory disease, such as asthma, should limit outdoor exertion.
- Red (151-200) indicates air quality is "unhealthy." Active children and adults, and people with respiratory disease, such as asthma, should avoid prolonged outdoor exertion; everyone else, especially children, should limit prolonged outdoor exertion.
- Purple (201-300) indicates air quality is "very unhealthy." Active children and adults, and people with respiratory disease, such as asthma, should avoid prolonged outdoor exertion; everyone else, especially children, should limit outdoor exertion.

TABLE 4.2-1
SAN PABLO-RUMRILL STATION AIR QUALITY DATA SUMMARY (2013-2015)

	Monitoring Data by Year		
Pollutant	**2013**	**2014**	**2015**
Ozone			
Highest 1 Hour Average (ppm)[b]	0.074	0.075	0.084
Days over State Standard (0.09 ppm)[a]	0	0	0
Highest 8 Hour Average (ppm)[b]	0.065	0.060	0.062
Days over National/State Standard (0.070 ppm)[a]	0	0	0
Carbon Monoxide			
Highest 1 Hour Average (ppm)[b]	2.2	1.8	2.0
Days over State Standard (20 ppm)[a]	0	0	0
Highest 8 Hour Average (ppm)[b]	1.0	1.0	1.1
Days over National and State Standard (9 ppm)[a]	0	0	0
Particulate Matter (PM_{10})			
Highest 24 Hour Average – State/National ($\mu g/m^3$)[b]	48	46	43
Estimated Days over National Standard (150 $\mu g/m^3$)[a,c]	0	0	0
Estimated Days over State Standard (50 $\mu g/m^3$)[a,c]	0	0	0
State Annual Average (State Standard 20 $\mu g/m^3$)[a,b]	18.4	16.4	18.6
Particulate Matter ($PM_{2.5}$)			
Highest 24 Hour Average ($\mu g/m3$)[b] – National Measurement	**41.2**	**38.2**	33.2
Estimated Days over National Standard (35 $\mu g/m^3$)[a,c]	2	1	0
State Annual Average (12 $\mu g/m3$)[b]	12	11	9
Nitrogen Dioxide			
Highest 1 Hour Average (ppm)[b]	0.047	0.052	0.046
Days over State Standard (0.18 ppm)[a]	0	0	0
Days over National Standard (0.10 ppm)	0	0	0
State Annual Average (State Standard 0.03 ppm/National Standard 0.053 ppm)	0.010	0.009	0.009
Sulfur Dioxide			
Highest 1 Hour Average (ppm)[b]	0.011	0.015	0.011
Days over National Standard (0.075 ppm)[a]	0	0	0
Highest 24 Hour Average (ppm)[b]	0.002	0.006	0.002
Days over National Standard (0.04 ppm)	0	0	0

[a] Generally, state standards and national standards are not to be exceeded more than once per year.
[b] ppm = parts per million; $\mu g/m^3$ = micrograms per cubic meter.
[c] PM_{10} and $PM_{2.5}$ is not measured every day of the year.

NA = Not Available. Values in **Bold** exceed the respective air quality standard, while attainment designation of state and federal standards are determined regionally for each air basin. .

SOURCE: BAAQMD, 2016a.

The AQI numbers refer to specific amounts of pollution in the air. They are based on the federal air quality standards for ozone, CO, NO2, SO2, PM10, and PM2.5. In most cases, the federal standard for these air pollutants corresponds to the number 100 on the AQI chart. If the concentration of any of these pollutants rises above its respective standard, it can be unhealthy for the public. In determining the air quality forecast, local air districts, including the BAAQMD, use the anticipated concentration measurements for each of the major pollutants, convert them into AQI numbers, and determine the highest AQI for each zone in a district.

Readings below 100 on the AQI scale would not typically affect the health of the general public (although readings in the moderate range of 50 to 100 may affect unusually sensitive people). Levels above 300 rarely occur in the United States, and readings above 200 have not occurred in the Bay Area in decades. Historical BAAQMD data indicate that the SFBAAB experienced air quality in the Red level (unhealthy) on three days between the years 2010 and 2014. As shown in **Table 4.2-2**, the SFBAAB had a total of 14 Orange-level (unhealthy for sensitive groups) days in 2010, 12 days in 2011, 8 days in 2012, 15 days in 2013, and 11 days 2014.

TABLE 4.2-2
AIR QUALITY INDEX STATISTICS FOR THE SAN FRANCISCO BAY AREA AIR BASIN

AQI Statistics for San Francisco Bay Area Air Basin	Number of Days by Year				
	2010	2011	2012	2013	2014
Unhealthy for Sensitive Groups (Orange)	14	12	8	15	11
Unhealthy (Red)	1	0	0	1	1

SOURCE: BAAQMD, 2016.

Existing Sources of Air Pollution

The BAAQMD provides two public source inventories of TAC emissions sources within its jurisdiction. The first is its TAC Annual Report, the most recent of which was published in 2013. The most recent source is its Google Earth-based inventory of stationary source risks and hazards. This latter source identifies 13 permitted TAC sources are located within the Plan Area and another nine are located within 1,000 feet of the Plan Area boundary. **Table 4.2-3** inventories the permitted sources within and in proximity to the Plan Area. Risk values provided in Table 4.2-3 are conservative values measured at the facility fence line, as estimated by BAAQMD in 2012[5]. Many of the sources within the Plan Area would presumably be removed or would eventually relocate as parts of the Plan Area are redeveloped with new land uses envisioned under the Specific Plan.

[5] In May 2016, BAAQMD adopted update health risk assessment methodology developed by OEHHA which includes more conservative exposure parameters and age sensitivity considerations than the previous OEHHA health risk guidance. BAAQMD has not updated its risk estimates to account for these updated parameters.

TABLE 4.2-3
STATIONARY SOURCES OF TACS WITHIN AND WITHIN 1,000 FEET OF THE PLAN AREA [a]

	Name of Source	Address	Location		Cancer Risk (in one million)	Chronic Health Index[b] (Unit less ratio value)	$PM_{2.5}$ Concentration (micrograms/ cubic meter)
			Plan Area	*Sub-Area 4 Project Site*			
Sources within the Plan Area or Sub-Area 4 Project Site							
1	Smith & Co	5100 Channel Avenue	X		0	0	0
2	Allied Propane Services	5000 Seaport Boulevard		X	0	0	0
3	Bio Rad Laboratories	3110 Regatta Boulevard	X		36.10	0.374	0.028
4	Verizon Wireless	S. 27th Street & Pierson Avenue	X		8.48	0.003	0.002
5	PG & E	1100 S. 27th Street	X		1.094	0.002	NA
6	Safeway	905 S. 34th Street	X		0.03	0	0.617
7	DiCon Fibreoptics	1689 Regatta Boulevard	X		9.32	0.004	0.007
8	Next Door Trends	833 S. 19th Street	X		0	0	0
9	Kaiser Permanente	914 Marina Way South	X		26.57	0.009	0.006
10	Richmond Hall of Justice	1689 Regatta Boulevard	X		14.39	0.005	0.026
11	Del Monte	3151 Regatta Boulevard	X		0	0	0
12	PG & E	1100 S. 27th Street	X		0.53	0.001	0.002
Sources outside of the Plan Area of Sub-Area 4 Project Site (within 1,000 feet)							
13	Bay Area/Diablo Petroleum Co.	700 Erlandson Street	X		2.828	0.004	0
14	USEPA Laboratory	1337 S.46th Street	X	X	19.00	0.007	0.340
15	U.C. Richmond Field Station	1301 S. 46th Street		X	NA		
16	Grace Baking	3200 Regatta Boulevard	X		0.06	0	0.530
17	Poly Engineering	701 Erlandson Street	X		0	0	0
18	State of California	850 Marina Bay Parkway	X		15.30	0.006	0.395
19	Cooper Lighting	1141 Marina Way South	X		0	0	2.080
20	California Casting Inc.	530 S. 11thStreet	X		0	0	0.092
21	Richmond Metal Painting	1143 Marina Way South	X		0	0	0.003
22	City of Richmond Marina Bay Pump Station	Schooner Court	X		11.92	0.004	0.003

NOTE:
a. All values in the table are BAAQMD estimates for the fence line of the source property.
b. Chronic non-cancer risk is determined by dividing the estimated annual average concentration of a pollutant by the Reference exposure level assigned to that pollutant by the California Office of Environmental Health Hazard Assessment. For one pollutant this ratio is referred to as the Hazard Quotient (HQ). HQs for pollutants targeting the same organ system are added to determine the total Hazard Index (HI).

SOURCE: BAAQMD, 2012a

The northern boundary of the Plan Area is abutted by I-580, which is a localized source of DPM. Additionally, an active Burlington-Northern-Santa Fe (BNSF) rail spur, which is also a localized source of DPM, runs parallel to the eastern boundary of Sub Area-4 and I-580. Two major rail switching yards, the 23rd Street Switching Yard (located within Sub-Area 1 as shown on Figure 3.27 of the Specific Plan) and Safeway Switching Yard (located south of Sub-Area 3 as shown on Figure 3.27 of the Specific Plan) are also active within the Plan Area.

As discussed further in Section 4.7, *Hazards and Hazardous Materials*, according to the General Plan, an average of 18 trains per week moved along the BNSF railway in the city, and an average of 12 UPRR trains and 10 Amtrak trains moved per week along the UPRR railway in the city, in 1990 (Caltrans, 2012). A recently conducted study also indicates that approximately 5 trains are involved in line haul operations and approximately 14 trains are involved in switching operations per day along the BNSF line in Richmond (City of Richmond, 2014).

Sensitive Land Uses

Certain groups of people are considered more sensitive than others to air pollutants. The reasons for heightened sensitivity may include age or health problems. CARB defines sensitive individuals as segments of the population most susceptible to poor air quality (i.e., children, the elderly, and those with pre-existing serious health problems affected by air quality) (CARB, 2005).. Land uses such as schools, hospitals, residential uses and convalescent homes are considered to be sensitive to poor air quality because the very young, the old, and the infirm are more susceptible to respiratory infections and other air quality-related health problems than the general public. Residential areas are considered sensitive to poor air quality because people are often at home for extended periods. Recreational land uses are moderately sensitive to air pollution, because vigorous exercise associated with recreation places a high demand on the human respiratory system.

Existing residences closest to the Plan Area are those in the Marina Bay community, located adjacent to both Sub-Area 1 and Sub-Area 2 to the south (within 80 feet at some locations), east, and west; residences north of I-580 within 300 feet of the Plan Area (Sub-Areas 1 and 3); and residences east of I-580 within 500 feet of the Plan Area (Sub-Area 4). Open spaces within and near the Plan Area include Meeker Slough, Stege Marsh, and the Bay Trail; Marina Park, south of Sub-Area 1 and adjacent to the western boundary of Sub-Area 2; Shimada Friendship Park, approximately 0.4 miles south of Sub-Area 2; and Barbara and Jay Vincent Park, approximately 0.5 miles southwest of Sub-Area 2. In addition, the Point Isabel Regional Shoreline is adjacent to the southern boundary of Sub-Area 4, and both Booker T. Anderson Jr. Park and Crescent Park are located approximately 0.1 miles from Sub-Area 4, east of I-580.

No schools are located within the Plan Area. Coronado Elementary School is the nearest elementary school to the Plan Area and is located approximately 0.4 miles north, at 2100 Maine Ave. Benito Juarez Elementary School is located approximately 0.4 miles southwest of the Plan Area, and Stege Elementary School is located approximately 0.6 miles east of the Plan Area. No hospitals located within the Plan Area. Kaiser Permanente Richmond Medical Center, the closest hospital, is located over 1 mile to the north of the Plan Area.

4.2.3 Regulatory Setting

Criteria Pollutants

The federal Clean Air Act requires each state to prepare an air quality control plan referred to as the State Implementation Plan (SIP). The USEPA is responsible for implementing the programs established under the federal Clean Air Act, such as establishing and reviewing the federal ambient air quality standards and judging the adequacy of SIPs. However, the USEPA has authorized states with air programs that meet or exceed federal standards to implement many of the federal programs while retaining an oversight role to ensure that the programs continue to be implemented. In California, CARB is responsible for establishing and reviewing the State ambient air quality standards, developing and managing the California SIP, securing approval of this plan from USEPA, identifying TACs, regulating mobile emissions sources in California, and overseeing the activities of air quality management districts, which are organized at the county or regional level. Air quality management districts, such as the BAAQMD, are primarily responsible for regulating stationary emissions sources at facilities within their geographic areas and for preparing the air quality plans that are required under the federal and State Clean Air Acts.

Federal: USEPA

The federal Clean Air Act requires the USEPA to identify National Ambient Air Quality Standards (NAAQS or "national standards") to protect public health and welfare. National standards have been established for O_3, CO, NO_2, sulfur dioxide, respirable particulate matter (PM_{10} and $PM_{2.5}$), and lead. **Table 4.2-4** shows current national and State ambient air quality standards, as well as the Bay Area attainment status and common sources for each pollutant.

Pursuant to the 1990 federal Clean Air Act amendments, the USEPA classifies air basins (or portions thereof) as "attainment" or "nonattainment" for each criteria air pollutant, based on whether or not the national standards have been achieved. **Table 4.2-4** shows the current attainment status for the State and the SFBAAB.

The federal Clean Air Act amendments added requirements for states containing areas that violate the national standards to revise their SIPs to incorporate additional control measures to reduce air pollution. The SIP is a living document that is periodically modified to reflect the latest emissions inventories, planning documents, and rules and regulations of air basins as reported by the agencies with jurisdiction over them. The USEPA has responsibility to review all SIPs to determine if they conform to the mandates of the Federal Clean Air Act amendments and will achieve air quality goals when implemented. If the USEPA determines a SIP to be inadequate, it may prepare a Federal Implementation Plan (FIP) for the nonattainment area and may impose additional control measures. Failure to submit an approvable SIP or to implement the plan within mandated timeframes can result in sanctions being applied to transportation funding and stationary air pollution sources in the SFBAAB.

TABLE 4.2-4
AMBIENT AIR QUALITY STANDARDS AND BAY AREA ATTAINMENT STATUS

Pollutant	Averaging Time	State Standard	Bay Area Attainment Status for California Standard	Federal Primary Standard	Bay Area Attainment Status for Federal Standard	Major Pollutant Sources
Ozone	8 hour	0.070 ppm	Non-Attainment	0.070 ppm	Marginal Non-Attainment	Formed when ROG and NOx react in the presence of sunlight. Major sources include on-road motor vehicles, solvent evaporation, and commercial/ industrial mobile equipment.
	1 hour	0.090 ppm	Non-Attainment	---	---	
Carbon Monoxide	8 hour	9.0 ppm	Attainment	9.0 ppm	Attainment (maintenance area)	Internal combustion engines, primarily gasoline-powered motor vehicles
	1 Hour	20 ppm	Attainment	35 ppm	Attainment	
Nitrogen Dioxide	Annual Average	0.030 ppm	---	0.053 ppm	Attainment	Motor vehicles, petroleum refining operations, industrial sources, aircraft, ships, and railroads
	1 Hour	0.180 ppm	Attainment	0.100 ppm	Unclassified	
Sulfur Dioxide	Annual Average	---	---	0.03 ppm	Attainment	Fuel combustion, chemical plants, sulfur recovery plants and metal processing
	24 Hour	0.04 ppm	Attainment	0.14 ppm	Attainment	
	1 Hour	0.25 ppm	Attainment	0.075 ppm	Attainment	
Particulate Matter (PM10)	Annual Arithmetic Mean	20 μg/m3	Non-Attainment	---	---	Dust- and fume-producing industrial and agricultural operations, combustion, atmospheric photochemical reactions, and natural activities (e.g., wind-raised dust and ocean sprays)
	24 hour	50 μg/m3	Non-Attainment	150 μg/m3	Unclassified	
Particulate Matter (PM2.5)	Annual Arithmetic Mean	12 μg/m3	Non-Attainment	12 μg/m3	Unclassified	Fuel combustion in motor vehicles, equipment, and industrial sources; residential and agricultural burning; also, formed from photochemical reactions of other pollutants, including NOx, sulfur oxides, and organics.
	24 hour	---	---	35 μg/m3	Non-Attainment	
Lead	Calendar Quarter	---	---	1.5 μg/m3	Attainment	Present source: lead smelters, battery manufacturing & recycling facilities. Past source: combustion of leaded gasoline.
	30 Day Average	1.5 μg/m3	Attainment	---	---	
Hydrogen Sulfide	1 hour	0.03 ppm	Unclassified	No Federal Standard	---	Geothermal Power Plants, Petroleum Production and refining

SOURCE: BAAQMD, 2016b.

Regulation of TACs, termed Hazardous Air Pollutants (HAPs) under federal regulations, is achieved through federal, state and local controls on individual sources. The 1977 federal Clean Air Act amendments required the USEPA to identify National Emission Standards for HAPs to protect public health and welfare. These substances include certain volatile organic chemicals, pesticides, herbicides, and radionuclides that present a tangible hazard, based on scientific studies of exposure to humans and other mammals.

State: CARB

CARB manages air quality, regulates mobile emissions sources, and oversees the activities of county Air Pollution Control Districts and regional Air Quality Management Districts. CARB establishes State ambient air quality standards and vehicle emissions standards. California has adopted ambient standards that are more stringent than the federal standards for the criteria air pollutants. California has air quality standards for some pollutants for which there is no corresponding national standard. Under the California Clean Air Act (which is patterned after the federal Clean Air Act), areas have been designated as attainment or nonattainment with respect to the State standards. **Table 4.2-4** summarizes the Bay Area's attainment status with regard to California standards.

The Health and Safety Code defines TACs as air pollutants which may cause or contribute to an increase in mortality or in serious illness, or which may pose a present or potential hazard to human health. The State Air Toxics Program was established in 1983 under Assembly Bill (AB) 1807 (Tanner). A total of 243 substances have been designated TACs under California law; they include the 189 (federal) HAPs adopted in accordance with AB 2728. The Air Toxics "Hot Spots" Information and Assessment Act of 1987 (AB 2588) seeks to identify and evaluate risk from air toxics sources; however, AB 2588 does not regulate air toxics emissions. Toxic air contaminant emissions from individual facilities are quantified and prioritized. "High-priority" facilities are required to perform a health risk assessment and, if specific thresholds are violated, are required to communicate the results to the public in the form of notices and public meetings.

In August of 1998, CARB identified DPM as a TAC. CARB subsequently developed the *Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel-Fueled Engines and Vehicles* (CARB, 2000). The document contains proposals to reduce diesel particulate emissions, with the goal of reducing emissions and associated health risks by 75 percent by 2010 and by 85 percent by 2020. The program aims to require the use of state-of-the-art catalyzed diesel particulate filters and ultra low sulfur diesel fuel on diesel-fueled engines.

In April 2005, CARB published *Air Quality and Land Use Handbook: A Community Health Perspective* (CARB, 2005). This handbook is intended to give guidance to local governments in the siting of sensitive land uses, such as residences, schools, daycare centers, playgrounds, or medical facilities, near sources of air pollution. Within the Plan Area and in the vicinity, there are several TAC sources, as listed in Table 4.2-3.

Regional and Local

Air Quality Plans

The 1977 federal Clean Air Act amendments require that regional planning and air pollution control agencies prepare a regional Air Quality Plan to outline the measures by which both stationary and mobile sources of pollutants can be controlled in order to achieve all standards specified in the Clean Air Act. The 1988 California Clean Air Act also requires development of air quality plans and strategies to meet State air quality standards in areas designated as non-attainment (with the exception of areas designated as non-attainment for the State PM standards). Maintenance plans are required for attainment areas that had previously been designated non-attainment in order to ensure continued attainment of the standards. Air quality plans developed to meet federal requirements are referred to as SIPs, discussed above.

Bay Area plans are prepared with the cooperation of the BAAQMD, Metropolitan Transportation Commission (MTC), and the Association of Bay Area Governments (ABAG). On September 15, 2010, the BAAQMD adopted the most recent revision to the Clean Air Plan – the *Bay Area 2010 Clean Air Plan* (BAAQMD, 2010a). The *Bay Area 2010 Clean Air Plan* serves to:

- 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;
- Consider the impacts of ozone control measures on particulate matter, air toxics, and greenhouse gases in a single, integrated plan;
- Review progress in improving air quality in recent years; and
- Establish emission control measures to be adopted or implemented in the 2010 – 2012 timeframe.

BAAQMD is currently updating the 2010 Clean Air Plan in partnership with the ABAG, the Bay Conservation and Development Commission, and MTC. The 2016 Clean Air Plan/Regional Climate Protection Strategy (CAP/RCPS) will be a roadmap for BAAQMD's efforts over the next few years to reduce air pollution and protect public health and the global climate. The CAP/RCPS update will include the Bay Area's first-ever comprehensive RCPS, which will identify potential rules, control measures, and strategies that the BAAQMD can pursue to reduce greenhouse gases in the Bay Area. It is anticipated that a final draft CAP/RCPS will be submitted to the Air District Board in October/November 2016. Measures of the 2016 CAP addressing the transportation sector are in direct support of Plan Bay Area, which was prepared by ABAG and MTC and includes the region's Sustainable Communities Strategy and the 2040 Regional Transportation Plan.

BAAQMD Rules, Regulations, and CEQA Guidelines

The BAAQMD is the regional agency responsible for rulemaking, permitting, and enforcement activities affecting stationary sources in the Bay Area. BAAQMD does not have authority to regulate emissions from motor vehicles. Specific rules and regulations adopted by the BAAQMD limit the emissions that can be generated by various stationary sources, and identify specific

pollution reduction measures that must be implemented in association with various activities. These rules regulate not only emissions of the six criteria air pollutants; TACs emissions sources subject to these rules are also regulated through the BAAQMD's permitting process and standards of operation. Through this permitting process, including an annual permit review, the BAAQMD monitors generation of stationary emissions and uses this information in developing its air quality plans. Any sources of stationary emissions constructed as part of projects developed within the Plan Area would be subject to the BAAQMD Rules and Regulations. Both federal and State ozone plans rely heavily upon stationary source control measures set forth in BAAQMD's Rules and Regulations.

With respect to construction activities associated with the development of projects within the Plan Area, applicable BAAQMD regulations would relate to portable equipment (e.g., concrete batch plants, and gasoline- or diesel-powered stationary engines used for power generation, pumps, compressors, pile drivers, and cranes), architectural coatings, and paving materials. Equipment used during project construction would be subject to the requirements of BAAQMD Regulation 2 (Permits); Rule 1 (General Requirements) with respect to portable equipment unless exempt under Rule 2-1-105 (Exemption, Registered Statewide Portable Equipment); Regulation 2 Rule 5 (New Source Review of Toxic air Contaminants); Regulation 8 (Organic Compounds), Rule 3 (Architectural Coatings); and Regulation 8 (Organic Compounds), Rule 15 (Emulsified and Liquid Asphalts). In addition, the BAAQMD regulates the demolition of buildings or structures that may contain asbestos through Regulation 11 (Hazardous Pollutants), Rule 2 (Asbestos Demolition, Renovation, and Manufacturing).

The BAAQMD adopted updated *CEQA Air Quality Guidelines* (Guidelines), including new thresholds of significance in June 2010, and revised them in May 2011 (BAAQMD, 2012a). The Guidelines advise lead agencies on how to evaluate potential air quality impacts, including establishing quantitative and qualitative thresholds of significance. The thresholds BAAQMD adopted were called into question by a minute order issued January 9, 2012 in *California Building Industry Association v. BAAQMD,* Alameda Superior Court Case No. RGI0548693. The minute order states that "The Court finds [the BAAQMD's adoption of thresholds] is a CEQA Project, the court makes no further findings or rulings." The claims made in the case concerned the CEQA impacts of adopting the thresholds, and in particular, how the thresholds would affect land use development patterns. Petitioners argued that the thresholds for Health Risk Assessments encompassed issues not addressed by CEQA. As a result, the BAAQMD resolutions adopting and revising the significance thresholds in 2011 were set aside by a judicial writ of mandate on March 5, 2012. In May 2012, the BAAQMD updated its Guidelines to continue to provide direction on recommended analysis methodologies, but without recommended quantitative significance thresholds. On August 13, 2013, the First District Court of Appeal ordered the trial court to reverse the judgment and upheld the BAAQMD's CEQA thresholds (*California Building Industry Association v. Bay Area Air Quality Management District*, Case No. A135335 & A136212 [Court of Appeal, First District, August 13, 2013]).

The California Supreme Court granted review of the appeal, but only to address whether or not CEQA requires an analysis of how existing environmental conditions will impact future residents

or users of a proposed project and did not review or address the adequacy of specific thresholds adopted by the BAAQMD in 2011. On December 17, 2015, the Supreme Court concluded that agencies subject to CEQA generally are not required to analyze the impact of existing environmental conditions on a project's future users or residents, reversing the Court of Appeal's judgment on that issue. The case was the remanded back to the Court of Appeal on August 12, 2016 which concluded that "the challenged thresholds are not invalid on their face, but may not be used for the primary purpose envisioned by District, namely, to routinely assess the effect of existing environmental conditions on future users or occupants of a project" (CBIA v. BAAQMD [2016] 1 Cal.App.5th 715).

The BAAQMD has not formally re-instated the thresholds or otherwise responded to the Court of Appeal or Supreme Court decisions at this time. The air quality impact analysis in this EIR uses the previously-adopted thresholds and methodologies from the 2011 BAAQMD *CEQA Air Quality Guidelines* to determine the potential impacts of the project on the environment. For informational purposes and consistent with the current thresholds in Appendix G of the CEQA *Guidelines*, this EIR also evaluates the environment's effect on the project. While the significance thresholds adopted by BAAQMD in 2011 are not currently recommended by the BAAQMD, these thresholds are based on substantial evidence identified in BAAQMD's 2009 *Justification Report* (BAAQMD, 2009) and are therefore used within this document.

Richmond General Plan 2030

The Conservation, Natural Resources, and Open Space Element of the General Plan (City of Richmond, 2012b) includes the following goals, policies, and actions that are relevant to air quality in Richmond:

- **Goal CN-4: Improved Air Quality.** Take steps to improve and maintain air quality for the benefit the health and vitality of residents and the local economy. In alignment with state emission reduction goals and in cooperation with the Bay Area Air Quality Management District, pursue regional collaboration to reduce emissions from all sources.

  Policy CN-4.1: 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. Fully utilize Richmond's police power to regulate industrial and commercial emissions. 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.

Action CN-4.A: BAAQMD Partnership. Continue to work with the BAAQMD to meet or exceed air quality standards set in the BAAQMD's Clean Air Plan and to ensure projects incorporate feasible mitigation measures if not already provided for through proposed project design.

Action CN-4.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.

Action CN-4.C: 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.

Action CN-4.D: Air Quality Monitoring and Reporting Program. Work with BAAQMD 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 Services Department, BAAQMD and state agencies to establish baseline exposures and 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.

4.2.4 Significance Criteria

Consistent with Appendix G of the CEQA *Guidelines*, the impact of the Specific Plan or Sub-Area 4 Project on air quality would be considered significant if they would:

a) Conflict with or obstruct implementation of the applicable air quality plan;

b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation;

c) Result in a cumulatively significant net increase of any nonattainment pollutant;

d) Expose sensitive receptors to substantial pollutant concentrations; or

e) Create objectionable odors affecting a substantial number of people.

Approach to Analysis

The City has generally relied on the BAAQMD's 2011 Guidelines to develop significance thresholds for air quality; as such, the thresholds for air quality are based upon the BAAQMD 2011 CEQA Guidelines and Thresholds and BAAQMD's 2009 *Justification Report.* The City is also relying upon consistency with Plan Bay Area as a tool to assess whether criteria pollutant

emissions attributed to population and economic growth (inclusive of residential/commercial development and mobile source emissions) are significant for CEQA purposes. Plan Bay Area emissions data is have been demonstrated to be consistent with the mobile emission budgets assumed in the region's State Implementation Plan for ozone which has been approved by CARB and USEPA (ABAG, 2013a).

Specific Plan

Criteria Pollutant Emissions of the Specific Plan

The analysis of potential air quality impacts uses both the project-level and the plan-level methodology identified by the BAAQMD. This methodology is outlined in the BAAQMD document *California Environmental Quality Act Air Quality Guidelines* (BAAQMD, 2012a). Although individual projects developed under the Specific Plan may undergo separate environmental review under CEQA, this hybrid of a project-level and plan-level analysis considers potential individual construction and operational emissions from future projects, and represents adequate environmental analysis under CEQA for individual development projects under the Specific Plan development program.

The potential impacts from criteria air pollutant emissions are then assessed using a two-step process. First, calculated criteria pollutant emissions are compared to the significance criteria in the BAAQMD 2011 *CEQA Air Quality Guidelines* as a screening test for potential significance, with a focus on whether emissions would:

- Result in average daily construction emissions exceeding 54 pounds per day of ROG, NOx, or $PM_{2.5}$ (exhaust) or 82 pounds per day of PM_{10}; and
- Result in total operational emissions exceeding 10 tons per year or 54 pounds per day of ROG, NOx, or $PM_{2.5}$ or15 tons per year or 82 pounds per day of PM_{10}.

For PM_{10} and $PM_{2.5}$ as part of fugitive dust generated during construction, the BAAQMD Guidelines specify compliance with Best Management Practices as the threshold.

The screening thresholds above, however, do not necessarily lend well to evaluation of Specific Plans and large infill development projects because they unfairly penalize large-scale development. An unintended consequence of the BAAQMD operational criteria pollutant mass-based thresholds is that even low-emitting/transit-friendly development projects that are also large are shown as having significant and unavoidable impacts due only to their size. Large-scale projects will necessarily produce more criteria emissions on a mass basis than a smaller projects; however, on a service population basis (e.g., per capita basis for residential projects) larger projects may be much more efficient in terms of generation of criteria air emissions, and may produce significantly fewer emissions on a service population basis than a smaller project. [Although BAAQMD's GHG thresholds provide for an effiency-based metric, the criteria air pollutant thresholds are mass-based.]Without consideration of whether such large-scale development would be preferable, in terms of air quality impacts, to other types of development in other locations (e.g., development in peripheral portions of the Bay Area region, or projects

that are less accessible to transit) or projects that do not have transportation demand management programs, mass-based threshold may inappropriately identify a large-scale project as having a significant air quality impact.

Consequently, the following analysis, while evaluating the Specific Plan emissions with respect to the screening criteria above, also takes the next step of employing a regionally-based air quality analysis: for this approach, if criteria pollutant emissions are shown to exceed the screening thresholds, the second step taken in the the analysis is to evaluate consistency of the Specific Plan with Plan Bay Area (i.e., confirm a project's or plan's location within a Priority Development Area and implementation of Transportation Demand Management [TDM] practices) to determine whether criteria pollutant emissions attributed to population and economic growth (inclusive of residential/commercial development and mobile source emissions) for a plan or project are significant for CEQA purposes. This includes an evaluation of the Plan's ability to meet the vehicle miles travelled (VMT) reduction goals of Plan Bay Area as a result of providing mixed-use development with pedestrian, bicycle and transit connectivity.

Health Risk Impacts of the Specific Plan

Potential air quality risk and hazard impacts under the full buildout of the Specific Plan are analyzed at a programmatic level consistent with BAAQMD methodology for area plans (BAAQMD, 2011). Specifically, identification of overlay zones around existing and planned sources of TACs and at least 500 feet from all freeways and high volume roadways are considered an adequate method of impact evaluation at the Plan level.

While the BAAQMD 2011 *CEQA Air Quality Guidelines* provided methodology for analysis of potential adverse effects of a project on the environment, the Supreme Court ruling and subsequent remand to the Court of Appeal in *CBIA v. BAAQMD* on August 12, 2016 concluded that "the challenged thresholds are not invalid on their face, but may not be used for the primary purpose envisioned by District, namely, to routinely assess the effect of existing environmental conditions on future users or occupants of a project." (CBIA v. BAAQMD [2016] 1 Cal.App.5th 715) . However, this EIR nevertheless analyzes potential effects of "the environment on the project" in order to provide information to the public and decision-makers.

With respect to the potential health risk impacts of future development constructed and operated under the Specific Plan at off-site receptors, an analysis is provided to address the potential health risk impacts that could potentially result from construction activity as well as to address the potential health risk impacts that could result from operation of new stationary sources. This analysis focuses on implementation of best management practices and installation of best available control technology for TACs.

Assumptions for Impact Analysis of the Specific Plan

Specific assumptions used for the analysis of the Specific Plan below include the following:

1. The Specific Plan development program being evaluated in the EIR is the "foreseeable maximum theoretical buildout" presented in Table 3-3 of Chapter 3, *Project Description*, of this EIR.
2. As discussed below, adjusted emission factors have been applied to construction and operational emissions for volatile organic compounds/reactive organic gases (consumer product use) in the modeling of air pollutant emissions. This factor has been applied because model default factors are based on older data that do not reflect the results of recent regulatory efforts of the CARB. Consequently, locally specific emission factors, adjusted to take into account regulatory changes that are presently in effect, were developed to more accurately estimate ROG emissions (see Ramboll Environ, 2016 and Appendix B).
3. For the construction period, the City anticipates that development under the Specific Plan would occur over the next 20 to 40 years, approximately. The timing and sequence of development will depend upon numerous factors, including future market conditions, public investment, and private initiative and investment. Although the Specific Plan program likely would be developed at a slower pace, for the purposes of conservative analysis, the construction period is assumed to span from 2017 to 2040 (23 years). One construction period is assumed, and CalEEMod default construction phase length assumptions are used where necessary.
4. For the operational period, the analysis below assumes the first full year of operation of all uses developed under the Specific Plan is 2040.

Sub-Area 4 Project

Criteria Pollutant Emissions of the Sub-Area 4 Project

For the analysis of the Sub-Area 4 Project, the potential impacts from criteria air pollutant emissions are assessed using the same two-step process outlined above for the Plan-level analysis. First, calculated criteria pollutant emissions are compared to the significance criteria in the BAAQMD 2011 *CEQA Air Quality Guidelines* as a screening test for potential significance.

If criteria pollutant emissions are shown to exceed these thresholds, the second step in the analysis is to evaluate consistency of the Sub-Area 4 Project with Plan Bay Area (i.e., confirm a project's or plan's location within a Priority Development Area and implementation of TDM practices) to determine whether criteria pollutant emissions attributed to population and economic growth (inclusive of residential/commercial development and mobile source emissions) for the Sub-Area 4 Project are significant.

With regard to construction-related impacts resulting from fugitive dust (non-exhaust emissions of PM10), the BAAQMD considers implementation of the BAAQMD-recommended mitigation measures for fugitive dust sufficient to ensure that construction-related fugitive dust is reduced to a less-than-significant level. The BAAQMD Guidelines provide feasible control measures for construction emission of PM_{10}. If the appropriate construction controls are implemented, air

pollutant emissions for construction activities would be considered mitigated to a less-than-significant level.

Health Risk Impacts of the Sub-Area 4 Project

The results of the project-level health risk analysis contained herein are based on a Health Risk Assessment (HRA) conducted to address exposure impacts that would result from construction activities under the Sub-Area 4 Project (RCH Group, 2016). This analysis assesses the increased cancer risk and localized PM2.5 concentrations attributable to the Sub-Area 4 Project at off-site receptors. The Sub-Area 4 Project would be considered to have a significant health risk impact if project emissions would result in exposure of persons to substantial levels of TAC resulting in (a) an incremental cancer risk level greater than 10 in one million, (b) a noncancerous risk (chronic or acute) hazard index greater than 1.0, or (c) an increase of annual average $PM_{2.5}$ of greater than 0.3 micrograms per cubic meter ($\mu g/m^3$).

While there are no specific operational stationary TAC sources currently proposed by the Sub-Area 4 Project, the potential exists for future uses to install back-up diesel generators or other sources to meet the needs of their operations. Such sources would require a permit to operate which would address potential health risks pursuant to Regulation 2, Rule 5 of the BAAQMD.

While the BAAQMD 2011 *CEQA Air Quality Guidelines* provided methodology for analysis of potential adverse effects of a project on the environment, potential effects of the environment on a project are generally not required to be analyzed or mitigated under CEQA (CBIA v. BAAQMD [2016] 1 Cal.App.5th 715). However, this EIR nevertheless analyzes potential effects of "the environment on the project" in order to provide information to the public and decision-makers.

The health risk analysis contained herein is a qualitative analysis that relies on the BAAQMD's conservative screening-level data to screen out low-emitting existing sources of TACs that pose no substantial threat to increased cancer risk level exposure.

Assumptions for Impact Analysis of the Sub-Area 4 Project

Specific assumptions used for the analysis of the Sub-Area 4 Project below include the following:

1. The Subarea 4 development program being evaluated in the EIR is the "Subarea 4 Project" presented in Table 3-5 of Chapter 3, *Project Description*, of this EIR.
2. As discussed further below, adjusted emission factors have been applied to construction and operational emissions for volatile organic compounds/reactive organic gases (consumer product use) in the modeling of air pollutant emissions. This factor has been applied because model default factors are based on older data that do not reflect the results of recent regulatory efforts of the CARB. Consequently, locally-specific emission factors were developed to more accurately estimate ROG emissions (Ramboll Environ, 2016).
3. For the construction period, the City anticipates that development of the Sub-Area 4 Project would occur over 13 years. One construction period is assumed, and CalEEMod default construction phase length assumptions, which are based on dozens of projects throughout California, were applied proportionately to the overall development window. Although the

Sub-Area 4 Project may be developed at a slower pace, as a reasonable, conservative assumption the construction period is assumed to span from 2017 through 2029.

4. All truck trips for remediation and removal of contaminated soils at the Zeneca site that is located within the Sub-Area 4 Project site are considered under a separate CEQA analysis for DTSC's Feasibility Study/Remedial Action Plan (FS/RAP) for the Zeneca site.

5. For the operational period, the analysis below conservatively assumes the first full year of operation of all uses developed under the Sub-Area 4 Project is 2030.

Cumulative Criteria Pollutant Emissions

Regarding the assessment of cumulative impacts, a project's or plan's contribution to cumulative impacts to regional air quality from emission of criteria air pollutants would be considered cumulatively considerable and significant if the impact individually would be significant (i.e., exceeds the BAAQMD's quantitative thresholds). BAAQMD's quantitative thresholds are based on the trigger levels for the federal New Source Review (NSR) Program and BAAQMD's Regulation 2, Rule 2 for new or modified sources. These NSR Program rules provide that any new source that will emit pollutants above the levels stated must impose "Best Available Control Technology" (BACT). NSR increments were established within federal Clean Air Act programs, aimed at regulating stationary sources of air pollution, and are keyed quantitatively to an area's air quality designations. For a project or plan that would not result in a significant impact individually, the project or plan contribution to any cumulative impact would be considered less than significant if the project or plan is consistent with the local General Plan and the local general plan is consistent with the applicable regional air quality plan. In this case, the applicable regional air quality plan is the 2010 Clean Air Plan.

Cumulative Risk and Hazard Impacts for the Specific Plan

Potential cumulative air quality risk and hazard impacts under the full build out of the Specific Plan are analyzed at a programmatic level consistent with BAAQMD methodology (BAAQMD, 2011). Specifically, the analysis identifies overlay zones around existing and planned sources of TACs and at least 500 feet from all freeways and high volume roadways.

Cumulative Risk and Hazard Impacts for the Sub-Area 4 Project

Cumulative air quality impacts of the Sub-Area 4 Project from exposure to TACs or PM2.5 are assessed by evaluating whether the Project's contribution to cancer risk or localized PM2.5 concentrations would be cumulatively considerable. For increased cancer risk, a cumulatively considerable contribution would be an incremental increase of 10 in one million. Additionally, a cumulative cancer risk to off-site receptors is estimated by combining the increased risk of the Sub-Area 4 Project with those estimated for other projects proposed within 1,000 feet of Subarea 4, as available and comparing those risks to the 100 in one million cumulative cancer risk developed by BAAQMD.

For localized PM2.5 concentrations, a cumulatively considerable contribution would be an incremental concentration of 0.8 ug/m^3.

4.2.5 Program-Level Impacts of the Richmond Bay Specific Plan

Impact AIR-1.SP: Development under the Specific Plan would be consistent with the primary goals of the Bay Area Clean Air Plan and would not fundamentally conflict with the Clean Air Plan because the Specific Plan demonstrates reasonable efforts to implement control measures contained in the CAP (Criterion a.). (*Less Than Significant, No Mitigation Required*)

The 1988 California Clean Air Act, Section 40919(d) requires regions to implement "transportation control measures to substantially reduce the rate of increase in passenger vehicle trips and miles traveled." Consistent with this requirement, one of the goals of the 2010 CAP is to reduce the number of trips and vehicle miles Bay Area residents travel in single-occupant vehicles through the implementation of five categories of transportation control measures (TCMs).

Key goals, guiding design principles, and objectives of the Specific Plan that address reduced trip generation and are consistent with the goals of the Clean Air Plan include:

- Full service and safe communities: The four sub-areas described in the Specific Plan can develop as complete neighborhoods with access to affordable and quality services, transportation choices, and public space.
- Reduction of greenhouse gas emissions (GHGs) through transit-oriented development in a Priority Development Area as identified pursuant to the Sustainable Communities Strategy and Plan Bay Area.
- A dense grid of continuous, complete streets that support walking and bicycling and extend and connect to other parts of Richmond.
- Strengthened connections to regional transit, including the Water Emergency Transportation Authority (WETA) ferry set to begin service in 2018 and Richmond and El Cerrito Bay Area Rapid Transit (BART) stations.
- Opportunities for workers to walk, bike, or take transit to work.
- Transportation Demand Management (TDM) programs to minimize single occupancy vehicle trips and promote multi-modal options.
- Increased access across I-580 and railyard infrastructure, particularly for bicycles and pedestrians.

The Plan Area's infill location and proximity to major transportation corridors reduces the distance that users (e.g., residents or workers) would drive in motor vehicles to shop by providing increased retail opportunities within the Plan Area. Also, the Plan Area is located in direct proximity to nearby employment hubs. Taken together, these locational characteristics of the Plan Area help reduce potential motor vehicle trips.

Table 4.2-5 identifies the five categories of TCMs that local governments should implement through local plans to be considered in conformance with the 2010 Clean Air Plan. A review of the TCMs in Table 4.2-5 indicates that these measures lend themselves to application to large scale land use development projects and are addressed within the Specific Plan.

TABLE 4.2-5
TRANSPORTATION CONTROL MEASURES IN THE 2010 CLEAN AIR PLAN

1.	Improve Transit Services (TCM A)
2.	Improve System Efficiency (TCM B)
3.	Encourage Sustainable Travel Behavior (i.e., voluntary employer-based trip reduction program) (TCM C)
4.	Support Focused Growth (Bicycle and Pedestrian friendliness) (TCM D)
5.	Implement Pricing Strategies (TCM E)

SOURCE: BAAQMD, 2010a.

Improve Transit Services (TCM A) and Improve System Efficiency (TCM B)

Planned improvements to transit service in the Plan Area include the following:

- **Passenger Ferry Service:** The most significant enhancement to public transportation service in the area is the planned launch of public passenger ferry service to San Francisco from an existing pier on the Marina Bay Channel. Service is planned to be provided by WETA as soon as 2018, with a 299 passenger vessel operating initially during commute periods only.
- **South Richmond Transportation Connectivity Plan:** *The South Richmond Transportation Connectivity Plan* (SRTCP, July 2015) recommends various multi-modal improvements in the Plan Area. These include connecting South Richmond neighborhoods to the opportunities for employment, education, recreation and services existing and planned for the Plan Area. Additionally, the SRTCP calls for connecting key opportunity sites in South Richmond (e.g. the Berkeley Global Campus site), with major regional transit hubs, including Richmond BART, El Cerrito Plaza BART, El Cerrito Del Norte BART, and the planned WETA Ferry Terminal.
- **AC Transit:** In its current Comprehensive Operations Analysis, AC Transit is considering combining portions of routes on 23rd Street and Cutting Boulevard to better coordinate transit service and increase transit frequency serving the Plan Area. In addition, the City and AC Transit could coordinate and share operating costs for the Richmond Marina Bay Shuttle and AC Transit Route 76 and Route 74, which run concurrently.
- **Potential UC Berkeley and LBNL Shuttle Service:** In association with the development of the Berkeley Global Campus, UC Berkeley and Lawrence Berkeley National Laboratory (LBNL) are considering alternatives for enhancing existing shuttle transit services to the Berkeley Global Campus site and providing new service to and from other East Bay locations, including to: the Richmond BART Station; the El Cerrito Plaza BART Station; University Village in Albany; and the UC Berkeley/LBNL campuses.

Encourage Sustainable Travel Behavior (TCM C)

The establishment and continuing maintenance of a Transportation Management Association (TMA) is an implementation priority of the Specific Plan. Projects that meet certain thresholds detailed in the Specific Plan would be required to join the TMA, while other property owners and tenants are encouraged to join and participate based on incentives and benefits that the TMA will offer.

All projects with new construction, or that include additions to existing buildings in excess of 5,000 square feet shall be required to do the following:

- The applicant and/or property owner shall join the TMA and shall ensure that all tenants are TMA members for the first 25 years from the date of final inspection or certificate of occupancy.
- The applicant shall submit for the approval of the Director of Planning and Community Development or his/her designee a Transportation Demand Management (TDM) Plan. The TDM Plan will be designed so the proposed package of measures will achieve the Single Occupancy Vehicle (SOV) mode split goal of 50 percent over time.

Support Focused Growth (Bicycle and Pedestrian friendliness) (TCM D)

Principle 2 of the Richmond Bay Specific Plan calls for establishing stronger connections, particularly for pedestrians and bicyclists, to create additional opportunities for north-south connections. Specifically, the Specific Plan identifies the following improvements:

- Reinforcing Marina Way South as an important north/south connector through improvements to the Regatta Way intersection;
- Establishing a new north-south connector across the rail line between the Lark/Meeker and R&D Campus neighborhoods; and
- Bridging I-580 to provide direct access for pedestrians and bicycles between Sub-Area 4 and the El Cerrito Del Norte BART Station.

Implement Pricing Strategies (TCM E)

Development Standards of the Richmond Bay Specific Plan include the following Pricing strategies:

Charging for Non-residential Parking Required

- Cost to be Unbundled: All commercial parking spaces shall be unbundled from the cost of a leased commercial space, and the cost of the parking space shall be included as a separate line item in the commercial space lease.
- Parking Pricing: All shared parking spaces shall be priced at an hourly or daily rate. If shared parking spaces are leased on a monthly basis, the monthly rate shall not be less than twenty (20) times the applicable daily rate. A variable parking rate for off-peak hours may be introduced.

Charging for Residential Parking Required

- Cost to be Unbundled: Payment for residential parking spaces shall be unbundled from the cost of rent or purchase.
- Parking Pricing: All parking spaces shall be priced at an hourly, daily, or monthly rate as necessary to cover the cost to build, operate and maintain such parking.
- Parking for Deed-Restricted Affordable Units: For deed-restricted affordable units, the payment for residential parking spaces shall be unbundled from the cost of rent or purchase of the residential unit. However the price charged to tenants of deed restricted affordable housing units for each parking space shall not exceed the cost of building, operating and maintaining such parking.

The Lark Drive Variant would have similar impacts as those described above for the Specific Plan with respect to conflicts with the Clean Air Plan. The extension of the Lark Drive would improve internal circulation within the Plan Area, marginally reducing vehicle miles travelled, thus promoting sustainable travel behavior (TCM C of the CAP).

Because the requirements of Specific Plan would support and/or implement transportation control measures consistent with the 2010 CAP, adoption and development under the Specific Plan would not fundamentally conflict with the 2010 CAP and would have a less-than-significant air quality impact with regard to TCM implementation.

Significance: Less Than Significant.

Mitigation: None required.

Impact AIR-2.SP: Construction associated with development under the Specific Plan would result in average daily emissions of greater than 54 pounds per day of ROG, NO_X, or PM2.5 or 80 pounds per day of PM10 (Criteria a., b.). (*Significant and Unavoidable*)

Construction activities associated with the development of projects within the Plan Area would generate air emissions through the use of heavy-duty construction equipment, from vehicle trips hauling materials, and from construction workers traveling to and from the project site. Mobile source emissions, primarily NO_X, would be generated from the use of construction equipment such as excavators, bulldozers, wheeled loaders, and cranes. During the finishing phase, paving operations and the application of asphalt, architectural coatings (i.e., paints) and other building materials would release ROG. The assessment of construction air quality impacts considers each of these sources, and recognizes that construction emissions can vary substantially from day to day, depending on the level of activity, the specific type of operation, and for dust, the prevailing weather conditions.

The City of Richmond anticipates that adoption and development under the Specific Plan would occur over the next 20 to 25 years. The timing and sequence of development would depend upon numerous factors, including future market conditions, public investment, and private initiative

and investment. As a conservative analysis, construction activities are assumed to occur over a default construction period calculated by the CalEEMod land use emissions model based on the number of residential units and square feet of non-residential development. The assumed construction period spans from 2017 through 2029.

The BAAQMD's approach to analysis of construction-related particulate impacts (other than exhaust PM) is to emphasize implementation of effective and comprehensive dust control measures rather than detailed quantification of emissions. The BAAQMD considers construction-related fugitive dust impacts of projects to be less than significant if a suite of recommended dust-control measures are implemented. Therefore, BAAQMD-identified Best Management Practices for control of fugitive dust are included as **Mitigation Measure AIR-2a.SP.**

Construction-related exhaust emissions from adoption and development under the Specific Plan were estimated using the CalEEMod land use emissions model, which separates the construction process into stages: demolition, grading, paving, structural building, and architectural coating. The grading phase is separated into emissions from fugitive dust, emissions from off-road equipment, and worker vehicle trips. The paving phase estimates emissions from off-road equipment, on-road trucks worker vehicle trips, as well as off-gassing of ROG emissions from asphalt (primarily parking lot and roadway surfaces).[6] Emissions from the structural building phase would consist of off-road equipment emissions, worker vehicle trips and vendor vehicle trips. Grading activities were assumed to have been conducted prior to the other activities. The construction duration for each stage and scenario are detailed in CalEEMod printout sheets, which are included in Appendix B.

Average daily construction-related criteria pollutant emissions resulting from adoption and development under the Specific Plan inclusive of 49 acres of parking and roadways (including the extension of Lark Drive) are presented in **Table 4.2-6**. As shown, maximum regional emissions would exceed the BAAQMD daily significance thresholds for NOx during construction. The predominant construction activity associated with the significant NOx emissions would be operation of off-road construction equipment and on-road trucks. Consequently, **Mitigation Measure AIR-2b.SP (Require Tier 4 Engines on Construction Equipment)** and **Mitigation Measure AIR-2c.SP (Require Construction Fleet to Use Renewable Diesel)** are identified to reduce NOx emissions to the extent feasible. The CalEEMod model was then run under a mitigated scenario during which all off-road equipment was assumed to consist of equipment with Tier 4 engines and operate on renewable diesel. Using equipment with Tier 4 engines would reduce daily construction-related NOx emissions by 20.3 percent while use of renewable diesel would reduce equipment NOx emissions by 14 percent. Mitigated emissions are shown in Table 5.2-6 but would still exceed the NOx threshold for significance of 54 pounds per day.

> **Mitigation Measure AIR-2a.SP: Best Management Practices for Controlling Particulate Emissions.** All applicants proposing the development of projects within the Plan Area shall ensure the implementation of the following BAAQMD Best Management Practices for particulate control for all project construction activities. These measures will reduce particulate emissions primarily during soil movement, grading and demolition activities but also during vehicle and equipment movement on unpaved project sites

6 "Off gassing" refers to the release of gaseous compounds from a solid material such as asphalt.

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. 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 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.

Mitigation Measure AIR-2b.SP: Require Tier 4 engines on Construction Equipment. All applicants proposing development of projects within the Plan Area shall require their contractors, as a condition of contract, to further reduce construction-related exhaust emissions by ensuring that all off-road equipment greater than 25 horsepower (hp) and operating for more than 20 total hours over the entire duration of construction activities shall operate on a USEPA-approved Tier 4 engine. Construction equipment with Tier 4 engines currently comprise 22 percent of the statewide construction equipment fleet and CARB Regulations will result in the percentage increasing over the next several years. Alternatively, future project sponsors could have a construction air quality assessment performed which, if the results warrant and the City approves, would obviate the need for implementation of Mitigation Measure AIR-2b.SP.

Mitigation Measure AIR-2c.SP: Require Construction Fleet to Use Renewable Diesel. All applicants proposing development of projects within the Plan Area shall require their contractors, as a condition of contract, to reduce construction-related exhaust emissions by ensuring that all off-road equipment greater than 25 horsepower (hp) and operating for more than 20 total hours over the entire duration of construction activities shall operate on renewable diesel (such as Diesel HPR). Renewable diesel is currently commercially available in Berkeley and Oakland. Alternatively, future project sponsors could have a construction air quality assessment performed which, if the results warrant and the City approves, would obviate the need for implementation of Mitigation Measure AIR-2c.SP.

Lark Drive Variant

The Lark Drive Variant would have similar impacts as those described above for the Specific Plan with respect to construction-related emissions of criteria air pollutants. The predicted

emissions presented in Table 4.2-6 are inclusive of the construction activity to create the Lark Drive extension. The variant would result in increased average daily emissions of less than one pound per day of ROG, NOX, PM10 and PM2.5.

A conservative estimate of emissions in the Plan Area associated with construction of development under the Specific Plan shows a significant impact, as shown in **Table 4.2-6**. Even with the inclusion of Mitigation Measures AIR-2a.SP, AIR-2b.SP, and AIR-2c.SP, it cannot reliably be demonstrated that NOx emissions from application of architectural coatings would be reduced to 54 pounds per day or less. Therefore, this impact would be significant and unavoidable.

TABLE 4.2-6
AVERAGE DAILY CONSTRUCTION-RELATED EMISSIONS

	Average Daily Construction Emissions (lb/day)			
	ROG	**NO_X**	**PM_{10}**	**$PM_{2.5}$**
Unmitigated Average Daily Emissions	50.5	96.1	2.59	2.40
Threshold	54	54	82	54
Exceeds Threshold?	No	**Yes**	No	No
Mitigated Average Daily Emissions	48.5	**76.7**	1.73	1.60
Threshold	54	54	82	54
Exceeds Threshold?	No	**Yes**	No	No

SOURCE: ESA, 2016

Significance after Mitigation: Significant and Unavoidable.

Mitigation: Mitigation Measure AIR-2a.SP, AIR-2b.SP, and AIR-2c.SP.

Impact AIR-3.SP: Adoption and development under the Specific Plan would result in operational average daily emissions that could violate any air quality standard, contribute substantially to an existing or projected air quality violation or result in a cumulatively significant net increase of any nonattainment pollutant. (Criteria b., c.). (*Significant and Unavoidable*)

Plan Area development would result in an increase in criteria air pollutant and precursor emissions, including ROG, NO_X, PM_{10} and $PM_{2.5}$ from a variety of emissions sources, including onsite area sources (e.g., natural gas combustion for space and water heating, landscape maintenance, use of consumer products such as hairsprays, deodorants, cleaning products, etc.) and mobile on-road sources. Exhaust emissions from the above sources associated with adoption and development under the Specific Plan were calculated by using the CalEEMod land use emissions model program.

Estimated emissions of ROG from maintenance applications of architectural coatings reflect the VOC content limits of Regulation 8, Rule 3 of the BAAQMD. Adjusted emission factors have

been applied to operational emissions for VOC/ROG (consumer product use) in the modeling of air pollutant emissions. This factor has been applied because model default factors are based on older data that do not reflect the results of recent regulatory efforts of the CARB. Consequently, locally specific emission factors were developed to more accurately estimate ROG emissions (see Ramboll, 2016, and Appendix B).

The transportation analysis estimates that adoption and development under the Specific Plan would result in approximately 71,450 net new vehicle trips per day after accounting for use of transit, bicycling, walking and internal trip capture (a 38 percent reduction).

Table 4.2-7 and **Table 4.2-8** summarize daily mobile and onsite area emissions of criteria pollutants that would be generated by adoption and development under the Specific Plan by 2040 assuming vehicle trip generation from full buildout of the Specific Plan. It compares these emissions with screening thresholds of 10 tons per year or 54 pounds per day of ROG, NOx, or $PM_{2.5}$ or15 tons per year or 82 pounds per day of PM_{10}. As indicated in Table 4.2-7, development-related operational emissions of ROG, NO_X, and PM_{10} would exceed these screening thresholds.

Because the operational emissions from full buildout of the Specific Plan would be greater than the screening criteria, the Specific Plan was also then evaluated for consistency with Plan Bay Area (i.e., confirm a project's or plan's location within a Priority Development Area and implementation of TDM practices) to determine whether criteria pollutant emissions attributed to population and economic growth (inclusive of residential/commercial development and mobile source emissions) are significant for CEQA purposes.

Development under the Specific Plan would add higher densities within the City of Richmond that exceed the densities assumed in the Plan Bay Area. The resultant low overall per capita Vehicle Miles Traveled (VMT) within the City as intensified by the Specific Plan will help the region achieve criteria pollutant compliance targets more effectively than accommodating growth in distant suburban and exurban areas. Vehicle trips generated by development under the Specific Plan estimated as a part of the transportation analysis for this EIR (see Section 4.13, *Transportation and Traffic*) made adjustments to the estimated trip generation rates developed by the Institute of Transportation Engineers to account for internal trips afforded by the mixed-use development as well as for pedestrian, bicycle, and transit connectivity. This analysis indicated a 20 percent decrease in daily auto trips made by Plan Area residents by non-automobile means, over what would occur for development without this mixed use character and higher pedestrian, bicycle, and transit connectivity. This reduction in trips indicates that development under the Specific Plan would result in a per capita reduction of VMT for Plan Area residents consistent with the Plan Bay Area policy to reduce per capita VMT by 10 percent.

The Plan Area's infill location and proximity to major transportation corridors reduces the distance that customers would drive in motor vehicles to shop by providing increased retail opportunities within the Plan Area. Also, the Plan Area is located in direct proximity to nearby employment hubs. Taken together, these locational characteristics of the Specific Plan help reduce potential motor vehicle trips.

TABLE 4.2-7
AVERAGE DAILY OPERATIONAL EMISSIONS OF THE SPECIFIC PLAN

	Average Daily Operational Emissions (lb/day)			
	ROG	**NO_X**	**PM_{10}**	**$PM_{2.5}$**
Area Sources	302.6	2.68	1.10	1.10
Energy Sources	4.38	38.85	3.01	3.01
Mobile Sources	129.2	100.9	277.5	74.79
Total Emissions	**436.2**	**142.4**	**281.9**	**79.18**
Screening Threshold	54	54	82	54
Exceeds Screening Criteria?	Yes	Yes	Yes	Yes

SOURCE: Appendix B

TABLE 4.2-8
MAXIMUM ANNUAL OPERATIONAL EMISSIONS

	Maximum Annual Operational Emissions (ton/year)			
	ROG	**NO_X**	**PM_{10}**	**$PM_{2.5}$**
	Unmitigated Emissions			
Area Sources	55.22	0.49	0.25	0.25
Energy Sources	0.80	7.09	0.55	0.55
Mobile Sources	23.58	18.41	50.65	13.65
Total Emissions	**79.60**	**25.99**	**51.45**	**14.45**
Screening Threshold	10	10	15	10
Exceeds Screening Criteria?	Yes	Yes	Yes	Yes
	Mitigated emissions			
Area Sources	51.61	0.49	0.25	0.25
Energy Sources	0.79	7.09	0.55	0.55
Mobile Sources	22.3	16.81	43.34	11.69
Total Emissions	**74.72**	**24.38**	**44.14**	**12.48**
Screening Threshold	10	10	15	10
Exceeds Screening Criteria?	Yes	Yes	Yes	Yes

SOURCE: Appendix B

As discussed above in **Impact AIR-1.SP,** planned improvements to transit service in the Plan Area include improvements to local AC Transit routes within the City and commencement of public passenger ferry service to San Francisco from an existing pier on the Marina Bay Channel. The area will also served by UC Berkeley and the LBNL existing shuttle transit services with pending enhancements.

Additionally, the Specific Plan would encourage sustainable travel behavior by establishing a TMA, as discussed above. All projects with new construction, or that include additions to existing buildings in excess of 5,000 square feet would be required to join the TMA, while other property owners and tenants are encouraged to join and participate based on incentives and benefits that the TMA will offer.

Implementation of the Specific Plan would foster bicycle and pedestrian infrastructure via reinforcing Marina Way South as an important north/south connector through improvements to the Regatta Way intersection; establishing a new north-south connector across the rail line between the Lark/Meeker and R&D Campus neighborhoods; and bridging I-580 to provide direct access for pedestrians and bicycles between Sub-Area 4 and the El Cerrito Del Norte BART Station.

Consequently, while development under the Specific Plan would result in an increase in criteria pollutant emissions, accommodating that growth within a designated Priority Development Area with low per-capita VMT will ultimately reduce the severity of growth-oriented criteria pollutant emissions within the Bay Area as envisioned in the Plan Bay Area. Notwithstanding the fact that the Specific Plan would provide for growth within a Priority Development Area and generally implement that growth consistent with the VMT reduction goals of Plan Bay Area, the increase in operational criteria air pollutant emissions associated with development under the Specific Plan are conservatively identified as a significant air quality impact, due to the application of BAAQMD's mass-based thresholds for criteria air pollutants. For all existing and new development within the Plan Area, the Specific Plan requires compliance with TDA and TDM requirements to encourage sustainable travel behavior, such as preparation and implementation of a TDM Plan; this requirement would reduce impacts related to operational criteria air pollutants. Implementation of **Mitigation Measures TRF-9.SP** through **TRF-20.SP** (as described in Section 4.13, *Transportation and Traffic*), and **Mitigation Measures AIR-3a.SP** through **AIR-3e.SP**, below, would also reduce this impact.

A Mitigated Specific Plan scenario was run in CalEEmod that assumed implementation of **Mitigation Measure AIR-3a.SP: Transportation Demand Management** using the default CalEEmod reduction for 100 percent employee eligibility. This mitigated run also assumed implementation of **Mitigation Measure AIR-3b.SP: Use Low and Super-compliant VOC Architectural Coatings in Maintaining Buildings through CC&Rs and Ground Lease,** and **Mitigation Measure AIR-3e.SP: Prohibit Wood Burning Fireplaces.** No reductions were assumed for implementation of **Mitigation Measure AIR-3d.SP: Electrification of Loading Docks** and **Mitigation Measure AIR-3f.SP: Diesel Backup Generator Specifications** because the future inclusion of these sources is speculative and were not assumed in the modeling of operational air emissions for the Specific Plan. No reductions were assumed for implementation of **Mitigation Measure AIR-3c.SP: Promote use of Green Consumer Products** because project developer/s not have authority to require use of certain products, no reduction in ROG emissions can be estimated from this measure. Maximum annual mitigated emissions are also presented in Table 4.2-8. As can be seen from the table, mitigated emissions are still substantially greater than the screening criteria; hence, air quality emissions under the Specific Plan would be significant and unavoidable with mitigation.

Health Implications of Significant Impacts Related to Emission of Ozone Precursors and PM_{10}.

The concentration of ground-level ozone in the atmosphere is influenced by the volume of air available for dilution, the temperature, and the intensity of ultraviolet light. In the Bay Area, the

worst case conditions for ozone formation occur in the summer and early fall on warm, windless, sunny days. Given the interplay between these various factors, it is difficult to predict the magnitude of health effects from a proposed development's exceedance of significance criteria for regional ROG, NOx and PM emissions. The increase in emissions associated with the Specific Plan represents a fraction of total SFBAAB regional ROG emissions (up to 436 pounds per day compared to 265 tons per day in the SFBAAB region in 2012 [CARB,2012]), NOx emissions (up to 142 pounds per day compared to 318 tons per day in the SFBAAB region in 2012) and PM_{10} emissions (up to 281 pounds per day compared to 119 tons per day in the SFBAAB region in 2012). Although Table 4.2-1 indicates that the most stringent applicable ozone standards were not exceeded at the San Pablo Rumrill monitoring station between 2011 and 2015, the SFBAAB region experienced an average of 8.4 days of exceedance per year between 2011 and 2015 (BAAQMD, 2014b). The PM_{10} standard was exceeded on three days at the San Pablo Rumrill monitoring station between 2011 and 2015. Increased emissions of ROG, NOx and PM that could occur under development of the Specific Plan could contribute to new or exacerbated air quality violations in the SFBAAB region by contributing to more days of ozone or PM_{10} exceedance or result in AQI values that are unhealthy for sensitive groups and other populations. As shown in Table 4.2-2, the SFBAAB has averaged between 8 and 15 days per year that are considered unhealthy for sensitive groups and had 3 unhealthy (red) days in the last five years for which data are available. On unhealthy days, persons are recommended to avoid both prolonged and heavy exertion outdoor activities (USEPA, 2014). However, adding higher densities—even higher than included in Plan Bay Area— in Richmond, which has low overall per capita Vehicle Miles Traveled (VMT) and mobile source emissions, will help the region achieve criteria pollutant compliance targets more effectively than focusing growth in distant suburban and exurban areas.

Mitigation Measure AIR-3a.SP: Use Super-compliant VOC Architectural Coatings in Maintaining Buildings through CC&Rs and Ground Leases. Future developer(s) of projects within the Plan Area shall require all residentially developed parcels to include within their CC&R's and/or ground leases requirements for all future interior spaces to be repainted only with "Super-Compliant" Architectural Coatings (www.aqmd.gov/home/regulations/compliance/architectural-coatings/super-compliant-coatings).While Regulation 8 Rule 3 of the BAAQMD places limits on the VOC content of paint and other architectural coatings, use of lower VOC coatings available to consumers can further reduce operational ROG emissions.

Mitigation Measure AIR-3b.SP: Promote use of Green Consumer Products. To reduce ROG, NOx and PM_{10} emissions associated with projects developed within the Plan Area, developer(s) of such projects shall provide education for residential and commercial tenants concerning green consumer products. Prior to receipt of any certificate of final occupancy and every five years thereafter, the project sponsors shall work with the City of Richmond to develop electronic correspondence to be distributed by email annually to residential and/or commercial tenants of each building on the project site that encourages the purchase of consumer products that generate lower than typical VOC emissions. The correspondence shall encourage environmentally preferable purchasing and shall include contact information and links to vendors of low VOC consumer products.

Mitigation Measure AIR-3c.SP: Electrification of Loading Docks. For all projects developed within the Plan Area, developer(s) shall ensure that loading docks for retail, light

industrial or warehouse uses that will receive deliveries from refrigerated transport trucks incorporate electrification hook-ups for transportation refrigeration units to avoid emissions generated by idling refrigerated transport trucks.

Mitigation Measure AIR-3d.SP: Prohibit Wood Burning Fireplaces. For all projects developed within the Plan Area, developer(s) shall ensure that building specifications for residential units preclude fireplaces, whether wood-burning or natural gas-fired. Compliance with this measure shall be verified upon plan review and prior to occupancy by the City of Richmond Building Department.

Mitigation Measure AIR-3e.SP: Diesel Backup Generator Specifications. For all projects developed within the Plan Area, and to reduce NOx emissions associated with operation of stationary sources, the project sponsors shall implement the following actions:

1. Any new diesel backup generators shall:
    a. Have engines that meet or exceed CARB Tier 4 off-road emission standards which have the lowest NOx emissions of commercially available generators, and
    b. Be fueled with renewable diesel, if commercially available, which has been demonstrated to reduce NOx emissions by approximately 10 percent.
2. All new diesel backup generators shall have an annual maintenance testing limit of 50 hours, if feasible, and up to a maximum of 50 hours per engine, subject to any further restrictions as may be imposed by the Bay Area Air Quality Management District (BAAQMD) in its permitting process.

The Lark Drive Variant would have the same impacts as those described above for the Specific Plan with respect to operational emissions of criteria air pollutants. The Lark Drive Variant would not result in an increase in vehicle trip generations or in the operations of any new area sources or stationary sources of criteria air pollutant emissions.

Although implementation of the mitigation measures above would reduce emissions of operational criteria air pollutants, these measures are not proven to reduce such emissions to levels substantial enough such that they would be below BAAQMD mass-based thresholds. Many sources of criteria air pollutants are outside the City's jurisdiction and control, and attainment of regional criteria air quality standards cannot be achieved without addressing sources of emissions that are outside the City's jurisdiction and control. The City finds that mitigation measures to further reduce criteria air pollutants emissions from sources not within the jurisdiction of the City are within the jurisdiction and control of air quality agencies including BAAQMD, CARB and EPA. Therefore, this impact is significant and unavoidable.

Significance after Mitigation: Significant and Unavoidable.

Mitigation: Mitigation Measures AIR-3a.SP, AIR-3b.SP, AIR-3c.SP, AIR-3d.SP, AIR-3e.SP, AIR-3f.SP, and Mitigation Measures TRF-9.SP through TRF-20.SP.

Impact AIR-4.SP: Adoption and development under the Specific Plan would result in new sources of toxic Air Contaminants (TACs) and could expose new receptors to existing sources of TACs (Criterion d.). (*Significant and Unavoidable*)

For area plans to have a less-than-significant impact with respect to potential TACs, BAAQMD guidance has suggested that overlay zones be established around existing and proposed land uses that emit TACs. Additionally, the plan should identify measures to minimize potential impacts and create overlay zones for sources of TACs and receptors.

Table 4.2-9 inventories the permitted sources within and in proximity to the Plan Area with a cancer risk in excess of 10 in one million. Risk values provided in Table 4.2-8 are conservative risk values at the facility fence line estimated by BAAQMD. Many of the sources within the Plan Area would presumably be removed or would eventually relocate as parts of the Plan Area are redeveloped with new land uses envisioned under the Specific Plan. Of the 22 sources identified in Table 4.2-3, four have no associated cancer risk or PM2.5 concentration contribution.

TABLE 4.2-9
STATIONARY SOURCES OF TACS EXCEEDING A FENCELINE CANCER RISK OF 10 IN ONE MILLION WITHIN AND WITHIN 1,000 FEET OF THE PLAN AREA [a]

	Name of Source	Address	Cancer Risk (in one million)	Chronic Health Index[b] (Unit less ratio value)	$PM_{2.5}$ Concentration (micrograms/ cubic meter)
Sources within the Plan Area					
3	Bio Rad Laboratories	3110 Regatta Boulevard	36.10	0.374	0.028
9	Kaiser Permanente	914 Marina Way South	26.57	0.009	0.006
10	Richmond Hall of Justice	1689 Regatta Boulevard	14.39	0.005	0.026
Sources outside of the Plan Area (within 1,000 feet)					
14	USEPA Laboratory	1337 S.46thStreet	19.00	0.007	0.340
18	State of California	850 Marina Bay Parkway	15.30	0.006	0.395
22	City of Richmond Marina Bay Pump Station	Schooner Court	11.92	0.004	0.003

NOTE:

[a] All values in the table are BAAQMD estimates for the fence line of the source property.

[b] Chronic non-cancer risk is determined by dividing the estimated annual average concentration of a pollutant by the Reference exposure level assigned to that pollutant by the California Office of Environmental Health Hazard Assessment. For one pollutant this ratio is referred to as the Hazard Quotient (HQ). HQs for pollutants targeting the same organ system are added to determine the total Hazard Index (HI).

Source: BAAQMD, 2012a

The northern boundary of the Plan Area is abutted by I-580, which is a localized source of DPM. Additionally, an active BNSF rail spur, which is also a localized source of DPM, runs parallel to the eastern boundary of Sub Area-4 and I-580. Two major rail switching yards, the 23rd Street

Switching Yard (located within Sub-Area 1 as shown on Figure 3.27 of the Specific Plan) and Safeway Switching Yard (located south of Sub-Area 3 as shown on Figure 3.27 of the Specific Plan) are also active within the Plan Area.

Locating new sensitive receptors within proximity to stationary sources, I-580 or the BNSF railway could result in a cumulative increased caner exposure risk exceeding 100 in one million or an incremental exposure to PM2.5 concentrations exceeding 0.8 ug/m3. While assessment of the impacts of the environment on a project is, in most cases, outside of the purview of CEQA pursuant to the California Supreme Court's decision in *CBIA v. BAAQMD,* Mitigation **Measure AIR-4b.SP: Provision of Air Enhanced Air Filtration Systems** are identified to reduce the likelihood of potential exposure impacts to sensitive land uses developed as part of the Specific Plan. This mitigation measure also addresses CEQA Statute Section 21151.8 (a)(3)(B)(iii) which requires that any proposed school facilities with a boundary within 500 feet of the closest traffic lane of a freeway or other busy traffic corridor, the governing board of the school district must determine through air dispersion modeling, and after considering any potential mitigation measures, whether the air quality at the proposed site is such that neither short-term nor long-term exposure poses significant health risks to pupils.

Development under the Specific Plan may also result in the installation or operation of new stationary sources of TACs or PM2.5. While it unknown what specific sources, if any, would be installed or where they would be operated at the Specific Plan development stage, new stationary sources would be subject to the permit authority of the BAAQMD. As a practical matter, the BAAQMD will not issue a permit for a new generator that results in an operational cancer risk greater than 10 in one million. Consequently, regulatory mechanisms exist that would ensure that impacts from stationary sources of TACs and PM2.5 would be less than significant.

Construction activities of future development projects under the Specific Plan would also be sources of TACs and PM2.5. Without specific details of locations of building footprints, construction schedules a quantitative evaluation of such potential health risk impacts is not possible. However, **Mitigation Measure AIR-2b.SP: Require Tier 4 engines on Construction Equipment** and **Mitigation Measure AIR-2c.SP: Require Construction Fleet to Use Renewable Diesel**, which were identified to address NOx emissions in Impact AIR-2.SP would reduce DPM and PM2.5 associated with construction activities. Use equipment with Tier 4 engines would reduce daily construction-related DPM and PM2.5 exhaust emissions by 33 percent while use of renewable diesel would reduce equipment DPM and exhaust PM2.5 emissions by an additional 34 percent. Notwithstanding implementation of these measures to reduce DPM emissions during construction, **Mitigation Measure AIR4b.SP: Health Risk Assessment of Future Projects under the Specific Plan** is identified to provide evaluation of construction-related health risks for future projects to assess the impact to receptors that may exist in the future.

The Lark Drive Variant would have the same impacts as those described above for the Specific Plan with respect to operational emissions of TACs and TAC exposure. The Lark Drive Extension Variant would not result in the creation of a high volume roadway defined by BAAQMD as a

freeway or arterial roadway with greater than 10,000 vehicles or 1,000 trucks per day, nor would it result in the operation of any new area sources or stationary sources of TACs.

Although, with mitigation, the Specific Plan would identify measures to minimize potential health risk impacts, consistent with BAAQMD's Plan-level methodology, there may be instances in which site-specific or project-specific conditions preclude the reduction of all project impacts to less than- significant levels. For purposes of a conservative analysis, therefore, this impact remains significant and unavoidable.

Mitigation Measure AIR-4a.SP: Diesel Particulate Matter Exposure for Residential and Other Sensitive Land Uses. Should residences or other sensitive land use be proposed within 500 feet of the nearest traffic lane for I-580 or permitted stationary sources, to reduce DPM exposure to proposed receptors of the Specific Plan, all applicants proposing the development of projects within the Plan Area shall either:

1. Install and ensure the operation in good working order of indoor air filtration systems that meet or exceed an efficiency standard of Minimum Efficiency Reporting Value (MERV) 13 (i.e., a filter efficiency of approximately 80 percent of fine particulates in the range of 1.0 to 3.0 micrometers) to limit DPM within proposed sensitive land uses of the Specific Plan; or
2. Alternatively, the proposed project sponsor will perform a health risk assessment which, if the results warrant and the City approves, could obviate the need for filtration systems by demonstrating a less than significant exposure risk for future occupants.

Mitigation Measure AIR-4b.SP Health Risk Assessment of Future Projects under the Specific Plan. For all projects proposed for development within the Plan Area (except the Sub-Area 4 Project), project applicants shall assess the potential cancer risk exposures to on-site residential receptors or any proposed school facilities later in the design phase, but prior to occupancy, and to prepare a project-specific HRA using updated receptor location information and a more detailed assessment of risks associated with I-580 or permitted stationary sources at that time and submit to the City for review. If the revised HRA demonstrates, to the satisfaction of the City, that the cancer risk exposures for on-site receptors will be less than BAAQMD project-level thresholds, then Mitigation Measure AIR-4a.SP would be unnecessary. If the revised HRA demonstrates, to the satisfaction of the City, that the cancer risk for on-site sensitive receptors will be less than presented in this analysis, but still over BAAQMD threshold, the mitigation effort may be proportionately reduced.

Mitigation Measure AIR-4c.SP: Risk Reduction Plan for Backup Generators or New Permitted Stationary Sources. Applicants for projects that would include backup generators shall prepare and submit to the City a Risk Reduction Plan for City review and approval. The applicant shall implement the approved Risk Reduction Plan. The Risk Reduction Plan shall reduce cumulative localized cancer risks to the maximum feasible extent. The Risk Reduction Plan may contain, but is not limited to the following strategies:

1. Demonstration using screening analysis or a health risk assessment that project sources, when combined with local cancer risks from cumulative sources with 1,000 feet would be less than 100 in one million.

2. Installation of non-diesel fueled generators.
3. Installation of diesel generators with an EPA-certified Tier 4 engine or engines that are retrofitted with an ARB Level 3 Verified Diesel Emissions Control Strategy.

Significance after Mitigation: Significant and Unavoidable

Mitigation: Mitigation Measures AIR-2b.SP, AIR-2c.SP, AIR-4a.SP, AIR-4b.SP, and AIR-4c.SP.

Impact AIR-5.SP: Adoption and development under the Specific Plan would not contribute to carbon monoxide (CO) concentrations exceeding the California Ambient Air Quality Standards (CAAQS) of nine parts per million (ppm) averaged over eight hours and 20 ppm for one hour (Criterion d.). (*Less Than Significant*)

Pursuant to BAAQMD CEQA Guidelines, localized CO concentrations should be estimated for projects in which (a) project-generated traffic would conflict with an applicable congestion management program established by the county congestion management agency or (b) project-generated traffic would increase traffic volumes at affected intersections to more than 44,000 vehicles per hour (or 24,000 vehicles per hour where vertical and/or horizontal mixing is substantially limited, such as tunnels, parking garages, bridge underpasses, natural or urban street canyons, and below-grade roadways). The highest volume roadway in the Plan Area is the adjacent I-580 with a peak hour volume of 7,600 vehicles (Caltrans, 2014). Further, ambient CO standards have not been exceeded in the Bay Area for over a decade, largely due to reformulated fuels in California. Therefore, adoption and development under the Specific Plan would not be required to estimate localized CO concentrations as it would not contribute to CO concentrations exceeding CAAQS. The impact would be less than significant.

Significance: Less Than Significant.

Mitigation: None required.

Impact AIR-6.SP: Adoption and development under the Specific Plan would not frequently and for a substantial duration, create or expose sensitive receptors to substantial objectionable odors affecting a substantial number of people (Criterion e.). (*Less Than Significant*)

The BAAQMD 2012 Guidelines identify wastewater treatment plants, oil refineries, asphalt plants, chemical manufacturing, painting/coating operations, coffee roasters, food processing facilities, recycling operations and metal smelters as odor sources of particular concern, and recommends buffer zones of one to two miles around them to avoid potential odor conflicts. All of these odor sources would require a permit with the BAAQMD and none of these types of facilities are identified in Table 4.2-3 in the vicinity of the Plan Area. The Veolia Water treatment facility,

which received odor complaints in 2010 due to a leaking digester is located over one mile to the west and has since addressed it operational failure (Richmond Confidential, 2010).

Given the location of the Plan Area relative to BAAQMD-identified odor source facilities, the potential for new sensitive receptors within the Plan Area to be impacted by substantial objectionable odors affecting a substantial number of people would be less than significant.

The Specific Plan proposes residential, office, retail, and research and development land uses. If a proposed land use of the Specific Plan were to be an odor-generating facility (e.g., coffee roaster), such a facility would be require to comply with BAAQMD Regulation 7. BAAQMD Regulation 7 places general limitations on odorous substances and specific emission limitations on certain odorous compounds and applies to restaurants that employ more than 5 persons.

The Lark Drive Variant would have the same impacts as those described above for the Specific Plan with respect to odor impacts. The Lark Drive Variant would not result in the creation of a new odor source or locate sensitive receptors to a known odor-producing facility. Therefore, odor impacts would be less than significant.

Significance: Less Than Significant.

Mitigation: None required.

4.2.6 Project-Level Impacts of the Sub-Area 4 Project

Impact AIR-1.SA4: The Sub-Area 4 Project would not conflict with, or obstruct implementation of the *2010 Clean Air Plan* (Criterion a). (*Less Than Significant*)

The most recently adopted air quality plan for the Bay Area is the *2010 Clean Air Plan*. The *2010 Clean Air Plan* is a road map that demonstrates how the San Francisco Bay Area will achieve compliance with the state ozone standards as expeditiously as practicable and how the region will reduce the transport of ozone and ozone precursors to neighboring air basins. In determining consistency with the *2010 Clean Air Plan* (CAP), this analysis considers whether the Sub-Area 4 Project would: (1) support the primary goals of the CAP, (2) include applicable control measures from the CAP, and (3) avoid disrupting or hindering implementation of control measures identified in the CAP.

The Sub-Area 4 Project would have many of the same attributes as discussed in **Impact AIR-1.SP** for the Specific Plan. The Sub-Area 4 Project's infill location and proximity to major transportation corridors reduces the distance that customers would drive in motor vehicles to shop by providing increased retail opportunities within the vicinity. Also, the Sub-Area 4 Project site is located in direct proximity to nearby employment hubs. Taken together, these locational characteristics of the Sub-Area 4 Project area help reduce potential motor vehicle trips.

Table 4.2-5 identifies those five categories of TCMs that local governments should implement through local plans to be considered in conformance with the 2010 Clean Air Plan. A review of the TCMs in Table 4.2-5 indicates that these measures lend themselves to application to large scale land use development projects and are addressed within the South Richmond Specific Plan. The Sub-Area 4 Project would be subject to the development standards of the Specific Plan. Consequently, as discussed in **Impact AIR-1.SP**, Sub-Area 4 Project development would occur in an area with planned improvements to transit services (TCM A), and transit system efficiency (TCM B). As a large project in excess of 5,000 square feet, the Sub-Area 4 Project would be required to establish and maintain a TMA. The applicant and/or property owner shall join the TMA and shall ensure that all tenants are TMA members for the first 25 years from the date of final inspection or certificate of occupancy. The applicant would be required to submit a TDM Plan designed so the proposed package of measures will achieve the SOV mode split goal of 50 percent over time. This TDA and TDM requirement would encourage sustainable travel behavior (TCM C).

Additionally, Development Standards of the Richmond Bay Specific Plan include pricing strategies that would be commensurate with the intent of TCM D of the 2010 CAP, as described above for the discussion under **Impact AIR-1.SP**. Finally, the Sub-Area 4 Project would support focused growth and pedestrian and bicycle friendliness (TCM E) by bridging I-580 to provide direct access for pedestrians and bicycles between the Sub-Area 4 Project site and the El Cerrito Del Norte BART Station.

Therefore, like the Specific Plan as a whole, the Sub-Area 4 Project would support and/or implement transportation control measures consistent with the 2010 CAP, and adoption and development under the Sub-Area 4 Project would not be considered to fundamentally conflict with the 2010 CAP, and would be considered to have a less-than-significant air quality impact with regard to TCM implementation.

Significance: Less Than Significant.

Mitigation: None required.

Impact AIR-2.SA4: Construction activities associated with the Sub-Area 4 Project could generate fugitive dust and exceed construction criteria air pollutants emissions (Criterion b). (*Less Than Significant with Mitigation*)

Construction activities are short-term and typically result in emissions of ozone precursors and particulate matter in the form of dust (fugitive dust) and exhaust (e.g., vehicle tailpipe emissions). Emissions of ozone precursors and particulate matter are primarily a result of the combustion of fuel from on-road vehicles and off-road construction equipment. However, ROGs are also emitted from activities that involve painting, other types of architectural coatings, and asphalt paving. The Sub-Area 4 Project includes demolition of approximately 60,000 cubic yards of material, construction of 1,270,000 square feet of R&D/Business/Service uses, 190,000 square feet of retail and 1,520 dwelling units. Additionally, 6.5 acres of developed park space and 17.6 acres of

parking and roadways were assumed to be constructed. During the Sub-Area 4 Project's construction period construction activities would have the potential to result in emissions of fugitive dust, ozone precursors, and particulate matter, as discussed below.

Fugitive Dust

Sub-Area 4 Project-related demolition, excavation, grading, and other construction activities could cause wind-blown dust that would contribute particulate matter into the local atmosphere. Dust can be an irritant causing watering eyes or irritation to the lungs, nose, and throat. Depending on exposure, adverse health effects can occur due to particulate matter in general and also due to specific contaminants such as lead or asbestos that may be constituents of soil or the demolished buildings.

Rather than quantifying fugitive dust emissions to evaluate impacts, BAAQMD emphasizes the implementation of appropriate mitigation measures for dust control during all construction activities. The BAAQMD Guidelines provide feasible control measures for construction emission of PM_{10} and implementation of these measures would ensure that construction impacts from fugitive dust would be less than significant. The BAAQMD recommended dust control measures are listed in **Mitigation Measure AIR-2.SA4** below. With the implementation of the Mitigation Measure, the Sub-Area 4 Project's fugitive dust impacts would be mitigated to less than significant.

> **Mitigation Measure AIR-2.SA4: Implement BAAQMD Basic Construction Mitigation Measures.** The Sub-Area 4 Project applicant shall require construction contractors to implement the following applicable BAAQMD Basic Construction Mitigation Measures to reduce emissions of fugitive dust and equipment exhaust:
>
> - All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered two times per day.
> - All haul trucks transporting soil, sand, or other loose material off-site shall be covered.
> - 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.
> - All vehicle speeds on unpaved roads shall be limited to 15 mph.
> - All roadways, driveways, and sidewalks to be paved shall be completed as soon as possible. Building pads shall be laid as soon as possible after grading unless seeding or soil binders are used.
> - 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 shall be provided for construction workers at all access points.

- All construction equipment shall be maintained and properly tuned in accordance with manufacturer's specifications. All equipment shall be checked by a certified visible emissions evaluator.
- 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 BAAQMD's phone number shall also be visible to ensure compliance with applicable regulations.

Criteria Air Pollutants

Criteria pollutant emissions would be generated by construction equipment exhaust, on-road vehicle trips of haul trucks for delivering construction material and removing debris and excavation spoils, and construction worker commutes to and from the Sub-Area 4 Project site.

Construction-related criteria air pollutant emissions for the Sub-Area 4 Project were estimated using CalEEMod (California Emissions Estimator Model, version 2013.2.2). This version of the CalEEMod model was released in October 2013 and uses emission factors from the OFFROAD2007 model and the 2011 Inventory Model for the In-use Off-road Equipment Rule of the ARB. For the estimation of on-road emissions, the model uses EMFAC2011 which were updated with EMFAC 2014 emission factors which were approved by the USEPA in December 2015.

The City of Richmond anticipates that development of the Sub-Area 4 Project would be completed by 2030. The timing and sequence of development would depend upon numerous factors, including future market conditions, public investment, and private initiative and investment. One construction period is assumed, and CalEEMod default construction phase length assumptions, which are based on dozens of projects throughout California, were applied proportionately to the overall development window. Although the Sub-Area 4 Project may be developed at a slower pace, as a reasonable, conservative assumption the construction period is assumed to span from 2017 through 2029. To accommodate this accelerated (19 percent) construction schedule compared to CalEEMod default assumptions for this scale of development, default values for hourly construction equipment use were increased by 19 percent.

The total uncontrolled emissions generated over the duration of construction was divided by the number of construction days (estimated 3,391 days) to get an average daily emissions estimate for construction emissions, as shown in **Table 4.2-10.** As shown in the table, emissions of ROG, NOx, PM10 and PM2.5 from Sub-Area 4 Project construction would not exceed the significance thresholds for construction-related criteria air pollutants. Therefore the Sub-Area 4 Project would have a less than significant impact related to construction-related emissions of criteria air pollutants.

TABLE 4.2-10
UNCONTROLLED PROJECT CONSTRUCTION-RELATED EMISSIONS

	Construction Emissions			
	ROG	**NOx**	**PM_{10}**	**$PM_{2.5}$**
Total Construction Emissions (tons)	35.1	82.2	2.8	2.6
Number of construction days	3,391	3,391	3,391	3,391
Average Daily Construction Emissions (lbs/day)	20.72	**48.51**	1.66	1.54
Significance Threshold (lbs/day)	**54**	**54**	**82**	**54**
Significant?	**No**	**No**	**No**	**No**

SOURCE: ESA, 2015

Significance after Mitigation: Less Than Significant.

Mitigation: Mitigation Measure AIR-2.SA4.

Impact AIR-3.SA4: The Sub-Area 4 Project would result in emissions of criteria air pollutants at levels that could violate an air quality standard, or contribute to an existing or projected air quality violation (Criterion b). (*Significant and Unavoidable*)

The emissions increase attributable to operation of the Sub-Area 4 Project would be primarily from the vehicle trips generated by the future occupants of the Sub-Area 4 Project site and the use of commercial product by future occupants. Area sources such natural gas combustion for heating, landscape maintenance, and architectural coatings would also contribute to a lesser extent.

Sub-Area 4 Project operational criteria pollutant emissions from mobile and area sources were estimated using the CalEEMod model. The model was refined to reflect the project-specific trip generation as determined by the traffic study, which considered the availability of transit options and mode split in the area. Vehicle trip lengths from CalEEMod, which were developed with input from the BAAQMD, were used to determine the increase in vehicle miles travelled from the Sub-Area 4 Project site because project-specific trip lengths are not estimated in the transportation analysis. CalEEMod default emission factors for motor vehicle trips are based on EMFAC2014 emission factors which were inserted into the input program file for the analysis. Estimated emissions of ROG from maintenance applications of architectural coatings reflect volatile organic compound (VOC) content limits of Regulation 8, Rule 3 of the BAAQMD. Adjusted emission factors have been applied to operational emissions for volatile organic compounds/reactive organic gases (consumer product use) in the modeling of air pollutant emissions. This factor has been applied because model default factors are based on older data that do not reflect the results of recent regulatory efforts of the CARB. Consequently locally specific emission factors were developed to more accurately estimate ROG emissions (Ramboll, 2016). According to the traffic

study, the Sub-Area 4 Project would result in a net increase of 24,620 daily vehicle trips to and from the site.

Criteria pollutant emissions from the anticipated project-related operational sources are quantified in **Tables 4.2-11**. As shown, operation of the Sub-Area 4 Project would generate emissions that would exceed screening thresholds for all ROG, NOx and PM10.

TABLE 4.2-11
OPERATIONAL EMISSIONS OF THE SUB-AREA 4 PROJECT

Source	ROG	NOx	PM_{10}	$PM_{2.5}$
Average Daily Emissions (pounds/day)				
Area Sources	77.9	0.70	0.35	0.35
Energy	1.0	9.2	0.72	0.72
Mobile Sources	60.4	47.7	95.6	25.9
Total Project Emissions	**139.3**	**57.7**	**96.7**	**27.0**
Daily Screening Threshold	**54**	**54**	**82**	**54**
Exceed Screening Threshold?	**Yes**	**Yes**	**Yes**	**No**
Maximum Annual Emissions (tons/year)				
Total Project Emissions	**25.4**	**10.5**	**17.6**	**4.9**
Annual Screening Threshold	**10**	**10**	**15**	**10**
Exceed Screening Threshold?	**Yes**	**Yes**	**Yes**	**No**

SOURCE: ESA, 2016

Because the operational emissions under the Sub-Area 4 Project would be greater than the screening criteria, the Sub-Area 4 Project was evaluated for consistency with Plan Bay Area (i.e., evaluated to confirm the Sub-Area 4 Project site location within a Priority Development Area and implementation of TDM practices) to determine whether criteria pollutant emissions attributed to population and economic growth (inclusive of residential/commercial development and mobile source emissions) are significant for CEQA purposes.

Development of the Sub-Area 4 Project would add higher densities within the City of Richmond that exceed the densities assumed in the Plan Bay Area. The resultant low overall per capita VMT as intensified by the Sub-Area 4 Project will help the region achieve criteria pollutant compliance targets more effectively than accommodating growth in distant suburban and exurban areas. Vehicle trips generated by development under the Specific Plan estimated as a part of the transportation analysis for this EIR (see Section 4.13, *Transportation and Traffic*) made adjustments to the estimated trip generation rates developed by the Institute of Transportation Engineers to account for internal trips afforded by the mixed-use development as well as for pedestrian, bicycle, and transit connectivity. This analysis indicated a 19 percent decrease in daily auto trips made by Plan Area residents by non-automobile means, over what would occur for development without this mixed use character and higher pedestrian, bicycle, and transit connectivity. This reduction in trips indicates that development under the Specific Plan would result in a per capita reduction of VMT for Plan Area residents of more than 10 percent, when compared to per capita VMT for a less mixed use, pedestrian/bicycle/transit-friendly development,

indicating that development under the Specific Plan would meet the VMT reduction goal of the Plan Bay Area.

The Sub-Area 4 Project site's infill location and proximity to major transportation corridors reduces the distance that customers would drive in motor vehicles to shop by providing increased retail opportunities within the Sub-Area 4 Project site. Also, the Sub-Area 4 Project site is located in direct proximity to nearby employment hubs. Taken together, these locational characteristics of the Sub-Area 4 Project site help reduce potential motor vehicle trips.

As discussed above in **Impact AIR-1.SP,** planned improvements to transit service in the Plan Area include improvements to local AC Transit routes within the City and commencement of public passenger ferry service to San Francisco from an existing pier on the Marina Bay Channel. The area will also served by UC Berkeley and the LBNL existing shuttle transit services with pending enhancements.

Additionally, the Specific Plan would encourage sustainable travel behavior by establishing a TMA. All projects with new construction, or that include additions to existing buildings in excess of 5,000 square feet would be required to join the TMA, while other property owners and tenants are encouraged to join and participate based on incentives and benefits that the TMA will offer. The emissions estimated presented in Table 4.2-12 do not assume any emission reduction attributable to TDM strategies required by the TMA. Assuming a modest seven percent reduction in vehicle trips from implementation of TDM strategies, NOx emissions from the Sub-Area 4 Project would be reduced to less than the screening threshold. Similar percentage reductions in vehicle emissions would result for ROG and PM10 emissions.

Implementation of the Sub-Area 4 Project would also foster bicycle and pedestrian friendliness by bridging I-580 to provide direct access for pedestrians and bicycles between the Sub-Area 4 Project site and the El Cerrito Del Norte BART Station.

Consequently, while development under the Specific Plan would result in an increase in criteria pollutant emissions, accommodating that growth within a designated Priority Development Area with low per-capita VMT will ultimately reduce the severity of growth-oriented criteria pollutant emissions within the Bay Area as envisioned in the Plan Bay Area. Notwithstanding the fact that the Specific Plan would provide for growth within a Priority Development Area and generally implement that growth consistent with the VMT reduction goals of Plan Bay Area, the increase in operational criteria air pollutant emissions associated with development under the Sub-Area 4 Sub-Area 4 Project are conservatively identified as a significant air quality impact. For all development within the Plan Area, including the Sub-Area 4 Project, the Specific Plan requires compliance with TDA and TDM requirements to encourage sustainable travel behavior, such as preparation and implementation of a TDM Plan; this requirement would reduce impacts related to operational criteria air pollutants. Implementation of **Mitigation Measures TRF-9.SP** through **TRF-20.SP** (as described in Section 4.13, *Transportation and Traffic*), and **Mitigation Measures AIR-3a.SP** through **AIR-3e.SP**, below, would also reduce this impact. Although implementation of these mitigation measures would reduce emissions of operational criteria air pollutants, these

measures are not proven to reduce such emissions to levels substantial enough such that they would be below the BAAQMD thresholds. Therefore, this impact is significant and unavoidable.

Significance: Significant and Unavoidable.

Mitigation: Mitigation Measure AIR-1.SP, AIR-3a.SP, AIR-3b.SP, AIR-3c.SP, AIR-3d.SP, AIR-3e.SP, and TRF-9.SP through TRF -20.SP.

Impact AIR-4.SA4: The Sub-Area 4 Project would generate toxic air contaminants, including diesel particulate matter, but would not expose sensitive receptors to substantial air pollutant concentrations (Criterion d.). (*Less Than Significant with Mitigation*)

The Sub-Area 4 Project would initially generate TAC emissions of DPM from operation of equipment and vehicles during construction activities. Construction-related TAC emission could impact both existing off-site receptors as well as receptors of the Sub-Area 4 Project which may be occupied in the earliest phases of the assumed 13-year construction period. Once fully operational, the Sub-Area 4 Project would generate TAC emission from (primarily diesel) vehicle trips generated in the area. A project-specific health risk assessment (RCH Group, 2016) was conducted to estimate the health risks associated with construction and operation of the Sub-Area 4 Project.

Health Risk Evaluation Methodology

The HRA addresses DPM emissions from construction equipment such as cranes, loaders, excavators, and haul trucks from the Sub-Area 4 Project and cumulative health impacts from nearby permitted stationary sources, local roadways, I-580, and rail activities. Regulatory models used to estimate health impacts include:

- CalEEMod (California Emissions Estimator Model Version 2013.2.2)[7] land use emissions model estimates emissions due to construction activities and operations.
- AERMOD (American Meteorological Society/ US Environmental Protection Agency (USEPA) Regulatory Model, Version 15181) is an atmospheric dispersion model which can simulate point, area, volume, and line emissions sources and has the capability to include simple, intermediate, and complex terrain along with meteorological conditions and multiple receptor locations.[8,9] AERMOD is commonly executed to yield 1-hour maximum and annual average concentrations (in $\mu g/m^3$) at each receptor.

BAAQMD considers the relevant zone of influence for an assessment of air quality health risks to be within 1,000 feet of a project site. I-580, a four-lane freeway, is located directly north and east

7 California Emissions Estimator Model User's Guide, July 2013. http://www.caleemod.com/
8 USEPA Preferred/Recommended Models, *AERMOD Modeling System*, https://www3.epa.gov/ttn/scram/dispersion_prefrec.htm#aermod
9 Title 40 CFR Part 51, *Revision to the Guideline on Air Quality Models: Adoption of a Preferred General Purpose (Flat and Complex Terrain) Dispersion Model and Other Revisions; Final Rule,* http://www.epa.gov/ttn/scram/guidance/guide/appw_05.pdf

of the Specific Plan Sub-Area 4. North and east of I-580, the predominant land use is low/medium density residential neighborhoods. Additional residential areas are located southwest of Sub-Area 4 within the marina area. Nearby schools and daycare centers include Stege Elementary School located approximately 0.6 miles to the northeast of the Sub-Area 4 Project site. Recreational uses in the vicinity of the Sub-Area 4 Project site include Booker T. Anderson Park and Crescent Park (both approximately 0.1 mile northeast of the Sub-Area 4 Project site and across I-580). An active, railway corridor runs through the Plan Area and parallel to the eastern boundary of Sub Area 4 and I-580. The rail corridor connects to the Port of Richmond.

The HRA was conducted following methodologies in OEHHA's *Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments.*[10] This was accomplished by applying the estimated concentrations at the receptors analyzed to the established cancer risk estimates and acceptable reference concentrations for non-cancer health effects. Hourly meteorological data from BAAQMD's University of California at Richmond monitoring station (surface data), located approximately two miles to the east of the Sub-Area 4 Project site, and Oakland International Airport (upper air) were used in the dispersion modeling analysis.

Recent OEHHA's revisions to its *Guidance Manual* were primarily designed to ensure that the greater sensitivity of children to cancer and other health risks is reflected in HRA. For example, OEHHA now recommends that risks be analyzed separately for multiple age groups, focusing especially on young children and teenagers, rather than the past practice of analyzing risks to the general population, without distinction by age. OEHHA also now recommends that statistical "age sensitivity factors" be incorporated into a HRA, and that children's relatively high breathing rates be accounted for. On the other hand, the *Guidance Manual* revisions also include some changes that would reduce calculated health risks. For example, under the former guidance, OEHHA recommended that residential cancer risks be assessed by assuming 70 years of exposure at a residential receptor; under the *Guidance Manual*, this assumption is lessened to 30 years.

OEHHA developed exposure factors (e.g., daily breathing rates) for six age groups including the last trimester to birth, birth to 2 years, 2 to 9 years, 2 to 16 years, 16 to 30 years, and 16 to 70 years. These age groups allow for more refined exposure information to be used when estimating exposure and the potential for developing cancer over a lifetime. Exposure variates were determined for the third trimester, ages 0 to less than 2, ages 2 to less than 9, ages 2 to less than 16, ages 16 to less than 30, and ages 16 to 70. Residential receptors utilize the 95th percentile breathing rate values. Age-specific breathing rates are 1,090 liters per kilogram-day for ages less than 2 years, 745 liters per kilogram-day for ages 2 to 16 years, and 335 liters per kilogram-day for ages 16 to 30 years. A school child breathing rate is 520 liters per kilogram-day and an off-site worker breathing rate is 230 liters per kilogram-day.

OEHHA has provided updated age sensitivity factors (ASF) to take into account the increased sensitivity to carcinogens during early-in-life exposures. OEHHA now recommends that cancer risks be weighted by a factor of 10 for exposures that occur from the third trimester of pregnancy

[10] Office of Environmental Health Hazard Assessment, *Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments*, February 2015, http://oehha.ca.gov/air/hot_spots/hotspots2015.html

to 2 years of age, and by a factor of 3 for exposures from 2 years through 15 years of age. These 2015 updates to the OEHHA *Guidance Manual* are not currently reflected in BAAQMD's most recent (2010) *Air Toxics New Source Review Program Health Risk Screening Analysis Guidelines*.

Health Risk Impacts to Existing Off-Site Receptors from the Sub-Area 4 Project

The HRA results associated with existing receptors due to unmitigated Sub-Area 4 Project construction activities and operational emission sources are presented in **Table 4.2-12**. As shown in **Table 4.2-12**, the total maximum cancer risk from unmitigated Sub-Area 4 Project construction emissions for a residential receptor would be 23.8 per million.[11] The maximum unmitigated cancer risk from construction emissions for a school child would be 0.2 per million. The maximum cancer risk from Sub-Area 4 Project operational emissions (due to motor vehicle traffic on local roadways) would be 4.6 per million. The maximum concentrations would occur at a residential receptor (also known as the maximum exposed individual or MEI) northeast of the Project site,. Thus, the cancer risk due to unmitigated construction activities and Sub-Area 4 Project operations are potentially above the BAAQMD threshold of 10 per million and would be potentially significant.

Table 4.2-12 shows that the total hazard indices for the Sub-Area 4 Project would be below 1.0 and therefore represent a less-than-significant hazard impact without mitigation. Likewise, Sub-Area 4 Project contributions from construction and full operations would individually be less than 0.3 micrograms per cubic meter and therefore would be less than significant without mitigation.

TABLE 4.2-12
ESTIMATED UNMITIGATED HEALTH IMPACTS FOR EXISTING RECEPTORS, SUB-AREA 4 PROJECT

Source	Cancer Risk	Hazard Impact (acute/chronic)	$PM_{2.5}$ Concentration
Unmitigated Project Construction	23.8	0.13/0.01	0.07
Project Operations	4.60	<0.01	0.05
Total Sub-Area 4 Project	**28.4**	**0.13/0.01**	**0.12**
Significance Threshold	10	1.0	0.3
Potentially Significant (Yes or No)?	**Yes**	No	No

SOURCE: RCH Group, 2016

Mitigation Measure AIR-2a.SP (Require Tier 4 engines on Construction Equipment) and **Mitigation Measure AIR-2b.SP (Require Construction Fleet to Use Renewable Diesel)** which were identified to address NOx emissions for Impact AIR-2.SP would reduce DPM and PM2.5 associated with construction activities. Use equipment with Tier 4 engines would reduce daily construction-related DPM and PM2.5 exhaust emissions by 33 percent while use of renewable diesel would reduce equipment DPM and exhaust PM2.5 emissions by an additional 34 percent.

[11] This theoretical individual would be born on construction year 1 and subsequently be exposed to the full thirteen year construction period. Individuals born after construction year 1 would be exposed to shorter construction duration and thus, result in a lower risk and health impacts.

Project-related health risks at off-site receptors were evaluated with implementation of **Mitigation Measure AIR-2a.SP (Require Tier 4 engines on Construction Equipment)**. As shown in **Table 4.2-13**, with the implementation of Mitigation Measure AIR-2, the total maximum cancer risk from mitigated Sub-Area 4 Project construction emissions for a residential receptor would be 2.3 per million. The maximum mitigated cancer risk from construction emissions for a school child would be 0.03 per million. The maximum cancer risk from Sub-Area 4 Project operational emissions (due to motor vehicle traffic on local roadways) would be 4.6 per million. Thus, the cancer risk due to construction activities and Sub-Area 4 Project operations would be below the BAAQMD threshold of 10 per million and would be less than significant with mitigation.

TABLE 4.2-13
ESTIMATED MITIGATED HEALTH IMPACTS FOR EXISTING RECEPTORS, SUB-AREA 4 PROJECT

Source	Cancer Risk	Hazard Impact (acute/chronic)	$PM_{2.5}$ Concentration
Mitigated Project Construction	2.26	0.01/<0.01	0.01
Project Operations	4.60	<0.01	0.05
Total Sub-Area 4 Project	**6.86**	**0.01/0.01**	**0.06**
Significance Threshold	10	1.0	0.3
Potentially Significant (Yes or No)?	No	No	No

SOURCE: RCH Group, 2016

Health Risk Impacts to On-Site Receptors from the Sub-Area 4 Project

Construction of the Sub-Area 4 Project was assumed to occur continuously over a 13 year period. However, it is possible that residences completed during the earliest phases of construction could be occupied while construction is still on-going. Consequently, a health risk analysis was conducted for on-site receptors of the Sub-Area 4 Project conservatively assuming occupancy during the first full year of building construction (year 3 of construction), so that the residences are exposed to ten years of construction (2020 through 2029).

Sub-Area 4 Project-related health risks at on-site receptors were evaluated with implementation of **Mitigation Measure AIR-2b.SP: Require Tier 4 engines on Construction Equipment** and **Mitigation Measure AIR-2c.SP: Renewable Diesel**. As shown in **Table 4.2-14**, with the implementation of **Mitigation Measure AIR-2b.SP** and **Mitigation Measure AIR-2c.SP** (or **Mitigation Measure AIR-4a.SA4 and Mitigation Measure AIR-4b.SA4**, below), the total maximum cancer risk from mitigated Sub-Area 4 Project construction emissions for a residential receptor would be 8.4 per million.

TABLE 4.2-14
ESTIMATED MITIGATED HEALTH IMPACTS FOR RECEPTORS, SUB-AREA 4 PROJECT

Source	Cancer Risk	Hazard Impact (acute/chronic)	$PM_{2.5}$ Concentration
Mitigated Project Construction	8.4	0.01/0.01	0.03
Project Operations	1.98	<0.01	0.02

Mitigation Measure AIR-4a.SA4: As an alternative to Mitigation Measures AIR-2b.SP and AIR-2c.SP, the Sub-Area 4 Project construction contractor/s shall use other measures, or in combination with use of Tier 4 equipment, to minimize diesel particulate matter emissions during the construction period, provided such measures reduce the predicted cancer risk below the threshold of (a) an incremental cancer risk level greater than 10 in one million, (b) a noncancerous risk (chronic or acute) hazard index greater than 1.0, or (c) an increase of annual average $PM_{2.5}$ of greater than 0.3 micrograms per cubic meter ($\mu g/m^3$) and are approved by the City. Any diesel-powered off-road and portable equipment shall meet or exceed emission standards for Tier 2 engines. For example, the construction contractor(s) may use other measures such as the use of alternative powered equipment (e.g., LPG-powered or electric lifts), alternative fuels (e.g., biofuels), added exhaust devices, or a combination of measures**.**

Mitigation Measure AIR-4b.SA4: The Sub-Area 4 Project applicant/s may choose to reassess the potential off-site cancer risk and PM2.5 concentration exposures to off-site residential receptors later in the design phase, but prior to the start of construction, and prepare a revised HRA using updated receptor location information and more detailed construction plans and equipment list and submit to the City for review. If the revised HRA demonstrates, to the satisfaction of the City, that the cancer risk and exposure to PM2.5 for all potentially exposed off-site receptors will be less than BAAQMD project-level threshold of (a) an incremental cancer risk level greater than 10 in one million, (b) a noncancerous risk (chronic or acute) hazard index greater than 1.0, or (c) an increase of annual average $PM_{2.5}$ of greater than 0.3 micrograms per cubic meter ($\mu g/m^3$), then Mitigation Measure AIR-4a is unnecessary. If the revised HRA demonstrates, to the satisfaction of the City, that the cancer risk or exposure to PM2.5 for off-site sensitive receptors will be less than presented in this analysis but still over BAAQMD thresholds, then the mitigation effort may be proportionately adjusted.

With implementation of the aforementioned mitigation, impacts under this criterion would be less than significant.

Significance after Mitigation: Less Than Significant.

Mitigation: Mitigation Measures AIR-2a.SP, AIR-2b.SP, AIR-2c.SP,(or Mitigation Measure AIR-4a.SA4 and Mitigation Measure AIR-4b.SA4).

Impact AIR-5.SA4: The Sub-Area 4 Project would not create objectionable odors that would affect a substantial number of people (Criterion e). (Less Than Significant)

Typical odor sources of concern include wastewater treatment plants, sanitary landfills, transfer stations, composting facilities, petroleum refineries, asphalt batch plants, chemical manufacturing facilities, fiberglass manufacturing facilities, auto body shops, rendering plants, and coffee roasting facilities. There are no odor sources associated with the existing Sub-Area 4 Project site and the Sub-Area 4 Project would not create any new source of odors. During construction, diesel exhaust from construction equipment would generate some odors. However, construction-related odors would be temporary and would not persist upon project completion. Therefore, odor impacts would be less than significant.

Significance: Less Than Significant.

Mitigation: None required.

4.2.7 Cumulative Impacts

Impact C-AIR-1.SP: The Specific Plan, in combination with past, present, and reasonably foreseeable future development would contribute to cumulative regional air quality impacts. (*Significant and Unavoidable*)

The contribution of a plan's individual air emissions to regional air quality impacts is by its nature, a cumulative effect. Emissions from past, present and future projects in the region also have or will contribute to adverse regional air quality impacts on a cumulative basis. No single project by itself would be sufficient in size to result in non-attainment of ambient air quality standards. Instead, a project's individual emissions contribute to existing cumulative air quality conditions.[12] BAAQMD's CEQA Guidelines state that if a project's contribution to the cumulative impact is considerable, then the project's impact on air quality would be considered significant.

As described above, despite the attributes of the Specific Plan relative to regional planning goals with regard to air quality and sustainability, the Plan-level analysis of regional criteria pollutant emissions was determined to be significant and unavoidable with mitigation. Consequently, the Specific Plan would have a significant cumulative impact with regard to regional emissions of criteria air pollutants.

Significance after Mitigation: Significant and Unavoidable.

Mitigation: Mitigation Measures AIR-3a.SP, AIR-3b.SP, AIR-3c.SP, AIR-3d.SP, AIR-3e.SP, and Mitigation Measures TRF-9.SP through TRF -20.SP.

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[12] BAAQMD, BAAQMD, *CEQA Air Quality Guidelines*, May 2011, Page 2-1.

Impact C-AIR-2.SP: The Specific Plan, in combination with past, present, and reasonably foreseeable future development would contribute to cumulative health risk impacts on sensitive receptors. (*Significant and Unavoidable*)

Table 4.0-1 identified 60 cumulative projects and plans within the Cities or Richmond, Albany and El Cerrito. Many of these plans and projects have already been adopted and/or constructed and are already part of the existing setting. BAAQMD considers the relevant zone of influence for an assessment of air quality health risks to be within 1,000 feet of a project site. Of the 60 cumulative projects and plans identified in Table 4.0-1, there are seven that would be located within 1,000 feet of the Plan Area, and are shown in **Table 4.2-15**.

The Plan level analysis recommended by BAAQMD does not require modeling of risks associated with a plan (as was performed for the Sub-Area 4 Project in **Impact AIR-4.SA4**) as it would be speculative to predict the sequence and locations of construction activities at any given time. The Plan level analysis in **Impact AIR-4.SP** addresses health risk associated with the Specific Plan to the degree feasible. Of the seven cumulative projects in Table 4.2-10 the South Richmond Connectivity Plan, the Housing Element Update and the General Plan Update are guidance documents intended to facilitate planned growth in a sustainable fashion and would not be expected to have significant health risk impacts. Impacts of the Berkeley Global Campus/Richmond Field Station were addressed in the EIR for that project and identified to be potentially significant and unavoidable due to localized concentrations of PM2.5 in the cumulative analysis. These potential impacts from sources of PM2.5 would be addressed by **Mitigation Measure AIR-4a.SP: Diesel Particulate Matter Exposure for Residential and Other Sensitive Land Uses.** However, there may be instances in which site-specific or project-specific conditions preclude the reduction of all project impacts to less-than-significant levels. For purposes of a conservative analysis, therefore, this impact remains significant and unavoidable.

Significance after Mitigation: Significant and Unavoidable.

Mitigation: Mitigation Measure AIR.2b.SP, AIR.2c.SP, AIR-4a.SP, AIR-4b.SP, and 4c.SP.

TABLE 4.2-15
CUMULATIVE PROJECTS WITHIN 1,000 FEET OF THE SPECIFIC PLAN BOUNDARIES

Project Name	Description of Project	Location Within Richmond	Distance to Sub-Area 4 Project Site (feet)	Environmental Review and Construction Schedule
Officer Bradley A. Moody Memorial Underpass (Marina Bay Parkway Grade Separation)	Construction of a roadway undercrossing at the intersection of Marina Bay Parkway and Burlington Northern Santa Fe/Richmond Pacific Railroad Corporation railroad tracks.	845 Marina Bay Parkway	4,300	Approved and CEQA Categorical Exemption filed in 2012. Construction completed in 2015.
Anchorage at Marina Bay PLN14-098	Conditional use permit, re-zoning, and CEQA EIR for a modification of the previously approved Anchorage at Marina Bay residential development.	3400 Jetty Drive	4,300	Approved October 7, 2014.
South Richmond Connectivity Plan PLN13-207	Transportation and connectivity plan for the South Richmond shoreline and outlying areas.	Southern Shoreline Area	NA	Draft plan and community workshops took place starting in 2012. Plan adopted September 15, 2015.
Housing Element Update	Per State law, the City adopted a comprehensive, long-term General Plan to guide its physical development. The Housing Element is one of seven mandated elements of the General Plan.	Citywide	NA	Adopted May 19, 2015 and certified by State Housing and Community Development Department May 27, 2015.
University of California, Berkeley and Lawrence Berkeley National Laboratory (UCB LBNL) Richmond Bay Campus (Global Campus)	University of California, Berkeley "Global Campus" consolidates biosciences activities managed by Lawrence Berkeley National Laboratory. 134 acres with 5.4 million square feet over 40 years starting in 2017-2020. Estimated daily population of 10,000.	Richmond Field Station: 1301 South 46th Street	200	Draft CEQA Environmental Impact Report (EIR) completed; Final EIR certified at UC Regents' May 15, 2014 meeting.
Richmond General Plan 2030 (General Plan Update)	The General Plan provides a comprehensive framework for development within the city. The General Plan contains 15 elements addressing land use, economic development, housing, transportation, climate change, public safety, arts and culture, and open space conservation strategies, as well as a comprehensive element dedicated to community health and wellness.	Citywide	NA	Adopted April 25, 2012. Certified, pursuant to California State Government Code Section 65350, May 25, 2012.
Marina Way Live/ Work Project	Project consists of 64 two-story live/work units and a community center in a total of seven separate buildings with roof varying from 24 to 39 feet in height, approximately 155 outdoor parking spaces. Much of the landscaping, would be designed as a swale and/or a vegetated pervious filter for stormwater management.	900 Marina Way South	6,800	CEQA Mitigated Negative Declaration adopted October 2007, construction completed. [City please confirm that construction has been completed]
Zeneca site cleanup	Remediation of Zeneca site in South Shoreline area.	Richmond South Shoreline area	Within Plan Area	Feasibility Study/Remedial Action Plan under preparation by DTSC.

Impact C-AIR-1.SA4: The Sub-Area 4 Project, in combination with past, present, and reasonably foreseeable future development of cumulative projects would contribute to cumulative regional air quality impacts. (*Significant and Unavoidable*)

The contribution of a project's individual air emissions to regional air quality impacts is by its nature, a cumulative effect. Emissions from past, present and future projects in the region also have or will contribute to adverse regional air quality impacts on a cumulative basis. No single project by itself would be sufficient in size to result in non-attainment of ambient air quality standards. Instead, a project's individual emissions contribute to existing cumulative air quality conditions.[13] BAAQMD's CEQA guidelines state that if a project's contribution to the cumulative impact is considerable, then the project's impact on air quality would be considered significant.

As described above, despite the attributes of the Specific Plan relative to regional planning goals with regard to air quality and sustainability, the project-level analysis of regional criteria pollutant emissions was determined to be significant and unavoidable with mitigation . Consequently, the Sub-Area 4 Project would have a significant and unavoidable cumulative impact with regard to regional emissions of criteria air pollutants.

Significance after Mitigation: Significant and Unavoidable.

Mitigation: Mitigation Measure AIR-3a.SP, AIR-3b.SP, AIR-3c.SP, AIR-3d.SP, AIR-3e.SP, and Mitigation Measure TRF-9.SP through TRF -20.SP.

Impact C-AIR-2SA4: The Sub-Area 4 Project, in combination with past, present, and reasonably foreseeable future development of cumulative projects would contribute to cumulative health risk impacts on sensitive receptors. (*Less Than Significant with Mitigation*)

Table 4.0-1 identifies 60 cumulative projects and plans within the Cities or Richmond, Albany and El Cerrito. Many of these plans and projects have already been adopted and/or constructed and are already part of the existing setting. BAAQMD considers the relevant zone of influence for an assessment of air quality health risks to be within 1,000 feet of a project site. Of the 60 cumulative projects and plans identified in Table 4.0-1, there are eight that would be located within 1,000 feet of the Plan Area, and are shown in Table 4.2-15. Of these eight cumulative projects within 1,000 feet of the Plan Area, the first two are over 4,000 feet from the Sub-Area 4 Project site and would be outside of the zone of influence with respect to localized health risks. The three Plans (the South Richmond Connectivity Plan, the Housing Element Update and the General Plan Update) would result in increased vehicle traffic with the Sub-Area 4 Project site but these increased traffic volumes were incorporated in the HRA analysis which was based on volumes from the General Plan Update, the latest of these three planning documents. Similarly, the Marina Way Live/Work Project has been completed and its increased traffic volumes were

[13] BAAQMD, BAAQMD, *CEQA Air Quality Guidelines*, May 2011, Page 2-1.

incorporated in the HRA analysis. Consequently, the only cumulative project within 1,000 feet of the Sub-Area 4 Project site are the remediation of the Zeneca site and the Berkeley Global Campus/Richmond Field Station.

An analysis of the air quality impacts related to the remediation of the Zeneca site is contained in the draft Initial Study for Feasibility Study and Remedial Action Plan for Lot 1, Lot 2, and the Uplands Portion of Lot 3, Campus Bay, Richmond, CA and Feasibility Study and Remedial Action Plan for Habitat Area 2, Campus Bay Site, Richmond, CA (DTSC, 2014) which found that the cleanup activities would have a less than significant impact with respect to exposing sensitive receptors to substantial pollutant concentrations.

TABLE 4.2-16
ESTIMATED MITIGATED HEALTH IMPACTS FOR SUB-AREA 4 PROJECT SITE RECEPTORS

Source	Cancer Risk	Hazard Impact (acute/chronic)	$PM_{2.5}$ Concentration
Mitigated Project Construction	8.38	0.01/0.01	0.03
Operations	1.98	<0.01	0.02
Berkeley Global Campus/Richmond Field Station Construction	3.3	0.07/0.89	0.02
Stationary Sources			
University of CA-Richmond, 1301 South 46th Street[a]	0.55	<0.01	<0.01
Wareham Property Group, 1337 South 46thStreet[a]	0.44	<0.01	0.01
Allied Propane Service, 5000 Seaport Boulevard[a]	No risk/health impacts reported		
Smith & Company, 5100 Channel Avenue[a]	No risk/health impacts reported		
Freeways and High Volume Roadways			
Interstate 580[b]	39.9	0.01/0.01	0.08
Carlson Boulevard[c]	Beyond 1,000 feet of the receptor		
Meade Street[c]	0.94	<0.01	0.01
Seaport Avenue[c]	0.08	<0.01	<0.01
Seaver Avenue[c]	Beyond 1,000 feet of the receptor		
Railways			
Rail Activities[d]	3.86	0.01/<0.01	0.01
Cumulative Impact	**59.5**	**0.10/0.90**	**0.18**
Significance Threshold	**100**	**10**	**0.8**
Potentially Significant (Yes or No)?	**No**	**No**	**No**

NOTES:
a Cancer Risk, Hazard Impact, and PM2.5 Concentration values for permitted stationary sources are based on BAAQMD's Stationary Source Risk & Hazard Analysis Tool, dated May 30, 2012. Cancer Risk was adjusted by a factor of 2.6 to account for the Revised OEHHA Guidance Manual, See Appendix B for details.
b Cancer Risk, Hazard Impact, and PM2.5 Concentration values for Interstate 580 are based on BAAQMD's Highway Screening Analysis Tool, dated April 29, 2011. Cancer Risk was adjusted by a factor of 2.6 to account for the Revised OEHHA Guidance Manual, See Appendix B for details.
c Cancer Risk, Health Impact, and PM2.5 Concentration values for local roadways are based on BAAQMD's Roadway Screening Analysis Calculator, dated April 16, 2015. Cancer Risk was adjusted by a factor of 2.6 to account for the Revised OEHHA Guidance Manual, See Appendix B for details.
d Cancer Risk, Hazard Impact, and PM2.5 Concentration values based on the assumption of the number of diesel locomotives passing by on a weekly basis. The AERMOD model was used to estimate maximum downwind concentrations and potential health risk at sensitive receptors from the rail line source.

The maximum off-site receptor risk from construction of the LRDP is calculated to be 3.3 in one million. **Table 4.2-16,** above, totals all the contributions to the receptors including those of the Sub-Area 4 Project, the Berkeley Global Campus (Richmond Field Station) and I-580 as well as major roadways (with volumes greater than 10,000 vehicles per day), railways, and permitted stationary sources located within 1,000 feet and compares them to the 100 in one million cumulative impact threshold of the BAAQMD.

Adding these risks to those of the Sub-Area 4 Project results in a cumulative increased cancer risk of 59.5 in one million which is below the BAAQMD cumulative threshold of 100 in one million. Cumulative hazard indices and annual PM2.5 concentrations would also be below the BAAQMD's cumulative thresholds. Consequently, cumulative health risk impacts of the Sub-Area 4 Project would be less than significant to planned receptors.

If new stationary sources were introduced by the Sub-Area 4 project as a result of currently unspecified operations of proposed commercial or industrial uses or egress requirements requiring back-up generators for tall buildings, then these sources together with other cumulative sources could conceivably result in a receptor in the Sub-Area 4 Project site being exposed to increased cancer risk exceeding 100 in one million. However, this risk is small because (a) as shown in table 4.2-16, the current cumulative risk is less than 60 percent of the cumulative threshold and (b) the BAAQMD will not issue a permit for a stationary source with an increased risk exceeding 10 in one million. Implementation of **Mitigation Measure AIR-4b.SP Health Risk Assessment of Future Projects under the Specific Plan and Mitigation Measure AIR-4c.SP: Risk Reduction Plan for Backup Generators or New Permitted Stationary Sources** would address this potential cumulative impact and ensure that cumulative risks to proposed receptors under Sub-Area 4 Project would be less than significant.

Significance after Mitigation: Less Than Significant.

Mitigation: Mitigation Measure AIR-4b.SP and AIR-4c.SP.

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4.3 Biological Resources

4.3.1 Introduction

This section assesses the potential for implementation of the Specific Plan and the Sub-Area 4 Project to result in significant adverse environmental impacts to both terrestrial and marine biological resources. The following discussion describes communities and habitat types, along with wildlife typically associated with these communities, occurring within and directly adjacent to (generally within 500 feet of) the Plan Area (as shown in Figure 3-1) together referred to as the Study Area, which could potentially be exposed to adverse effects from development of the Specific Plan and the Sub-Area 4 Project.[1] The Study Area includes all areas that may be directly or indirectly affected by projects developed under the Specific Plan. The potential area of influence that is relevant to each biological resource was considered.

For the purposes of this assessment, the Study Area for terrestrial biological resources includes the Plan Area and landside areas adjacent to the Plan Area with similar habitat composition, including developed or paved areas with long-standing industrial uses. The marine/aquatic biological resources Study Area includes the Bay shoreline along the Plan Area and the Central Bay waters immediately adjacent to the Plan Area, though marine resources documented in all waters of the Central Bay north and east of Brooks Island were considered in this analysis. The shoreline and adjacent San Francisco Bay waters comprising the aquatic resources Study Area have been intensely modified from their prior natural condition; however, they remain ecologically productive habitats.

Habitat quality and species distribution were considered in evaluating the likelihood of special-status species occurrence in the Study Area. This analysis identifies the Specific Plan and Sub-Area 4 Project components that may have significant impacts on these resources. In addition, the analysis presents regulations and guidelines relevant to biological resources and identifies mitigation measures to avoid, minimize, or mitigate impacts.

The Environmental Setting section below describes existing conditions in two separate subsections, terrestrial and marine resources. The Regulatory Setting, Significance Criteria, Approach to Analysis, and Impact Evaluation sections integrate the discussion for both terrestrial and marine resources. For the purposes of this EIR, terrestrial resources include terrestrial habitats, including non-tidal wetlands, and terrestrial species including waterfowl and seabirds, which require terrestrial habitat for reproduction, while marine resources consist of marine habitats, including the San Francisco Bay waters (Bay waters), marine mammals, fish, and other marine species. Although specific impacts to resources on the Richmond Field Station are not defined in this section, the ecological habitats and species occurrences on the Richmond Field

[1] The Study Area includes the areas immediately adjacent to the Plan Area, as they are considered buffer zones where species may likely spill over into, or from. The Specific Plan does not encompass the Richmond Field Station, which divides the Plan Area; only habitats within the Richmond Field Station which are adjacent to and within 500 feet of the Plan Area, and within the area of disturbance for the Lark Drive Connector (as shown on Figure 3-3 of the Final Environmental Impact Report for the Richmond Bay Campus Long Range Development Plan [Tetra Tech, 2014]) are considered within the Study Area.

Station are considered as part of the Environmental Setting information due to the location of the campus, which is adjacent to two of the Specific Plan sub-areas.

4.3.2 Environmental Setting

Regional Setting

Existing Study Area characteristics, such as habitat types and plant and animal species present or potentially present, are described based on site-specific information developed for the Specific Plan, published relevant information, technical articles, and agency reports as indicated in source citations.[2] In addition, Environmental Science Associates (ESA) conducted a biological reconnaissance survey of the Sub-Area 4 Project site on November 24, 2015. This survey included open water observations, and did not include detailed observations of aquatic or subtidal habitat. The primary sources of information referenced in this section regarding sensitive terrestrial and marine biological resources are:

- California Department of Fish and Wildlife (CDFW) January 2016 "Special Animals" list (last updated October 2015);
- CDFW January 2016 "State and Federally Listed Endangered, Threatened, and Rare Plants of California" list;
- CDFW California Natural Diversity Database (CNDDB) for 7.5-minute topographic quadrangles *Richmond, Briones Valley, San Francisco North, Oakland West, Oakland East, Petaluma Point, Mare Island, Benicia, San Quentin*, Commercial Version, December 2015;
- United States Fish and Wildlife Service (USFWS), Federally Endangered and Threatened Species List for the Richmond Bay Specific Plan Area Information Planning and Conservation System (IPaC) Trust Resource Report, January 2016; and
- California Native Plant Society (CNPS), Rare Plant Program. Inventory of Rare and Endangered Plants for the 7.5-minute topographic quadrangles *Richmond, Briones Valley, San Francisco North, Oakland West, Oakland East, Petaluma Point, Mare Island, Benicia, San Quentin*, 2016.
- Merkel & Associates, California Department of Transportation, National Marine Fisheries Service, Center for Habitat Studies, Moss Landing Marine Laboratories. *San Francisco Bay Eelgrass* (Merkel et al 2009); and
- California State Coastal Conservancy, San Francisco Bay Subtidal Habitat Goals Report, Conservation Planning for the Submerged Areas; 50-Year Conservation Plan (CCC, 2010);

In addition, other primary information sources of information used to prepare sections on marine biological resources included federal, state, and local reports pertaining to marine resources in

[2] Relevant information, technical articles, and agency reports also consulted include the 2016 Initial Study for the Zeneca cleanup site, and the 2014 Biological Assessment prepared by Arcadis for the Berkeley Global Campus/Richmond Field Station. Species observed and recorded in these reports, including the black rail and Ridgway's rail are described as appropriate in this section.

San Francisco Bay, as well as data collected in support of similar waterfront projects that were recently analyzed in the local area.

Regional Setting – Terrestrial Resources

The City of Richmond is located in the Central portion of the San Francisco Bay Area–Delta Bioregion, as defined by the State of California's Natural Communities Conservation Program.[3] This bioregion consists of a variety of natural communities shoreline areas that range from the open waters of San Francisco Bay and Delta to salt and brackish marshes, as well as upland habitats that include grassland, chaparral, and oak woodlands. The area has a Mediterranean climate with dry, hot summers and cool, wet winters. The high diversity of vegetation and wildlife found in the region is a result of soil, topographic, and microclimate variations that combine to promote relatively high levels of endemism.[4] This, in combination with a long history of uses that have altered the natural environment and the increasingly rapid pace of development in the region, has resulted in impacts to some local flora and fauna.

Lands within this subregion are in Alameda, Contra Costa, Marin, San Francisco, and San Mateo Counties. Major streams in the Central Bay include Codornices, Corte Madera, Temescal, and Wildcat Creeks.

In addition to the Plan and Study Area setting described below, California "coastal prairie," or native perennial and/or annual grasses, occur in the region near the Study Area. This community includes California oatgrass (*Danthonia californica*) and purple needlegrass (*Stipa pulchra*). Native coastal prairie grasslands are found on the Richmond Field Station site, and are present within the portion of the Study Area that includes the area of the Lark Avenue Variant.

Lastly, the regional setting comprises the waters of the Bay itself and its islands, including Brooks Island, Red Rock, Angel Island, and Treasure Island, all of which are within 6 miles of the Study Area. Brooks Island is located within approximately 1 mile of the Study Area.

Regional Setting — Marine Resources

The San Francisco Bay is the second largest estuary in the United States and supports numerous aquatic habitats and biological communities. It encompasses 479 square miles, including shallow mudflats. The estuary's fish and wildlife populations have changed substantially in the past 150 years, with losses due to over-harvest, habitat loss and degradation, introduced species, pollutants, and the modification of freshwater flows.

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3 A bioregion is an area defined by a combination of ecological, geographic, and social criteria and consists of a system of related interconnected ecosystems. The Bay bioregion is considered the immediate watershed of the Bay Area and the Delta, not including the major rivers that flow into the Delta. It is bounded on the north by the northern edge of Sonoma and Napa Counties and the Delta and extends east to the edge of the valley floor; on the south, it is bounded by the southern edge of San Joaquin County, the eastern edge of the Diablo Range, and the southern edge of Santa Clara and San Mateo Counties.

4 *Endemism* refers to the degree to which organisms or taxa are restricted to a geographical region or locality and thus are individually characterized as endemic to that area.

This analysis focuses primarily on the waters directly west and south of the Plan Area shoreline, in the eastern portion of the Central Bay subregion. The regional setting for purposes of this evaluation includes both above-water and underwater habitats in San Francisco Bay, including the open waters of the bay, the intertidal habitats associated with the Richmond waterfront (the "baylands" [Goals Project, 1999]), subtidal habitats, and the artificial habitat provided by waterfront infrastructure along Richmond's South Shoreline Area (primarily levees, creosote pilings, and marinas).

Plan and Study Area Setting

Terrestrial Resources

Surrounding land uses in this part of Richmond are primarily maritime and industrial, interspersed with areas of relatively new residential, recreational park land and open space, marina and commercial development. The Study Area is bounded by Interstate-580 (I-580) to the northeast, and the Marina Bay residential community and Bay waters to the southwest. The southern border of the southwestern portion of the Plan Area (Sub-Area 4) is intermittently lined with riprap, coastal salt marsh, and the Bay Trail. Multiple sites in the Plan Area are known to have environmental contamination from past industrial land use, as discussed in Section 4.7, *Hazards and Hazardous Materials*, of this EIR.

Marine Resources

The Study Area includes the shoreline and nearby open water portions of Central San Francisco Bay to the south and west of the Plan Area. The Central Bay contains the deepest regions of the estuary as well as the greatest amount of natural and man-made hard bottom substrate in the Bay (Goals Project, 1999). Marine habitats and associated marine communities present in this area include natural (rock) and artificial (concrete, rock riprap, wood [including creosote-treated] and concrete pilings) hard intertidal area, soft and hard substrate subtidal habitat, and open water. As discussed in Section 4.5, *Geology, Soils, and Seismicity*, much of the shoreline within the Plan Area and in the vicinity consists of alluvial deposits overlain by soft to very stiff marine clay deposits that were hauled to the waterfront, known as Bay Mud. The marine biota found in the Central Bay includes invertebrate infauna and epifauna that inhabit bay sediments, sessile and encrusting invertebrates and aquatic vegetation on natural and man-made hard substrates, and planktonic organisms, fish, marine mammals, and marine birds that inhabit or use the open waters of the San Francisco Bay. Each of these habitats and associated biological communities are presented in more detail below.

Vegetation Communities and Habitat Types in the Study Area

Terrestrial Communities and Habitat Types

The majority of the Study Area comprises a landscape active with industrial uses mixed with patches of open space or riparian corridors connecting to biologically rich marshland habitats adjacent to the Bay. Natural communities are assemblages of plant and wildlife species that occur together in the same area, which are defined by species composition and relative abundance.

Vegetation communities and habitat types identified in the Study Area during the reconnaissance site visit on November 24, 2015, are described below.

Developed/Landscaped/Ruderal

This community type includes areas occupied by buildings, roads, parking lots, paved areas, open channels and other developed facilities, as well as landscaped or heavily disturbed industrial areas. Urban and developed areas in the Plan Area tend to be landscaped with ornamental trees, such as blue gum (*Eucalyptus globulus*), Monterey pine (*Pinus radiata*), and blackwood acacia (*Acacia melanoxylon*), in addition to non-native shrub and grass species including (*Bromus* spp., *Avena* sp., *Lolium* sp.), wild mustard (*Raphanus* sp.), fennel (*Foeniculum vulgare*), plantain (*Plantago lanceolata*), pampas grass (*Cortaderia* sp.), and English ivy. A limited number of native species, such as coyote brush (*Baccharis pilularis*) and California poppy (*Eschscholzia californica*) were observed in the Plan Area. Developed, landscaped, and ruderal communities occur in the majority of the Plan Area. In Sub-Area 4, this community is intermixed with wetlands and unvegetated waters largely surrounded by ruderal land previously used for industrial purposes.

Ruderal vegetation occurs in areas that are subject to repeated or otherwise substantial disturbance, and are characterized by opportunistic plant species that can easily colonize in such conditions. Ruderal vegetation may include some native species, but is typically dominated by non-native and often highly invasive species including annual grasses and opportunistic weedy species that include foxtail brome (*Bromus madritensis*), rattail sixweeks grass (*Festuca myuros*), fennel (*Foeniculum vulgare*), pampas grass, kikuyu grass (*Pennisetum clandestinum*), black mustard (*Brassica nigra*), ice plant (*Carpobrotus edulis*), Harding grass (*Phalaris aquatica*), wild oats (*Avena occidentalis*), ripgut brome (Bromus diandrus), soft chess (*Bromus hordeaceus*), Italian ryegrass (*Festuca perennis*), and barley (*Hordeum* sp.), and Himalayan blackberry.

Ruderal and developed areas provide limited foraging and/or nesting habitat for birds and small mammals. Birds commonly found in such areas are seed-eating and include non-native species such as English sparrow (*Passer domesticus*), European starling (*Sturnus vulgaris*), common raven (*Corvus corax*), and northern mockingbird (*Mimus polyglottos*), as well as birds native to the area, including black phoebe (*Sayornis nigricans*), house finch (*Haemorhous mexicanus*), yellow-rumped warbler (*Setophaga coronata*), white-crowned sparrow (*Zonotrichia leucophrys*), lesser goldfinch (*Spinus psaltria*), Brewer's blackbird (*Euphagus cyanocephalus*), western kingbird (*Tyrannus verticalis*), and rock pigeon (*Columba livia*). Wildlife species utilizing urban areas must be able to tolerate the presence of humans and their activities and are typically generalists, capable of utilizing the limited food sources available, such as garbage and horticultural plants and their fruit. Urban wildlife species found in such a community and observed during the site visit include California ground squirrel (*Otospermophilus beecheyi*), raccoon (*Procyon lotor*), striped skunk (*Mephitis mephitis*), Virginia opossum (*Didelphis virginiana*), Norway rat (*Rattus norvegicus*), deer mouse (*Peromyscus maniculatus*), and feral cats.

Pallid bat (*Antrozous pallidus*) and hoary bat (*Lasiurus cinereus*), in addition to common bat species found in the region, could roost in industrial buildings; raptors could nest inside or on the exterior ledges of industrial buildings; and ground-nesting birds such as killdeer (*Charadrius*

vociferous) commonly nest on the margins of industrial roads, especially where the roads are ruderal and infrequently traveled. Existing traffic on paved Study Area roads is likely to deter any potential use by ground-nesting birds.

Riparian Areas and Open Water Channels

Riparian zones in the Study Area include portions of Meeker Tidal Creek near the confluence with the open channel. Riparian overstory trees and vegetation include coast live oak (*Quercus agrifolia*), arroyo willow (*Salix lasiolepis*), coyote brush (*Baccharis pilularis*), toyon (*Heteromeles arbutifolia*), California coffeeberry (*Frangula californica*), California buckeye (*Aesculus californica*), and Himalayan blackberry. Wildlife species that may use the riparian corridors include California toad (*Anaxyrus boreas halophilus*), Sierran treefrog (*Pseudacris sierra*), western pond turtle (*Emys marmorata*), common garter snake (*Thamnophis sirtalis*), Alameda song sparrow and a variety of more common birds, opossum (*Didelphis virginiana*), raccoon (*Procyon lotor*), gray fox (*Urocyon cinereoargenteus*), and red fox (*Vulpes vulpes*). Birds may use the riparian corridor during their respective migration and breeding seasons. Wildlife species using the Meeker Creek riparian zone as a movement corridor or nesting area are assessed in the species impact discussion.

A trapezoidal man-made channel, bordering an eastern portion of Sub-Area 2, redirects stormwater and industrial waters from the surrounding uplands. This channel was likely excavated in dry land and did not follow any natural drainage course or otherwise intersect with natural tributaries or drainages until its confluence with Meeker Creek. Other built drainage ditches, with distinct bed and bank features, and ponded areas can be found within the Study Area. Vegetation surrounding features such as these is commonly dominated by arroyo willow, pampas grass (*Cortaderia* spp.), Himalayan blackberry (*Rubus armeniacus*), and English ivy (*Hedera helix*).

Coastal Scrub

Coastal scrub dominated by coyote brush boarders the Meeker Slough wetlands, Stege Marsh, and Hoffman Marsh within the Plan Area and is interspersed with non-native grasses (described below). This community is characterized by coyote brush and a somewhat indistinct assemblage of shrub, sub-shrub, and herbaceous understory associates (Holland and Keil, 1995). The coastal scrub community of shrubby vegetation with an herbaceous understory supports alligator lizard (*Elgaria* spp.), western fence lizard (*Sceloporus occidentalis*) and gopher snakes (*Pituophis catenifer*); small rodents such as deer mouse (*Peromyscus maniculatus*), vagrant shrew (*Sorex vagrans*), and California vole (*Microtus californicus*); and a variety of birds such as white-crowned sparrow (*Zonotrichia leucophrys*), Bewick's wren (*Thryomanes bewickii*), and common bushtit (*Psaltriparus minimus*).

Non-Native Annual Grasslands

Non-native annual grasslands within the Study Area are primarily dominated by Harding grass (*Phalaris aquatica*), wild oats (*Avena* sp.), ripgut brome (*Bromus diandrus*), soft chess (*Bromus hordeaceus*), Italian rye grass (*Festuca perennis*), foxtail barley (*Hordeum murinum* ssp. *leporinum*), chicory (*Cichorium intybus*), teasel (*Dipsacus fullonum*), and black mustard, while forbs such as Italian thistle (*Carduus pycnocephalus*), English plantain (*Plantago lanceolata*),

geraniums (*Geranium dissectum* and *G. Molle*), and wild radish (*Raphanus sativus*) are intermixed (WRA and Jane Valerius Environmental Consulting, 2011). Non-native annual grasslands can be found in the fringes of developed communities, along roadways in Sub-Area 4, and in upland areas adjacent to wetlands. Small stands of blue gum (*Eucalyptus globulus*) occur throughout upland areas north of West Stege Marsh and border Meeker Creek (URS, 2001; WESCO, 1990). Wildlife inhabiting this community is similar to those described under the Developed/ Landscaped/Ruderal subsection above, in addition to northern alligator lizard (*Elgaria coerulea principis*), western fence lizard (*Sceloporus occidentalis*), Pacific slender salamander (*Batrachoseps pacificus*), California quail (*Callipepla californica*), mourning dove (*Zenaida macroura*), meadowlark (*Sturnella neglecta*), California scrub jay (*Cyanocitta stelleri*), barn swallow (*Hirundo rustica*), northern mockingbird (*Mimus polyglottos*), American crow (*Corvus brachyrhynchos*), Stellar's jay (*Cyanocitta stelleri*), Botta's pocket gopher (Thomomys bottae), California ground squirrel (*Otospermophilus beecheyi*), black-tailed jackrabbit (*Lepus californicus*), and common bats.

Freshwater Emergent Wetland and Lagoon

Freshwater emergent wetland and freshwater lagoon habitat is found within the Study Area. Refer to the *Wetlands and Other Waters of the U.S.* discussion below for a discussion of freshwater emergent wetlands in the Study Area.

Freshwater lagoon is located in the western portion of Sub-Area 4, within an area of two lagoons (described in this EIR and other documents as the Upper and Lower Lagoons) that were previously used for industrial and agricultural chemical manufacturing for over 100 years. The Upper and Lower Lagoons were constructed in previously filled areas of the San Francisco Bay for use as evaporation ponds between 1968 and 1973 (URS, 1994), and currently comprise palustrine unconsolidated bottom waters and palustrine emergent wetlands. As part of the chemical manufacturing facility on-site, the Upper and Lower Lagoons were used as wastewater evaporation ponds to capture site wastewater from industrial activities, building maintenance, chemical processing, and untreated stormwater runoff. In more recent years, after their function as evaporation ponds was discontinued, stormwater from upland areas has flowed into the Upper Lagoon. Overflow from the Upper Lagoon flows into the Lower Lagoon through a culvert and excess water from the Lower Lagoon is then discharged into East Stege Marsh. As identified in Section 4.7, *Hazards and Hazardous Materials*, these lagoons are the subject of ongoing remediation.

The Upper Lagoon holds water during the wet season (generally October through April), then dries during the summer months. The Lower Lagoon is perennially wet except during high drought years. The Lower Lagoon and surrounding freshwater marsh is approximately 4.3 acres in size, and the Upper Lagoon and surrounding marsh is approximately 2.5 acres. The lagoons currently support willows, cattails (*Typha* spp.), bulrush (*Bolboschoenus* sp.), Himalayan blackberry, English ivy, and pampas grass along the waterline.

Tidal Salt Marsh

Tidal salt marsh communities present within the Study Area include coastal brackish marsh, northern coastal salt marsh, and intertidal mudflats. Coastal brackish marshes are typically wetlands

influenced by fresh and tidal waters vegetated with bulrush (*Bolboschoenus* sp.) and/or cattails (*Typha* sp.). The northern coastal saltmarsh community is characterized by irregularly flooded, permanently saturated wetlands with a shallow water table and vegetated with low growing, herbaceous halophytes such as cordgrass (*Spartina* sp.), pickleweed (*Salicornia* sp.), and/or saltgrass (*Distichlis* sp.). Intertidal mudflats are typically unvegetated or sparsely vegetated.

The formation of tidal wetlands, such as Stege Marsh, Meeker Slough, and Hoffman Marsh within the Plan Area is a relatively recent occurrence. Prior to the construction of the former Southern Pacific railroad (SPRR) grade in 1959 (the current location of the Bay Trail in Sub-Area 4), the majority of the tidal salt marsh within the Plan Area was open water or intertidal mudflat (URS, 2003). Establishment of the railroad grade and breakwaters altered local hydrology such that areas of sediment deposition were formed inboard (upland from Bay waters) and outboard of the railroad grade (Ibid.). Sediment erosion inboard of the railroad grade formed the Western Stege marsh plain, which was then colonized by vegetation. The areas of East and West Stege Marsh located in Sub-Area 4 are representative of saline or tidal marsh environments, with Meeker Slough and the Baxter Creek mouth providing conduits for tidal exchange from the Bay to Western Stege Marsh. These communities represent high marsh, low marsh, and open water slough habitats (Blasland, Bouck, and Lee, Inc. 2003; Tetra Tech 2010). In 2006, habitat enhancement, including excavating and refilling approximately 5 acres of tidal wetlands in East Stege Marsh, was completed followed by relevant remedial activities such as vegetation restoration and maintenance (Arcadis, 2011). Additional information regarding the restoration efforts of these habitats can be found in Section 4.7 *Hazards and Hazardous Materials*. These habitats are all considered jurisdictional wetlands, with Meeker Slough considered to be the primary hydrologic feature in the area.

The upland vegetation present within East and West Stege Marsh is characteristic of a disturbed, early successional plant community. The marsh plant community is dominated by halophytes such as saltgrass (*Distichlis spicata*) and pickleweed (*Salicornia pacifica*), with patches of Pacific cordgrass (*Spartina foliosa*) and rushes (*Juncus* spp.) (URS, 2000). Reports also indicate the occurrence of upper salt marsh plants such as fat hen (*Atriplex prostrata*), alkali heath (*Frankenia salina*), and marsh gumplant (*Grindelia stricta* var. *angustifolia*) (URS, 2001; WRA, 1996). Marsh transition species recorded include gumplant, Italian rye grass, curly dock (*Rumex crispus*), ripgut brome (*Bromus diandrus*), and saltgrass (WESCO, 1990). Previous observations suggest that pampas grass has defined the outer perimeter of West Stege Marsh in several areas (URS, 2001). Other native species commonly found in the upland areas adjacent to wetlands and lagoons, adjacent to the Bay Trail in areas of former or current disturbance, and dry, exposed slopes include coyote brush, poison oak (*Toxicodendron diversilobum*), blue elderberry (*Sambucus nigra* ssp. *caerulea*), toyon, and California coffeeberry mixed with coast live oak, and California buckeye. The East Bay chapter of the California Native Plant Society (CNPS) has designated the entirety of the Richmond shoreline as a botanical priority protection area (CNPS, 2013).

A variety of invertebrates, including polychaetes, mollusks, and arthropods, can be found within this community as food sources for avian wildlife, including snowy egret, great blue heron (*Ardea herodias*), great egret (*Ardea alba*), western gull (*Larus occidentalis*), willet (*Tringa semipalmata*), black-necked stilt (*Himantopus mexicanus*), marbled godwit (*Limosa fedoa*), pied-billed grebe

(*Podilymbus podiceps*), sandpiper (Scolopacidae), dowitcher (*Limnodromus* sp.), long-billed curlew (*Numenius americanus*), and American avocet (*Recurvirostra americana*).[5] Common and special-status bats, such as the pallid bat (*Antrozous pallidus*), have been identified in this habitat at the Richmond Field Station (Tetra Tech, 2013). Black-tailed hare (*Lepus californicus*) can be found foraging and migrating along the fringes of this community. Non-native invasive predators that have been documented foraging within tidal salt marshes and are likely to occur on site include the Norway rat (*Rattus novegicus*) and domestic cat (USFWS, 2013). These invasive predators are also likely to occur in all other terrestrial communities discussed above.

Marine Communities and Habitat Types

Open Water Avian Habitat

Sub-Area 4 within the Study Area contains open water habitat. The San Francisco Bay region is an important wintering and stop-over site along the Pacific Flyway for wintering waterfowl. Bird guilds that use the open waters of the Central Bay include the diving birds, which feed in deeper water on benthic invertebrates; dabblers, which feed in the upper water column of shallow subtidal areas; piscivores, which feed on fish; and opportunistic predators (NOAA, 2007).

In the western-most portion of the Study Area, within Sub-Area 4, marine birds that regularly inhabit or can be found include Caspian tern (*Sterna caspia*), California least tern (*Sternula antillarum browni*), cormorants (*Phalacrocorax* spp.), herring gull (*Larus argentatus*), mew gull (*Larus canus*), and western grebe (*Aechmophorus occidentalis*). Among the diving benthivores guild, canvasback (*Aythya valisineria*), greater scaup (*Aythya marila*), lesser scaup (*Aythya affinis*), and surf scoter (*Melanitta perspicillata*) are common in Bay waters (SFPD, 2011). Brooks Island, approximately 1 mile southwest of the Study Area, provides nesting habitat for over 18 species of shorebirds, including Caspian tern, black-crowned night-heron, numerous gulls, and ducks (EBRPD, 2015).

Open Water (Pelagic) Habitat

Pelagic (open water) habitat is the predominant marine habitat in Central San Francisco Bay and includes the area between the water's surface and the seafloor (also known as the water column). The open waters within the Study Area have primarily silty mud and sand substrates. The physical conditions of the open water environment change constantly with tidal flow and season. As a result, San Francisco Bay waters vary in temperature, salinity, dissolved oxygen, and turbidity within depending on water depth, location, and season. Open water habitat is found along the western boundary of the Study Area. The pelagic habitat is predominantly inhabited by planktonic organisms, fish, and marine mammals.

Pelagic Fish. San Francisco Bay supports a wide variety of fishes, including special-status species such as steelhead (*Oncorhynchus mykiss irideus*), Chinook salmon (*Oncorhynchus tshawytscha*), longfin smelt (*Spirinchus thaleichthys*), and green sturgeon (*Acipenser medirostris*).

[5] While invertebrates are found in this community which may provide food for the long-billed curlew, there was no CNDDB occurrences recorded in 9-Quad search (CDFW, 2015)

Although these species are commonly found migrating through the Central Bay, longfin smelt is the only one of these species with the potential to pass through waters of the Study Area.

Thirty-three species of fish have been documented inhabiting Central Bay pelagic waters in recent years, of which three species account for 99 percent of the total abundance of fish regularly sampled in both the deep water and shallow areas of the Central Bay. Northern anchovy (*Engraulis mordax*) is the overwhelming dominant species, accounting for up to 94 percent of those fish inhabiting the water column. Pacific herring (*Clupea pallasii*) and jacksmelt (*Atherinopsis californiensis*) are the second and third most common fish taxa in Central Bay waters, together accounting for an additional 5 percent of fish sampled on an annual basis. The remaining 30 species collectively account for less than 1 percent of the fish species present annually. Important managed fish species or sensitive species of concern that are present in Central Bay pelagic waters include Northern anchovy, Pacific herring (*Clupea pallasii*), and Pacific sardine (*Sardinops sagax*) (CDFW, 2009).

Demersal Fish. As opposed to pelagic fish, many different fish species spend all or part of their life cycle in association with the demersal (seafloor) zone. These species include flatfish, gobies, poachers, eelpouts, and sculpins, which all live in close association with the benthos during their sub-adult and adult life. Managed, protected, or other fish species of concern or special significance observed inhabiting Central Bay seafloor areas include Pacific sardine, English sole, Pacific sanddab (*C. sordidus*), lingcod (*Ophiodon elongates*), brown rockfish (*S. auriculatus*), kelp greenling (*Hexagrammos decagrammus*), leopard shark (*Triakas semifaciata*), spiny dogfish shark (*Squalus acantias*), skates (*Raja* spp.), cabezon (*Scopaenichthys marmaoratus*), English sole (*Parophrys vetulus*) (IEP 2009). Pacific herring, and longfin smelt. As noted above, because the sea floor within the Study Area is generally silty, species of demersal fish which prefer rocky substrates, including lingcod, brown rockfish, kelp greenling, and cabezon would be less common.

Marine Mammals. Seven species of marine mammals are known to currently occupy or use Central Bay waters. The most common and predominant are the harbor seal (*Phoca vitulina*), California sea lion (*Zalophus californianus*), and harbor porpoise (*Phocoena phocoena*).

In general, the presence of marine mammals in San Francisco Bay is related to the distribution and presence of prey species and foraging habitat. Additionally, harbor seals and California sea lions use various intertidal substrates that are exposed at low to medium tide levels for resting and breeding (Goals Project, 1999). The current Bay harbor seal population is estimated at between 500 and 700 individuals with the permanent colony closest to the Study Area occurring at Castro Rocks, more than 3 miles north of the Study Area. Harbor seals and harbor porpoises are the only year-round residents of the Bay, although California sea lions can be observed most of the year.

Intertidal and Subtidal Habitats

Intertidal habitats are the regions of the Bay that lie between low and high tides, while subtidal habitats consist of benthic substrates. Intertidal habitats in the Study Area include waters of Meeker Slough, Stege Marsh, and Hoffman Marsh. The predominant marshland substrate is unconsolidated soft sediment composed of a combination of mud/silt/clay, sand, and pebble/cobble, with varying amounts of intermixed shell fragments. Exposure to wave and current action, temperature, salinity, and light penetration determine the composition and

distribution of organisms within intertidal areas and soft sediments (NOAA, 2007). The close proximity of the Study Area to the Golden Gate and Pacific Ocean has resulted in an intertidal zone inhabited by many coastal as well as estuarine species, as discussed below.

Benthic, or bottom-dwelling, fauna in the open waters of San Francisco Bay include a large variety of invertebrates, such as polychaetes (i.e., marine worms), crustaceans (e.g., crabs, amphipods, and isopods), mollusks such as clams and mussels, echinoderms, and fishes such as halibut and sole. Pelagic organisms also are widely observed to cross over from open water to intertidal and subtidal habitats and include planktonic organisms (e.g., phytoplankton, copepods, and larval animals), crustaceans (e.g., shrimps and mysiids), and many bony fish and shark species. These lower taxa provide a prey base for the higher taxa, such as marine mammals and birds, which also are commonly present in this environment and throughout all San Francisco Bay habitats (SFBNPSL, 2015).

Richmond's Southern Shoreline waterfront area contains both soft sediment and hard substrate subtidal (submerged) habitat. Soft bottom substrate ranges between soft mud with high silt and clay content and areas of coarser sand, which tends to occur in locations subjected to high tidal or current flow. Soft mud locations are typically located in areas of reduced energy that enable deposition of sediments that have been suspended in the water column, such as in protected slips of Richmond Marina Bay, and behind breakwalls and groins, similar to the waters immediately west of the mouth of Meeker Slough and Baxter Creek.

Submerged hard bottom substrate is typically covered with a mixture of turf organisms dominated by hydroids, bryozoans, tunicates, encrusting sponges, encrusting diatoms, and anemones. Pacific rock crab (*Cancer antennarius*) and red rock crab (*C. productus*) inhabit rocky, intertidal and subtidal areas in the Pacific Ocean, and likely use San Francisco Bay as an extension of their coastal habitats (Hieb, 2011). The Pacific and red rock crabs are frequent targets of sport anglers from piers and jetties, and while they are mainly limited to areas near the Golden Gate Bridge, have the potential to occur within the Study Area.

The most common large mobile invertebrate organisms in the Central Bay include black-spotted shrimp (*Crangon nigromaculata*), Bay shrimp (*Crangon franciscorum*), Dungeness crab (*Metacarcinus magister*), and slender rock crab (*Cancer gracilis*). Each of these invertebrates is present throughout the Bay and provides an important food source for carnivorous fishes, marine mammals, and birds in San Francisco Bay's food web (Tasto,1979).

Submerged Aquatic Vegetation. Subtidal plants and submerged aquatic vegetation occur throughout the Central Bay on both soft and hard substrates. Eelgrass is a rooted marine plant with long, narrow leaves which float on or just below the water surface typically at subtidal depths ranging from about -1.0 feet mean lower low water (MLLW) to + 4.5 feet MLLW. Eelgrass cannot withstand extreme channel scouring or consistent wave action.

Some of the largest eelgrass beds in the San Francisco Bay estuary are in shallow subtidal regions of San Pablo and Richardson Bay, approximately 5 miles north of the Study Area (more than 12 miles along the coast). The shallow coves along the San Pablo Peninsula, such as those near Keller Beach, north of the Study Area, support extensive eelgrass beds that contribute

significantly to the amount of eelgrass habitat in the Bay. No known eelgrass beds occur within the Study Area (Merkel & Associates, Inc., 2015).

Aquatic vegetation in the Study Area also may include the green alga (*Ulva/Enteromorpha*), red alga (*Gracilaria verrucosa),* beaked tasselweed (*Ruppia maritima),* and sago pondweed (*Potamogeton pectinatus),* which are common in subtidal habitats but not known to occur in the marine areas of the Bay (NOAA, 2007). All submerged aquatic vegetation in the Central Bay is considered critical essential fish spawning habitat for Pacific herring.[6]

Special-Status and Otherwise Protected Species

Special-Status and Otherwise Protected Species – Terrestrial Resources

A number of species known to occur in the Study Area are protected pursuant to federal and/or state endangered species laws, or have been designated a California species of special concern (CSC) by the CDFW or NOAA-National Marine Fisheries Service (NMFS), or are afforded certain protection through regulatory means such as the California Department of Fish and Game Code. In addition, Section 15380(b) of the CEQA *Guidelines* provides a definition of rare, endangered, or threatened species that are not included in any listing, but whose "survival and reproduction in the wild are in immediate jeopardy" (endangered) or which are "in such small numbers throughout all or a significant portion of its range that it may become endangered if its environment worsens" or "is likely to become endangered within the foreseeable future throughout all or a significant portion of its range and may be considered 'threatened' as that term is used in the federal Endangered Species Act."[7] Species recognized under these terms are collectively referred to as "special-status species." For the purpose of this evaluation, special-status species include:

1. Species listed or proposed for listing as threatened or endangered under the federal Endangered Species Act (50 CFR 17.12 [listed plants], 17.11 [listed animals], and various notices in the Federal Register [FR] [proposed species]);

2. Species that are candidates for possible future listing as threatened or endangered under the federal Endangered Species Act (61 FR 40, February 28, 1996);

3. Species listed or proposed for listing by the State of California as threatened or endangered under the California Endangered Species Act (14 Cal. Code Regs. 670.5);

4. Species formerly designated by the USFWS as species of concern or species designated by the CDFW as a California species of special concern;[8]

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6 The Magnuson-Stevens Act defines "essential fish habitat" as those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity.

7 For example, the CDFW interprets Ranks 1A, 1B, 2A, and 2B of the California Native Plant Society's *Inventory of Rare and Endangered Vascular Plants of California* to consist of plants that, in a majority of cases, would qualify for listing as rare, threatened, or endangered. However, the determination as to whether an impact is significant is made by the lead agency, absent the protection of other laws.

8 A California species of special concern (CSC) is one that: has been extirpated from the state; meets the state definition of threatened or endangered but has not been formally listed; is undergoing or has experienced serious population declines or range restrictions that put it at risk of becoming threatened or endangered; and/or has naturally small populations susceptible to high risk from any factor that could lead to declines that would qualify it for threatened or endangered status.

5. Species designated as "special animals" by the state;[9]

6. Species identified on the list of State and Federally Listed Endangered, Threatened and Rare Plants of California, and/or as "special plants"[10];

7. Species designated as "fully protected" by the state (there are about 35, most of which are also listed as either endangered or threatened);[11]

8. Non-listed fish species included in Essential Fish Habitat (EFH) and of regional importance for harvest;

9. Plants listed as rare or endangered under the California Native Plant Protection Act (California Fish and Game Code, Section 1900 et seq.);

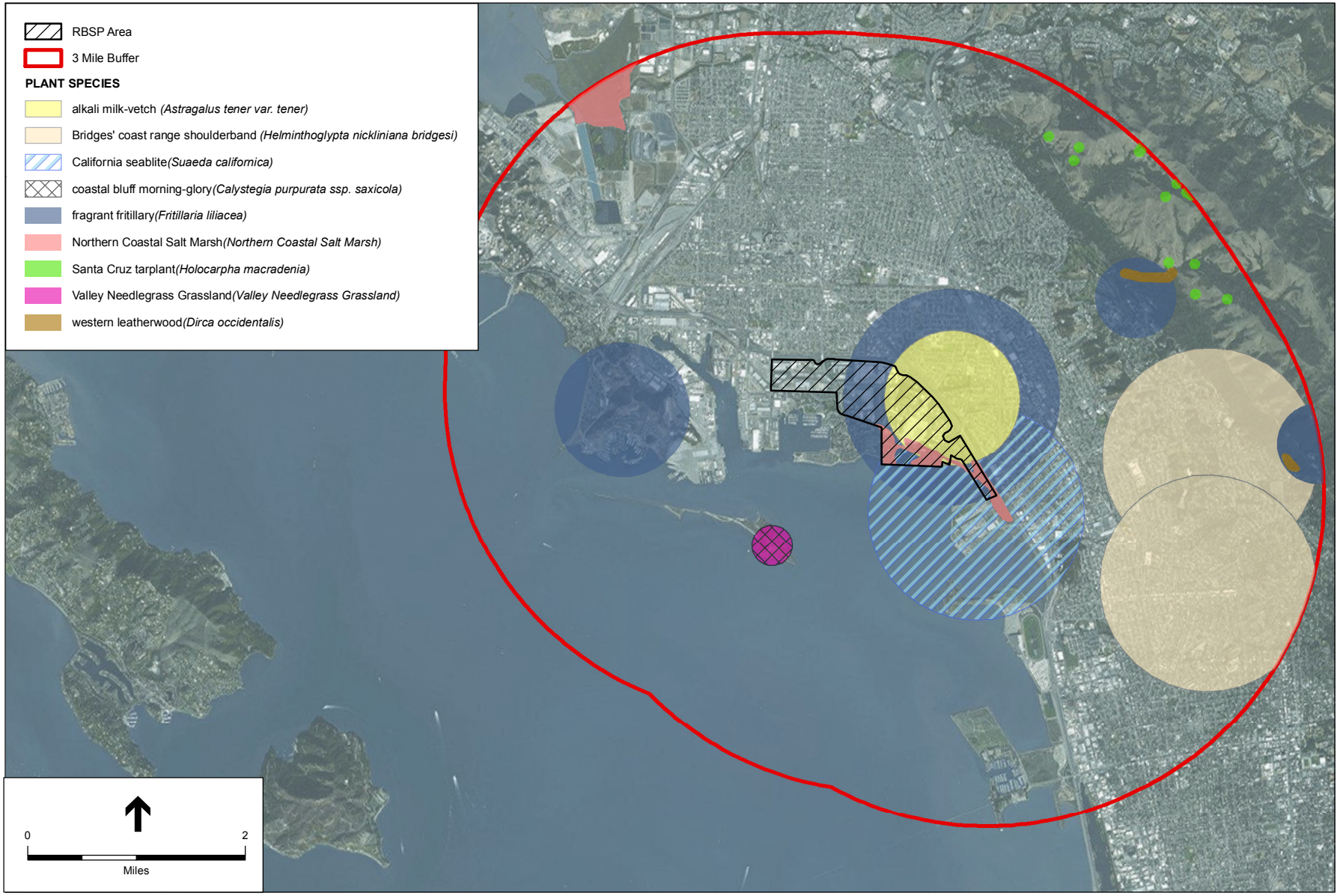
10. Species that meet the definitions of rare and endangered under CEQA. CEQA Section 15380 provides that a plant or animal species may be treated as "rare or endangered" even if not on one of the official lists (CEQA *Guidelines,* Section 15380); and,

11. Plants considered by the CNPS to be "rare, threatened or endangered in California" under the California Rare Plant Ranking system (CRPR) which include Rank 1A, 1B, 2A, and 2B as well as Rank 3 and 4[12] plant species.

Appendix C provides a comprehensive list of the special-status species that have been documented as occurring within the Study Area or have suitable habitat in the Study Area. This list was obtained from the California Natural Diversity Database (CDFW, 2015), California Native Plant Society (CNPS) Electronic Inventory (CNPS, 2016) as designated under the California Rare Plant Rank (CRPR), and the U.S. Fish and Wildlife Service (USFWS, 2016) for the Plan Area and *Richmond, Briones Valley, San Francisco North, Oakland West, Oakland East, Petaluma Point, Mare Island, Benicia,* or *San Quentin* U.S. Geological Survey 7.5 minute topographical quadrangles. Based on a review of the biological literature of the region, recent biological reports for the Study Area, and an evaluation of the Study Area's habitat conditions, a determination of whether each species has a Low, Moderate, or High potential to occur in the Study Area has been made. **Figure 4.3-1**, identifies the locations of regional special-status species occurrences as reported in CNDDB.

Based on review of the biological literature of the region, information presented in previous environmental documentation, and an evaluation of the habitat conditions of the Study Area, a species was designated as "absent" if: (1) the species' specific habitat requirements (e.g.,

9 Species listed on the current CDFW "Special Animals" list (CDFW, 2016a)
10 Species listed on the current CDFW "Special Vascular Plants, Bryophyte, and Lichens" List (CDFW, 2016b)
11 The "fully protected" classification was California's initial effort in the 1960s to identify and provide additional protection to those animals that were rare or faced possible extinction. The designation can be found in the Fish and Game Code.
12 Rank 3 plants may be analyzed under CEQA *Guidelines* Section 15380 if sufficient information is available to assess potential impacts to such plants. Factors such as regional rarity vs. statewide rarity should be considered in determining whether cumulative impacts to a Rank 4 plant are significant even if individual project impacts are not. CRPR Rank 3 and 4 may be considered regionally significant if, e.g., the occurrence is located at the periphery of the species' range, or exhibits unusual morphology, or occurs in an unusual habitat/substrate. For these reasons, CRPR Rank 3 and 4 plants should be included in the special-status species analysis. Rank 3 and 4 plants are also included in the CNDDB Special Vascular Plants, Bryophytes, and Lichens List. The current online published list is available at: www.dfg.ca.gov/biogeodata (CDFW, 2016b).

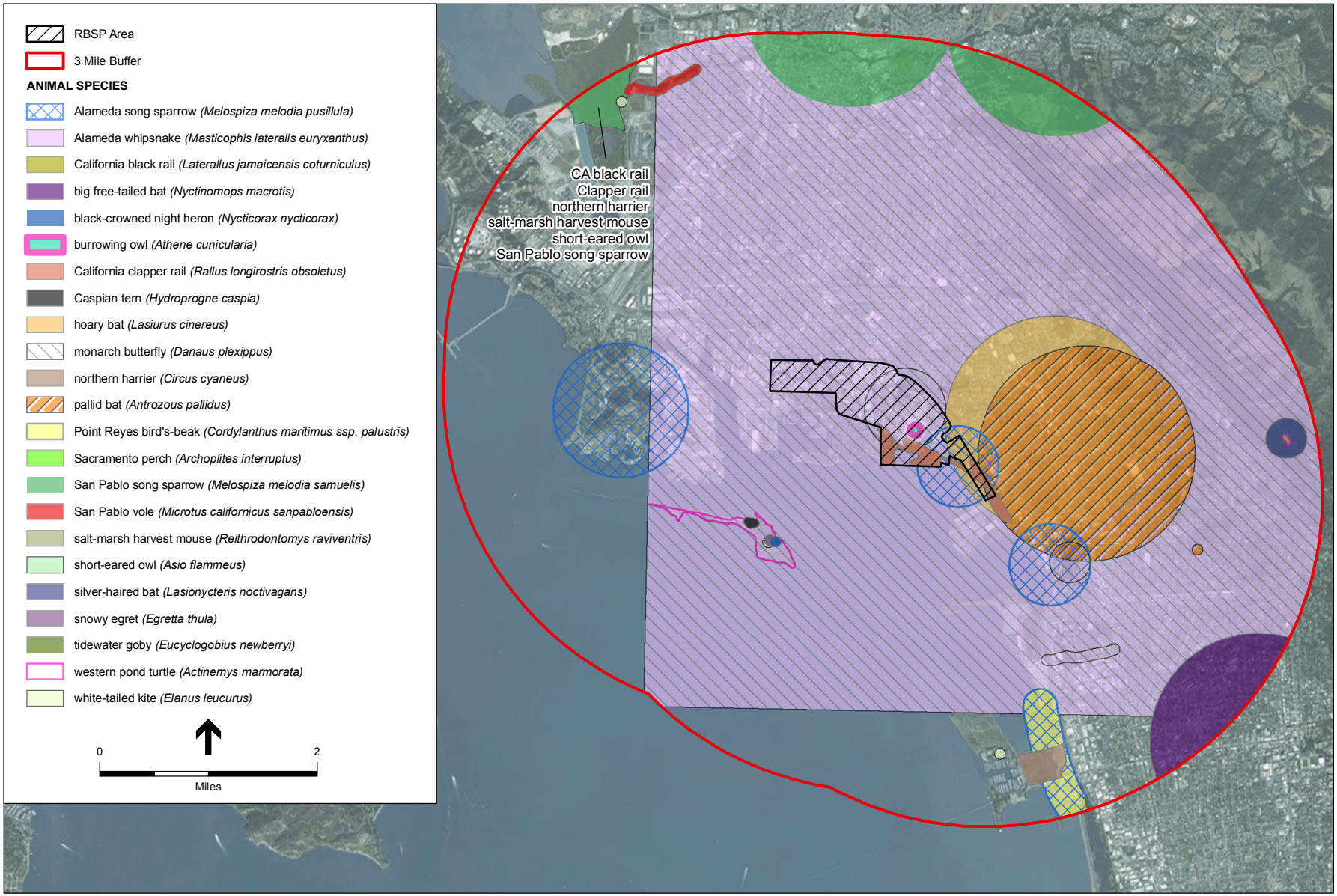


SOURCE: CDFW, CNDDB for 7.5 minute topographic graphic quadrangles

Richmond Bay Specific Plan EIR. 120834

Figure 4.3-1a

CNDDB Occurrences (Plants) within 3 Miles of the Plan Area



SOURCE: CDFW, CNDDB for 7.5 minute topographic graphic quadrangles

Figure 4.3-1b

CNDDB Occurrences (Animals) within 3 Miles of the Plan Area

serpentine grasslands, as opposed to grasslands occurring on other soils) are not present, or (2) the species is presumed, based on the best scientific information available, to be extirpated from the Study Area.

A species was designated as having a "low potential" for occurrence if: (1) its known current distribution or range is outside of the Study Area or (2) only limited or marginally suitable habitat is present within the Study Area. A species was designated as having a "moderate potential" for occurrence if: (1) there is low to moderate quality habitat present within the Study Area or immediately adjacent areas or (2) the Study Area is within the known range of the species, even though the species was not observed during biological surveys. A species was designated as having a "high potential" for occurrence if: (1) moderate to high quality habitat is present within the Study Area, and (2) the Study Area is within the known range of the species.

Special-Status Plants

Coastal scrub and marsh habitats found in Meeker Slough wetlands, Stege Marsh, and Hoffman Marsh all support some native plant communities; however, all of the special-status plant species listed in Appendix C are considered to have a low potential to occur in the Study Area due to the absence of suitable habitat, and were eliminated from further evaluation. The majority of the Study Area upland landscape consists of industrial development, comprising mostly of buildings and paved surfaces that support little in the way of intact natural communities, except for opportunistic non-native weedy species. Natural communities that occur within the Study Area have generally been exposed to human influence, greatly simplified in terms of plant diversity, and dominated by non-native species.

No special-status plants have been observed in the Study Area and regionally documented occurrences are almost exclusively historical in nature. For example, although fragrant fritillary (*Fritillaria liliacea*), rare plant rank 1B.2, was historically observed in two separate occurrences in Richmond (CDFW, 2015), this plant is considered extirpated in these two areas. Tidal salt marsh habitats within the Plan Area historically provided high quality habitat for the federally-endangered California seablite (*Suaeda californica*), California Rare Plant Rank (CRPR) 1B.1; however, CNDDB (2015) documents this species is likely extirpated from the region with the only recent occurrences being restored populations. The nearest restored population of California seablite is in Eastshore State Park, approximately 2 miles south of the Study Area. Previously graded and highly disturbed ruderal uplands in the Study Area do not provide suitable habitat for these species or any other special-status plant species listed in Appendix C.

No special-status plant species were observed during the biological resources reconnaissance survey, although the survey did not constitute a detailed botanical inventory of the Study Area. Special-status plant species listed in Appendix C are not expected to occur within the Study Area because of the absence of suitable habitat, extensive disturbance to the area, or due to historical record of this landscape being open water or intertidal mudflat.

Special-Status Animals

Of the special-status animals listed in Appendix C, only species known to be present within the Study Area or classified as having a moderate or high potential for occurrence in the Study Area

were considered in the impact analysis and described in further detail below. The following have the potential to occur in the Study Area and could potentially be impacted by the Specific Plan.

Monarch butterfly (*Danaus plexippus*; over-wintering populations). This species makes massive migrations from August through October, flying thousands of miles south to winter along the California coast and in central Mexico. Along the way, monarchs stop to feed on flower nectar, roost together at night, seek out tree stands for cover and thermal regulation, and can be found in many open habitats including fields, meadows, weedy areas, marshes, and roadsides. Every fall, the monarch butterfly flies to the same overwintering sites and frequently to the same trees. At wintering sites, these butterflies roost in trees and form huge aggregations that may have thousands to mil lions of individuals. In California, these sites are primarily eucalyptus (*Eucalyptus* sp.) or Monterey pine (*Pinus radiata*) groves, and the monarch butterfly winters at such sites from about October through February.

An overwintering population has been documented within the Study Area, that is, in the eucalyptus windrows along Seaver Avenue in the Richmond Field Station site adjacent to Sub-Area 3. No overwintering sites are present within the Plan Area. Although the monarch butterfly is not listed as threatened or endangered, the species is known to have high fidelity to overwintering sites even though numbers vary from year to year, and in some years they may not appear at all (Arnold, 2013). Because dense stands of eucalyptus found within the Study Area, (that is, on lands within the Richmond Field Station site adjacent to the Plan Area), have been documented as suitable overwintering sites, the monarch butterfly is assumed to be present within this isolated portion of the Study Area, and potentially exposed to Specific Plan activities; however, overwintering sites have not been documented within the Plan Area.

Special-Status Birds

The following birds are state- or federally-listed as endangered or threatened, fully protected, recently delisted, or on a watch list. Species considered Birds of Conservation Concern (BCC) by the USFWS, California species of special concern by CDFW, or that occur on the CDFW Special Animals List are also described below.

Great egret (*Ardea alba*). The great egret is a common permanent resident throughout California, except for high mountains and deserts. The species feeds and rests in fresh and saline emergent wetlands, along the margins of estuaries, lakes, and slow-moving streams, on mudflats and salt ponds, and in irrigated croplands and pastures. Great egrets require groves of trees suitable for nesting and roosting, relatively isolated from human activities, near aquatic foraging areas. Great egret is a state-designated special animal due to declining availability of breeding areas, and its rookeries (nesting colonies) are protected. The nearest known rookeries are at West Marin Island, approximately 7.5 miles northwest of the Study Area and Lake Merritt in Oakland, approximately 7 miles southeast of the Study Area. The species is known to forage in the Study Area but no established rookeries are documented within the Study Area.

Snowy egret (*Egretta thula*). Snowy egret feed on small fish, crustaceans, and large insects, in shallow water or along shores of wetlands or aquatic habitats. San Francisco Bay colonies of this species nest at ground level on gumweed (*Grindelia hirsutula*), pickleweed, and most commonly

on coyote brush. Nesting colonies of this species are named as a resource on the California Special Animals List. The nearest known rookery for snowy egret is on Brooks Island, located within 1 mile of the Study Area. Two snowy egrets were observed foraging in East Stege Marsh during ESA's reconnaissance survey; however, no known rookeries are documented in the Study Area. Snowy egret rookeries are protected under Section 3503 of the California Fish and Game Code, and these rookeries are considered a CDFW special-status resource (CDFW, 2016a).

Great blue heron (*Ardea herodias*). Great blue heron is a state-designated special animal due to declining availability of breeding areas and its rookeries are protected. Great blue heron is a year-round resident throughout California, in and around reservoirs, streams, and lakes with trees for nesting. The species is typically a colonial nester. Great blue heron forages in slow moving streams with adjacent wetlands, shallow bay waters, and grasslands, feeding on small fish, amphibians, invertebrates, small mammals, and young birds. Great heron rookeries, made up of anywhere from a few to hundreds of nests, are considered a resource of conservation concern by the CDFW due to their general rarity and susceptibility to disturbance. An adult great blue heron was documented roosting in Meeker Slough during ESA's reconnaissance survey; however, there is no significant rookery known to be present within the Study Area. Great blue heron rookeries are protected under Section 3503 of the California Fish and Game Code and are considered a CDFW special-status species (CDFW, 2016a).

Black-crowned night-heron (*Nycticorax nycticorax*). Rookeries of black-crowned night-herons are listed on the CDFW Special Animals list (CDFW, 2016a). This species depends on large trees, dense types of vegetation, and man-made structures by tidal marsh, tidal mudflats, and non-tidal wetlands for nesting in spring and summer and for feeding year-round. Important feeding sites also include creeks and ponds where they feed upon fish, small mammals, and invertebrates. Black-crowned night heron nests in groves of trees, in thickets, or on ground, usually on islands or above water, perhaps to avoid predators.

Double-crested cormorant (*Phalacrocorax auritus*). The double-crested cormorant is on the CDFW Watch List. A yearlong resident along the entire coast of California, the species is very common in the San Francisco Bay region. The species forages mainly on fish, crustaceans, and amphibians. It sometimes feeds cooperatively in flocks of up to 600, often with pelicans, and nests in colonies of a few to hundreds of pairs (Zeiner et al., 1990). There are known breeding colonies within the Bay on Yerba Buena and Alcatraz Islands, as well as the Richmond-San Rafael and Bay Bridges. The species could forage and roost within the Study Area but is not known to nest there. Nesting colonies of double-crested cormorant colonies are protected under Section 3503 of the California Fish and Game Code and are considered a CDFW special-status species (CDFW, 2016a).

Caspian tern (*Sterna caspia*). Caspian terns, whose nesting colonies are listed as a sensitive resource on the California Special Animals List, are common to very common along the California coast and at scattered locations inland, from April through early August. They nest in colonies on sandy estuarine shores, on levees in salt ponds, and on islands in alkali and freshwater lakes. Breeding adults often fly substantial distances to forage in lacustrine, riverine, and fresh and saline emergent wetland habitats. Brooks Island has been the site of the largest nesting colony of Caspian

terns in the San Francisco Bay. The Caspian tern colony was estimated at 680 breeding pairs in 2009 on the upper part of the beach on the northeast shore of the spit. The size and productivity of the Brooks Island Caspian tern colony is currently limited by suitable nesting habitat, which has been declining due to shoreline erosion, spread of invasive vegetation, and expansion of a newly formed California gull colony (Real Time Research, n.d.). Caspian tern colonies are protected under Section 3503 of the California Fish and Game Code and are considered a CDFW special-status species (CDFW, 2016a).

California least tern (*Sterna antillarum browni***)**. Least terns usually arrive at breeding territory in late April in southern California to mid-May in Northern California. The species is both state- and federally--listed as endangered. Breeding colonies are located in Southern California along marine and estuarine shores, and in San Francisco Bay in abandoned salt ponds and at the former Alameda Naval Air Station in Alameda County. The species feeds in nearby shallow, estuarine waters. Terns forage in the San Francisco Bay but are not known to nest on the Richmond waterfront. Suitable nesting habitat is not present in the Plan Area due to the absence of suitable substrate and human presence from recreational activities based in the upland areas along the shoreline and boating activities based in the Bay waters. This species could forage in open water offshore of the Plan Area.

California Ridgway's rail (*Rallus obsoletus*). California Ridgway's rail (formerly known as California clapper rail) is a federal and state endangered species. Cordgrass and pickleweed-dominated saltmarsh (i.e., low intertidal saltmarsh) is typically the preferred nesting habitat of California Ridgway's rail in brackish emergent wetlands (Harvey, 1999, and Gill, 1972). California Ridgway's rail requires shallow water and mudflats for foraging and adjacent higher vegetation for cover during high tide. In saline emergent wetlands, the species nests mostly in lower zones, where cordgrass is abundant, and tidal sloughs, such as Meeker Slough (Harvey, 1999). These tidal channels provide California Ridgway's rail with movement corridors, easily accessible foraging habitat, and escape habitat. The saltmarsh associated with East Stege Marsh and West Stege Marsh (both East Stege Marsh and West Stege Marsh are shown on **Figure 3-8**) is dominated by pickleweed and saltgrass (i.e., middle intertidal saltmarsh). Both East Stege Marsh and West Stege Marsh provide suitable habitat for California Ridgway's rail and the subspecies has been documented in this area during previous studies (Bumgardner, 2002). The high complexity of the internal channel systems and preponderance of middle intertidal saltmarsh associated with this marsh complex suggests that the habitat is highly suitable for foraging and nesting by California Ridgway's rail. The Upper and Lower Lagoons do not provide suitable habitat due to the lack of saline marsh habitat available.

California black rail (*Laterallus jamaicensis coturniculus*). This state-threatened species and federal bird of conservation concern occurs in California, Arizona, and Mexico, with a subspecies population inhabiting the northern San Francisco Bay coastal tidal marshes. Within the San Francisco Bay Area, California black rail is most abundant and widely distributed in the emergent tidal marshes, most commonly within the "pickleweed zone," at or above mean tide level and is often associated with patches of bulrush (Evens and Thorne, 2015). The species can also be found in freshwater marsh habitat.

California black rail are largely absent from Central San Francisco Bay (except for Corte Madera Marsh) and are considered only a rare wintering visitor in South San Francisco Bay (Trulio and Evens, 2000). Surveys conducted by Point Reyes Bird Observatory (PRBO) Conservation Science during 2001 found no California black rail in the tidal or muted marshes between I-80 and I-580 in Alameda and Contra Costa counties (Spautz and Stralberg, 2005), though one to two individuals were recorded by others in the Emeryville Crescent Marsh (immediately north of I-80, approximately 6 miles south of the Study Area) in March 1999 (CDFW, 2015). An assessment was performed in 2014 for the presence of California black rail in the southeast portion of the Richmond Field Station site and the Upper and Lower Lagoons, associated upland, and a ponded area. This document concluded that available data did not indicate that direct or indirect adverse effects to California black rail would occur as a result of remediation or any other activities in or in the immediate upland vicinity of Upper and Lower Lagoons (Arcadis, 2014). Due to the presence of potentially suitable habitat and the proximity of known California black rail populations in other portions of San Francisco Bay, this species has a moderate potential to forage within the Study Area, but is not expected to nest within the Study Area.

Peregrine falcon (*Falco peregrines anatum*). The American peregrine falcon is a California fully protected species that is regularly observed in the Study Area and surrounding vicinity including Meeker Slough and along the San Francisco Bay Trail (eBird, 2016). The American peregrine falcon nests on cliff ledges in natural environments, but it has adapted to nesting on shelves of tall buildings or structures in urban environments. This raptor commonly hunts other birds in flight from perches or from high in the air. Although peregrines typically prefer to nest in taller buildings, it is possible that they could nest in one of the multi-story buildings on the site. Peregrine falcon nesting has not been documented or observed on site, though they may forage in the Study Area.

Loggerhead Shrike (*Lanius ludovicianus*). This California species of concern prefers open habitats with scattered shrubs, trees, posts, fences, utility lines, or other perches. This species has been documented in the grassland habitats near the Plan Area and has a high potential to nest and forage within the Study Area.

Black Skimmer (*Rynchops niger*). This California species of concern forages in calm shallows of harbors, lagoons, bays, estuaries, ponds, and river channels, and nests on large areas of bare earth isolated from disturbances. This species has been observed at Meeker Slough and has a high potential to forage within the Study Area but has a low potential to occur due to a lack of suitable habitat.

Willow flycatcher (*Empidonax trailii*). This state endangered and federal bird of conservation concern is unlikely to nest in the Study Area but may occur incidentally during migration or dispersal. This species was observed at Meeker Slough.

White-tailed kite (*Elanus leucurus*). A state fully-protected species, the white-tailed kite inhabits rolling foothills with scattered oaks or marshes near deciduous woodland. This species forages in wetlands and open brushlands, usually near water and streams. A combination of habitats is essential, including open grasslands, meadows or marshes for foraging, and isolated dense topped

trees for perching and nesting. Successful nests are typically surrounded by more natural, fallow and riparian vegetation, as well as non-urban human development (PRBO, 2000). The destruction of wetlands is a primary threat to this species. White-tailed kites could nest in the pine and eucalyptus trees found throughout the Study Area and have been documented nesting on Brooks Island and at Berkeley Yacht Harbor, both approximately 2 miles away from the Study Area (CDFW, 2015).

Northern harrier (*Circus cyaneus*). Northern harrier is a California species of special concern by CDFW. Northern harrier nests and forages along wet meadows, sloughs, savanna, prairie, and marshes, feeding on small mammals such as California vole and mice. Destruction of marsh habitat is the primary reason for the decline of this species. Northern harrier has been observed in Meeker Slough and Hoffman Marsh and may use wetlands and grasslands in the Study Area for foraging and nesting (eBird, 2016).

Cooper's hawk (*Accipiter cooperi*). Cooper's hawks range over most of North America and may be seen throughout California, most commonly as a winter migrant. Nesting pairs have declined throughout the lower-elevation, more populated parts of the state. Cooper's hawk generally forage in open woodlands and wooded margins and nests in tall trees, often in riparian areas, and could frequent the mature trees in Sub-Area 4. Cooper's hawk is known to nest locally in Bay Area urban neighborhoods. The nearest occurrence of the species was documented along San Pablo Ridge, east of the Study Area. Cooper's hawks are on the CDFW Watch List and are protected under Section 3503.5 of the California Fish and Game Code.

Osprey (*Pandion haliaetus*). Osprey, a CDFW Watch List species, breeds in northern California from Cascade Ranges south to Lake Tahoe, and along the coast south to Marin County. The species is associated strictly with large, fish-bearing waters, primarily in ponderosa pine through mixed conifer habitats. This species preys mostly on fish, as well as some mammals, birds, reptiles, amphibians, and invertebrates, and requires open, clear waters for foraging. Osprey use rivers, lakes, reservoirs, bays, estuaries, and surf zones, and nest on platform of sticks at the top of large snags, dead-topped trees, on cliffs, or on human made structures. Osprey have been observed in San Francisco Bay bordering the Plan Area which supports suitable foraging and breeding habitat for this species (eBird, 2016).

Alameda song sparrow (*Melospiza melodia pusillula*). The Alameda song sparrow is one of three morphologically distinct song sparrow subspecies that occur in tidal marshes of the San Francisco Bay region. This particular subspecies is endemic to the marshes bordering the Central Bay and is a federal bird of conservation concern and California species of special concern by CDFW. Historical occurrences for this species are documented in tidal marsh habitat in the vicinity of Point Richmond, Stege Marsh and Point Isabel Regional Shoreline, and the Albany and Berkeley shorelines where the species is presumed to be extant. More recent observations of Alameda song sparrow in the region include occurrences in the tidal marsh habitat east of Emeryville and north of the Bay Bridge from 2004 (CDFW, 2016). Intermixed stands of bulrush, cattail, and other emergent vegetation provide suitable habitat for this species in brackish marshes. Alameda song sparrows nest in tall tules with local pickleweed. They also frequent tall vegetation along the edges of tidal marshes and forage on mudflats and channel beds

exposed at low tide; consequently, the Study Area provides suitable foraging and nesting habitat for Alameda song sparrow.

Saltmarsh common yellowthroat (*Geothlypis trichas sinuosa*). The saltmarsh common yellowthroat is a federal bird of special concern and is a current California species of special concern by CDFW. This species is a resident of the San Francisco Bay region, in fresh and salt water marshes and requires thick, continuous cover down to the water surface for foraging in tall grasses, tule patches, willows for nesting. Saltmarsh common yellowthroat has been documented approximately 5 miles south of the Study Area near the Bay Bridge (CDWF, 2015a).

Burrowing owl (*Athene cunicularia*). The burrowing owl is a federal bird of conservation concern and a species of special concern by the CDFW . It is a small, semi-fossorial bird of prairie and grassland habitats. Burrowing owls in the western United States rarely dig their own burrows, but take over burrows dug by ground squirrels. Burrowing owls are generally found in open country including annual and perennial grasslands, open agricultural areas, deserts, and vacant lots. Burrowing owls are able to adapt to some human-altered landscapes, including the perimeters of agricultural fields, irrigation ditches, fallow agricultural fields, open fields prepared for development, airports, golf courses, military bases, and parks. These owls can be found adjacent to San Francisco Bay on levees next to salt ponds, open grasslands, or manicured fields near the Bay's edge where ground squirrel numbers and foraging area are adequate. These birds are primarily terrestrial predators and in these locations focus on mice and insects. Burrowing owls were documented in the Study Area in 2004, specifically in the Sub-Area 4 (CDFW, 2015).

Other breeding and migratory birds. The Study Area and surrounding Bay waters provide habitat for a diversity of birds, with some species as year-round residents, other species as winter residents, and still others passing through along the Pacific Flyway during spring and fall migrations. Avian diversity in urbanized areas is highest where relatively large sized, diverse patches of habitat remain. Trees, shrubs, grasslands, seasonal and tidal wetlands, and buildings within the Plan Area provide foraging and nesting habitat for a variety of birds, including barn owl (*Tyto alba*), American kestrel (*Falco sparverius*), red-tailed hawk (*Buteo jamaicensis*), black phoebe (*Sayornis nigricans*), cliff swallow (*Petrochelidon pyrrhonota*), and barn swallow (*Hirundo rustica*), as well as patches of habitat for potential use by migrants as stop-over sites. As discussed further below under *Regulatory Setting*, most migratory birds are protected from harm by the Federal Migratory Bird Treaty Act and nearly all breeding birds in California are protected under the California Fish and Game Code (Section 3503).

Western pond turtle (*Emys marmorata*).Western pond turtle is a California species of special concern. Two subspecies are recognized, the northwestern pond turtle that inhabits San Francisco Bay and areas to the north, and the southwestern pond turtle which is found south of San Francisco Bay (Lovich, n.d.). Optimal habitat seems to be characterized by the presence of adequate emergent basking sites, emergent vegetation, and the presence of suitable refugia in the form of undercut banks, submerged vegetation, mud rocks and logs (Holland, 1994). Adjacent terrestrial habitat is also critical for egg laying, winter refuge, and dispersal. Western pond turtles eat a wide variety of food items including, algae, various plants, snails, crustaceans (Lovich, n.d.). The nearest presumed extant CNDDB occurrence of the species is an undated occurrence on

Brooks Island (CNDDB, 2016); this occurrence may be historical. Although this species prefers freshwater habitat, the western pond turtle is known to occur in and near aquatic habitat throughout the San Francisco estuary fringes, and suitable habitat is present within proximity to the lagoons and Meeker Tidal Creek in the Plan Area.

Salt-marsh harvest mouse (*Reithrodontomys raviventris*). The salt-marsh harvest mouse is a small rodent that lives in the salt marshes of the San Francisco Bay and feeds primarily on the stems and leaves of salt marsh plants. The species is typically associated with tall, dense, continuous stands of perennial pickleweed. Other highly important habitat considerations include high tide/flood refugia of marsh gumplant, seasonal use of terrestrial grassland, and stands of chairmaker's bulrush (*Schoenoplectus americanus*). The species is generally nocturnal and requires access to cover on high ground to escape high tides. Few major, resilient, or secure populations of the species persist in the East San Francisco Bay. These populations are documented within the San Pablo Creek Marsh, over 3.5 miles north of the Study Area, and the Emeryville Crescent Marsh. These populations are small and isolated compared with the historical pattern of distribution and abundance of the subspecies (CDFW, 2015; USFWS, 2010; and SFEI, 2015).

Key predators include the domestic cat and red fox, in addition to native predators such as hawks, owls, herons and Ridgway's rail (USFWS, 2010). Predation and diminished habitat quality and size are the greatest threats to salt-marsh harvest mouse population numbers (Shellhammer, 1998; and USFWS, 2010). Studies indicate that salt marsh harvest mouse population size is generally correlated with the depth of the pickleweed plain (i.e., the middle zone of tidal marshes) (Shellhammer, 1998). In the Study Area, narrow fringe marshes, such as those found within East Stege Marsh, were observed to have narrow pickleweed zones. While such fringe habitats may support generally poor habitat for salt marsh harvest mouse, western portions of the Study Area from Meeker Slough south to Hoffman Marsh may support remnant populations of salt marsh harvest mouse.

Salt-marsh wandering shrew (*Sorex vagrans halicoetes*). The salt-marsh wandering shrew, a California species of special concern, has recently been confined to small remnant stands of salt marsh, inundated daily by tidal waves, found around the southern arm of the San Francisco Bay in San Mateo, Santa Clara, Alameda and Contra Costa counties (Ford, 1986). The known elevational range extends from approximately 6 to 9 feet above mean sea level (Shellhammer, 2000). The species breeds from February through June, with most young born during April (Johnston and Rudd, 1957). Another smaller peak of breeding occurs in September. Two kinds of nests, one for breeding and the other for resting, are constructed. The breeding nest is constructed of dead plant material (*Spartina*, *Distichlis*, and *Salicornia*), and is typically located on the ground either under or in driftwood, planks, or woodblocks found along the higher tide line where they may escape flooding. The salt-marsh wandering shrew has been documented in the San Pablo Creek salt marsh, over 3.5 miles north of the Study Area. Suitable habitat for this species occurs within the Study Area.

Pallid Bat (*Antrozous pallidus*). The pallid bat is a California species of special concern and has a moderate potential to occur within the Study Area (CDFW, 2016a). The pallid bat has been recorded in El Cerrito and suitable foraging habitat is present within the study area. This species

prefers to roost in caves, crevices, mines. The preferred roosting habitat for this species is generally absent from the study area, but this species is also know to occasionally roost in trees, bridges, and buildings which are present within the study area.

Hoary Bat (*Lasiurus cinereus*). The hoary bat is a California species of special concern and has a moderate potential to occur within the Study Area (CDFW, 2016a). The hoary bat has been recorded in Crescent Park, which is adjacent to the Plan Area directly across I-580, and therefore outside the Study Area (CDFW, 2015a). This species generally roosts in dense foliage of medium to large trees that preferably have an open lower canopy for dropping out into flight.

Non-Special-Status Bats. Suitable roosting habitat for common bat species (e.g. Brazilian free-tailed bat) is present in the Study Area and includes open spaces within buildings and man-made structures including bridges and culverts, in tree foliage, underneath exfoliating bark of trees, and in tree cavities. Bridges and culverts can provide roosting habitat for large colonies of roosting bats, including maternity colonies.

Special-Status Species — Marine Resources

As explained above for special-status terrestrial species, the term "special-status" species includes those species that are listed and receive specific protection defined in federal or state endangered species legislation, as well as species not formally listed as "Threatened" or "Endangered" but designated as "Rare" or "Sensitive" on the basis of adopted policies and expertise of state resource agencies or organizations, or local agencies such as counties, cities, and special districts. For the purposes of this analysis, special-status species include:

- Species that are listed or proposed or are candidate species for listing as Threatened or Endangered by the USFWS or National Marine Fisheries Service (NMFS) pursuant to the Federal Endangered Species Act (FESA);
- Species listed as Rare, Threatened, or Endangered by the CDFW pursuant to the California Endangered Species Act (CESA);
- Species managed and regulated under the Magnuson-Stevens Fisheries Act (Magnuson-Stevens Act or MSA);
- Species protected under the Marine Mammals Protection Act (MMPA);
- Species designated by CDFW as California Species of Concern; and,
- Species not currently protected by statute or regulation but considered rare, threatened, or endangered under CEQA (*Guidelines* Section 15380).

Special-Status FIsh

The special-status species list presented in Appendix C for marine species includes those taxa for which potential habitat (i.e., general habitat types for breeding or foraging) occurs in the general vicinity of the Study Area or can reasonably be expected to be affected by Specific Plan or Sub-Area 4 Project activities. Species for which generally suitable habitat occurs but that were nonetheless determined to have low potential to occur in the Study Area are also listed in

Appendix C. This appendix also provides the rationale for each "potential-to-occur" determination. Species observed or with a moderate to high potential to occur in the Study Area are discussed in further detail below. While not included below, the Central California Coast Coho Salmon (*O. kisutch*), is a federally-listed threatened and State-listed endangered ESU. Adult coho salmon have historically migrated through San Francisco Bay after heavy late fall or winter rains to spawn in the Sacramento/San Joaquin Delta. However, the NMFS have classified this species extirpated from Bay. The species is therefore not analyzed within this EIR.

Longfin Smelt (*Spirinchus thaleichthys*). The longfin smelt is a state-listed endangered species, and is a candidate being considered for listing as endangered or threatened by the USFWS (2011). The longfin smelt is a pelagic schooling fish known to inhabit the San Francisco Bay, including all of the waters of the Central Bay and adjacent to the Plan Area, and therefore have a maoderate potential to occur within the Study Area (Baxter et al., 1999). Although observed in Central Bay waters throughout the year, longfin smelt migrate to the fresher water of the Delta to spawn in the winter, returning to Bay waters in late spring. No critical habitat has been designated for this species.

Sacramento River Winter-Run Chinook Salmon (*Oncorhynchus tshawytscha*). Sacramento River winter-run Chinook salmon is federally and State-listed as endangered. Winter-run Chinook salmon migrate and spawn from mid-December to August, along the Sacramento River, up to Keswick Dam in Shasta County. Adult winter-run Chinook salmon can be found in San Francisco Bay in November through December, tend to utilize deeper channels within the Central Bay, and tend to spend very little time within the shallow, nearshore portions of the Bay (Klimley et al., 2010). Occurrences of this species within and adjacent to the Study Area would be considered incidental.

Winter-run Chinook salmon critical habitat includes all waters of San Francisco Bay north of the Bay Bridge, including waters adjacent to the Plan Area (NOAA, 2005).

Central Valley Spring-Run Chinook Salmon (*O. tshawytscha*). A federally-listed threatened evolutionarily significant unit (ESU),[13] the spring-run Chinook salmon has a similar life history to the winter-run salmon but begins its spawning migration to the Sacramento/San Joaquin Delta in late winter to spring. Adults are found in San Francisco Bay during the migratory period in the spring, and juveniles have the potential to inhabit the Bay in the fall, winter, and spring, tend to utilize deeper channels within the Central Bay, and tend to spend very little time within the shallow, nearshore portions of the Bay (Klimley et al., 2010). Spring-run Chinook may occur in the Central Bay in low numbers. Occurrences of this species within and adjacent to the Study Area would be considered incidental.

Critical habitat for the Central Valley spring-run Chinook salmon includes all waters of San Francisco Bay north of the Bay Bridge (NOAA, 2005); therefore, waters adjacent to the Plan Area are within designated critical habitat for this taxa.

[13] An "evolutionarily significant unit" is a population of organisms that is considered distinct for purposes of conservation.

Central Valley Fall-Run/Late Fall-Run Chinook Salmon (*O. tshawytscha*). The Central Valley fall/late fall run of Chinook Salmon are a California species of concern. Adult fall-run/late fall-run Chinook salmon begin their migration toward their spawning grounds in June, with a peak in September. They spawn in the Sacramento/San Joaquin Delta during December and January (USFWS, 1999). Juvenile salmon potentially occur in San Francisco Bay in the late winter through summer. There is no critical habitat designated for this taxa because it is not listed as a threatened or endangered species. Studies conducted by NMFS (NMFS, 2001) and CDFW (CDFG, 1999) indicate that this species' primary migration corridor to the ocean is through the northern reaches of the Central Bay, directly west of the Plan Area. This species, like other salmonids, uses deeper channels within the Central Bay, and tends to spend very little time within the shallow, nearshore portions of the Bay. Occurrences of this species within and adjacent to the Study Area would be considered incidental.

Central Valley Steelhead Trout (*O. mykiss*). The Central Valley steelhead is federally listed as a threatened ESU and has no state status. Central Valley steelhead trout migrate between the ocean and the Sacramento and San Joaquin Rivers and their tributaries via San Francisco Bay and San Pablo Bay. Upstream migration occurs in the winter, with peak spawning occurring December through April (McEwan and Jackson, 1996). Most Central Valley steelhead juveniles rear in freshwater for one to two years and can be found migrating downstream at any time of the year, with peak emigration typically occurring in the spring. This ESU has the potential to occur in the Central Bay. However, if present, they are expected to be present in low numbers and only occasionally. Waters adjacent to the Plan Area are within critical habitat for Central Valley steelhead, which includes the waters of San Francisco Bay, north of the Bay Bridge (NOAA, 2005). However, this species tends to be present within the deeper channels in the Bay and occurrences of this species within and adjacent to the Study Area would be considered incidental. (Klimley et al., 2010).

Central California Coast Steelhead Trout (*O. mykiss*). The Central California Coast steelhead trout is federally listed as threatened. These trout migrate from the Pacific coast through San Francisco Bay in the winter to spawn in freshwater in the upper Sacramento River (McEwan and Jackson, 1996). Upstream migration occurs from December through May, and peak spawning occurs in April. This population is known to occur in moderate numbers utilizing deeper channels in the Central Bay typically (Klimley et al., 2010). While Central California Coast steelhead may be present in Bay waters at any time of the year, they are found only infrequently in most streams that are tributary to the Bay. This species utilizes deeper channels Bay, and tends to spend very little time within the shallow, nearshore portions of the Bay (Klimley et al., 2010). Occurrences of this species within and adjacent to the Study Area would be considered incidental.

Critical habitat for this species includes all river reaches and estuarine areas accessible to the trout in coastal river basins, from the Russian River to Aptos Creek (inclusive), and the drainages of San Francisco and San Pablo Bays. Also included as critical habitat are adjacent riparian zones, all waters of San Pablo Bay west of the Carquinez Bridge, and all waters of San Francisco Bay to the Golden Gate (USFWS, 2000). Critical habitat for this species therefore includes the waters adjacent to the Plan Area.

Green Sturgeon (*Acipenser medirostris*). This anadromous fish is the most widely distributed member of the sturgeon family, and the most marine-oriented. It is listed as a federal threatened species and as a state species of concern. Green sturgeons range in nearshore coastal waters from Mexico to the Bering Sea and are common occupants of bays and estuaries along the western coast of the United States (Moyle et al., 1995). Adult green sturgeons migrate into freshwater beginning in late February with spawning occurring in March through July and peak activity in April and June. After spawning, juveniles remain in fresh and estuarine waters for one to four years and then begin to migrate out to the sea. The upper Sacramento River has been identified as the only known spawning habitat for green sturgeon in the southern distinct population segment (Kelly et al., 2007). Critical habitat for the green sturgeon includes the Sacramento River, the Sacramento-San Joaquin Delta, and Suisun, San Pablo and San Francisco Bays, including waters adjacent to the Plan Area (NOAA, 2009). The Study Area and directly adjacent waters provide potential foraging habitat. No spawning habitat is present.

Critical Habitat

Critical Habitat – Terrestrial Resources

Critical habitats are areas designated by USFWS because they are considered essential for the conservation of a species listed as endangered or threatened under the Federal Endangered Species Act. Critical habitats are specific geographic areas that contain features essential for conservation of listed species and may require special management and protection. Projects involving a federal agency or federal funding are required to consult with the USFWS to ensure that actions will not destroy or adversely modify critical habitat. No Critical habitat has been mapped in the Study Area (USFWS, 2015).

Critical Habitat and Essential Fish Habitat – Marine Resources

The USFWS and NMFS designate critical habitat for species that they have listed as threatened or endangered. “Critical habitat” is defined in Section 3(5)(A) of the federal Endangered Species Act as those lands (or waters) within a listed species’ current range that contain the physical or biological features that are considered essential to the species’ conservation, as well as areas outside the species’ current range that are determined to be essential to its conservation. As discussed above, the Bay waters within the Study Area are within critical habitat for species including Sacramento River winter-run Chinook salmon, Central Valley spring-run Chinook salmon, Central Valley steelhead trout, Central California Coast steelhead trout, and green sturgeon.

Under the Magnuson-Stevens Act (see Regulatory Setting for description), as amended by the Sustainable Fisheries Act of 1996 (Public Law 104-297), NMFS, Fishery Management Councils, and federal agencies are required to cooperatively protect essential fish habitat (EFH) for commercially important fish species such as Pacific coast groundfish, three species of salmon, and five species of coastal pelagic fish and squid. As defined by Congress, EFH includes “those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity.” Those fish species present in Central San Francisco Bay included in Fishery Management Plans, prepared by regional Fishery Management Councils under the Magnuson-Stevens Act, are listed in Appendix C.

EFH is present in waters within and adjacent to the Plan Area for Pacific groundfish, coastal pelagic fish, and Pacific Coast salmon. Pacific groundfish species include species of rockfishes, flatfishes, sharks, and other fish. Coastal pelagic species include Pacific herring, northern anchovy, Pacific sardine, and jack mackerel. While the Specific Plan avoids direct in-water activity within EFH, potential impacts to water quality could impact EFH.

Sensitive and Special-Status Natural Communities

Sensitive Natural Communities – Terrestrial Resources

A sensitive natural community is a biological community that is regionally rare, provides important habitat opportunities for wildlife, is structurally complex, or is in other ways of special concern to local, state, or federal agencies. Most sensitive natural communities are given special consideration because they perform important ecological functions, such as maintaining water quality and providing essential habitat for plants and wildlife. Some plant communities support a unique or diverse assemblage of plant species and therefore are considered sensitive from a botanical standpoint. The most current version of the CDFW's *List of California Terrestrial Natural Communities* (CDFG, 2010), available through the CNDDB, indicates which natural communities are of special-status given the current state of the California classification. The CNDDB reports six sensitive natural communities within the nine-quadrangle area; two of which are found within the Plan Area, coastal brackish marsh (i.e., Stege Marsh) and northern coastal salt marsh (CDFW, 2015). These communities are described within the Tidal Salt Marsh description under *Vegetation Communities and Wildlife Habitats* and could be impacted by the Specific Plan and Sub-Area 4 Project. Valley needlegrass grassland documented on Brooks Island and remnant coastal terrace prairie within the Richmond Field Station site would not be impacted by the Specific Plan or Sub-Area 4 Project and are therefore not included in this analysis.

Wetlands and Other Waters of the United States

Portions of the western and southern perimeter of the Study Area are within the San Francisco Bay, which is considered a navigable Water of the U.S. and is therefore a jurisdictional water under Section 10 of the Rivers and Harbors Act and Section 404 of the Clean Water Act (see Section *Federal Regulation of Wetlands and Other Waters*, below) and regulated by the U. S. Army Corps of Engineers (USACE). San Francisco Bay waters are also regulated by the San Francisco Bay Regional Water Quality Control Board (RWQCB) as Waters of the State and by the San Francisco Bay Conservation and Development Commission (BCDC), which has jurisdiction over all areas of the Bay that are subject to tidal action, as well as a 100-foot shoreline band.

Wetlands are ecologically complex habitats that support a variety of both plant and animal life. Section 404 of the Clean Water Act defines wetlands for purposes of federal jurisdiction as "areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support (and do support, under normal circumstances) a prevalence of vegetation typically adapted for life in saturated soil conditions" (33 CFR 328.3[b] and 40 CFR 230.3). Under normal circumstances, the federal definition of wetlands requires three wetland identification parameters be present: wetland hydrology, hydric soils, and hydrophytic vegetation. Examples of wetlands include freshwater marsh, seasonal wetlands, and vernal pool complexes that have a hydrologic

link to other waters of the U.S. (see definition below for "other waters of the U.S."). The USACE is the agency responsible for regulating wetlands under Section 404 of the Clean Water Act, while the U.S. Environmental Protection Agency (USEPA) has overall responsibility for the Act. CDFW does not normally have direct jurisdiction over wetlands unless they are subject to regulation under Lake or Streambed Alteration Agreements or they support state-listed endangered, threatened, or rare species; however, CDFW has responsibility for wildlife and habitats pursuant to California law.

"Other waters of the U.S." refers to those hydric features that are regulated by the Clean Water Act but are not wetlands (33 CFR 328.4). To be considered jurisdictional, these features must exhibit a defined bed and bank and an ordinary high-water mark, or be subject to the ebb and flow of the tides. Examples of other waters of the U.S. include rivers, creeks, intermittent and ephemeral channels, ponds, and lagoons.

In March, 2012, ARCADIS environmental consulting conducted a field investigation within a portion of Sub-Area 4 to delineate potential jurisdictional "waters of the U.S.," "waters of the State," and associated wetlands. ARCADIS identified waters/wetlands areas based on soils, hydrology, and vegetation data collected at soil assessment locations, using the multi-parameter method presented in the Corps Wetland Delineation Manual (USACE, 1987) and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0) (USACE, 2008). ARCADIS delineated three distinct waters (i.e., Upper Lagoon Open Water, Lower Lagoon Open Water, and Ponded Area) and three distinct wetland areas (Upper Lagoon Vegetated, Lower Lagoon Vegetated, and Drainage Ditch). Waters/wetlands areas in the investigation area were palustrine unconsolidated bottom waters and palustrine emergent wetlands, totaling approximately 8.61 acres. The delineation has yet to be verified by the USACE. The majority of the remainder of Sub-Area 4 and the Study Area has not been delineated and additional drainage ditches and small areas of wetland could be present in the Plan Area. Given the low-lying aspect of the Plan Area and adjacency to the tidal salt marsh, some of the depressional areas in the grasslands and ruderal areas may qualify as jurisdictional wetlands.

Wildlife Movement Corridors

Wildlife movement corridors are considered an important ecological resource by CDFW and USFWS and under CEQA. Movement corridors may provide favorable locations for wildlife to travel between different habitat areas such as foraging sites, breeding sites, cover areas, and preferred summer and winter range locations. Wildlife movement corridors may help to reduce or moderate some of the adverse effects of habitat fragmentation by facilitating dispersal of individuals between substantive patches of remaining habitat, allowing for both long-term genetic interchange and individuals to re-colonize habitat patches from which populations have been locally extirpated (Center for Biological Diversity, 2003). Topography and other natural factors, in combination with urbanization, can fragment or separate large open-space areas. Areas of human disturbance or urban development can fragment wildlife habitats and impede wildlife movement between areas of suitable habitat. This fragmentation creates isolated "islands" of vegetation that may not provide sufficient area to accommodate sustainable populations, and can adversely affect genetic and species diversity. Movement corridors mitigate the effects of this fragmentation by allowing

animals to move between remaining habitats, which in turn allows depleted populations to be replenished and promotes genetic exchange between separate populations.

While the Study Area itself would not constitute as a wildlife corridor because it is isolated from other terrestrial habitats due to largely being surrounded by industrial development, it remains within the larger corridor of Central San Francisco Bay. The undeveloped shorelines of the Study Area provide connectivity between wildlife populations inhabiting the shorelines north of the Study Area with those to the south.

Special status species that inhabit tidal salt marshes could use the tidal salt marsh habitat in the Study Area as stopover or resting habitat while moving between "islands" of habitat throughout the Bay that are separated by miles of development and other unsuitable habitat.

Special-Status Natural Communities — Marine Resources

Within San Francisco Bay, there are many marine communities and habitats that are considered particularly sensitive to disturbance or possess unique or special ecological value (Goals Project, 2010). Additionally, certain waters of the U.S. may be recognized "special aquatic sites" such as sanctuaries and refuges, mudflats, wetlands, vegetated shallows, and eelgrass bedsdue to their unique ecological values. Northern coastal saltmarsh and coastal brackish marsh are special-status natural communities that are present in the Study Area, as discussed above.

4.3.3 Regulatory Setting

Federal Regulations

Federal Endangered Species Act

Pursuant to the requirements of FESA, a federal agency reviewing a proposed project within its jurisdiction must determine whether any federally listed threatened or endangered species may be present in the project area and determine whether the proposed project may affect or "take" such species.[14] In addition, the agency is required to consult with the United States Fish and Wildlife Service (USFWS) and/or the NMFS to determine whether the project is likely to jeopardize the continued existence of any species listed under FESA or result in the destruction or adverse modification of critical habitat (see below) designated for such species (16 USC 1536(3)). Consultation with either the USFWS or NMFS would be required for the project if the USACE would need to issue a permit for the project. During consultation, the potential for take would be determined and, if take is expected to occur, the necessary conditions to allow the issuance of an incidental take permit would be imposed.

Areas of habitat considered essential to the conservation of a listed endangered or threatened species may be designated as Critical Habitat (referred to above), which is protected under FESA.

[14] The definition of "take" is to "harass, harm, pursue, hunt, shoot, wound, trap, capture, or collect, or to attempt to engage in any such conduct. The USFWS has also interpreted "harm" to include significant habitat modification that could result in take.

Migratory Bird Treaty Act

The Federal Migratory Bird Treaty Act (MBTA; United States Code, Title 16, Section 703, Supplement I, 1989) prohibits taking, killing, possessing, or trading in migratory birds, except in accordance with regulations prescribed by the Secretary of the Interior. This act encompasses whole birds, parts of birds, and bird nests and eggs. This would include the protection of nests for all bird species of birds that are on the List of Migratory Birds, published in the Federal Register in 1995.

Marine Mammal Protection Act

The MMPA of 1972, as amended in 1981, 1982, 1984, and 1995, establishes a federal responsibility for the protection and conservation of marine mammal species by prohibiting the "take" of any marine mammal. The MMPA defines "take" as the act of hunting, killing, capture, and/or harassment of any marine mammal, or the attempt at such. The act also imposes a moratorium on the import, export, or sale of any marine mammals, parts or products within the United States. These prohibitions apply to any person in U.S. waters and to any U.S. citizen in international waters.

The primary authority for implementing the act belongs to the USFWS and NMFS. The USFWS is responsible for ensuring the protection of sea otters and marine otters, walruses, polar bears, three species of manatees, and dugongs. NMFS is responsible for protecting pinnipeds (seals and sea lions) and cetaceans (whales and dolphins).

The Marine Mammal Protection Act, as amended, provides for the "incidental take" of marine mammals during marine activities, as long as NMFS finds the "take" would be of small numbers of individuals and have no more than a negligible impact on those marine mammal species not listed (i.e., listed under FESA as depleted under the MMPA, and not having an unmitigable adverse impact on subsistence harvests of these species).

Federal Regulation of Wetlands and Other Waters

Pursuant to Section 10 of the Rivers and Harbors Appropriation Act of 1899 (33 U.S.C. 403), the USACE regulates the construction of structures in, over, or under, excavation of material from, or deposition of material into "navigable waters." Navigable waters under the act are those "subject to the ebb and flow of the tide and/or are presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce" (33 C.F.R. Section 3294). In tidal areas, the limit of navigable water is the mean high tide line; in nontidal waters it is the ordinary high water mark (OHWM). Larger streams, rivers, lakes, bays, and oceans are examples of navigable waters regulated under Section 10 of the Rivers and Harbors Act. Typical activities requiring Section 10 permits are construction of piers, wharves, bulkheads, marinas, ramps, floats, intake structures, cable or pipeline crossings, and dredging and excavation.

Section 404 of the Federal Clean Water Act (CWA) (33 U.S.C. 1251–1376) prohibits the discharge of dredged or fill material into waters of the U.S., including wetlands, without a permit from the USACE. Section 401 of the CWA requires that USACE permitting applicants also obtain state certification that the activity associated with the permit will comply with applicable state effluent limitations and water quality standards.

Magnuson-Stevens Fishery Conservation and Management Act

The Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act or MSA) (16 U.S.C. Sections 1801–1884) of 1976 as amended in 1996 and reauthorized in 2007 applies to fisheries resources and fishing activities in federal waters that extend to 200 miles offshore. Conservation and management of U.S. fisheries, development of domestic fisheries, and phasing out of foreign fishing activities are the main objectives of the legislation.

As discussed above in Section Critical Habitat and Essential Fish Habitat, the Central Bay region of the San Francisco Bay, including the waters encompassing the Sub-Area 4 Project site, is designated as Essential Fish Habitat for fish managed under Fishery Management Plans and as a Habitat Area of Particular Concern under Fishery Management Plans. The Sustainable Fisheries Act of 1996 (Public Law 104-297), amended the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) to establish new requirements for EFH descriptions in federal Fisheries Management Plans (FMPs) and to require federal agencies to consult with NMFS on activities that may adversely affect EFH.

The Magnuson-Stevens Act requires all fishery management councils to amend their FMPs to describe and identify EFH for each managed fishery. The act also requires consultation for all federal agency actions that may adversely affect EFH (i.e., direct versus indirect effects); it does not distinguish between actions in EFH and actions outside EFH. Any reasonable attempt to encourage the conservation of EFH must take into account actions that occur outside of EFH, such as upstream and upslope activities that may have an adverse effect on EFH. Therefore, EFH consultation with NMFS is required by federal agencies undertaking, permitting, or funding activities that may adversely affect EFH, regardless of the activity's location.

Under section 305(b)(4) of the Magnuson-Stevens Act, NMFS is required to provide EFH conservation and enhancement recommendations to federal and state agencies for actions that adversely affect EFH. However, state agencies and private parties are not required to consult with NMFS unless state or private actions require a federal permit or receive federal funding. Although the concept of EFH is similar to that of critical habitat under the FESA, measures recommended to protect EFH by NMFS are advisory, not proscriptive.

Coastal Zone Management Act

The Coastal Zone Management Act (CZMA) enacted by Congress in 1972 is administered by the National Oceanic and Atmospheric Administration's Office of Ocean and Coastal Resource Management. The overall program objectives of CZMA are to "preserve, protect, develop, and where possible, to restore or enhance the resources of the nation's coastal zone."

Under Section 307 of the CZMA (16 USC Section 1456), activities that may affect coastal uses or resources that are undertaken by federal agencies, require a federal license or permit, or receive federal funding must be consistent with a state's federally approved coastal management program. California's federally approved coastal management program consists of the California Coastal Act, the McAteer-Petris Act, and the Suisun Marsh Protection Act. The California Coastal Commission implements the California Coastal Act and the federal consistency provisions of the CZMA for activities affecting coastal resources outside of San Francisco Bay. BCDC implements

the McAteer-Petris Act and the Suisun Marsh Preservation Act and performs federal consistency reviews for activities within its jurisdiction.

State Regulations

California Endangered Species Act

Under the CESA, CDFW maintains a list of threatened species and endangered species (California Fish and Game Code Section 2070). CDFW also maintains a list of "candidate species," which are species that CDFW has formally recognized as being under review for addition to either the list of endangered species or the list of threatened species, in addition to a list of "species of special concern." Pursuant to the requirements of CESA, an agency reviewing a proposed project within its jurisdiction must determine whether any state-listed endangered or threatened species may be present in the project area and determine whether the proposed project will have a potentially significant impact on such species. In addition, CDFW encourages informal consultation on any proposed project that may affect a candidate species. During consultation, the potential for take would be determined and, if take is expected to occur, the necessary conditions to allow the issuance of an incidental take permit would be imposed.

California Fish and Game Code

Under Section 3503 of the California Fish and Game Code, it is unlawful to take, possess, or needlessly destroy the nest or eggs of any bird, except as otherwise provided by this code or any regulation made pursuant thereto. Section 3503.3 of the California Fish and Game Code prohibits take, possession, or destruction of any raptor (birds of prey) in the orders Falconiformes (hawks) or Strigiformes (owls), or of their nests and eggs. Any loss of fertile eggs or nesting raptors, or any activities resulting in nest abandonment, would constitute a significant impact.

CDFW Fully Protected Species may not be taken or possessed at any time without a permit from CDFW (Section 3511 Birds, Section 4150 Nongame Mammals, Section 4700 Mammals, Section 5050 Reptiles and Amphibians, and Section 5515 Fish).

Under Sections 1600–1616 of the California Fish and Game Code, CDFW regulates activities that would substantially divert, obstruct the natural flow of, or substantially change rivers, streams, and lakes. The jurisdictional limits of the CDFW are defined in Section 1602 of the Fish and Game Code as the "bed, channel, or bank of any river, stream, or lake". Activities that would "deposit or dispose of debris, waste, or other material containing crumbled, flaked, or ground pavement where it may pass into any river, stream, or lake" are prohibited by the CDFW unless a Streambed Alteration Agreement is issued.

California Native Plant Protection Act

State listing of plant species began in 1977 with the passage of the California Native Plant Protection Act (CNPPA), which directed the CDFW to carry out the legislature's intent to "preserve, protect, and enhance endangered plants in this state." The CNPPA gave the California Fish and Game Commission the power to designate native plants as endangered or rare and to require permits for collecting, transporting, or selling such plants. As of January 2015, CDFW has

the authority to permit take of state-listed rare plants under CNPPA, similar to how it has historically regulated state endangered and threatened plants. This new regulation elevates the protection of rare plants, potentially requiring the need to obtain a permit from CDFW to remove rare plants, contingent upon impacts addressed in the project's CEQA process. The CESA expanded on the original CNPPA and enhanced legal protection for plants. The CESA established threatened and endangered species categories and grandfathered all rare animals—but not rare plants—into the act as threatened species. Thus, three listing categories for plants are employed in California: rare, threatened, and endangered.

State Regulation of Wetlands and Other Waters

The state's authority in regulating activities in wetlands and waters in a project area resides primarily with the State Water Resources Control Board (SWRCB), pursuant to the Porter-Cologne Water Quality Control Act. The SWRCB, acting through the San Francisco Regional Water Quality Control Board (RWQCB), must certify that a USACE permit action meets state water quality objectives (CWA Section 401). Any condition of water quality certification is then incorporated into the USACE Section 404 permit authorized for the project. The RWQCB ensures no net loss of wetlands and typically requires mitigation for loss of wetlands before the agency issues a water quality certification. Activities such as dredging, filling, or excavation of isolated waters constitutes a discharge of waste to waters of the State, and prospective dischargers are required to submit a report of waste discharge to the RWQCB.

San Francisco Bay Conservation and Development Commission

The Bay Conservation and Development Commission (BCDC) is authorized by the McAteer-Petris Act to analyze, plan, and regulate San Francisco Bay and its shoreline. BCDC jurisdiction includes the waters of the bay as well as a shoreline band that extends inland 100 feet from the high tide line or to 5 feet above mean sea level where marsh vegetation is present. Any fill, excavation of material, or substantial change in use within BCDC jurisdiction requires a permit from BCDC. BCDC implements the *San Francisco Bay Plan* (BCDC 2012) which specifies goals, objectives, and policies for existing and proposed waterfront land use and other areas. Refer to Chapter 3.0, *Project Description* for a more detailed description of the *San Francisco Bay Plan*. The Bay Plan policies that are most relevant to the proposed Specific Plan with respect to biological resources are as follows:

Fish, Other Aquatic Organisms, and Wildlife

- **Policy 4(a):** The Commission should consult with the California Department of Fish and Game and the U.S. Fish and Wildlife Service or the National Marine Fisheries Service whenever a proposed project may adversely affect an endangered or threatened plant, fish, other aquatic organism or wildlife species;

- **Policy 4(b):** The Commission should not authorize projects that would result in the "taking" of any plant, fish, other aquatic organism or wildlife species listed as endangered or threatened pursuant to the state or federal endangered species acts, or the federal Marine Mammal Protection Act, or species that are candidates for listing under the California Endangered Species Act, unless the project applicant has obtained the appropriate "take"

authorization from the U.S. Fish and Wildlife Service, National Marine Fisheries Service or the California Department of Fish and Game; and

- **Policy 4(c):** The Commission should give appropriate consideration to the recommendations of the California Department of Fish and Game, the National Marine Fisheries Service or the United States Fish and Wildlife Service in order to avoid possible adverse effects of a proposed project on fish, other aquatic organisms and wildlife habitat.

Local Regulations and Policies

General Plan Policies on Biological Resources

The Conservation and Natural Resources and Open Space Element of the General Plan contains the following objectives and policies related to biological resources protection that are relevant to the Specific Plan and the Sub-Area 4 Project.

- **Goal CN1:** Continue to preserve and restore natural habitat and associated plants and wildlife including wetlands, baylands, riparian areas, oak woodlands, and other sensitive biological resources.

  Policy CN1.1: Natural habitat is essential to ensuring biodiversity and protecting sensitive biological resources.

  Policy CN1.2: Promote the use of locally propagated native plant and tree species and remove and control the spread of invasive exotic plant species.

- **Goal CN2:** Conserved Open Space.

  Policy CN2.1: 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.

  Policy CN2.2: Minimize the impacts of development on the shoreline with special attention to intensity, density, and proximity to the water.

  Policy CN2.5: Improve access to large-scale natural areas located in the City including regional parks along the shoreline and in the hills.

- **Goal CN2:** A Healthy Urban Environment.

  Policy CN6.2: Protect and expand tree resources within Richmond.

Richmond Tree Preservation Ordinance

City of Richmond's Tree Ordinance protects the trimming, pruning, care, planting, removal and moving of trees, shrubs or plants (Municipal Code Chapter 10.08). The Code specifies that no person shall cut, trim, prune, plant, removed, or injure any tree, shrub, or plant upon any street, park, pleasure ground, boulevard, alley, or public place of the City of Richmond without a permit from the Recreation and Parks Director.

Urban Greening Master Plan

In 2011, the City of Richmond received a Strategic Growth Council Urban Greening Planning Grant to develop a citywide Urban Greening Master Plan (Urban Greening Plan). The Urban

Greening Plan will serve as the master document to guide and coordinate future greening projects in Richmond and will include a citywide tree inventory, and updated urban forest management plan, and new planting standards for the city. The Urban Greening Master Plan and a related CEQA Initial Study/Mitigated Negative Declaration (ISMND) has been released for public review; comments on the Plan and ISMND must be received by September 9, 2016.

4.3.4 Significance Criteria

Based on CEQA *Guidelines* Appendix G, a project would cause significant adverse impacts to biological resources if it would:

a) Have a substantial adverse effect, either directly or through habitat modifications, 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 Wildlife, the National Marine Fisheries Service, or U.S. Fish and Wildlife Service;

b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service;

c) 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;

d) 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;

e) Conflict with any local policies or ordinances protecting biological resources, such as tree preservation policy or ordinance; or

f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional or state habitat conservation plan.

Approach to Analysis

Richmond Bay Specific Plan

For the purposes of this analysis, the following three principal components are considered with regard to the Specific Plan and how it relates to biological resources:

- Magnitude of the impact (e.g., substantial/not substantial),
- Uniqueness of the affected resource (rarity), and
- Susceptibility of the affected resource to perturbation (sensitivity).

The evaluation of significance must consider the interrelationship of these three components. For example, a relatively small magnitude impact to a state- or federally-listed species would be considered significant because the species is very rare and is believed to be very susceptible to disturbance. Conversely, a plant community such as California annual grassland is not necessarily

rare or sensitive to disturbance. Therefore, a much larger magnitude of impact would be required to result in a significant impact. Impacts are generally considered less than significant if the habitats and species affected are common and widespread in the region and the state. Impacts are considered beneficial if the action causes no detrimental impacts and results in an increase of habitat quantity and quality.

Sub-Area 4 Project

The analysis of the Sub-Area 4 Project uses a similar approach to that of the Specific Plan; however, it examines potential impacts to biological resources within the smaller geographical area proposed for the Sub-Area 4 Project (for geographical reference refer to Figure 3-8.

Cumulative`

The Specific Plan and Sub-Area 4 Project's contributions to cumulative impacts on biological resources in the Plan Area should be considered significant if the Sub-Area 4 Project's contribution affecting criteria identified in *Significance Criteria*, above, would be significant.

Additional Planning Documents

The additional planning documents discussed below were used to inform the impacts discussion. These are not policy documents and are included here for informational purposes only.

Habitat Goals Project

The Baylands Ecosystem Habitat Goals Project (Goals Project) establish a long-term vision for a healthy and sustainable baylands ecosystem. While the Goals Project does not designate specific species of habitats for protection, it set goals for restoration purposes and is discussed in this EIR for informational purposes only. The final report, published in 1999 (Goals Project, 1999) enumerated a series of recommendations for habitat protection and restoration. Recommendations specific to Richmond include:

- Restore, enhance, and protect a diversity of habitats, including tidal marsh, shorebird roosting sites, and seasonal wetlands.
- Restore and enhance the tidal marsh between the Hoffman Marsh and the Richmond Marina by removing fills that fragment the area.
- Restore riparian vegetation along Codornices Creek. Also enhance wetland/upland transitions in this area.
- Protect gull, tern, and egret nesting habitat at Brooks Island, Red Rock, and Castro Rocks.

Report recommendations are not binding but are generally consistent with the basic policies outlined in the General Plan. The Goals Project was recommended by the Governor's "California Wetlands Conservation Policy" and by the Comprehensive Conservation and Management Plan (CCMP) of the USEPA's San Francisco Estuary Project. It is also supported by most of the agencies and non-governmental groups with major planning, operational, or regulatory interests in Bay Area wetlands.

San Francisco Bay Subtidal Habitat Goals Project

Continuing with the Goals Project described above, BCDC, the California Ocean Protection Council/California State Coastal Conservancy, the National Oceanographic and Atmospheric Administration (NOAA), and the San Francisco Estuary Partnership, in collaboration with each other and the broader scientific community, managers, restoration practitioners, and stakeholders, published a report containing restoration planning goals and guidelines for the subtidal areas and habitats of the San Francisco Bay (Subtidal Goals Project, 2010). The San Francisco Bay Subtidal Habitat Goals Project takes a Bay-wide approach in setting science-based goals for maintaining a healthy, productive, and resilient ecosystem. Where possible, these subtidal goals are designed to connect with intertidal habitats and with goals developed by other projects, including goals for Baylands and uplands habitats. The goals and recommendations contained within the Subtidal Habitat Goals Project are not binding by regulation but rather are intended to serve as guidance to local, state, and federal agencies when evaluating projects and their potential ecological effects, and when issuing permits and is discussed in this EIR for informational purposes only. Though currently neither a policy nor regulatory document, this report offers guidance on opportunities or subtidal restoration and protection. Implementation will occur through a number of avenues such as local governments may incorporate these recommendations into their planning processes and documents and regulatory agencies may use this report to evaluate, revise, or implement their policies.

The principal habitat conservation goals included in the Subtidal Habitat Goals Report that apply to the Specific Plan and Sub-Area 4 Project include:

Soft Substrate

- Promote no net increase to disturbance to San Francisco Bay soft bottom habitat.
- Promote no net loss to San Francisco Bay subtidal and intertidal sand habitats.

Rock Habitats

- Promote no net loss of natural intertidal and subtidal rock habitats in San Francisco Bay.

Artificial Structures

- Enhance and protect habitat function and the historical value of artificial structures in San Francisco Bay.
- Improve San Francisco Bay subtidal habitats by minimizing placement of artificial structures that are detrimental to subtidal habitat function.

Submerged Aquatic Vegetation

- Protect existing eelgrass habitat in San Francisco Bay through no net loss to existing beds.

4.3.5 Program-Level Impacts of the Richmond Bay Specific Plan

Impact BIO-1.SP: Development facilitated by the Specific Plan would have a substantial adverse effect, either directly or through habitat modifications, on species identified as candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or the United States Fish and Wildlife Service. (Criterion a) (*Less Than Significant with Mitigation*)

Species considered special-status and analyzed in this EIR that have a moderate or high potential to occur *and* to be exposed to impacts resulting from development proposed under the Specific Plan are as follows (see Appendix C for the full list of species considered):

State or Federally Threatened or Endangered and State Fully Protected Species

- Sacramento River winter-run Chinook salmon, Central Valley Spring-run Chinook salmon, Central Valley steelhead trout, Central California Coast steelhead trout, longfin smelt, and green sturgeon
- California Ridgway's rail
- California black rail
- White-tailed kite
- California least tern
- Salt-marsh harvest mouse

Other Special-Status and Otherwise Protected Species

- Monarch butterfly (overwintering site)
- Breeding birds and their nests protected under the MBTA and California Fish and Game Code
- Burrowing owl
- Nesting site or colony: Great egret, great blue heron, snowy egret, Caspian tern, osprey, black-crowned night heron, and double-crested cormorant
- Central Valley Fall-Run/Late Fall-Run Chinook Salmon
- Hoary bat, pallid bat, their roosts and the roosts of common bats protected under California Fish and Game Code
- Salt-marsh wandering shrew
- Western pond turtle

The majority of development under the Specific Plan would occur in existing disturbed industrial or recreational areas and is unlikely to result in direct impacts to special-status wildlife species. However, development within disturbed areas still has the potential to indirectly impact nearby sensitive species, particularly nesting birds and special-status wildlife, due to noise, vegetation removal, increased human presence and use of mechanized equipment associated with construction and developed uses proposed under Specific Plan. Other activities proposed under the Specific Plan, such as Bay Trail improvements, could directly impact special status wildlife

species areas of Meeker Slough, Stege Marsh, and Hoffman Marsh by vegetation and habitat removal, sediment and stormwater discharge, and draining or diverting water from the Upper and Lower Lagoons, potentially diminishing the value of the habitat. The implementation of mitigation measures identified below reduces these potential impacts resulting from implementation of the Specific Plan to less-than-significant.

Impacts on Special-Status Fish

The open water and soft unconsolidated sediment areas of the Central Bay are identified as Critical Habitat for winter- and spring-run Chinook salmon, steelhead trout, and green sturgeon. Although no in-water work is proposed, construction activities could result in exposing fish to short-term and localized increased water turbidity and exposure to sediment-affiliated organic and inorganic contaminants from resuspended sediments. However, waters in the eastern portion of the Plan Area, such as Baxter Creek and Meeker Slough channel, have been degraded over time due to industrial runoff and altering of local hydrology, therefore any impacts to the aforementioned special-status fish resulting from the Specific Plan would be considered less than significant. The use of a SWPPP would further mitigate impacts to water quality, as discussed in Section 4.8, *Hydrology and Water Quality*.

Furthermore, higher quality and less disturbed foraging habitat for these species is located in other parts of the Central Bay that are less industrialized. Improvements and expansion of the Bay Trail and development encroachment on shoreline habitats would not result in habitat loss for these species but could result in temporary increases of turbidity in Meeker Slough or Baxter Creek.

Lastly, although increased use of Bay waters by recreationalists may result in increased turbidity in special-status fish foraging habitat in the Study Area, impacts would be considered less than significant as species present in Central Bay have likely habituated to anthropogenic marine activity. Overall, potential impacts to special-status fish and their Critical Habitat resulting from the Specific Plan are considered to be less than significant.

Impacts on Monarch Butterfly

As noted in above in Subsection *Environmental Setting*, dense concentrations of monarch butterflies have been known to use the large windrow of eucalyptus within the Richmond Field Station site along Seaver Avenue. Monarch butterflies are not listed as threatened or endangered; however, their overwintering sites are protected. Monarch butterfly surveys were not conducted for this EIR, and therefore, it is assumed the autumnal and winter roost trees (i.e., where the clusters of Monarchs form) may still be in use by monarch butterflies. However, this stand of eucalyptus may be removed under the Long Range Development Plan (LRDP) for the Berkeley Global Campus/Richmond Field Station (Tetra Tech, 2014). If this is the case, the Specific Plan would not impact overwintering monarch butterfly populations since this habitat would not be available at the time of the Specific Plan implementation, if adopted, and any potential impacts would be offset by implementation of mitigation under that LRDP. If the Richmond Field Station eucalyptus stand is present after the Specific Plan is adopted, impacts resulting from construction noise and increased human disturbance would be considered less than significant to potential overwintering populations of monarch butterflies due to availability of other habitat in the region and implementation of the

LRDP planting plan, which would maintain the availability of habitat within the Richmond Field Station site. No mitigation under the Specific Plan would be required.

Impacts on Western Pond Turtle

There is suitable aquatic habitat for western pond turtle in the Upper and Lower Lagoons and along Meeker Slough and Meeker Creek, but the likelihood of development directly affecting foraging or nesting western pond turtle habitat is low. Considering the high degree of disturbance from ongoing and past uses of the Study Area, upland dispersal habitat for this species is of marginal quality. However, due to the presence of aquatic habitats in the Study Area, western pond turtle could utilize these sites for dispersal or migratory movement to aquatic features in the immediate area. As such, construction activities for projects that would be developed under the Specific Plan could adversely affect this species by direct mortality or upland habitat removal. Implementation of **Mitigation Measure BIO-1a.SP: Avoidance and Minimization Measures for Western Pond Turtle** and **Mitigation Measure BIO-1b.SP: Worker Environmental Awareness Program Training**, would reduce potential impacts on this species to a less-than-significant level by requiring education of workers about this species and its presence in the project vicinity, requiring the installation of exclusion fencing around the project site, conducting preconstruction surveys, and requiring additional protection measures during site remediation.

> **Mitigation Measure BIO-1a.SP: Avoidance and Minimization Measures for Western Pond Turtle.** For any project proposed for development on a parcel immediately adjacent to the existing Upper Lagoon and/or Lower Lagoon, or in the area of Meeker Slough and Meeker Creek, project applicants shall determine the presence or absence of western pond turtle by conducting a preconstruction survey prior to ground-disturbing activities in areas of suitable habitat. If western pond turtle is present, the following measures shall be implemented:
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> a) A qualified biologist shall supervise the installation of exclusion fencing along the boundaries of the work area adjacent to occupied and/or suitable habitat, as the biologist deems necessary to prevent western pond turtles from entering the work area. The construction contractor shall install species exclusion fencing, with a minimum height of 3 feet above ground surface and with an additional 4 to 6 inches of fence material buried such that species cannot crawl under the fence.
>
> b) A qualified biologist shall survey the project site within 48 hours before the onset of initial ground-disturbing activities and shall be present during initial vegetation clearing and ground-disturbing activities. (A qualified biologist is an individual who shall have a minimum of five years of academic training and professional experience in biological sciences and related resource management activities with a minimum of two years conducting surveys for each species that may be present within the project site.) The biological monitor shall monitor the exclusion fencing weekly to confirm proper maintenance and inspect for turtles. If western pond turtles are found, the City shall halt activities in the vicinity that pose a threat to the individual turtle or turtles as determined by the qualified biologist. If possible, the turtle or turtles shall be allowed to move out of the project site of their own volition (e.g., if it is near the exclusion fence that can be temporarily removed to let it pass). The qualified biologist shall relocate turtles to the nearest suitable habitat should they not leave the work area of their own accord. Construction shall resume after

the turtles are out of harm's way. If western pond turtles occur repeatedly onsite after the exclusion fencing has been installed, a qualified biologist shall initiate preconstruction sweeps of the project site for this species prior to start of construction on a daily basis and thereafter throughout the duration of the project.

c) During project construction or other ground-disturbing activities, excavations deeper than 6 inches shall have a sloping escape ramp of earth or a wooden plank installed at a 3:1 rise; openings, such as pipes, where western pond turtles might seek refuge shall be covered when not in use; and all trash that may attract predators or hide western pond turtles shall be properly contained each day, removed from the worksite, and disposed of regularly. Following the completion of activities, the construction contractor shall remove all trash and construction debris from the work areas.

Mitigation Measure BIO-1b.SP: Worker Environmental Awareness Program Training. For any project proposed for development within the area of the Specific Plan, a project-specific Worker Environmental Awareness Program (WEAP) training shall be developed and implemented by a qualified biologist and attended by all project personnel prior to beginning work onsite. The WEAP training shall generally include but not be limited to education about the following:

- Applicable state and federal laws, environmental regulations, Specific Plan permit conditions, and penalties for non-compliance;
- Special-status plant and animal species with potential to occur at or in the vicinity of the project site, avoidance measures, and a protocol for encountering such species including a communication chain;
- Preconstruction surveys and biological monitoring requirements associated with each phase of work and at each project site as biological resources and protection measures will vary depending on the land managers;
- Known sensitive resource areas in the project vicinity that are to be avoided and/or protected as well as approved project work areas, access roads, and staging areas; and
- Best management practices (BMPs) and their location at various project sites for erosion control, species exclusion, in addition to general housekeeping requirements.

Impacts on Special-Status and Nesting Birds

Habitat Loss. As noted in the Environmental Setting discussion above, although much of the Plan Area has been subject to intensive industrial use and approximately 35 acres of Sub-Area 4 is located below a cap that is devoid of any vegetation, mature trees and dense vegetation exist in portions of the Plan Area. This vegetation may offer nesting and roosting habitat for raptors and other birds, including special-status birds, as do existing buildings and other structures, many of which would be demolished or rehabilitated in association with development facilitated under the Specific Plan. Although no protected nesting colonies for herons and egrets are known to be present in the Plan Area, both herons and egrets were observed within the Plan Area; eucalyptus and other trees in or adjacent to the Plan Area could contain nesting colonies, and any birds in these colonies could then be directly impacted through tree removal.

Marshlands, grasslands, and ruderal habitat identified in portions of Sub-Area 4 may provide nesting and foraging opportunities for raptors and a number of special-status and common nesting birds, including burrowing owl and Ridgway's rail. No removal of marshland habitat is proposed under the Specific Plan, therefore, potential impacts to marshland species are limited to noise and are discussed under the noise section below. Ground disturbance during construction along the western grassland and ruderal upland fringes of the Plan Area and south of Bayview Avenue, specifically near the Upper and Lower Lagoons, Hoffman Marsh, and Baxter Creek, could result in the destruction of burrowing owl nesting habitat.

Additionally, this work, if unmitigated, could result in the release of contaminants into nesting or foraging habitat that may inhibit California Ridgway's rail, California black rail, Alameda song sparrow, saltmarsh common yellowthroat, and northern harrier from potentially inhabiting these areas and Stege Marsh. Nesting and foraging habitat degradation could occur through earth disturbance and the exposure of contaminated soils. As discussed under Mitigation Measure HYD-1 below, the Plan Area is subject to the SWRCB General Construction Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities (see Section 4.8, *Hydrology and Water Quality*). This permit requires a minimum level of construction water quality BMPs and monitoring to protect receiving waters from construction-related pollutants, stormwater, and sediment erosion and runoff. These BMPs would be part of project-specific stormwater pollution prevention plans (SWPPP) that would be submitted and reviewed by the RWQCB before the start of construction activities. Please refer to subsection *Exposure to Contaminants*, below, for further discussion of this topic.

The conversion of undeveloped and ruderal land under the Specific Plan to facilitate proposed development could cause the destruction of burrows, if any are present, removal of trees or other vegetation resulting in a loss of nesting habitat. Such impacts on nesting birds could be considered significant; however, implementation of **Mitigation Measure BIO-1c.SP: Preconstruction Nesting Bird Surveys** below would reduce potential impacts relating to habitat loss of migratory and common nesting birds to less-than-significant levels. Further, the permanent loss of ruderal/undeveloped nesting habitat would be offset by the presence of readily available higher quality undeveloped areas.

> **Mitigation Measure BIO-1c.SP**: **Preconstruction Nesting Bird Surveys**. For any project proposed for development within the Plan Area, the City shall require the project applicant to conduct preconstruction nesting bird surveys in areas containing, or likely to contain, habitat for nesting birds (i.e., areas with burrows or areas with trees or shrub vegetation) as a condition of approval for any development-related permit. Specific measures to avoid and minimize impacts on nesting birds include, but are not limited to, those described below.
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> - To the extent practicable, construction activities including building demolition, vegetation and tree removal, and new site construction shall be performed between September 1 and January 31 in order to avoid the avian nesting season.
> - If construction activities cannot be completed between September 1 and January 31, a preconstruction survey for nesting birds shall be conducted by a qualified biologist. During the avian nesting season (February 1 through August 31), a qualified biologist shall survey construction areas within and in the vicinity of the

Plan Area for nesting raptors and passerine birds not more than 30 days prior to any ground-disturbing activity or vegetation removal. All accessible potential nesting habitat, including bare ground, in the Plan Area and within a 500 feet (for raptors) and 250 feet (for all other species) around any construction activity will be surveyed.

- If active nests are found either within the project site or within the 500-foot survey buffer surrounding the project site, "no-work" buffer zones shall be established around the nests by a qualified biologist in coordination with CDFW as necessary depending on the specific species encountered. No demolition, vegetation removal, or ground-disturbing activities shall occur within the no-work buffer zone until young have fledged or the nest is otherwise abandoned as determined by the qualified biologist. If work during the nesting season stops for 14 days or more and then resumes, then nesting bird surveys shall be repeated, to ensure that no new birds have begun nesting in the area.

- Typically, the size of individual buffers ranges from a minimum of 250 feet for raptors to a minimum of 50 feet for other birds but can be adjusted based on an evaluation of the site by a qualified biologist in cooperation with the USFWS and/or CDFW as necessary (i.e., in the case of protected species). Buffer distances may also be modified if obstacles such as buildings or trees obscure the construction area from active bird nests, or existing disturbances create an ambient background disturbance similar to the proposed disturbance.

- Birds that establish nests after construction starts are assumed to be habituated to and tolerant of the indirect impacts resulting from construction noise and human activity. However, direct take of nests, eggs, and nestlings is still prohibited and a buffer must be established to avoid nest destruction.

- Results of the surveys shall be forwarded to CDFW (if required by state law based on the species observed) and avoidance procedures shall be adopted, if necessary, on a case-by-case basis. These may include construction buffer areas (up to several hundred feet in the case of raptors) or seasonal avoidance.

- **Burrowing Owls:** The following measures shall be implemented to address construction or other ground-disturbing activities that could take place within burrowing owl nesting habitat in Sub-Area 4. All accessible potential nesting habitat, including bare ground, in the project site that could be affected by construction activity will be surveyed per guidance provided in Appendix C of the Staff Report on Burrowing Owl Mitigation (CDFG, 2012). These guidelines shall determine timing and survey methodology, and reporting requirements. Preconstruction surveys to determine absence or presence of active burrowing owl nesting sites within the project site shall generally be completed as follows, or as modified by any subsequent approved protocol:

    a) Two surveys shall occur no more than 30 days prior to ground disturbing activity: one no less than 14 days prior to ground disturbing activity, and one within 24 hours prior to ground disturbing activity. Habitat assessments shall be conducted per guidelines provided in Appendix C of the Staff Report on Burrowing Owl Mitigation (CDFG, 2012). If no burrows are observed during the first survey, the second survey is not required.

b) Conduct the survey/s between morning civil twilight and 10:00 AM and two hours before sunset until evening civil twilight to provide the highest detection probabilities.

c) A survey for burrows and owls shall be conducted by walking through suitable habitat in the project site and in areas within 150 meters (approximately 500 feet) of the project site. This 150-meter buffer zone is included to account for adjacent burrows and foraging habitat outside the project site and impacts from factors such as noise and vibration due to heavy equipment which could impact resources outside the project site.

d) Pedestrian survey transects shall be spaced to allow 100 percent visual coverage of the ground surface. The distance between transect center lines should be no more than 30 meters (approximately 100 feet), and should be reduced to account for differences in terrain, vegetation density, and ground surface visibility. To efficiently survey projects larger than 100 acres, it is recommended that two or more surveyors conduct concurrent surveys. Surveyors should maintain a minimum distance of 50 meters (approximately 160 feet) from any owls or occupied burrows. It is important to minimize disturbance near occupied burrows during all seasons.

e) A report of the burrow survey stating absence or presence of burrows shall be prepared and submitted to the City and, if results are positive for birds, CDFW.

Exposure to Contaminants. The Plan Area is known to contain industrial brownfields and non-native grasslands that contain potentially contaminated soils (CH2MHill, 2013). Conversion of open space into development proposed under the Specific Plan could increase the risk of exposure of chemical contaminants or hazardous materials during ground disturbing activities, which could be toxic to foraging and ground nesting birds. This would be considered a significant impact. To offset these impacts, the Specific Plan shall incorporate standard BMPs relating to hazardous waste sites during construction to contain and manage all contaminated soils and vegetation encountered, as described in Section 4.7, *Hazards and Hazardous Materials*. Furthermore, all use, handling, storage and transportation of waste materials within the Plan Area shall comply California hazardous waste control materials regulations Potential discharge at any point into a public or private sewage disposal system, stream, or the ground, of any material that could contaminate any water supply or otherwise cause the emission of dangerous or offensive elements is prohibited under these regulations.

Implementing **Mitigation Measure BIO-1b.SP**, above, would help reduce contaminant exposure impacts to special-status and nesting migratory birds in the Study Area to less-than-significant levels. All project construction staff would be trained to identify sensitive environmental resources in the Plan Area (e.g. special-status plants and wildlife with potential to occur onsite and adjacent sensitive habitat areas and vegetation communities), and trained to implement the protection and avoidance measures as needed onsite throughout the duration of the each proposed development project under the Specific Plan.

Human Disturbance. Increased human activity in the Plan Area, including along the Bay Trail, could result in increased disturbance and harassment of special-status wildlife, such as California Ridgway's rail, that forage in the mudflats and lagoons. This impact could especially occur in areas, such as those near the proposed Baxter Creek Preserve (in the southern part of Sub-Area 4), currently not exposed to regular public use. Heron and egret nesting colonies, migrating and nesting Cooper's hawk, osprey, white-tailed kite, northern harrier, Alameda song sparrow, saltmarsh common yellowthroat, and common nesting birds could be indirectly impacted through increased human disturbance. However, significant amounts of open space that will remain undeveloped in the Plan Area will provide a "buffer zone" between special-status birds, common nesting birds, and human activity. The construction of community parks and Baxter Creek Preserve, including the restoration of creek banks and surrounding habitat, would help offset increased human disturbance to less-than-significant levels.

Noise. The construction activities of projects that would be developed under the Specific Plan, especially those that involve demolition and heavy machinery in upland areas with eucalyptus, Monterey pine, and California buckeye or in dense shrubs such as coyote bush and toyon, may adversely affect raptors and migratory nesting bird species within 0.25 miles of the project sites during the nesting season (February 1 – August 15), including special-status raptor and passerine bird species known to forage in grasslands, riparian corridors, wetlands, tidal marshes, mudflats, and Bay waters within the Study Area (Tetra Tech, 2014). Although high levels of ambient noise and disturbance originating from I-580, industrial warehouses, and other human disturbances surrounding the Plan Area likely preclude nesting activities for many special-status birds, or limit it to species with high tolerance for urban noise and activity, potential nesting habitat could still be present in the Plan Area, particularly within Sub-Area 4, and activities that may alter the ambient noise environment could have an effect on bird behavior. Noise pollution can be detrimental to wildlife, and bird populations are particularly susceptible because they rely on acoustic signals for mating, predator evasion, and communication between adults and offspring, among other behaviors.

California Ridgway's rail, California black rail, Alameda song sparrow, saltmarsh common yellowthroat, burrowing owl, and northern harrier could experience flushing, avoidance, or nest abandonment in marshlands, creeks, and lagoons, similar to tree nesting birds, such as raptors, as a result of increased noise levels from construction and demolition activities from projects proposed under the Specific Plan. Although considered a less-than-significant impact, fish-eating birds, including Caspian tern, California least tern, and osprey, foraging within marshlands and Bay waters in the Plan Area could also be exposed to short-term increased noise as a result of construction activities.

The loss of an active nest of a special-status bird species that is attributable to project construction activities associated with the Specific Plan would be considered a significant impact under CEQA. Moreover, disruption of nesting migratory or native birds is not permitted under the federal MBTA or the California Fish and Game Code, as it could constitute unauthorized take. Thus, the loss of any active nest by, for example, removing a tree or shrub containing an active nest or causing visual or noise disturbance that leads to nest abandonment, must be avoided under federal and California law. Implementation of **Mitigation Measure BIO-1c.SP: Preconstruction Nesting Bird Surveys**,

above, would reduce potential impacts on migratory and special-status birds to a less-than-significant level by restricting certain construction activities during the breeding bird season, requiring preconstruction surveys, and implementing avoidance measures if active nests are located. In addition, implementing Noise **Mitigation Measure NOI-1a.SP, Mitigation Measure NOI-1b.SP**, and **Mitigation Measure NOI-4b.SP** as discussed in Section 4.10, *Noise*, would require the use of noise control methods and technologies during construction activities, which would further reduce potential impacts on nesting birds. These noise measures would mitigate noise-related impacts to Ridgway's rail by ensuring construction noise does not exceed existing baseline levels.

Avian Collisions with Buildings and Night Lighting. The Specific Plan would result in the development of open space with research and development, commercial, and other uses which would increase sources of night lighting. Open space that would remain in the Plan Area and that would potentially be affected by increased sources of night lighting include the following features: Baxter Creek, Eastern Stege Marsh, Upper and Lower Lagoon, and Meeker Slough and its riparian and channel corridor. Although these open spaces are currently subject to substantial amounts of existing light from I-580 and industrial development, impacts on special-status and common nesting birds from artificial night lighting that could be introduced through the development of projects proposed under the Specific Plan could be significant. Furthermore, development facilitated under the Specific Plan has the potential to result in the development of new buildings at heights that may result in a deceptive appearance or attractant for nocturnal migrating birds, resulting in collisions and avian mortality. For these reasons, development projects that would be developed under the Specific Plan could result in significant impacts to nocturnal migratory birds.

Many bird collisions with buildings are induced by artificial night lighting, particularly from large buildings, which can be especially problematic for migrating songbirds since many are nocturnal migrants (Ogden, 1996). The tendency of birds to move towards lights at night when migrating, and their reluctance to leave the sphere of light influence for hours or days once encountered (Graber 1968), has been well documented (Ogden, 1996). It has been suggested that structures located at key points along migratory routes may present a greater hazard than those at other locations (Ogden, 2002). Other research suggests that fatal bird collisions increase as light emissions increase, that weather often plays an important part in increasing the risk of collisions (Verheijen, 1981), and that nights with heavy cloud cover and/or precipitation present the conditions most likely to result in high numbers of collisions (Ogden, 2002). The type of light used may affect its influence on birds: for example, studies have indicated that blinking lights or strobe lights affect birds significantly less than non-blinking lights (Gauthreaux and Belser, 2006; Evans et al., 2007).

Birds can also become "trapped" by a light source and, disoriented, continue to fly around the source until they become exhausted and drop to the ground, where they may be killed by predators (Ogden, 1996) or die from stress or exhaustion (Reed et al., 1985). Light attraction in birds is positively related to light intensity, and studies have shown that reduction in lighting intensity and changing fixed lighting to a flashing or intermittent light system can dramatically reduce avian mortality at lighted structures (Jones and Francis, 2003).

At least one controlled experiment has shown avian mortality can be dramatically reduced through shielding the upward radiance of lighting fixtures. In an experiment with fledgling seabirds in Hawaii, shielding the upward radiation of lights resulted in a 40 percent reduction in attraction to lights as the fledglings made their way from their nesting colonies to the sea (Reed et al., 1985). Furthermore, during this study the sides of large buildings and the grounds remained fully lit by the shielded lights, suggesting that birds are not attracted to lighted areas per se but, rather to point-sources of light, which may be related to the use of stars and the moon as navigational aids (Ibid.).

Although the Study Area is located within the Pacific Flyway and in an urban area of the East Bay shoreline, specific migratory corridors in the vicinity of the Plan Area are unknown. It can be assumed, however, that numerous birds pass overhead or in the Study Area during spring and fall migrations.

A portion of the Study Area is currently illuminated during nighttime, and existing industrial development and I-580 have increased ambient lighting over the recent years; however, development that would be proposed under the Specific Plan could substantially increase ambient light and glare levels associated with the potential use of reflective building materials, street light fixtures, nighttime lighting of commercial identification signs and logos, and increased vehicle and transit use. The Plan Area has a wide variety of planned public spaces that will require night lighting including streets and alleys, sidewalks, plazas, parks, trails, and surface parking lots. Consistent use of requirements identified in California Energy Commission Title 24, California Green Building Standards, and Illuminating Engineering Society of North America (IESNA) recommended values for exterior lighting RP-33 for Zone LZ3-Medium would help ensure that new development does not create unnecessary glare or lighting impacts to adjacent parcels or waters suitable for wildlife foraging or nesting habitat within the Plan Area. The Specific Plan includes a lighting palette and will require all lighting, reflective surfaces or any other sources of illumination to be utilized in a manner which produces no glare on public streets or on any other parcel. Lights shall be shielded at lot lines so as not to be directly visible from an adjoining residential district.

Development proposed under the Specific Plan would also consider the addition of low-impact light that does not disturb wildlife in areas but would provide increased safety for commuters and recreational users. Although the Specific Plan does not identify development standards requiring low-impact lighting, the Plan requires consideration of the preservation of the night sky in selecting fixtures for installation. The Plan also specifies that lighting design near the Bay must also avoid disruption to bird migratory patterns and wildlife habitat areas, and requires all new lighting to be LED. The pedestrian path along the Shoreline Promenade in Sub-Area 4, for example, shall be illuminated with low-level pedestrian fixtures (e.g., in-ground or bollard type) that minimize ambient light and potential disruption of marsh wildlife habitats. Overall, increased ambient night lighting from projects developed under the Specific Plan would not significantly impact aquatic life in Bay waters due to the open space buffer between the most significant sources of lighting and Bay waters.

Furthermore, new extensions of the Bay Trail (or renovations to the existing Bay Trail) will be developed to Bay Trail and BCDC standards, such as providing enough lighting to create a sense of

safety, but designing to control intensity, glare and spillover, thereby reducing adverse impacts to birds in the Study Area resulting from increased night lighting (BCDC, 2005). Landscaped areas proposed along the northwestern border of Sub-Area 4 and Upper and Lower Lagoons, could screen night lighting emitted from the proposed new residential areas.

Although the development within the Plan Area varies from the development that would occur within the Richmond Field Station site, lighting standards for development within the Plan Area would be consistent with those used for development within the Richmond Field Station site, and all new buildings will comply with the 2013 California Green Building Standards Code of Regulation, Title 24, Part 11 (CALGreen), Richmond's Municipal Code 15.04.840.040 *Lighting and Glare Standards*, which requires that "all lighting, reflective surfaces or any other sources of illumination shall be utilized in a manner which produces no glare on public streets or on any other parcel," and the San Francisco Bay Plan's Public Access Policy #9 *Avoiding Adverse Effects on Wildlife*, which requires development to "locate night lighting away from sensitive habitat areas."

Regardless, new buildings and lighting sources within the Plan Area could result in significant impacts to birds. Implementation of **Mitigation Measure BIO-1d.SP: Building Design and Lighting Strategies to Address Biological Resources Impacts** would avoid and minimize potential impacts on special-status and nesting and migratory birds by requiring design features such as patterned or fritted glass and decreasing reflectivity of surfaces to make buildings appear less transparent. The measure also calls for limiting night lighting, which would reduce the potential for disorientation.

> **Mitigation Measure BIO-1d.SP: Building Design and Lighting Strategies to Address Biological Resources Impacts.** For any project proposed for development within the area of the Specific Plan, and prior to the issuance of the first building permit for each new building, the City of Richmond (City) shall require that the project applicant retain a qualified biologist experienced with bird strike issues to review and approve the design of the building windows and lighting to ensure that it sufficiently minimizes the potential for bird strikes. The City may also consult with applicable resource agencies with jurisdiction such as CDFW, USFWS, or others, as it determines to be appropriate during this review.
>
> ***Building Design.*** Prior to issuance of a building permit, the project applicant shall provide documentation to the satisfaction of the Planning Director identifying the measures and features of the building design that are intended to reduce potential impacts on birds. The building design may include, but is not limited to, some of the following measures:
>
> - Employ design techniques that create "visual noise" via cladding or other design features that make it easy for birds to identify buildings as such and not mistake buildings for open sky or trees;
> - Decrease continuity of reflective surfaces using "visual marker" design techniques, which may include:
>
> a) Patterned or fritted glass, with patterns at most 28 centimeters apart;
>
> b) One-way films installed on glass, with any picture or pattern or arrangement that can be seen from the outside by birds but appear transparent from the inside;

c) Geometric fenestration patterns that effectively divide a window into smaller panes of at most 28 centimeters; and/or

d) Decals with patterned or abstract designs, with the maximum clear spaces at most 28 centimeters square.

- Up to 60 feet high on building facades facing the shoreline, decrease reflectivity of glass, using design techniques such as plastic or metal screens, light-colored blinds or curtains, frosting of glass, angling glass towards the ground, UV-A glass, or awnings and overhangs;
- Eliminate the use of clear glass on opposing or immediately adjacent faces of the building without intervening interior obstacles such that a bird could perceive its flight path through the glass to be unobstructed;
- Mute reflections in glass using strategies such as angled glass, shades, internal screens, and overhangs; and
- Place new vegetation sufficiently away from glazed building facades so that no reflection occurs. Alternatively, if planting of landscapes near a glazed building façade is desirable, situate trees and shrubs immediately adjacent to the exterior glass walls, at a distance of less than 3 feet from the glass. Such close proximity will obscure habitat reflections and will minimize fatal collisions by reducing birds' flight momentum.
- A construction lighting plan for each project under the Specific Plan shall be prepared detailing measures to minimize light spillover outside of each project site.

Lighting Design. The project applicant shall ensure that the design and specifications for buildings implement design elements to reduce lighting usage, change light direction, and confine light exposure. These may include, but are not limited to, the following general considerations that should be applied wherever feasible throughout the proposed project to reduce night lighting impacts on fish, marine mammals, and avian species:

a) Avoid installation of lighting in areas where not required for public safety;

b) Examine and adopt alternatives to bright, all-night, floor-wide lighting when interior lights would be visible from the exterior or exterior lights must be left on at night, including:

i. Installing motion-sensitive lighting;

ii. Installing task lighting;

iii. Installing programmable timers; and,

iv. Installing fixtures that use lower-wattage, sodium, and yellow-red spectrum lighting; and,

c) Where exterior lights are to be left on at night, install fully shielded lights to contain and direct light away from the sky.

Educating Residents and Occupants. The City shall ensure, as a condition of approval for every building permit, that the project applicant agrees to provide educational materials to building tenants, occupants, and residents encouraging them to minimize light transmission from windows, especially during peak spring and fall migratory periods, by turning off

unnecessary lighting and/or closing window coverings at night. The City Planning and Building Services Division shall administratively review and approve the educational materials prior to building occupancy.

Documentation. The City shall document undertaking the activities described in this mitigation measure and maintain records that include, among others, the written descriptions provided by the building developer of the measures and features of the design for each building that are intended to address potential impacts on birds, and the recommendations and memoranda prepared by the qualified biologist experienced with bird strikes who reviews and approves the design of any proposed projects to ensure that they sufficiently minimize the potential for bird strikes.

Impacts on Special-Status Mammals

Tidally inundated marshlands in Sub-Area 4 within the Plan Area could provide nesting and foraging opportunities for salt-marsh harvest mouse and salt-marsh wandering shrew; however, no removal of marshland habitat is proposed under the Specific Plan. Ground disturbance during construction along the western grassland and ruderal upland fringes of the Plan Area and south of Bayview Avenue, specifically near Upper and Lower Lagoons, Hoffman Marsh, and Baxter Creek, could result in the release of contaminants into nesting or foraging habitat for salt-marsh harvest mouse and salt-marsh wandering shrew potentially inhabiting these areas and in Stege Marsh. Similarly, habitat loss within the Plan Area could result in habitat fragmentation or even mortality of individual species.

Short-term habitat degradation and loss impacts to nesting and foraging salt-marsh harvest mouse and salt-marsh wandering shrew could occur through the exposure of contaminated soils or proposed ground disturbing construction activities, such as Bay Trail expansion and work that occurs near Stege Marsh, Meeker Slough or Baxter Creek; however, the impact would be addressed with the implementation of **Mitigation Measure BIO-1e.SP**, described below.

Furthermore, the Specific Plan and all projects that would be developed under the Specific Plan incorporate standard BMPs relating to hazardous waste sites, as described in Section 4.7, *Hazards and Hazardous Materials*, during construction to contain and properly dispose of all contaminated soils and vegetation encountered. Additionally, all use, handling, storage, and transportation of waste materials within the Plan Area shall comply with City of Richmond Municipal Code section 15.04.840.090 Liquid or Solid Waste Standards and California hazardous materials regulations.

Implementation of **Mitigation Measure BIO-1b.SP: Worker Environmental Awareness Program Training** would further reduce contaminant exposure impacts to salt-marsh harvest mouse and salt-marsh wandering shrew in the Plan Area. All project participants would be trained regarding sensitive environmental resources in the Plan Area (e.g. special-status plants and wildlife with potential to occur onsite and adjacent sensitive habitat areas and vegetation communities) and the protection and avoidance measures to be implemented onsite throughout the duration of each development project proposed under the Specific Plan.

Increased human activity in the Plan Area, including along the Bay Trail, could result in increased disturbance by people and their dogs of salt-marsh harvest mouse and salt-marsh

wandering shrew foraging or nesting in pickleweed when compared to existing conditions where these areas are not open for public use.

Overall, significant amounts of open space will remain in the Plan Area to provide a "buffer zone" between salt-marsh harvest mouse and salt-marsh wandering shrew and any areas of disturbance resulting from the Specific Plan. Impacts to salt-marsh harvest mouse and salt-marsh wandering shrew would be less than significant with the implementation of Mitigation Measure BIO-1e.SP.

Mitigation Measure BIO-1e.SP: Salt Marsh Harvest Mouse and Salt Marsh Wandering Shrew Measures. The following measures shall be implemented within occupied, or presumed-occupied, salt marsh harvest mouse and/or salt marsh wandering shrew habitat to avoid, minimize, and mitigate impacts to these species and their habitat.

1. A qualified, CDFW and/or USFWS-approved biological monitor will be present during all project-related activities within habitat determined suitable for salt marsh harvest mouse and/or salt marsh wandering shrew, or within 100 feet of such habitat. The biological monitor will present supplemental Worker Environmental Awareness Program information as needed for construction personnel to provide guidance about listed species and their habitats. The biological monitor will monitor all activities to ensure that no salt marsh harvest mouse or salt marsh wandering shrew is harassed, killed, or injured, and to ensure that the project conforms to the conservation measures outlined in the EIR. The biological monitor will notify the construction management lead when any aspect of the project might result in unauthorized take of special-status wildlife.

2. Vegetation within 100 feet of potential salt marsh harvest mouse and salt marsh wandering shrew habitat shall be removed using hand-tools prior to the installation of the exclusion fencing under the supervision of the qualified biological monitor. If animals of either species are observed within the work area, a biologist, with the appropriate federal and state permits, will remove and relocate the species to the nearest appropriate habitat.

3. To avoid potential impacts to salt marsh harvest mouse and salt marsh wandering shrew, exclusion fencing shall be installed by hand in all locations containing pickleweed, fat hen, and alkali heath vegetation or suitable foraging or nesting habitat and all natural/undeveloped uplands within a minimum of 100 feet of these habitats to prevent these species from entering the active work area, to protect habitat from earthmoving activities or accidental spills, and to exclude workers from sensitive habitat. The fence shall be made of a heavy plastic sheeting material that does not allow salt marsh harvest mouse and salt marsh wondering shrew to pass through or climb, and the bottom shall be buried to a depth of at least four inches so that the mouse and shrew cannot crawl under the fence. Fence height shall be at least 12 inches higher than the highest adjacent vegetation with a maximum height of four feet. All supports for the exclusion fencing shall be placed on the inside of the work area. A two-foot buffer will be maintained clear of vegetation along the outside of the exclusion fencing. Exclusion fencing shall be installed above the maximum high tide to prevent trapping animals between the fencing and rising tide waters. The fencing shall be installed under the supervision of the qualified biological monitor. Installation shall not occur during winter high tides, as determined by the biological monitor, when marsh habitats are submerged and these species are pushed to upland habitats.

Impacts on Bats

Removing existing structures and clearing of vegetation in support of development proposed under Specific Plan construction could result in direct mortality of special-status bats, such as hoary bat and pallid bat roosting in buildings or mature trees within the Study Area. Direct mortality of special-status bat roosts would be a significant impact. Implementation of **Mitigation Measure BIO-1f.SP: Special-Status Bats Protection Measure** would reduce potential impacts on special-status bats to a less-than-significant level by requiring preconstruction surveys and implementing avoidance measures if potential roosting habitat or active roosts are located.

> **Mitigation Measure BIO-1f.SP: Special-Status Bat Protection Measure.** For any project proposed for development within the area of the Specific Plan that would involve the removal of trees or buildings or the renovation of buildings, a preconstruction survey for special-status bats shall be conducted by a qualified biologist in advance of tree and structure removal to characterize potential bat habitat and identify active roost sites. Should the preconstruction survey find no bat habitat or bat roosting sites, then no further action is required. Should potential roosting habitat or active bat roosts be found in trees and/or structures to be removed under the project, the following measures shall be implemented:
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> a) Removal of trees and structures shall be initiated when bats are active, approximately between the periods of March 1 to April 15 and August 15 to October 15; outside of bat maternity roosting season (approximately April 15 – August 31) and outside of months of winter torpor (approximately October 15 – February 28), to the extent feasible.
>
> b) If removal of trees and structures during the periods when bats are active is not feasible and active bat roosts being used for maternity or hibernation purposes are found on or in the immediate vicinity of the project site where tree and structure removal is planned, a no disturbance buffer of 100 feet shall be established around these roost sites until they are determined to be no longer active by the qualified biologist. The extent of this buffer may be modified by the qualified biologist depending on existing screening around the roost site (such as dense vegetation or a building) as well as the type of construction activity which would occur around the roost site.
>
> c) The qualified biologist shall be present during tree and structure removal if potential bat roosting habitat or active bat roosts are present. Trees and structures with active roosts shall be removed only when no rain is occurring or is forecast to occur for 3 days and when daytime temperatures are at least 50°F.
>
> d) Removal of trees with potential bat roosting habitat or active bat roost sites shall follow a two-step removal process:
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> i. On the first day of tree removal and under supervision of the qualified biologist, branches and limbs not containing cavities or fissures in which bats could roost, shall be cut only using chainsaws.
>
> ii. On the following day and under the supervision of the qualified biologist, the remainder of the tree may be removed, either using chainsaws or other equipment (e.g. excavator or backhoe).
>
> e) Removal of structures containing or suspected to contain potential bat roosting habitat or active bat roosts shall be dismantled under the supervision of the

qualified biologist in the evening and after bats have emerged from the roost to forage. Structures shall be partially dismantled to significantly change the roost conditions, causing bats to abandon and not return to the roost. Removal of structures shall occur within the allowed construction hours detailed under the City's Municipal Code (Section 9.52.110) weekdays between 7:00 a.m. to 7:00 p.m. and between 9:00 a.m. to 8:00 p.m. on weekends and holidays. If demolition/removal activities are expected to occur outside of the City's allowed construction hours, these activities shall be reviewed by the City Planning and Building Division as part of the review of the project demolition permit. All demolition/removal activities shall comply with the Noise Control Plan prepared in accordance with **Mitigation Measure NOI-1a.SP** in Chapter 4.10, *Noise*, of this EIR.

Significance after Mitigation: Less Than Significant.

Mitigation: Mitigation Measures BIO-1a.SP, BIO-1b.SP, BIO-1c.SP, BIO-1d.SP, BIO-1e.SP, BIO-1f.SP, and Mitigation Measures NOI-1a.SP, NOI-1b.SP, and NOI-4b.SP.

Impact BIO-2.SP: Development under the Specific Plan could have an adverse effect on riparian habitat or other sensitive natural communities identified in local or regional plans, policies, regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service. (Criterion b) (*Less Than Significant with Mitigation*)

Impacts to the California coastal prairie community on the Richmond Field Station site were analyzed in the *Richmond Bay Campus Long Range Development Plan Final Environmental Impact Report* (Tetra Tech, 2014). The coastal prairie resources on the Berkeley Global Campus site are protected and managed according to UC's *Richmond Bay Campus Coastal Terrace Prairie Management Plan* (Stromberg, 2014). Direct impacts would result from the Lark Creek Variant, which would displace up to 0.8 acres of coastal prairie.

Encroachment of development proposed under the Specific Plan into sensitive natural communities and effects associated with increased human population would result in impacts to sensitive natural communities in the Plan Area, specifically coastal terrace prairie in the location of the Lark Avenue Extension Variant. Project construction could occur adjacent to and within northern coastal saltmarsh, coastal scrub, and riparian and freshwater emergent wetland habitat within the Plan Area, resulting in potential incidental impacts from construction activities that take place in upland areas adjacent to these types of habitats. Runoff associated with other construction activities such as materials staging, stockpiling, vehicle and equipment parking, could also result in adverse effects on these sensitive habitats. The northern coastal saltmarsh, upland coastal scrub, riparian scrub, and wetland communities within the Plan Area provide valuable foraging and cover benefits for resident wildlife and the loss or degradation of such habitat would be considered a significant impact.

Under Goal 2: Access to Open Space, the Specific Plan encourages the pursuit of opportunities to clean up contaminated land in an effort to restore marshlands, and restore and preserve Meeker Slough and Baxter Creek. By implementing Open Space Key Action Item 4, the Specific Plan

would require any development in Sub-Area 4 to transfer all currently designated open space to the EBRPD or California State Parks to ensure appropriate long-term management.

Furthermore, the City would adhere to its Municipal Regional Permit (MRP), which is regulated by the National Pollutant Discharge Elimination System (NPDES) and sets forth water quality provisions to be completed by the City relating to construction site controls, new development, and industrial and commercial sites. Clean Water Act 303(d) waters within the Study Area subject to the MRP, and receive discharges from the City's Phase I Municipal Separate Storm Sewer System (MS4) sewer system include, Baxter Creek and the Central San Francisco Bay and Harbor. Through the adherence to the MRP, potential adverse impacts to these waters would be less than significant.

Guiding principles relating to natural communities in the Plan Area have been drafted in concert with the open space program identified in the Berkeley Global Campus LRDP. In 2014, UC adopted their *Richmond Bay Campus Coastal Terrace Prairie Management Plan* (Stromberg, 2014) as part of the LRDP FEIR. In 2004, UC Berkeley prepared a Wetland Restoration Monitoring Plan (BBL, 2004) that included requirements to document post-remediation conditions in portions of the Richmond Field Station (RFS) Western Stege Marsh. Efforts like these reduce adverse impacts to natural communities through restoration and improvement of hydrologic, biogeochemical, plant community maintenance, faunal support/habitat function, and local tidal channel network.

Implementing **Mitigation Measure BIO-2a.SP: Restoration of Northern Coastal Saltmarsh, Riparian, and Wetlands** would further reduce impacts to natural communities by requiring project-level design to adhere to principles protecting and restoring northern coastal saltmarsh, riparian habitat, and freshwater emergent wetlands, and associated wildlife. As such, the impact to natural communities would be considered less than significant by restoring affected vegetation following construction. Although coastal scrub species are present on site, this community primarily occurs in ruderal areas and is not considered a sensitive community as it exists on site.

> **Mitigation Measure BIO-2a.SP: Restoration of Northern Coastal Saltmarsh, Riparian, and Wetlands.** For any project proposed for development within the area of the Specific Plan that may remove the habitat functions and services of northern coastal saltmarsh, riparian habitat, or freshwater emergent wetlands, these habitats shall be restored in-place to pre-project conditions, if possible, or an equivalent area of these habitats shall be established (ratio of 1:1) at suitable off-site locations along the Richmond shoreline. A habitat-specific Restoration and Monitoring Plan shall be prepared by the project applicant for each development project that removes the respective habitat, and shall contain the same principles as the existing Berkeley Global Campus Wetland Restoration Monitoring Plan for affected areas, subject to approval by the appropriate regulatory agencies, and shall generally include, but not be limited, to the following:
>
> - A final grading plan for the affected northern coastal saltmarsh, riparian habitat, and/or wetlands, which would restore the topography of the affected habitat areas to pre-project conditions, or to conditions that will achieve long-term stability, and will support site-appropriate habitat;

- A planting plan, composed of native plant species appropriate to the target restored habitat;
- A management plan, including provisions for weed control to prevent the spread of invasive non-native plant species in the restoration area;
- Performance criteria for the revegetated areas that establish success thresholds over a specific amount of time (typically five years) as determined by the regulatory agencies with jurisdiction over the affected areas;
- A monitoring and reporting program under which progress of the revegetated areas shall be tracked to ensure survival of the mitigation plantings. The program shall document overall health and vigor of mitigation plantings throughout the monitoring period and provide recommendations for adaptive management as needed to ensure the site is successful, according to the established performance criteria. An annual report documenting monitoring results and providing recommendations for improvement throughout the year shall be provided to the regulatory agencies; and
- A best management practices element describing erosion control measures to be installed around the affected areas following mitigation planting in order to avoid sediment runoff into adjacent waters.

Implementing **Mitigation Measure BIO-2b.SP: Restoration of Coastal Terrace Prairie** would further reduce impacts to this sensitive natural community resulting from the Lark Avenue Variant by requiring project-level design to adhere to principles of minimization, protection and restoration of coastal prairie, as described in UC's *Coastal Terrace Prairie Management Plan* (Stromberg, 2014). As such, the impact to natural communities would be considered less than significant by restoring affected vegetation following construction of the Lark Avenue Variant.

Mitigation Measure BIO-2b.SP: Restoration of Coastal Terrace Prairie. For the Lark Avenue Variant, road construction within the coastal prairie that removes this sensitive plant community shall be restored according to UC Berkeley's *Coastal Terrace Prairie Management Plan* (Stromberg, 2014). To facilitate construction of the Lark Avenue Variant on UC land, the City would enter into a Memorandum of Understanding (MOU) with UC, and would adopt and implement the *Coastal Terrace Prairie Management Plan*, which would result in net ecological benefit for the prairie community. Implementation of the Plan in conjunction with UC would include the following (adapted from the LRDP FEIR):

- UC shall commence initial phase implementation of the 2014 *Richmond Bay Campus Coastal Terrace Prairie Management Plan* (Appendix G of the LDRP FEIR) that addresses exotic plant removal, tree and coyote brush removal, weed management, and programs for native plant stock preservation to aid in preservation and enhancement of the grassland portion of the Natural Open Space area.
- When the Lark Avenue Variant is constructed, proactive (not passive) measures to improve the quality of the native grasslands in the Natural Open Space area shall be funded and undertaken. This may take the form of support for research and education into effective restoration. Possible fund sources would be established as part of the MOU between the City and UC.

- Once the Lark Avenue Variant is constructed, UC shall update its *Coastal Terrace Prairie Management Plan* to guide conservation and enhancement efforts, as well as the siting of boardwalks and minor access roads and structures in a resource-sensitive manner. The plan shall include weed management actions, annual monitoring and reporting, and adaptive management sufficient to maintain or improve the quality of the grasslands preserved in the designated Natural Open Space. The effectiveness of the plan shall be continually evaluated and the plan adjusted as needed.
- Prior to the commencement of the construction of the Lark Creek Variant in high, medium, or low quality grasslands outside of the Natural Open Space land use zone, UC shall conduct a site-specific native plant survey. All survey results would be published to the UC environmental website for the Berkeley Global Campus/Richmond Field Station. UC would apply the results of such surveys to implement a program that would use the native plant stock from such area to aid enhancement and restoration in Natural Open Space grassland areas, and to develop or restore meadow acreage elsewhere. Possible locations include formal landscaped open areas of the Richmond Field Station, rooftops of buildings at the Richmond Field Station, demonstration meadows at UC Berkeley or in the city of Richmond that help explain the former extent of regional coastal terrace prairie grasslands.

In addition, implementing **Mitigation Measure BIO-3.SP: Wetland Protection**, as described below, would isolate development proposed under the Specific Plan to each project footprint through measures such as exclusion fencing installation and implementation of stormwater BMPs, thereby protecting the remaining habitat surrounding each project site during construction activities. Impacts to freshwater emergent habitat are further discussed under Impact 4.3-3.SP, below.

Significance after Mitigation: Less Than Significant.

Mitigation: Mitigation Measures BIO-2a.SP, BIO-2b.SP and BIO-3.SP.

Impact BIO-3.SP: Development proposed under the Specific Plan could have a substantial adverse effect on federally protected wetlands, as defined by Section 404 of the Clean Water Act and state protected wetlands (Criterion c). (*Less Than Significant with Mitigation*)

The Study Area, most notably Sub-Area 4, contains jurisdictional features that would be directly affected by development under the Specific Plan, including wetlands and other waters of the United States and waters of the State of California. This would be a significant impact.

Development activities that would be proposed by individual projects under the Specific Plan such as grading and excavation would generate loose, erodible soils which could result in erosion or siltation into tributaries to Bay waters and associated wetlands resulting in indirect impacts to jurisdictional features in the Study Area. In the case of soil erosion or an accidental release of deleterious materials during construction, development could indirectly impact water quality, which would be a significant impact. Urban runoff is also a major source of water pollution, especially in industrial areas such as the Plan Area. Development proposed under the Specific

Plan could increase runoff, such as earth disturbance during construction, that often carries heavy metals, pesticides, fertilizers, trash, pet waste, automotive fluids, and other toxic chemicals to jurisdictional features, including creeks, in the Plan Area and adjacent Bay waters.

All new projects in the Plan Area must comply with the MRP permit provisions, as discussed above. During construction of projects approved under the Specific Plan, best management practices (BMPs) would be applied to prevent potential pollutants from entering the storm drain system directly, reducing sediment or potentially hazardous runoff from entering receiving waters. Examples of these measures include covering trash receptacles and car wash areas, regular sweeping of paved surfaces, stenciling of storm drain inlets, and installation of full trash capture devices.

In the operational phase of the Specific Plan, hydromodification management could be employed to reduce sediment runoff through stormwater flow management. The new stormwater management system will integrate water quality treatment features designed to meet current Contra Costa County and RWQCB design criteria. The Low Impact Development (LID) biotreatment measures that will be implemented throughout the Plan Area will include bioretention planters, street planters, bioswales, subgrade infiltration areas, permeable paving and any other approved treatment. Individual development projects within the Plan Area will also be required to be designed with LID principles and treat the runoff interior to that parcel. These measures would offset anticipated increased sediment runoff resulting from increased stormwater runoff into jurisdictional wetlands.

Wetland Permitting Requirements

Fill and excavation in areas considered jurisdictional waters requires permitting and authorization from the appropriate regulatory agencies. An individual project within the Plan Area that failed to proceed without permits or approvals would be in violation of these regulations. A verified wetland delineation is required prior to the submittal of regulatory permit applications, and should include a full delineation of wetland features associated with the project site in question. Permit approvals and certifications generally include the following:

Section 404 / Section 10 Permits. Pursuant to Section 404 of the Federal Clean Water Act, permit approval from the USACE shall be obtained for any project placing dredge or fill material in waters of the U.S., including, for example, the placement of rip-rap or other fill along the shoreline during construction of the Promenade in Sub-Area 4 as described in the Specific Plan. Any other construction below mean higher water (MHW) elevation in Meeker Channel or similar waterbody would require a Section 10 permit. Preparation of the Section 404 / Section 10 permit applications may require a Preconstruction Notification (PCN) and supporting documentation. A PCN outlines project activities, areas of impact, construction techniques, and methods for avoiding and reducing impacts to jurisdictional features.

Section 401 Water Quality Certification. Approval of Clean Water Act Section 401 Water Quality Certification (WQC) and/or Waste Discharge Requirements (WDRs) must be obtained from the RWQCB for work within their jurisdiction. The WQC typically requires a permit

application and supporting materials including construction techniques, areas of impact, and project schedule.

By adhering to wetland permitting requirements and implementing **Mitigation Measure BIO-2a.SP: Restoration of Northern Coastal Saltmarsh, Riparian, and Wetlands, Mitigation Measure BIO-3.SP: Wetland Protection**, and **Mitigation Measure HYD-1.SP: Water Quality Best Management Practices for All Construction Activities**, impacts to jurisdictional features would be reduced to a less-than-significant level. These measures require installation of a protective barrier at the border of jurisdictional wetlands at each project site to ensure that development under the Specific Plan does not affect jurisdictional wetlands beyond the allowable extent identified in the regulatory permits. This sediment barrier could also serve as exclusion fencing for common wildlife as long as it meets the CDFW standards for species exclusion fencing (see Mitigation Measure BIO-1a.SP, above). In addition, the Plan Area is subject to the SWRCB General Construction Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities (see Section 4.8, *Hydrology and Water Quality*). This permit requires a minimum level of construction water quality BMPs and monitoring to protect receiving waters from construction-related pollutants, stormwater, and sediment erosion and runoff. These BMPs would be part of project-specific stormwater pollution prevention plans (SWPPP) that would be submitted and reviewed by the RWQCB before the start of construction activities. With stormwater regulation compliance and implementation of **Mitigation Measure BIO-2a.SP**, **Mitigation Measure BIO-3.SP**, and **Mitigation Measure HYD-1.SP: Water Quality Best Management Practices for All Construction Activities**, impacts to jurisdictional features would be reduced to a less-than-significant level.

> **Mitigation Measure BIO-3.SP: Wetland Protection.** For any project proposing development within or adjacent to jurisdictional wetlands within the area of the Specific Plan, the project applicant shall ensure that wetland protection measures shall be applied to protect identified state and federal jurisdictional wetlands. These measures shall include the following:
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> a) To the extent feasible, construction projects that might affect jurisdictional drainages or wetlands shall be scheduled for dry-weather months. Avoiding ground-disturbing activities during the rainy season would further decrease the potential risk of construction-related discharges to jurisdictional waters
>
> b) A protective barrier shall be erected around any wetland feature designated for complete avoidance in project construction plans and regulatory permits to isolate it from construction or other ground-disturbing activities;
>
> c) Signage shall be installed on the fencing to identify sensitive habitat areas and restrict construction activities;
>
> d) No equipment mobilization, grading, clearing, or storage of vehicles, equipment or machinery, or similar activity shall occur at each project site until a City representative has inspected and approved the wetland protection fencing; and
>
> e) The City shall ensure that the temporary fencing is continuously maintained until all construction or other ground-disturbing activities are completed.

f) The project applicant shall obtain the appropriate permits in accordance with the Clean Water Act and California Fish and Game Code from the regulatory agencies and implement any additional mitigations measures or conditions of approval included within the permits.

A fencing material meeting the requirements of both water quality protection and wildlife exclusion may be used, such as heavy plastic sheeting material. Fences must be properly installed with final approval by a City representative, including adequate supports or wire backing for use in windy sites, and with the lower edge keyed in to the soil to ensure a proper barrier.

Significance after Mitigation: Less Than Significant.

Mitigation: Mitigation Measures BIO-2a.SP, BIO-3.SP, and HYD-1.SP.

Impact BIO-4.SP: Development under the Specific Plan would not 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 (Criterion d). (*Less Than Significant with Mitigation*)

The Study Area is located in a regionally-sensitive natural area, with northern coastal saltmarsh, coastal scrub, riparian, freshwater emergent wetland in the immediate vicinity of its industrial activities. Avian species rely on tidal marshes, lagoons, and open water in the Study Area during seasonal migrations and/or require these specific habitats to successfully breed. Much of the Plan Area development would occur within upland areas which do not provide viable wildlife movement corridors that differ from the proposed Plan condition. The tidal salt marsh found in the Plan Area provides the most favorable locations for wildlife to travel between larger areas of open space which support foraging, breeding, shelter, and preferred summer and winter range locations. Impacts to this habitat will largely be avoided. Because these areas would remain intact and the species located within the Plan Area would be adapted to human presence, development under the Specific Plan would not substantially interfere with the movement of any resident species or impede the use of native wildlife nursery sites.

With the implementation of **Mitigation Measure BIO-2a.SP: Restoration of Northern Coastal Saltmarsh, Riparian, and Wetlands**, proposed development of individual projects under the Specific Plan would not have a significant impact on potential wildlife movement, nursery sites, or other habitat functions in the Plan Area.

Although the Study Area is currently subject to nighttime illumination from nearby development, new development under the Specific Plan would increase the amount of light and glare generated in the Study Area. New development would potentially use reflective building materials, street light fixtures, and nighttime lighting of signs and logos. This could interfere with the movement or migratory patterns of avian species inhabiting the Study Area. Through the implementation of **Mitigation Measure BIO-1d.SP: Building Design and Lighting Strategies to Address Biological Resources Impacts** as discussed above, proposed development under the Specific Plan

would minimally impact potential wildlife movement, nursery sites, or other habitat functions in the Plan Area.

Specific Plan habitat restoration strategies are envisioned to improve the role of existing creeks as wildlife habitat and as district amenities. City Zoning Ordinance Section 15.04.840.060, (Creeks/Streams/Riparian Corridors) supports this goal by establishing creek buffer zones and best management practices on parcels that include creeks. With the implementation of these strategies, and the mitigation measures mentioned above, impacts to the movement of wildlife or with established migratory wildlife corridors would be reduced to less than significant.

Significance after Mitigation: Less Than Significant.

Mitigation: Mitigation Measures BIO-1d.SP and BIO-2a.SP.

Impact BIO-5.SP: Implementation of the Specific Plan could conflict with existing plans, policies, or ordinances, including the City of Richmond's Tree Ordinance (City of Richmond Municipal Code Chapter 10.08) (Criterion e). (*Less Than Significant with Mitigation*)

Adoption and development under the Specific Plan would be subject to, and consistent with, all the regulatory requirements identified in the Conservation, Natural Resources and Open Space element of the General Plan. This includes compliance with the following applicable policies: **Policy CN1.1 Habitat and Biological Resources Protection and Restoration; Policy CN1.2 Local Native Plant Species; Policy CN1.3 Urban Creek Restoration; Policy CN2.1 Open Space and Conservation Areas; Policy CN2.2 Richmond Shoreline; Policy CN2.5 Access to Large-Scale Natural Areas; and Policy CN2.6 Protect Soil and Reduce Erosion.**

As discussed in the *Local Regulations and Policies* section above, the City of Richmond Municipal Code contains protections for street trees throughout the City. While it is likely that some trees may be removed as a result of projects proposed for development within the Plan Area, replacement of any such trees would be required under the City Code. Chapter 10.08 of the City's Municipal Code requires that the Recreation and Parks Director (Superintendent) permit any planting, removal, trimming, pruning, or cutting of street trees. As long as tree removal is consistent with all permitting conditions, such removal would not conflict with local ordinances or policies.

The BCDC's San Francisco Bay Plan contains findings and policies related to fish and wildlife, water quality, fill, recreation, public access, and the appearance and design of shorelines, as well as procedures for BCDC control of filling, dredging, and shoreline development. The Specific Plan would incorporate a public Shoreline Promenade and improvements to the Bay Trail, both of which would enhance public access to water-related uses consistent with the Bay Plan. In addition, BCDC permitting for project elements within Bay waters or within the 100 foot shoreline band would require measures to ensure that development facilitated by the Specific Plan

would be protective of the Bay's biological resources. Thus, projects developed under the Specific Plan would generally be consistent with the Bay Plan.

The San Francisco Estuary Project (SFEP) is a federal-state-local partnership established under the Clean Water Act's National Estuary Program. It is a cooperative effort working to promote effective management of the Bay Estuary, and to restore and maintain its water quality and natural resources while maintaining the region's economic vitality. The SFEP oversees and tracks implementation of its Comprehensive Conservation and Management Plan (CCMP) goals, objectives and actions to protect and restore the Estuary. While not a formally accepted conservation plan, the CCMP serves as a roadmap for restoring the Estuary's chemical, physical, and biological health and was adopted in 1993, with an updated CCMP adopted in 2007. This discussion is provided for informational purposes primarily as the CCMP is not a formal approved habitat conservation plan.

The CCMP and San Francisco Baylands Habitat Goals Report contain recommended conservation goals for Bay habitats, including those potentially affected by Specific Plan activities, that can be used by permitting agencies when evaluating proposed projects within their jurisdictions. Although the CCMP and Goals Project are not regulatory documents, they are supported by most of the agencies and non-governmental groups with major planning, operational, or regulatory interests in Bay Area wetlands. Adverse effects on wetlands or shorelines could also have negative effects on special-status species, critical habitat, or protected natural communities.

Development facilitated by the Specific Plan could result in potentially significant impacts on biological resources, which could conflict with applicable local policies, ordinances, or plans protecting biological resources. The implementation of all mitigation measures described above – **Mitigation Measure BIO-1a.SP: Avoidance and Minimization Measures for Western Pond Turtle, Mitigation Measure BIO-1b.SP: Worker Environmental Awareness Program Training, Mitigation Measure BIO-1c.SP: Preconstruction Nesting Bird Surveys, Mitigation Measure BIO-1d.SP: Building Design and Lighting Strategies to Address Biological Resources Impacts, Mitigation Measure BIO-1e.SP: Salt Marsh Harvest Mouse and Salt Marsh Wandering Shrew Measures, Mitigation Measure BIO-1f.SP: Special-Status Bat Protection Measure, Mitigation Measure BIO-2a.SP: Restoration of Northern Coastal Saltmarsh, Riparian, and Wetlands, Mitigation Measure BIO-2b.SP: Restoration of Coastal Terrace Prairie,** and **Mitigation Measure BIO-3.SP: Wetland Protection** – would ensure that development under the Specific Plan takes place in a manner that would maintain and improve the quality of the bay, ocean, and shoreline areas, and would thus not conflict with the Goals Report or CCMP.

Therefore, with implementation of the measures described above, the potential for development that would occur under the Specific Plan to conflict with applicable local policies or ordinances protecting biological resources is low and would represent a less-than-significant impact.

Significance after Mitigation: Less Than Significant.

Mitigation: Mitigation Measures BIO-1a.SP, BIO-1b.SP, BIO-1c.SP, BIO-1d.SP, BIO-1e.SP, BIO-1f.SP, BIO-2a.SP, BIO-2b.SP, and BIO-3.SP.

4.3.6 Project-Level Impacts of Sub-Area 4 Project

Impact BIO-1.SA4: Development facilitated by the Sub-Area 4 Project would have a substantial adverse effect, either directly or through habitat modifications, on species identified as candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or the United States Fish and Wildlife Service (Criterion a). (*Less Than Significant with Mitigation*)

The majority of development under the Sub-Area 4 Project would occur in existing disturbed industrial areas, unlikely resulting in direct impacts to special-status wildlife species. However, similar to impacts discussed above for the Specific Plan, development within disturbed areas of the Sub-Area 4 Project site still has the potential to indirectly impact nearby sensitive species, particularly nesting birds and special-status wildlife, due to noise, vegetation removal, increased human presence, and use of mechanized equipment associated with development of the Sub-Area 4 Project. Other Sub-Area 4 Project activities, such as the pedestrian path along the Shoreline Promenade, could impact relatively undisturbed portions near the site, including Stege Marsh and Hoffman Marsh. There is no known monarch butterfly habitat within the Sub-Area 4 Project site.

Impacts on Special-Status Plants

Lagoons and riparian corridors surrounding the stormwater channels adjacent to the Sub-Area 4 Project site are densely vegetated. However, these communities have become dominated by weedy, non-native vegetation and have been subject to historic disturbances and the introduction of fill materials. For these reasons, special-status plant species listed in Appendix C are not expected to occur within the Sub-Area 4 Project site because of the absence of suitable habitat or extensive disturbance to the area, or due to parts of the site formerly being open water or intertidal mudflat. No known occurrences of special-status plant species occurring within the Sub-Area 4 Project site.

Impacts on Special-Status Fish

The open water and soft unconsolidated sediment areas of the Central Bay are identified as Critical Habitat for winter- and spring-run Chinook salmon, steelhead trout, and green sturgeon. Although no in-water work is anticipated for the Sub-Area 4 Project, construction activities could result in short-term and localized increased water turbidity and exposure to sediment-affiliated organic and inorganic contaminants from re-suspended sediments to fish. However, waters in the eastern portion of the Sub-Area 4 Project site, such as Baxter Creek and Meeker Slough channel, have been degraded over time due to industrial runoff and altering of local hydrology, therefore any impacts to the aforementioned special-status fish resulting from the Sub-Area 4 Project would be considered less than significant. Furthermore, higher quality and less disturbed foraging habitat for these species is located in other parts of the Central Bay that are less industrialized. Improvements and expansion of the Bay Trail and development encroachment on shoreline

habitats would not result in habitat loss for these species but could result in increased turbidity in Meeker Slough or Baxter Creek; however, this impact would be minor, temporary, and considered less than significant, as species present in Central Bay have likely habituated to anthropogenic marine activity. Overall, potential impacts to special-status fish and their critical habitat resulting from the Sub-Area 4 Project are considered to be less than significant. The use of a SWPPP would further mitigate impacts to water quality, as discussed in Section 4.8 (*Hydrology and Water Quality*).

Impacts on Western Pond Turtle

Suitable aquatic habitat for western pond turtle is present in the Upper and Lower Lagoons, but the likelihood of development affecting foraging or nesting western pond turtle habitat is low. Considering the high degree of disturbance from ongoing and past uses of the Sub-Area 4 Project site, upland dispersal habitat for this species is of marginal quality. However, due to the presence of aquatic habitat adjacent to the Sub-Area 4 Project site, western pond turtle could utilize these sites for dispersal or migratory movement to aquatic features in the immediate area. As such, Sub-Area 4 Project construction could adversely affect this species by direct mortality or upland habitat removal. Implementation of **Mitigation Measure BIO-1a.SP: Avoidance and Minimization Measures for Western Pond Turtle** and **Mitigation Measure BIO-1b.SP: Worker Environmental Awareness Program Training** would reduce potential impacts on this species to a less-than-significant level by educating workers on this species and its presence in the Sub-Area 4 Project site vicinity, by requiring the installation of exclusion fencing around construction sites, requiring the completion of preconstruction surveys, and requiring other protection measures.

Impacts on Special-Status and Nesting Birds

Habitat Loss. As described above (setting information for *Terrestrial Resources*), although much of the Plan Area has been subject to intensive industrial use and approximately 35 acres of Sub-Area 4 comprises a capped cleanup site that is devoid of any vegetation, mature trees and dense vegetation exist in the Sub-Area 4 Project site offer nesting and roosting habitat for raptors and other birds, including special-status birds, as do existing buildings and other structures, many of which would be demolished or rehabilitated in association with development facilitated under the Sub-Area 4 Project. Protected nesting colonies for herons and egrets potentially in eucalyptus found in the Sub-Area 4 Project site could be directly impacted through tree removal. No removal of marshland habitat is anticipated under development of the Specific Plan.

Marshlands, grasslands, and ruderal habitat in and adjacent to the Sub-Area 4 Project site provide nesting and foraging opportunities for raptors, and a number of special-status and common nesting birds, including burrowing owl. Ground disturbance within the western grassland area and ruderal upland fringes of the Sub-Area 4 Project site and south of Bayview Avenue, specifically near the Upper and Lower Lagoons, Hoffman Marsh, and Baxter Creek, could result in the destruction of burrowing owl nesting habitat or release of contaminants into nesting or foraging habitat for California Ridgway's rail, California black rail, Alameda song sparrow, saltmarsh common yellowthroat, and northern harrier potentially inhabiting these areas and in Stege Marsh, if unmitigated. Although there would be no significant loss of high-quality habitat, short-term nesting and foraging habitat degradation would occur through the exposure of contaminated soils.

Please refer to the discussion of *Exposure to Contaminants*, below, for further analysis on this topic.

The conversion of undeveloped and ruderal land to facilitate Sub-Area 4 Project development would necessitate the removal of trees or other vegetation that would result in a loss of nesting habitat. Such impacts on nesting birds could be considered significant; however, implementation of **Mitigation Measure BIO-1c.SP: Preconstruction Nesting Bird Surveys** would reduce potential impacts relating to habitat loss of migratory and common nesting birds to less-than-significant levels.

Exposure to Contaminants. The Sub-Area 4 Project site is known to contain industrial brownfields and non-native grasslands in direct contact with potentially contaminated soils (CH2MHill, 2013). Conversion of open space into developed areas would contribute to the risk of exposure of chemical contaminants or hazardous materials during ground disturbing activities, which would be toxic to foraging and ground nesting birds. This would be a significant impact unless mitigated. The Sub-Area 4 Project will incorporate standard BMPs relating to hazardous waste sites during construction to contain and properly dispose of all contaminated materials encountered, as described in Section 4.7, *Hazards and Hazardous Materials*. Furthermore, all use, handling, storage and transportation of waste materials within the Sub-Area 4 Project site shall comply with California regulations applicable to hazardous materials and waste . The potential discharge at any point into a public or private sewage disposal system, stream, or the ground, of any material which could contaminate any water supply, or otherwise cause the emission of dangerous or offensive elements is prohibited.

In addition, implementation of **Mitigation Measure BIO-1b.SP: Worker Environmental Awareness Program Training** would reduce contaminant exposure impacts to special-status and nesting migratory birds in the Sub-Area 4 Project site to less-than-significant levels. All Sub-Area 4 Project construction workers would be trained about sensitive environmental resources in the Sub-Area 4 Project site (e.g. special-status plants and wildlife with potential to occur onsite and adjacent sensitive habitat areas and vegetation communities) and the protection and avoidance measures to be implemented onsite throughout the duration of the Sub-Area 4 Project.

Human Disturbance. Increased human activity in the Sub-Area 4 Project site during and after construction, including along the Shoreline Promenade, could result in increased disturbance and harassment of special-status wildlife such as California Ridgway's rail or California black rail foraging in the mudflats and lagoons. Protected nesting colonies of herons and egrets in mature trees found in the Sub-Area 4 Project site, if present, and migrating and nesting Cooper's hawk, osprey, white-tailed kite, northern harrier, Alameda song sparrow, saltmarsh common yellowthroat, and common nesting birds could be indirectly impacted through increased human disturbance. However, significant amounts of open space will remain adjacent to the Sub-Area 4 Project site, and will provide a "buffer zone" between special-status birds and human activity.

Noise. Construction activities under the Sub-Area 4 Project, especially those that involve demolition and heavy machinery, may adversely affect special-status and migratory nesting bird species within 0.25 miles of the Sub-Area 4 Project site during the nesting season (February 1–

August 15). These activities may also affect special-status and migratory birds, known to forage in the grasslands, riparian corridors, wetlands, tidal marshes, mudflats, and Bay waters near the Sub-Area 4 Project site. Although high ambient levels of noise and disturbance originating from I-580, industrial warehouses, and other human disturbances surrounding the Sub-Area 4 Project site likely preclude nesting activities for many special-status birds, potential nesting habitat could still be present in the Sub-Area 4 Project site, particularly in the western areas, and Sub-Area 4 Project activities that may alter the ambient noise environment could have an effect on bird behavior. Noise pollution can be detrimental to wildlife, and bird populations are particularly susceptible because they rely on acoustic signals for mating, predator evasion, and communication between adults and offspring, among other behaviors.

California's Ridgway's rail, California black rail, Alameda song sparrow, saltmarsh common yellowthroat, burrowing owl, and northern harrier could experience flushing, avoidance, or nest abandonment in marshlands, creeks, and lagoons, similar to tree nesting birds, such as raptors, including white-tailed kite, herons, and egrets in the Sub-Area 4 Project site, as a result of increased noise levels from Sub-Area 4 Project construction and demolition activities. Fish-eating birds, including Caspian tern, California least tern, and osprey, and multiple duck species, foraging within marshlands and Bay waters in the Sub-Area 4 Project site could also be exposed to short-term noise impacts as a result of construction activities; however, these impacts would be considered less than significant. Furthermore, if these species were to forage or migrate east of the Bay waters, towards the land-based development, they would likely be habituated to high levels of noise currently associated with I-580 and existing industrial operations.

The loss of an active nest of a special-status bird species that is attributable to Sub-Area 4 Project activities would be considered a significant impact under CEQA. Moreover, disruption of nesting migratory or native birds is not permitted under the Federal MBTA or the California Fish and Game Code, as it could constitute unauthorized take. Thus, the loss of any active nest by, for example, removing a tree or shrub containing an active nest or causing visual or noise disturbance that leads to nest abandonment, must be avoided under federal and California law. Implementation of **Mitigation Measure BIO-1c.SP: Preconstruction Nesting Bird Surveys**, as described above for the Specific Plan, would reduce potential impacts on migratory and special-status birds to a less-than-significant level by restricting certain construction activities during the bird breeding season, requiring preconstruction surveys, and implementing avoidance measures if active nests are identified. In addition, implementing **Mitigation Measure NOI-1a.SP, Mitigation Measure NOI-1b.SP** and **Mitigation Measure NOI-4b.SP** as discussed in Section 4.10, *Noise*, would require the use of noise control methods and technologies during construction activities which would further reduce potential impacts on nesting birds.

Avian Collisions with Buildings and Night lighting. The Sub-Area 4 Project would result in the conversion of open space into development with increased sources of night lighting. Open space adjacent to the Sub-Area 4 Project site potentially affected by increased night lighting includes Baxter Creek, Eastern Stege Marsh, the Upper and Lower Lagoons, and Meeker Slough. Although these open spaces are currently subject to substantial amounts of existing light from I-580 and industrial development, impacts on special-status and common nesting birds from artificial night lighting under the Sub-Area 4 Project could be significant. Furthermore,

development facilitated under the Sub-Area 4 Project has the potential to result in a significant new source of building heights that may act as a deceptive appearance or attractant for nocturnal migrating birds, resulting in collisions and avian mortality. For these reasons, the Sub-Area 4 Project could result in significant impact with respect to nocturnal migratory birds.

Many bird collisions with buildings are induced by artificial night lighting, particularly from large buildings, which can be especially problematic for migrating songbirds since many are nocturnal migrants (Ogden, 1996).

Although a portion of the Sub-Area 4 Project site is currently illuminated during the nighttime, and existing industrial development and I-580 have increased ambient lighting over the recent years, the Sub-Area 4 Project could substantially increase ambient light and glare levels associated with the potential use of reflective building materials, street light fixtures, and nighttime lighting of commercial identification signs and logos. The Sub-Area 4 Project would include a wide variety of planned public spaces that will require night lighting including streets and alleys, sidewalks, plazas, parks, trails, and surface parking lots. Consistent use of requirements identified in California Energy Commission Title 24, California Green Building Standards, and Illuminating Engineering Society of North America (IESNA) recommended values for exterior lighting RP-33 for Zone LZ3-Medium would help ensure that new development does not create unnecessary glare or lighting impacts to adjacent parcels or waters suitable for wildlife foraging or nesting habitat in the Sub-Area 4 Project site. Under the Specific Plan, the Sub-Area 4 Project would follow a recommended lighting palette and will require all lighting, reflective surfaces or any other sources of illumination to be utilized in a manner which produces no glare on public streets or on any other parcel. Lights shall be shielded at lot lines so as not to be directly visible from an adjoining residential district.

Sub-Area 4 Project development would consider the addition of low-impact light that does not disturb wildlife in areas where it would also increase safety for commuters and recreational users. Although the Sub-Area 4 Project does not identify specific development standards requiring low-impact lighting, under the Specific Plan, the Sub-Area 4 Project would select fixtures sensitive to preservation of the night sky. The Specific Plan specifies that lighting design must also avoid disruption to bird migratory patterns and wildlife habitat areas, and requires all new lighting to be LED. The pedestrian path along the Shoreline Promenade in the Sub-Area 4 Project site shall be illuminated with low-level pedestrian fixtures (e.g., in-ground or bollard type) that minimize ambient light and potential disruption of marsh wildlife habitats. Overall, increased ambient night lighting would not significantly impact aquatic life in Bay waters due to the open space buffer between the most significant source of lighting, buildings, and Bay waters. Furthermore, landscaped areas that would be established along the Sub-Area 4 Project site boundaries could screen night lighting emitted from new residential areas.

Although the development within the Sub-Area 4 Project site varies from the development that would take place within the Richmond Field Station site, lighting standards under the Sub-Area 4 Project would be consistent with these other plans and all new buildings shall comply with the 2013 California Green Building Standards Code of Regulation, Title 24, Part 11 (CALGreen), Richmond's Municipal Code 15.04.840.040 *Lighting and Glare Standards*, "all lighting, reflective surfaces or any other sources of illumination shall be utilized in a manner which

produces no glare on public streets or on any other parcel," and the San Francisco Bay Plan's Public Access Policy Number 9 *Avoiding Adverse Effects on Wildlife*, which requires development to "locate night lighting away from sensitive habitat areas." A general increase in night lighting is anticipated with the implementation of the Sub-Area 4 Project. Implementation of **Mitigation Measure BIO-1d.SP: Building Design and Lighting Strategies to Address Biological Resources Impacts** would avoid and minimize potential impacts on special-status species and nesting and migratory birds by requiring design features such as patterned or fritted glass and decreasing reflectivity of surfaces to make buildings appear less transparent. The measure also calls for limiting night lighting, which would reduce the potential for disorientation.

Impacts on Special-Status Mammals

Tidally inundated marshlands adjacent to the Sub-Area 4 Project site could provide nesting and foraging opportunities for salt-marsh harvest mouse and salt-marsh wandering shrew; however, no removal of marshland habitat is anticipated under the Sub-Area 4 Project. Ground disturbance during construction along the western grassland and ruderal upland fringes of the Sub-Area 4 Project site and near the Upper and Lower Lagoons, could result in the release of contaminants into seasonal or refugia habitats for salt-marsh harvest mouse and salt-marsh wandering shrew potentially inhabiting these areas and in Stege Marsh. Similarly, habitat loss within the Sub-Area 4 Project site could result in habitat fragmentation or even mortality of individual species.

Short-term habitat degradation and loss impacts to nesting and foraging salt-marsh harvest mouse and salt-marsh wandering shrew could occur through the exposure of contaminated soils or proposed ground disturbing construction activities. However, short-term Project-level impacts to salt-marsh harvest mouse and salt-marsh wandering shrew would be reduced to less than significant levels with the implementation of **Mitigation Measure BIO-1e.SP: Salt Marsh Harvest Mouse and Salt Marsh Wandering Shrew Measures,** described above.

Furthermore, to offset these impacts, the Sub-Area 4 Project incorporates standard BMPs relating to hazardous waste sites, as described in Section 4.7, *Hazards and Hazardous Materials*, during construction to contain and properly dispose of all contaminated soils and vegetation encountered. Additionally, all use, handling, storage and transportation of waste materials within the Sub-Area 4 Project site shall comply with City of Richmond Municipal Code section 15.04.840.090, Liquid or Solid Waste Standards and California hazardous materials regulations.

Implementing **Mitigation Measure BIO-1b.SP: Worker Environmental Awareness Program Training**, as described above for the Specific Plan, would reduce contaminant exposure impacts to salt-marsh harvest mouse and salt-marsh wandering shrew in the Sub-Area 4 Project site to less-than-significant levels. All Sub-Area 4 Project participants would be trained about sensitive environmental resources in the Sub-Area 4 Project site (e.g. special-status plants and wildlife with potential to occur onsite and adjacent sensitive habitat areas and vegetation communities) and the protection and avoidance measures to be implemented onsite throughout the duration of Sub-Area 4 Project construction.

Increased human activity in the Sub-Area 4 Project site, including along the Bay Trail, could result in increased disturbance by people and their dogs to salt-marsh harvest mouse and salt-

marsh wandering shrew foraging or nesting habitat when compared to existing conditions where these areas are not open for public use. Increased noise resulting from construction activities in the Sub-Area 4 Project site, especially activities that involve demolition and heavy machinery, would result in impacts to salt-marsh harvest mouse and salt-marsh wandering shrew populations potentially in the Sub-Area 4 Project site.

Overall, significant amounts of open space will remain in the Sub-Area 4 Project site to provide a "buffer zone" for salt-marsh harvest mouse and salt-marsh wandering shrew potentially present in the Sub-Area 4 Project site from any disturbance resulting from the Sub-Area 4 Project. Impacts to salt-marsh harvest mouse and salt-marsh wandering shrew would be less than significant.

Impacts on Bats

Removing existing structures and clearing of vegetation in support of Sub-Area 4 Project development could result in direct mortality of special-status bats roosting within the Sub-Area 4 Project site. Direct mortality of special-status bats such as hoary bat and pallid bat would be a significant impact. Implementation of **Mitigation Measure BIO-1f.SP: Special-Status Bats Protection Measure** would reduce potential impacts on special-status bats to a less-than-significant level by requiring preconstruction surveys and implementing avoidance measures if potential roosting habitat or active roosts are located.

Significance after Mitigation: Less Than Significant.

Mitigation: Mitigation Measures BIO-1a.SP, BIO-1b.SP, BIO-1c.SP, BIO-1d.SP, BIO-1e.SP, BIO-1f.SP, NOI-1a, NOI-1b, and NOI-4b.SP.

Impact BIO-2.SA4: Development under the Sub-Area 4 Project could have a substantial adverse effect on riparian habitat or other sensitive natural communities identified in local or regional plans, policies, regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service (Criterion b). (*Less Than Significant with Mitigation*)

Encroachment of Sub-Area 4 Project development into sensitive natural communities and impacts associated with increased human population could result in significant impacts to sensitive natural communities in the Sub-Area 4 Project site. Sub-Area 4 Project construction could affect areas of northern coastal saltmarsh, coastal scrub, riparian, and freshwater emergent wetland habitat located within or adjacent to the Sub-Area 4 Project site. Runoff associated with other construction activities such as materials staging, stockpiling, vehicle and equipment parking, could also result in adverse effects on these sensitive habitats. The northern coastal saltmarsh, riparian, and wetland communities within the Sub-Area 4 Project site provide valuable foraging and cover benefits for resident wildlife and the loss or degradation of such habitat would be considered a significant impact.

The Sub-Area 4 Project would be constructed under the principles and design guidelines of the Specific Plan, discussed below, which would help reduce potential impacts to sensitive natural

communities to less than significant. By implementing Open Space Key Action Item 4, any development in the Sub-Area 4 Sub-Area 4 Project site would include the transfer of all currently designated open space to the EBRPD or California State Parks to ensure appropriate long term management; "All designated open space lands under the same ownership could be transferred to the East Bay Regional Park District or California State Parks to become part of McLaughlin Eastshore State Park and ensure appropriate long-term management of these sensitive natural lands." Furthermore, the City would adhere to its MRP permit relating to water quality monitoring for Baxter Creek and the Central San Francisco Bay and Harbor, which would limit potential adverse impacts to natural communities.

Guiding principles relating to natural communities in the Sub-Area 4 Project site have been drafted in concert with the open space program identified in the Berkeley Global Campus LRDP. In 2004, UC Berkeley prepared a Wetland Restoration Monitoring Plan (BBL, 2004) for the Berkeley Global Campus/Richmond Field Station that included requirements to document post-remediation conditions in portions of the Western Stege Marsh. Efforts like these reduce impacts to natural communities through restoration and improvement of hydrologic, biogeochemical, plant community, and faunal support/habitat functions, and the local tidal channel network.

Implementation of **Mitigation Measure BIO-2a.SP: Restoration of Northern Coastal Saltmarsh, Riparian, and Wetlands** for the Sub-Area 4 Project site would further reduce impacts to natural communities by requiring Sub-Area 4 Project design to adhere to principles benefiting northern coastal saltmarsh, riparian scrub habitat, and freshwater emergent wetlands, and associated wildlife. As such, the impact to natural communities would be considered less than significant by restoring affected vegetation following construction. Implementing **Mitigation Measure BIO-2b.SP: Restoration of Coastal Terrace Prairie** would further reduce impacts to this sensitive natural community.

In addition, implementation of **Mitigation Measure BIO-3.SP: Wetland Protection** would isolate Sub-Area 4 Project development with the installation of exclusion fencing and stormwater BMPs. This would result in protection of the remaining habitat which surrounds the Sub-Area 4 Project site during construction activities. Impacts to wetlands and freshwater emergent habitat are further discussed in Impact BIO-3.SA4, below.

Significance after Mitigation: Less Than Significant.

Mitigation: Mitigation Measure BIO-2a.SP, and BIO-2b.SP, and BIO-3.SP.

Impact BIO-3.SA4: Development of the Sub-Area 4 Project could have a substantial adverse effect on federally protected wetlands, as defined by Section 404 of the Clean Water Act and state protected wetlands (Criterion c). (*Less Than Significant with Mitigation*)

The Sub-Area 4 Project site may contain jurisdictional features that could be directly affected by development of the Sub-Area 4 Project, including wetlands and other waters of the United States and waters of the State of California. This would be a significant impact.

As described above in *Vegetation Communities* (*Freshwater Emergent Wetland and Lagoon*), the Sub-Area 4 Project site was used for industrial and agricultural chemical manufacturing for approximately a century, until 1997. As part of the chemical manufacturing facility on site, the Upper and Lower Lagoons were used as wastewater evaporation ponds to capture site wastewater mixture from industrial activities, building maintenance, chemical processing, and untreated stormwater runoff. As such, these features have been exposed to a high degree of disturbance from recent and historical site uses and are characterized as being a low-quality biological resource in the Sub-Area 4 Project site.

Sub-Area 4 Project construction activities such as grading and excavation would generate loose, erodible soils which could result in erosion or siltation into tributaries to Bay waters and its associated wetlands resulting in indirect impacts to jurisdictional features in the Sub-Area 4 Project site. In the case of soil erosion or an accidental release of deleterious materials during construction, development could indirectly impact water quality, which would be considered a significant impact. Urban runoff is also a major source of water pollution, especially in industrial areas such as the Sub-Area 4 Project site. Sub-Area 4 Project development would increase runoff that often carries heavy metals, pesticides, fertilizers, trash, pet waste, automotive fluids, and other toxic chemicals to jurisdictional features within the Plan Area and Bay waters.

However, stormwater discharges from the Sub-Area 4 Project site are regulated by the NPDES through the issuance of a MRP and the Sub-Area 4 Project would be required to comply with the MRP permit provisions. During construction of the Sub-Area 4 Project, BMPs would be applied to prevent potential pollutants from entering the storm drain system directly, reducing sediment or potentially hazardous runoff from entering receiving waters. Examples of these measures include: covering trash receptacles and car wash areas, regular sweeping of paved surfaces, stenciling of storm drain inlets, and installation of full trash capture devices.

After Sub-Area 4 Project construction and during operation of the Sub-Area 4 Project, hydromodification management could be employed to manage sediment runoff through stormwater flow management. The new stormwater management system will integrate water quality treatment features designed to meet current Contra Costa County and RWQCB design criteria. As discussed further in Section 4.8, *Hydrology and Water Quality*, LID biotreatment measures that will be implemented throughout much of the Sub-Area 4 Project site will include bioretention planters, street planters, bioswales, subgrade infiltration areas, permeable paving and any other approved treatment. The individual development parcels within the Sub-Area 4 Project site will also be required to be designed with LID principles and treat the runoff interior to that parcel. These measures would offset anticipated increased sediment runoff resulting from increased stormwater runoff into jurisdictional wetlands.

Wetland Permitting Requirements

Fill and excavation in areas considered jurisdictional waters requires permitting and authorization from the appropriate regulatory agencies. Failure to proceed without permits or approvals would be in violation of these regulations. A verified wetland delineation is required prior to the submittal of regulatory permit applications, and should include a full delineation of wetland features associated with the Sub-Area 4 Project impact footprint. The Sub-Area 4 Project does not

currently propose activities which would involve fill and excavation in areas considered jurisdictional waters. However, should construction activities require such approvals, permit approvals and certifications generally include the following:

Section 404 / Section 10 Permits. Pursuant to Section 404 of the Federal Clean Water Act, permit approval from the USACE shall be obtained for the placement of dredge or fill material in waters of the U.S., including, for example, the placement of rip-rap or other fill in the area of the Shoreline Promenade. Any other construction below MHW elevation would require a Section 10 permit. Preparation of the Section 404 / Section 10 permit applications may require a PCN and supporting documentation. A PCN outlines Sub-Area 4 Project activities, areas of impact, construction techniques, and methods for avoiding and reducing impacts to jurisdictional features.

Section 401 Water Quality Certification. Approval of WQC and/or WDRs must be obtained from the RWQCB for work within jurisdictional waters. Preparation of the Section 401 Water Quality Certification typically requires a permit application and supporting materials including construction techniques, areas of impact, and Sub-Area 4 Project schedule.

By adhering to wetland permitting requirements and implementing **Mitigation Measure BIO-2a.SP: Restoration of Northern Coastal Saltmarsh, Riparian, and Wetlands, Mitigation Measure BIO-3.SP: Wetland Protection**, and **Mitigation Measure HYD-1.SP Water Quality Best Management Practices for All Construction Activities**, impacts to jurisdictional features would be reduced to a less-than-significant level. These measures require installation of a protective barrier at the border of the state and federal jurisdictional to ensure that development under the Sub-Area 4 Project does not affect jurisdictional wetlands. This sediment barrier could also serve as exclusion fencing for common wildlife as long as it meets the CDFW standards for species exclusion fencing (see Mitigation Measure BIO-1a.SP). In addition, the Sub-Area 4 Project site is subject to the SWRCB General Construction Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities (see Section 4.8, *Hydrology and Water Quality*). This permit requires a minimum level of construction water quality BMPs and monitoring to protect receiving waters from construction-related pollutants, stormwater, and sediment erosion and runoff. These BMPs would be specified to each specific SWPPP that would be submitted and reviewed by the RWQCB before the start of construction activities. With stormwater regulation compliance and implementation of Mitigation Measure BIO-2.SP, as well as implementation of **Mitigation Measure HYD-1.SP: Water Quality Best Management Practices for All Construction Activities**, Sub-Area 4 Project impacts to jurisdictional features would be reduced to a less-than-significant level.

Significance after Mitigation: Less Than Significant.

Mitigation: Mitigation Measure BIO-2a.SP, BIO-3.SP, and HYD-1.SP.

Impact BIO-4.SA4: Development of the Sub-Area 4 Project would not likely 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. (Criterion d) (*Less Than Significant with Mitigation*)

The Sub-Area 4 Project site is located in a regionally-sensitive natural area, with northern coastal saltmarsh, riparian, and freshwater emergent wetland habitats in the immediate vicinity of existing industrial activities. Avian species rely on tidal marshes, lagoons, and open water in the adjacent environment to the Sub-Area 4 Project site during seasonal migrations and/or require these specific habitats to successfully breed. Much of the Sub-Area 4 Project development would occur within upland areas where very little undisturbed wildlife habitat exists, and which do not provide viable wildlife movement corridors that would differ under Sub-Area 4 Project development conditions. As addressed under Impact BIO-4.SP, the tidal salt marsh found south of the Sub-Area 4 Sub-Area 4 Project site provides favorable locations for wildlife to travel between larger areas of open space which support foraging, breeding, shelter, and preferred summer and winter range locations. Impacts to this habitat will largely be avoided.

Landscaping that would be developed within the Sub-Area 4 Sub-Area 4 Project site, as described in the Specific Plan, is recommended to consist of drought tolerant and low-maintenance plant species. However, the Specific Plan does not specify tree and shrub species to be native species to California. The use of non-native species could lead to the spread of invasive plants and encroachment upon intact native plant communities supporting native and special-status wildlife that may migrate through the site. Through the implementation of **Mitigation Measure BIO-2a.SP: Restoration of Northern Coastal Saltmarsh, Riparian, and Wetlands**, Sub-Area 4 Project development would minimally impact potential wildlife movement, nursery sites, or other habitat functions in the Sub-Area 4 Project site.

Although the Sub-Area 4 Project site is already subject to nighttime illumination from nearby development, Sub-Area 4 Project development is expected to increase the amount of light and glare generated in the Sub-Area 4 Project site. New development would potentially use reflective building materials, street light fixtures, and nighttime lighting of signs and logos. This could interfere with the movement or migratory patterns of wildlife inhabiting the Sub-Area 4 Project site. Through the implementation of **Mitigation Measure BIO-1d.SP: Building Design and Lighting Strategies to Address Biological Resources Impacts**, Sub-Area 4 Project development would minimally impact potential wildlife movement, nursery sites, or other habitat functions in the Sub-Area 4 Project site.

With the implementation of these strategies, impacts to the movement of wildlife or to established migratory wildlife corridors would be reduced to less than significant.

Significance after Mitigation: Less Than Significant.

Mitigation: Mitigation Measure BIO-1d.SP, BIO-2a.SP.

Impact BIO-5.SA4: The Sub-Area 4 Project could conflict with existing plans, policies, or ordinances, including the City of Richmond's Tree Ordinance (City of Richmond Municipal Code Chapter 10.08). (Criterion e) (*Less Than Significant with Mitigation*)

Development under the Sub-Area 4 Project would be subject to, and consistent with, all the regulatory requirements identified in the Conservation, Natural Resources and Open Space element of the General Plan. Consistent with Impact BIO-5.SP, this includes compliance with the following applicable policies: *Policy CN1.1 Habitat and Biological Resources Protection and Restoration; Policy CN1.2 Local Native Plant Species; Policy CN1.3 Urban Creek Restoration; Policy CN2.1 Open Space and Conservation Areas; Policy CN2.2 Richmond Shoreline; Policy CN2.5 Access to Large-Scale Natural Areas; and Policy CN2.6 Protect Soil and Reduce Erosion.*

As discussed above under *Local Regulation and Policies*, the City of Richmond Municipal Code Chapter 10.08 contains protections for trees in the event they are damaged or removed. As discussed in the *Local Regulations and Policies* section above, the City of Richmond Municipal Code contains protections for street trees throughout the City. While it is likely that some trees may be removed during construction of the Sub-Area 4 Project, replacement of any such trees would be required under the City Code. Chapter 10.08 of the City's Municipal Code requires that the Recreation and Parks Director (Superintendent) permit any planting, removal, trimming, pruning, or cutting of street trees. As long as tree removal is consistent with all permitting conditions, such removal would not conflict with local ordinances or policies.

The BCDC's San Francisco Bay Plan contains findings and policies related to fish and wildlife, water quality, fill, recreation, public access, and the appearance and design of shorelines, as well as procedures for BCDC control of filling, dredging, and shoreline development. Areas under BCDC jurisdiction that are covered within the Plan Area include the Bay up to the high tide line; 5 feet above mean sea level where marsh vegetation is present; and a shoreline band encompassing tidelands to 100 feet landward of the shoreline that are determined to be of regional importance to the Bay (BCDC 2012). The Sub-Area 4 Project would incorporate a public Shoreline Promenade which would enhance public access to water-related uses consistent with the Bay Plan. In addition, BCDC permitting for Sub-Area 4 Project elements within areas under BCDC jurisdiction would require measures to ensure that development facilitated by the Sub-Area 4 Project would be protective of the Bay's biological resources. Thus, the Sub-Area 4 Project would generally be consistent with the Bay Plan.

The CCMP and San Francisco Baylands Habitat Goals Report contain recommended conservation goals for Bay habitats, including those potentially affected by Sub-Area 4 Project activities that can be used by permitting agencies when evaluating proposed projects within their jurisdictions. Although the CCMP and Goals Project are not regulatory documents, they are supported by most of the agencies and non-governmental groups with major planning, operational, or regulatory interests in Bay Area wetlands and are therefore included for informational purposes. Adverse effects on wetlands or shorelines could also have negative effects on special-status species, critical habitat, or protected natural communities.

Development facilitated by the Sub-Area 4 Project could result in potentially significant impacts on biological resources, which could conflict with applicable local policies, ordinances, or plans

protecting biological resources. The implementation of all mitigation measures described above for the Specific Plan – **Mitigation Measure BIO-1a.SP: Avoidance and Minimization Measures for Western Pond Turtle, Mitigation Measure BIO-1b.SP: Worker Environmental Awareness Program Training, Mitigation Measure BIO-1c.SP: Preconstruction Nesting Bird Surveys, Mitigation Measure BIO-1d.SP: Building Design and Lighting Strategies to Address Biological Resources Impacts, Mitigation Measure BIO-1e.SP: Salt Marsh Harvest Mouse and Salt Marsh Wandering Shrew Measures, Mitigation Measure BIO-1f.SP: Special-Status Bat Protection Measure, Mitigation Measure BIO-2a.SP: Restoration of Northern Coastal Saltmarsh, Coastal Scrub, Riparian Scrub, and Wetlands,** and **Mitigation Measure BIO-3.SP: Wetland Protection** – would ensure that Sub-Area 4 Project development takes place in a manner that would maintain and improve the quality of the bay, ocean, and shoreline areas, and would thus not conflict with the Goals Report or CCMP.

Therefore, with implementation of the measures described above, the potential for Sub-Area 4 Project development to conflict with applicable local policies or ordinances protecting biological resources is low and would represent a less-than-significant impact.

Significance after Mitigation: Less Than Significant.

Mitigation: Mitigation Measure BIO-1a.SP, BIO-1b.SP, BIO-1c.SP, BIO-1d.SP, BIO-1e.SP, BIO-1f.SP, BIO-2a.SP, and BIO-3.SP.

4.3.7 Cumulative Impacts

This analysis evaluates whether the impacts of buildout under the Specific Plan and the Sub-Area 4 Project, in combination with past, present, approved, pending and reasonably foreseeable future projects within Plan Area and in the vicinity (as described in Section 4.0.4, Cumulative Analysis, in this chapter) would result in a cumulatively significant impact on special-status species, wetlands and other waters of the U.S., or other biological resources protected by federal, state, or local regulations or policies (based on the significance criteria and thresholds presented earlier). This analysis then considers whether the incremental contribution of the Specific Plan or the Sub-Area 4 Project to this cumulative impact would be considerable. Both conditions must apply in order for the Specific Plan's or Sub-Area 4 Project's cumulative effects to rise to the level of significance.

Impact C-BIO-1.SP: The Specific Plan, in conjunction with other past, current, or foreseeable development, could result in cumulative impacts on special-status species, habitats, wetlands and other waters of the U.S. (*Less Than Significant with Mitigation*)

The geographic scope of potential Specific Plan cumulative impacts on biological resources encompasses the sensitive natural communities, species occurrences, and habitats within the Study Area as well as biologically linked areas sharing Central San Francisco Bay and its waters. Past projects within this context, including the development of civic facilities, residences, commercial and industrial areas, and infrastructure, have already caused substantial adverse

cumulative changes to biological resources in the Study Area. For example, portions of the Plan Area are located on fill of what was once tidal mudflats and marshes, with a significant loss of the original habitat types and many of the species that once occurred there. Areas on the shoreline that were industrial or have revegetated naturally over time provide a "new normal" in terms of habitat that is often simplified in terms of diversity, and supporting a different suite of species than once existed there. Overall, this is true of many areas surrounding the Bay. Therefore, due to past projects, an adverse significant cumulative effect on biological resources has already occurred. With the addition of current and proposed projects, there is an existing significant cumulative impact *without* the Specific Plan.

The majority of projects considered for cumulative impacts listed in Chapter 4.0 of this EIR, including the Terminal One Project, Berkeley Global Campus/Richmond Field Station, Marina Way Live /Work Project, and Westshore Marina Project involve the land-based redevelopment of previously developed areas, or involve improvement of waterfront areas in Richmond. The areas in which these projects would be developed have limited habitat value for wildlife as they are already primarily or fully developed and in industrial or disturbed areas. However, the proximity of some projects to the waters of San Francisco Bay could lead to potential cumulatively significant impacts on water birds and marine life, and demolition of existing buildings or removal of existing vegetation could lead to significant cumulative impacts on nesting or roosting bats and birds.

Beyond the Study Area, there could be cumulative impacts on sensitive biological resources located throughout the Bay. For example, the Specific Plan might affect birds that use not only the Study Area's foraging and nesting habitats but also other habitats quite distant from the Study Area; these birds could therefore be affected by other projects. Cumulative impact assessment at this scale is speculative, and offsetting these impacts are large-scale habitat improvement projects such as the tidal marsh restoration efforts at the Cullian Ranch Restoration Project in San Pablo Bay, San Leandro Shoreline Marshlands and Hayward Regional Shoreline, and the South Bay Salt Pond Restoration project, all of which intend to provide a net benefit to biological resources.

With the implementation of **Mitigation Measures BIO-1a.SP** through **BIO-3.SP**, as well as **Mitigation Measure HYD-1.SP** and **Mitigation Measure NOI-1b.SP**, the impact analysis in this section has shown that the Specific Plan would result in less-than-significant impacts on biological resources within the Study Area. When considered within the existing conditions of biological resources in the Study Area and Central Bay in the context of past, present and reasonably foreseeable similar projects, as well as existing regulatory and legal requirements, including permitting requirements, the Specific Plan would add only a minor, incremental and negligible contribution to habitat loss, degradation, and direct and indirect impacts to special-status species. The Specific Plan's contribution would not be considered cumulatively considerable; therefore, in combination with past, present, and reasonably foreseeable future projects, the Specific Plan's cumulative effects on biological resources would be less than significant after implementation of mitigation.

Significance after Mitigation: Less Than Significant.

Mitigation: Mitigation Measure BIO-1a.SP, BIO-1b.SP, BIO-1c.SP, BIO-1d.SP, BIO-1e.SP, BIO-1f.SP, BIO-2a.SP, BIO-2b.SP, BIO-3.SP, HYD-1.SP, and NOI-1b.SP.

Impact C-BIO-1.SA4: The Sub-Area 4 Project, in conjunction with other past, current, or foreseeable development, could result in cumulative impacts on special-status species, habitats, wetlands and other waters of the U.S. (*Less Than Significant with Mitigation*)

The geographic scope of potential Sub-Area 4 Project cumulative impacts on biological resources encompasses the sensitive natural communities, species occurrences, and habitats within the Study Area as well as biologically linked areas sharing Central San Francisco Bay and its waters. Past projects within this context, including the development of civic facilities, residences, commercial and industrial areas, and infrastructure, have already caused substantial adverse cumulative changes to biological resources in the Study Area. For example, much of the Sub-Area 4 Project site is located on fill of what was once tidal mudflats and marshes, with a significant loss of the original habitat types and many of the species that once occurred there. Therefore, due to past projects, an adverse significant cumulative effect on biological resources has already occurred. With the addition of current and proposed projects, there is an existing significant cumulative impact *without* the Specific Plan.

The majority of projects considered for cumulative impacts listed in Chapter 4.0 of this EIR, including the Terminal One Project, Berkeley Global Campus/Richmond Field Station, Marina Way Live /Work Project, and Westshore Marina Project involve the land-based redevelopment of previously developed areas, or involve improvement of waterfront areas in Richmond. The areas in which these projects would be developed have limited habitat value for wildlife as they are already primarily or fully developed and in industrial or disturbed areas. However, the proximity of some projects to the waters of San Francisco Bay could lead to potential cumulatively significant impacts on water birds and marine life, and demolition of existing buildings or removal of existing vegetation could lead to significant cumulative impacts on nesting or roosting bats and birds.

Beyond the Sub-Area 4 Project site, there could be cumulative impacts on sensitive biological resources located throughout the Bay. For example, development of the Sub-Area 4 Project might affect birds that use not only the Sub-Area 4 Project site's foraging and nesting habitats but also other habitats quite distant from the Study Area; these birds could therefore be affected by other projects. Cumulative impact assessment at this scale is speculative, and offsetting these impacts are large-scale habitat improvement projects such as the tidal marsh restoration efforts at the Cullian Ranch Restoration Project in San Pablo Bay, San Leandro Shoreline Marshlands and Hayward Regional Shoreline, and the South Bay Salt Pond Restoration project, all of which intend to provide a net benefit to biological resources.

With the implementation of **Mitigation Measures BIO-1a.SP** through **BIO-3.SP**, as well as **Mitigation Measure HYD-1.SP** and **Mitigation Measure NOI-1b**, the impact analysis in this section has shown that the Sub-Area 4 Project would result in less-than-significant impacts on biological resources within the Study Area. When considered within the existing conditions of

biological resources in the Study Area and Central Bay in the context of past, present and reasonably foreseeable similar projects, as well as existing regulatory and legal requirements, including permitting requirements, the Sub-Area 4 Project would add only a minor, incremental and negligible contribution to habitat loss, degradation, and direct and indirect impacts to special-status species. The Sub-Area 4 Project's contribution would not be considered cumulatively considerable; therefore, in combination with past, present, and reasonably foreseeable future projects, the Sub-Area 4 Project's cumulative effects on biological resources would be less than significant after implementation of mitigation.

Significance after Mitigation: Less Than Significant.

Mitigation: Mitigation Measure BIO-1a.SP, BIO-1b.SP, BIO-1c.SP, BIO-1d.SP, BIO-1e.SP, BIO-1f.SP, BIO-2a.SP, BIO-3.SP, and HYD-1.SP.

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4.4 Cultural and Paleontological Resources

4.4.1 Introduction

This section includes a discussion of impacts to potential cultural and paleontological resources in the Plan Area and the Sub-Area 4 Project site. Topics below include the physical and regulatory setting, baseline information for determining environmental impacts, significance criteria used for determining environmental impacts, and potential impacts associated with construction, operation, and maintenance in the Plan Area and Sub-Area 4 Project site.

Cultural resources include architectural resources, archaeological resources, potential tribal cultural resources,[1] and human remains. Paleontological resources are also discussed in this section. Key definitions are provided below.

Key Terms

Architectural resources include buildings, structures, objects, and historic districts. Residences, cabins, barns, lighthouses, military-related features, industrial buildings, and bridges are examples of architectural resources.

Archaeological resources consist of prehistoric and historic-era archaeological resources. Prehistoric archaeological resources consist of village sites, temporary camps, lithic scatters, roasting pits/hearths, milling features, petroglyphs, rock features, and burials. Associated artifacts include obsidian and chert flaked-stone tools (e.g., projectile points, knives, scrapers) or toolmaking debris; culturally darkened soil ("midden") containing heat-affected rocks, artifacts, or shellfish remains; and stone milling equipment (e.g., mortars, pestles, handstones, or milling slabs). Historic-era archaeological resources consist of townsites, homesteads, agricultural or ranching features, mining-related features, refuse concentrations, and features or artifacts associated with early military and industrial land uses. Associated artifacts include stone, concrete, or adobe footings and walls; artifact filled wells or privies; and deposits of metal, glass, and/or ceramic refuse.

Tribal cultural resources are sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American tribe that are listed, or determined to be eligible for listing, on the national, state, or local register of historical resources (PRC Section 21074[a][1]).

Paleontological resources are the fossilized evidence of past life found in the geologic record. Fossils are preserved in sedimentary rocks, which are the most abundant rock type exposed at the surface of the earth. Despite the abundance of these rocks, and the vast numbers of organisms that have lived through time, preservation of plant or animal remains as fossils can be a rare occurrence. In many cases, fossils of animals and plants occur only in limited areas and in small numbers

[1] The impacts of development to tribal cultural resources are required to be analyzed under CEQA for projects with Notices of Preparation (NOPs) that were released after July 1, 2015, as described below (*Assembly Bill 52*). The NOP for the Richmond Bay Specific Plan EIR was circulated in September 2014.

relative to the distribution of the living organisms they represent. In particular, fossils of vertebrates – animals with backbones – are sufficiently rare to be considered nonrenewable resources.

4.4.2 Setting

Cultural Resources Setting

Natural Environment

The northern part of the San Francisco Bay is within the Bay Area-Delta bioregion. This bioregion consists of a variety of natural communities that range from the open waters of the Bay and Delta to salt and brackish marshes to chaparral and oak woodlands. The temperate climate is Mediterranean in nature, with relatively mild, wet winters and warm, dry summers. Habitat types include annual (non-native) grasslands, coastal scrub, Eucalyptus woodland, riparian corridors, emergent wetlands, and urban/ruderal communities. A wide variety of migratory and year-round resident birds use San Francisco Bay and the associated creeks and marshes as habitat for nesting and feeding. Salmonid and other fish were historically present in local creeks, and San Francisco Bay is still identified as an important fish habitat.

Geologic Context

The San Francisco Bay Area has undergone dramatic landscape changes since humans began to inhabit the region more than 10,000 years ago. Rising sea levels and increased sedimentation into streams and rivers are among some of the changes (Helley et al., 1979). In many places, the interfaces between older land surfaces and alluvial fans are marked by a well-developed buried soil profile, or a paleosol. A paleosol is formed from weathering at or near the ground surface during a period of comparative landform stability. This surface would also have been available for human occupation and use prior to subsequent sediment deposition. Paleosols preserve the composition and character of the Earth's surface prior to subsequent sediment deposition; thus, paleosols have the potential to preserve archaeological resources if the area was occupied or settled by humans (Meyer and Rosenthal, 2007). Because human populations have increased since the arrival of the area's first inhabitants, younger paleosols (late Holocene, or from approximately 4,000 years before present [B.P.]) are more likely to yield archaeological resources than older paleosols (early Holocene or Pleistocene, or after approximately 14,000 B.P.). Numerous archaeological sites in the Bay Area have been found in this context.

Geologic mapping of surficial deposits indicates that the Plan Area and Sub-Area 4 Project site is located on the edge of a Pleistocene-age alluvial fan adjacent to former Bay marshland currently consisting of modern artificial fill over San Francisco Bay Mud (Witter et al., 2006). A thin band of Holocene-age alluvium overlying very soft Bay Mud that likely represents a buried slough extends through the Pleistocene-age alluvium. The Pleistocene-age depositional landform does not have the potential to contain deeply buried soil surfaces with associated archaeological deposits. Prehistoric archaeological resources in this context would be at or near to the existing ground surface, as evidenced by the known archaeological sites in the vicinity.

Since areas of artificial fill were created during the historic or modern period as a result of urban development (less than 150 years), archaeological sites of any age may have been destroyed, re-deposited, or completely buried by artificial fill deposits. The identification of sites buried beneath artificial fill and/or Bay Mud is problematic because these areas consists of altered landscapes that may not currently represent historical landforms and shorelines (Meyer and Rosenthal, 2007). In general, estuarine mud deposits are not expected to contain buried archaeological deposits because they were formed in settings that were either submerged, or subject to regular tidal influence. The interface of the Bay Mud with the adjacent terrestrial land surface is, however, an exception to this sensitivity assessment—these areas are considered to have at least moderate potential for buried sites (Meyer and Rosenthal in Byrd and Darcangelo, 2008). The general disturbance in the Plan Area and Sub-Area 4 Project site from previous grading, construction, and remediation activities significantly lessens the potential for identifying buried prehistoric sites and features.

Prehistoric Background

The natural marshland communities along the edges of bays and channels were the principal source for subsistence and other activities during the prehistory of the San Francisco Bay region. Between 1906 and 1908, Stanford (and, later, U.C. Berkeley) archaeologist N. C. Nelson conducted surveys of archaeological sites in the Bay region. His early surveys documented nearly 425 "earth mounds and shell heaps" along the littoral zone of the bay (Nelson, 1909). Archaeologists later excavated some of the most notable of these sites in the Bay Area, such as the Stege Mound Archaeological District (CA-CCO-297) in the Plan Area, the Ellis Landing Site (CA-CCO-295) just outside of the Plan Area, the Emeryville shellmound (CA-ALA-309), and the Fernandez Site (CA-CCO-259) in Rodeo Valley (Moratto, 1984). These dense midden sites, such as CA-ALA-309, have been carbon 14 dated to be 2,310 ± 220 years old, but other evidence from around the bay suggests that human occupation in the region is of greater antiquity, perhaps as early as 8000 B.C. (Davis & Treganza, 1959, as cited in Moratto, 1984).

Categorizing the prehistoric period into cultural stages allows researchers to describe a broad range of archaeological resources with similar cultural patterns and components during a given timeframe, thereby creating a regional chronology. Milliken et al. (2007) provide a framework for the interpretation of the San Francisco Bay Area who have divided human history in the San Francisco Bay Area into four periods: the *Paleoindian Period* (11,500 to 8000 B.C.), the *Early Period* (8000 to 500 B.C.), the *Middle Period* (500 B.C. to A.D. 1050), and the *Late Period* (A.D. 1050 to 1550). Economic patterns, stylistic aspects, and regional phases further subdivide cultural patterns into shorter phases. This scheme uses economic and technological types, socio-politics, trade networks, population density, and variations of artifact types to differentiate between cultural periods.

The *Paleoindian Period* (11,500 to 8000 B.C.) was characterized by big-game hunters occupying broad geographic areas. Evidence of human habitation during *Paleoindian Period* has not yet been discovered in the San Francisco Bay Area. During the *Early Holocene* (*Lower Archaic*; 8000 to 3500 B.C.), geographic mobility continued from the *Paleoindian Period* and is characterized by the millingslab and handstone as well as large wide-stemmed and leaf-shaped projectile points. The first cut shell beads and the mortar and pestle are first documented in burials during the *Early*

Period (*Middle Archaic*; 3500 to 500 B.C.), indicating the beginning of a shift to sedentism. During the *Middle Period*, which includes the *Lower Middle Period* (*Initial Upper Archaic*; 500 B.C. to A.D. 430), and *Upper Middle Period* (*Late Upper Archaic*; A.D. 430 to 1050), geographic mobility may have continued, although groups began to establish longer-term base camps in localities from which a more diverse range of resources could be exploited. The first rich black middens are recorded from this period. The addition of milling tools, obsidian and chert concave-base projectile points, and the occurrence of sites in a wider range of environments suggest that the economic base was more diverse. By the *Upper Middle Period*, mobility was being replaced by the development of numerous small villages. Around A.D. 430 a "dramatic cultural disruption" occurred evidenced by the sudden collapse of the *Olivella* saucer bead trade network. During the *Initial Late Period* (*Lower Emergent*; A.D. 1050 to 1550), social complexity developed toward lifeways of large, central villages with resident political leaders and specialized activity sites. Artifacts associated with the period include the bow and arrow, small corner-notched projectile points, and a diversity of beads and ornaments.

Ethnographic Context

Based on a compilation of ethnographic, historic, and archaeological data, Milliken (1995) describes a group known as the Ohlone, who once occupied the general vicinity of the Plan Area and Sub-Area 4 Project site. While traditional anthropological literature portrayed the Ohlone peoples as having a static culture, today it is better understood that many variations of culture and ideology existed within and between villages. While these "static" descriptions of separations between native cultures of California make it an easier task for ethnographers to describe past behaviors, this masks Native adaptability and self-identity. California's Native Americans never saw themselves as members of larger "cultural groups," as described by anthropologists. Instead, they saw themselves as members of specific villages, perhaps related to others by marriage or kinship ties, but viewing the village as the primary identifier of their origins.

Levy (1978) describes the language group spoken by the Ohlone, known as "Costanoan." This term is originally derived from a Spanish word designating the coastal peoples of Central California. Today Costanoan is used as a linguistic term that references to a larger language family spoken by distinct sociopolitical groups that spoke at least eight languages (as different as Spanish is from French) of the same Penutian language group. The Ohlone once occupied a large territory from San Francisco Bay in the north to the Big Sur and Salinas Rivers in the south. The Plan Area and Sub-Area 4 Project site is in the greater *Huchiun* tribal area who occupied a large area along the East Bay shore from north Oakland to the lower San Pablo and Wildcat Creek drainages in present day Richmond (Milliken et al., 2009).

Economically, Ohlone engaged in hunting and gathering. Their territory encompassed both coastal and open valley environments that contained a wide variety of resources, including grass seeds, acorns, bulbs and tubers, bear, deer, elk, antelope, a variety of bird species, and rabbit and other small mammals. The Ohlone acknowledged private ownership of goods and songs, and village ownership of rights to land and/or natural resources; they appear to have aggressively protected their village territories, requiring monetary payment for access rights in the form of clamshell beads, and even shooting trespassers if caught. After European contact, Ohlone society

was severely disrupted by missionization, disease, and displacement. Today, the Ohlone have a strong presence in the San Francisco Bay Area, and are highly interested in their historic and prehistoric past.

Historical Context

Pedro Fages and Reverend Juan Crespi were the first Europeans to visit the East San Francisco Bay area, passing through in 1772. During the late 18th century, the area was predominantly used for cattle grazing for Mission Dolores. After Mexico won independence from Spain in 1821, large tracts of land in California were granted to military heroes and loyalists. In 1823, the Plan Area was part of land granted by Governor Aguello, becoming part of Rancho San Pablo. Following annexation of California, the 1851 California Land Claims Act required Mexican landowners to prove the validity of their claim on land held under Mexican titles. Lands under rejected claims were deemed public and available for arriving settlers (Hoover et al., 2002).

During the American period, the City of Richmond has been a terminal port where its growing network of national railroads met deep water channels to the sea. The arrival of the Southern Pacific Railroad in 1878 primed western Contra Costa County for an industrial and economic boom. The arrival of the Santa Fe railroad (1899–1900), the startup of Standard Oil and its industrial waterfront (1901–1902), and the founding of the municipality of Richmond (1905) were also pivotal developments in the Richmond waterfront.

During World War II the Point of Richmond's Inner Harbor was transformed as a wartime shipyard, currently recognized with the designation of the Rosie the Riveter World War II Home Front National Historical Park along with multiple listed sites and resources, including Shipyard 3 to the west of the Specific Plan Area — a designated Richmond Historic Landmark as a contributor to Richmond Shipyard. Following the end of World War II private industry dominated much of the area, and many of the World War II structures were demolished and replaced.

Review of historic topographic maps of the Plan Area and Sub-Area 4 Project site indicate that the immediate vicinity has been subject to development resulting from the presence of the Southern Pacific Railroad, since the late nineteenth century. Significant development occurred around 1915, with a railroad spur paralleling 47th Avenue promoting industrial development. Review of County assessor data and historic aerials determine that the majority of the extant buildings (45 years or older) date from the late 1950s through 1970s.

Paleontological Setting

Paleontological resources are the fossilized remains of plants and animals, including vertebrates (animals with backbones), invertebrates (e.g., starfish, clams, ammonites, and marine coral), and microscopic plants and animals (microfossils). The age and abundance of fossils depend on the location, topographic setting, and particular geologic formation in which they are found. Fossil discoveries not only provide a historical record of past plant and animal life but can assist geologists in dating rock formations. Fossil discoveries can expand our understanding of the time periods and the geographic range of existing and extinct flora and fauna.

The Plan Area is underlain by Quaternary-age (Pleistocene) alluvium. These are predominantly flat-lying unconsolidated to moderately consolidated deposits of sand, silt, gravel and cobbles that have been carried by creeks from the hills to the east. Typically, these deposits are coarse-grained close to the base of mountains and near the head of alluvial fans (i.e., they contain more gravel and sand), whereas Quaternary-age alluvium closer to the bay margins tend to contain more silt and mud.

The Society of Vertebrate Paleontology (SVP) established guidelines for the identification, assessment, and mitigation of adverse impacts on nonrenewable paleontological resources (SVP, 2010). Most practicing paleontologists in the United States adhere closely to the SVP's assessment, mitigation, and monitoring requirements as outlined in these guidelines, which were approved through a consensus of professional paleontologists. Many federal, state, county, and city agencies have either formally or informally adopted the SVP's standard guidelines for the mitigation of adverse construction-related impacts on paleontological resources. The SVP has helped define the value of paleontological resources and, in particular, indicates that geologic units of *high* paleontological potential are those from which vertebrate or significant invertebrate or plant fossils have been recovered in the past (i.e., are represented in institutional collections). Only invertebrate fossils that provide new information on existing flora or fauna or on the age of a rock unit would be considered significant. Geologic units of *low* paleontological potential are those that are not known to have produced a substantial body of significant paleontological material. As such, the sensitivity of an area with respect to paleontological resources hinges on its geologic setting and whether significant fossils have been discovered in the area or in similar geologic units.

The SVP further states the following:

- Vertebrate fossils and fossiliferous deposits are considered significant nonrenewable paleontological resources, and are afforded protection by federal, state, and local environmental laws and guidelines.
- A paleontological resource is considered to be older than recorded history or 5,000 years before present and should not be confused with archaeological resource sites.
- Invertebrate fossils are not significant paleontological resources, unless they are present with an assemblage of vertebrate fossils or they provide undiscovered information on the origin and character of the plant species, past climatic conditions or the age of the rock unit itself.
- Certain plant or invertebrate fossils may be designated as significant by a project paleontologist, special interest group, lead agency or local government.

With these principles, the SVP has outlined criteria for screening the paleontological potential of rock units and established assessment and mitigation procedures tailored to such potential (SVP, 1995; SVP, 2010). **Table 4.4-1** lists the criteria for high-potential, undetermined, and low-potential rock units.

TABLE 4.4-1
PALEONTOLOGICAL POTENTIAL CRITERIA

Paleontological Potential	Description
High	Geologic units from which vertebrate or significant invertebrate or plant fossils have been recovered in the past, or rock formations that would be lithologically and temporally suitable for the preservation of fossils. Only invertebrate fossils that provide new information on existing flora or fauna or on the age of a rock unit would be considered significant.
Undetermined	Geologic units for which little to no information is available.
Low	Geologic units that are not known to have produced a substantial body of significant paleontological material, as demonstrated by paleontological literature and prior field surveys, and which are poorly represented in institutional collections.

SOURCE: SVP, 2010

Findings

Architectural Findings

Plan Area

ESA completed a records search at the Northwest Information Center (NWIC) of the California Historical Resources Information System on December 22, 2014 (File No. 14-0809). The records search identified one historic-era building previously identified within 0.5 miles of the Plan Area: a 1955 industrial warehouse at 1211 Wright Avenue. Review of the Office of Historic Properties database identified no previously evaluated or recorded historic period buildings or structures located within the Plan Area.

In 1987, Basin Research Associates conducted a site history assessment for the Marina Bay Project in the Inner Harbor Basin, located adjacent to the Plan Area. Their report provided an overview of typical resource types and site history, and noted the presence of large-scale, World War II (WWII) buildings within the area, but also noted that the project vicinity had undergone extensive post-WWII development, resulting in the demolition of the majority of WWII-period structures and buildings.

A review of parcel data available from Contra Costa County's assessor website identified 17 buildings within the Plan Area with construction dates of 1970 or earlier, meeting the 45 year threshold for potential listing in the California Register of Historical Resources (California Register). These buildings predominantly include industrial buildings, along with limited commercial and government owned resources. **Table 4.4-2** below identifies these parcels, along with their land use designation and construction date.

Sub-Area 4 Project Site

In order to provide a comprehensive evaluation, the assessment of architectural resources within the Sub-Area 4 Project site included the entire area of Sub-Area 4. Within Sub-Area 4, archival review identified five buildings dating 45 years or older, none of which were located within the

boundaries of the Sub-Area 4 Project site. ESA architectural historian Katherine Anderson completed a field survey of these buildings

TABLE 4.4-2
PARCEL DATA FOR BUILT ENVIRONMENT RESOURCES 45 YEARS OR OLDER WITHIN THE SPECIFIC PLAN AREA

APN	Site Address	Specific Plan Location (Sub-Area)	Existing Land Use	Year Built
560190007	830 Marina Way South	Sub-Area 1	Light Industrial	1942
560190003	1732 Wright Avenue	Sub-Area 1	Light Industrial	1953
560170002	2000 Wright Avenue	Sub-Area 1	Light Industrial	1953
560170013	1952 Wright Avenue	Sub-Area 1	Light Industrial	1953
560190005	867 South 19th Street	Sub-Area 1	Light Industrial	1953
560190004	833 South 19th Street	Sub-Area 1	Light Industrial	1954
560170006	860 South 19th Street	Sub-Area 1	Light Industrial	1964
560531004	1100 Marina Way South	Sub-Area 1	Taxable Municipally-Owned	1970
560100008	3200 Regatta Boulevard	Adjacent to Sub-Area 2 and Sub-Area 3	Government-Owned	1956
560032021	4925 Seaport Avenue	Sub-Area 4 (not on Sub-Area 4 Project site)	Light Industrial	1957
560050022	1390 South 49th Street	Sub-Area 4 (on Sub-Area 4 Project site)	Office Buildings (not found)	1958
560090020	900 Marina Bay Parkway	Sub-Area 3	Light Industrial	1965
560090021	Regatta Boulevard	Sub-Area 3	Light Industrial	1965
560033028	5021 Seaport Avenue	Sub-Area 4 (not on Sub-Area 4 Project site)	Light Industrial	1965
560023028	5000 Seaport Avenue	Sub-Area 4 (not on Sub-Area 4 Project site)	Light Industrial	1968
560033048	1376 South 50th Street	Sub-Area 4 (not on Sub-Area 4 Project site)	Light Industrial	1970
560032027	1336 South 49th Street	Sub-Area 4 (not on Sub-Area 4 Project site)	Light Industrial	1970

SOURCE. Contra Costa County, 2016

on December 11, 2015. Buildings were digitally photographed and field notes detailing their use, architectural character, and any obvious modifications were compiled. These photographs and notes were used in support of DPR 523 forms documenting these buildings, included in **Appendix D**. **Table 4.4-3** below details the buildings, construction dates, and recommendation of eligibility for the buildings identified in the Sub-Area 4 Project site. Archival research failed to indicate any significant associations with important events or people (Criteria 1/A and 2/B), and the vernacular industrial structures lacked architectural distinction necessary for eligibility under Criterion 3/C. Finally, all five buildings have all been significantly modified since their original construction, with modern additions, cladding, and fenestration, and as such do not possess the physical integrity necessary to reflect their historic associations. As such, all are recommended ineligible for listing in the National and California Registers, and as such would not be considered historical resources under the California Environmental Quality Act (CEQA).

TABLE 4.4-3
BUILT ENVIRONMENT RESOURCES 45 YEARS OR OLDER WITHIN SUB-AREA 4

APN	Site Address	Year Built	Recommendation of Eligibility
560032021	4925 Seaport Avenue	1957	Recommended ineligible for National or California Registers
560033028	5021 Seaport Avenue	1965	Recommended ineligible for National or California Registers
560023028	5000 Seaport Avenue	1968	Recommended ineligible for National or California Registers
560033048	1376 South 50th Street	1970	Recommended ineligible for National or California Registers
560032027	1336 South 49th Street	1970	Recommended ineligible for National or California Registers

Archaeological Findings

Plan Area

For archaeological background, the purpose of ESA's records search was to (1) determine whether known cultural resources have been recorded within or adjacent to the Plan Area and Sub-Area 4 Project site; (2) assess the likelihood for unrecorded cultural resources to be present based on historical references and the distribution of nearby sites; and (3) develop a context for the identification and preliminary evaluation of cultural resources.

The Stege Mound Archaeological District is contained within the Plan Area. The California State Office of Historic Preservation has determined the District eligible for listing in the National Register of Historic Places (National Register). The District is also listed in the City of Richmond Planning Department's Historic Resources Inventory. During the time of prehistoric occupation, the Stege Mound archaeological sites were located near the margin of a tidal slough extending from the Bay shoreline. The sites were originally recorded during N.C. Nelson's survey of the San Francisco Bay Area (Nelson, 1909). In the 1920s the extensive shellmounds were leveled for a proposed development and covered with imported landfill, pavement, and buildings (Loud, 1924).

The District consists of five distinct prehistoric shellmounds locales with an extensive assemblage of artifacts including stone and shell beads, projectile points, bone awls, bird bone whistles, flute tubes, charm stones, baked clay basketry impressions, and plant, faunal, and shellfish refuse. Human remains have also been uncovered. Previous archaeological investigations in limited portions of the District indicate that the associated cultural materials have the potential to address important research themes regarding prehistoric settlement patterns, subsistence strategies, economic and exchange systems, as well as paleoenvironmental reconstruction (DeGeorgey, 2013). On December 9, 2014, the City of Richmond contacted the Native American Heritage Commission (NAHC) for a search of the Sacred Lands Inventory. Per Senate Bill 18 requirements, the City of Richmond sent letters requesting additional information to Native Americans on the list provided by the NAHC. ESA sent follow up letters on behalf of the City on December 4, 2015. No response has been received as of the publication of this EIR. Additional consultation will be ongoing through the environmental review process.

Sub-Area 4 Project Site

In order to provide a comprehensive evaluation, the assessment of archeological resources within the Sub-Area 4 Project site included the entire area of Sub-Area 4. At the request of Terraphase

Engineering Inc., the NWIC completed an in-house records search for a portion of the Sub-Area 4 Project site and provided recommendations in March 2015. The records search included a review of cultural resources studies, site records, and historic maps on file at the NWIC. Based on this information, the NWIC concluded that there was a high potential for historic-era archaeological resources and a moderate potential for Native American resources in the records search area. The NWIC further concluded that because ground disturbing activities would be conducted in "areas composed entirely of artificial fill," there was a low possibly of identifying Native American and historic-era archaeological resources. The NWIC did not recommend any additional study.

An ESA Registered Professional Archaeologist conducted a cursory surface survey of the Sub-Area 4 Project site on December 11, 2015. The Sub-Area 4 Project site is highly disturbed from various activities including early 20th century development and industrial activities, remediation including site capping, landfill, grading for construction of the Bayview Avenue overpass, and other modern development. Approximately 50 percent of the entire area of Sub-Area 4 was accessible. All accessible areas that provided even a small percentage of ground surface visibility were inspected. In general, the Sub-Area 4 Project site provided very limited views of native ground surface; most visible surfaces consisted of artificial fill, gravel, and pavement. ESA did not identify archaeological resources, including historic-era resources or prehistoric site locations. Overall, the archaeological sensitivity of the Sub-Area 4 Project site appears to be moderate, based on previous archaeological surveys, the environmental context, the NWIC recommendation, and the large amount of ground disturbance.

Archaeologists also completed a cultural resources survey of the Union Pacific Railroad (UPRR) Stege Property portion of Sub-Area 4 (Holman & Associates, 2006). They found no evidence of prehistoric cultural resources, and noted that the entire project location was historic tidal marsh that would have not been occupied. Holman & Associates concluded that future construction or remedial activities in the area would have no effect on archaeological resources. A later Removal Action Work Plan for the Pistol Range concluded that if excavation extending deeper than either the fill depth of 10 feet below ground surface becomes necessary, a geoarchaeological study will be conducted to adequately assess locations that have the potential to disturb sensitive landforms (CH2MHill, 2013). Based on archival research and geologic context provided above, ESA recommends that the Sub-Area 4 Project site has a lessened sensitivity for buried archaeological sites, and a geoarchaeological study is not recommended.

Paleontological Findings

ESA conducted a search of the paleontological locality database of the University of California Museum of Paleontology (UCMP) to identify vertebrate fossil localities within Contra Costa County (UCMP, 2015). Over 9,000 vertebrate specimens in 62 fossil localities have been identified in a Pleistocene-age geologic context in Contra Costa County. Fossils represent numerous species including camels, horses, bison, mammoth, mastodons, and several other hoofed vertebrates. In accordance with SVP criteria for assigning paleontological potential ratings to rock units, Pleistocene Alluvium would have a high paleontological potential because vertebrate fossils have been recovered from them in the past.

4.4.3 Regulatory Setting

Federal Regulations

National Historic Preservation Act

Cultural resources are considered through the National Historic Preservation Act (NHPA) of 1966, as amended (54 U.S.C. 306108), and it's implementing regulations. Prior to implementing an "undertaking" (e.g., federal funding or issuing a federal permit), Section 106 of the NHPA requires federal agencies to consider the effects of the undertaking on historic properties (i.e., properties listed in or eligible for listing in the National Register) and to afford the Advisory Council on Historic Preservation a reasonable opportunity to comment on any undertaking that would adversely affect properties eligible for listing in the National Register. Under the NHPA, a property is considered significant if it meets the National Register listing criteria at 36 CFR 60.4, as stated below:

> The quality of significance in American history, architecture, archaeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association and that:
>
> a) Are associated with events that have made a significant contribution to the broad patterns of our history;
>
> b) Are associated with the lives of persons significant in our past;
>
> c) Embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or,
>
> d) Have yielded, or may be likely to yield, information important in prehistory or history.

Federal review of projects is normally referred to as the Section 106 process. This process is the responsibility of the federal lead agency. The Section 106 review normally involves a four-step procedure, which is described in detail in the implementing regulations (36 CFR Part 800):

- Identify historic properties in consultation with the Office of Historic Preservation (OHP) and interested parties;
- Assess the effects of the undertaking on historic properties;
- Consult with the OHP, other agencies, and interested parties to develop an agreement that addresses the treatment of historic properties and notify the Advisory Council on Historic Preservation; and finally,
- Proceed with the project according to the conditions of the agreement.

State Regulations

The State of California implements the NHPA of 1966, as amended, through its statewide comprehensive cultural resource surveys and preservation programs. The California Office of

Historic Preservation, as an office of the California Department of Parks and Recreation (DPR), implements the policies of the NHPA on a statewide level. The Office of Historic Preservation also maintains the California Historical Resources Inventory. The State Historic Preservation Officer is an appointed official who implements historic preservation programs within the state's jurisdictions.

California Environmental Quality Act

CEQA, as codified in Public Resources Code (PRC) Sections 21000 et seq., is the principal statute governing the environmental review of projects in the state. CEQA requires lead agencies to determine if a proposed project would have a significant effect on historical resources, including archaeological resources. The CEQA *Guidelines* define a historical resource as: (1) a resource in the California Register; (2) a resource included in a local register of historical resources, as defined in PRC Section 5020.1(k) or identified as significant in a historical resource survey meeting the requirements of PRC Section 5024.1(g); or (3) any object, building, structure, site, area, place, record, or manuscript that a lead agency determines to be historically significant or significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California, provided the lead agency's determination is supported by substantial evidence in light of the whole record.

If a lead agency determines that an archaeological site is an historical resource, the provisions of PRC Section 21084.1 and CEQA *Guidelines* Section 15064.5 would apply.

If an archaeological site does not meet the CEQA *Guidelines* criteria for a historical resource, then the site may meet the threshold of PRC Section 21083 regarding unique archaeological resources. A unique archaeological resource is "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" (PRC Section 21083.2 [g]).

The CEQA *Guidelines* note that if a resource is neither a unique archaeological resource nor a historical resource, the effects of the project on that resource shall not be considered a significant effect on the environment (CEQA *Guidelines* Section 15064[c][4]).

The CEQA *Guidelines* state that preservation in place is the preferred mitigation for historical resources of an archaeological nature, because such practice "maintains the relationship between artifacts and the archaeological context" and "may also avoid conflict with religious or cultural values of groups associated with the site." (CEQA *Guidelines* Section 15126.4(b)(3)(A)). Preservation in place may be accomplished by, but is not limited to:

- Planning construction to avoid archaeological sites;

- Incorporation of sites within parks, greenspace, or other open space;
- Covering the archaeological sites with a layer of chemically stable soil before building tennis courts, parking lots, or similar facilities on the site.
- Deeding the site into a permanent conservation easement" (CEQA *Guidelines* 15126.4(b)(3)(B)).

California Register of Historical Resources

The California Register is "an authoritative listing and guide to be used by state and local agencies, private groups, and citizens in identifying the existing historical resources of the state and to indicate which resources deserve to be protected, to the extent prudent and feasible, from substantial adverse change" (PRC Section 5024.1[a]). The criteria for eligibility are based on National Register criteria (PRC Section 5024.1[b]). Certain resources are determined by the statute to be automatically included in the California Register, including California properties formally determined eligible for or listed in the National Register.

To be eligible for the California Register, an historical resource must be significant at the local, state, and/or federal level under one or more of the following criteria:

- Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;
- Is associated with the lives of persons important in our past;
- Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values; and/or,
- Has yielded, or may be likely to yield, information important in prehistory or history (PRC Section 5024.1[c]).

For a resource to be eligible for the California Register, it must also retain enough integrity to be recognizable as a historical resource and to convey its significance. A resource that does not retain sufficient integrity to meet the National Register criteria may still be eligible for listing in the California Register.

Senate Bill 18

Senate Bill 18 (SB18) requires cities and counties to notify and consult with California Native American Tribes about proposed local land use planning decisions for the purpose of protecting tribal cultural resources. Senate Bill 18 requires cities and counties to send any proposals for revisions or amendments to general plans and specific plans to those California Native American Tribes that are on the Native American Heritage Commission (NAHC) contact list and have traditional lands located within the city or county's jurisdiction. Cities and counties must also conduct consultations with these tribes prior to adopting or amending their general plans or specific plans. On November 6, 2015, the City sent correspondence to the NAHC per the requirements of SB18, requesting review of the proposed Specific Plan and Sub-Area 4 Project. The NAHC responded in a letter dated November 30, 2015, stating that a record search of the sacred land file

failed to indicate the presence of Native American cultural resources in the immediate project area, and including a list of Native American individuals and organizations that could have knowledge of cultural resources in the project area (**Appendix D**). The City submitted letters to these organizations on December 4; as of the date of this EIR, no responses have been received.

Assembly Bill 52

In September of 2014, the California Legislature passed Assembly Bill (AB) 52, which added provisions to the PRC regarding the evaluation of impacts on tribal cultural resources under CEQA, and consultation requirements with California Native American tribes. In particular, AB 52 now requires lead agencies to analyze project impacts on "tribal cultural resources" separately from archaeological resources (PRC Section 21074; 21083.09). The Bill defines "tribal cultural resources" in a new section of the PRC Section 21074. AB 52 also requires lead agencies to engage in additional consultation procedures with respect to California Native American tribes (PRC Section 21080.3.1, 21080.3.2, 21082.3). Finally, AB 52 requires the Office of Planning and Research to update Appendix G of the CEQA *Guidelines* by July 1, 2016 to provide sample questions regarding impacts to tribal cultural resources (PRC Section 21083.09). On Friday, June 3, the California Natural Resources Agency released a revised proposal to update Appendix G of the CEQA *Guidelines* related to tribal cultural resources.

AB 52's provisions only apply to projects that have a notice of preparation (NOP) filed on or after July 1, 2015. Because the NOP for the Specific Plan was released September 30, 2014, the Plan Area (including the Sub-Area 4 Project site) is not subject to AB 52 requirements.

Other Provisions of California Public Resources Code

Several sections of the PRC protect paleontological resources. PRC Section 5097.5 prohibits "knowing and willful" excavation, removal, destruction, injury, and defacement of any paleontological 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 7050.5 of the Health and Safety Code protects human remains by prohibiting the disinterring, disturbing, or removing of human remains from any location other than a dedicated cemetery. Section 5097.98 of the PRC (and reiterated in CEQA Section 15064.59 [e]) also states that in the event of the accidental discovery or recognition of any human remains in any location other than a dedicated cemetery, the following steps shall be taken:

1) There shall be no further excavation or disturbance of the site or any nearby area reasonably suspected to overlie adjacent human remains until:

    A) The coroner of the county in which the remains are discovered must be contacted to determine that no investigation of the cause of death is required, and

    B) If the coroner determines the remains to be Native American:

        1. The coroner shall contact the Native American Heritage Commission within 24 hours.

2. The Native American Heritage Commission shall identify the person or persons it believes to be the most likely descended from the deceased Native American.

3. The most likely descendent may make recommendations to the landowner or the person responsible for the excavation work, for means of treating or disposing of, with appropriate dignity, the human remains and any associated grave goods as provided in PRC Section 5097.98, or

2) Where the following conditions occur, the landowner or his authorized representative shall rebury the Native American human remains and associated grave goods with appropriate dignity on the property in a location not subject to further subsurface disturbance.

A) The Native American Heritage Commission is unable to identify a most likely descendent or the most likely descendent failed to make a recommendation within 48 hours after being notified by the commission.

B) The descendant identified fails to make a recommendation; or,

C) The landowner or his authorized representative rejects the recommendation of the descendant, and the mediation by the Native American Heritage Commission fails to provide measures acceptable to the landowner.

City of Richmond Historic Structures Code

The purpose of the Historic Structures Code is to provide for the identification, protection, enhancement, perpetuation, and use of improvements, buildings, structures, signs, features, sites, places, and areas within the City that reflect key elements of the City's historical, architectural, archaeological, cultural, or aesthetic heritage. Goals of the Historic Structures Code include encouraging public knowledge, understanding, appreciation, and use of the City's past; enhancing the visual character of the City by encouraging new design and construction that complement the City's historical buildings; and increasing the economic benefits of historic preservation to the City and its inhabitants.

The Historic Resources Code applies to historic resources, potentially historic resources, and any property located within an historic district. An object, building, structure, site or area not already designated as an historic or archaeological resource may be designated, by recommendation of the Historic Preservation Commission and approval of the City Council, if it meets the following criteria:

- It exemplifies or reflects valued elements of the City's cultural, social, economic, political, aesthetic, engineering, archaeological, or architectural history;
- It is identified with persons or events important in local, state, or national history;
- It reflects significant geographical patterns, including those associated with different eras of settlement and growth, particular transportation modes, or distinctive examples of park or community planning;
- It embodies distinguishing characteristics of an architectural style, type, period, or method of construction, or is a valuable example of the use of indigenous materials or craftsmanship;

- It is representative of the notable work of a builder, designer, or architect whose style influenced the City's architectural development; or
- A structure, site, or other improvement which meets any of the above criteria at the highest level, and whose loss would be a major loss to the City, may be designated a Richmond Historic Landmark.

Designation of an historic resource may be prompted by any resident of Richmond or by the Historic Preservation Commission. The Historic Preservation Commission can recommend approval in whole or in part or disapproval of the application within 30 days of the close of the public hearing. The City Council either approves or disapproves the recommendations of the Historic Preservation Commission within 60 days of receiving the Commission's recommendation concerning proposed designations.

General Plan

The General Plan contains the following goals related to historic resources:

- **Goal HR1:** Historic Resource Preservation. Richmond has a rich history that is woven throughout the fabric of the community. Preserve historic resources and leverage them to enhance and build upon Richmond's historic character.
- **Goal HR2:** Expanded Economic Opportunities Based on Historic Resources. In addition to serving as a source of community pride, historic resources play a role in attracting visitors to the area and strengthening the economic position of the City. Take advantage of these historic and cultural resources by promoting them as visitor destinations. Draw on the City's heritage as a tool for economic revitalization and enhancement of community identity.
- **Goal HR3:** Increased Public Awareness of Richmond's History. The value of historic resources relies on an adequate level of community awareness. Raise public awareness by educating the public about the City's past, how it has shaped modern-day Richmond and how residents can identify and preserve historically significant properties. With a better understanding of these resources, it is likely that residents will play a stronger role in caring for the City's historic resources.

4.4.5 Significance Criteria

Based on CEQA *Guidelines*, a project would cause adverse impacts to cultural and paleontological resources if it would:

a) Cause a substantial adverse change in the significance of a historical resource as defined in CEQA *Guidelines* Section 15064.5;

b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to CEQA *Guidelines* Section 15064.5;

c) Disturb any human remains, including those interred outside of formal cemeteries; or

d) Directly or indirectly destroy a unique paleontological resource or site, or a unique geologic feature.

Approach to Analysis

Historical Resources

CEQA *Guidelines* Section 15064.5 requires the lead agency to consider the effects of a project on historical resources. A historical resource is defined as a building, structure, site, object, or district (including landscapes) listed in or determined to be eligible for listing in the California Register, or determined by a lead agency to be significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, or cultural annals of California. The following discussion will focus on architectural and structural resources.

Potential impacts on architectural resources are assessed by identifying any activities that could affect resources that have been identified as historical resources for the purposes of CEQA. Resources identified as historical resources under CEQA include those that are significant because of their association with important events, people, or architectural styles or master architects, or for their informational value (National Register and California Register Criteria A/1, B/2, C/3, and D/4) and that retain sufficient historical integrity to convey their significance. Criterion D/4 is typically applied to the evaluation of historic-era archaeological resources and not to architectural resources, as described below.

Once a resource has been identified as a CEQA historical resource, it then must be determined whether the impacts of the project would "cause a substantial adverse change in the significance" of the resource (CEQA *Guidelines* Section 15064.5[b]). A substantial adverse change in the significance of a historical resource means "physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of the historic resource would be materially impaired" (CEQA *Guidelines* Section 15064[b][1]). A historical resource is materially impaired through the demolition or alteration of the resource's physical characteristics that convey its historical significance and that justify its inclusion in the California Register (CEQA *Guidelines* Section 15064.5[b][2][A]).

Archaeological Resources

Archaeological resources are considered both as historical resources according to Section 15064.5 as well as unique archaeological resources as defined in Section 21083.2(g). The significance of most prehistoric and historic-era archaeological sites is usually assessed under National Register and California Register Criterion D/4. This criterion stresses the importance of the information potential contained within the site, rather than its significance as a surviving example of a type or its association with an important person or event. Archaeological resources may also be assessed under CEQA as unique archaeological resources, defined as archaeological artifacts, objects, or sites that contain information needed to answer important scientific research questions.

As noted above, the Specific Plan and Sub-Area 4 Project are not required to assess potential adverse impacts to tribal cultural resource as defined in PRC Section because the Specific Plan NOP was released before July 1, 2015. While the Specific Plan and Sub-Area 4 Project are not subject to this analysis, the City of Richmond has distributed notification to regional tribes providing the opportunity to engage regarding the potential presence of tribal cultural resources. The City has since received no notification of the existence of such resources.

Human Remains

Human remains, including those buried outside of formal cemeteries, are protected under several state laws, including PRC Section 5097.98 and Health and Safety Code Section 7050.5. These laws are identified above in Section 5.5.2.2, *State Regulations and Legal Compliance*. This analysis considers impacts including intentional disturbance, mutilation, or removal of interred human remains.

Paleontological Resources

The paleontological analysis identifies the potential to encounter paleontological resources (i.e., plant, animal or invertebrate fossils or microfossils) during excavations associated with projects that would be constructed under the Specific Plan. A potentially significant impact on paleontological resources would occur if: (1) construction disturbance were to move or excavate previously undisturbed geologic bedrock (native rock); and (2) the bedrock to be disturbed has a high paleontological potential.

4.4.6 Program-Level Impacts of the Richmond Bay Specific Plan

Historical Resources

Impact CUL-1.SP: Implementation of the Specific Plan could cause a substantial adverse change in the significance of a historical resource. (Criterion a.) (*Significant; Significant and Unavoidable*)

The Specific Plan would result in a significant impact if a project developed from implementation of the Plan could cause a substantial adverse change to a historical resource (architectural resources or the built environment, including buildings, structures, and objects). A substantial adverse change includes the physical demolition, destruction, relocation, or alteration of the resource. Archaeological resources that are also considered historical resources as defined in CEQA *Guidelines* Section 15064.5 are considered below under Impact CUL-2.SP.

Review of the records search conducted at the NWIC, along with review of Contra Costa County Assessor records, determined that while no previously recorded historical resources have been documented within the Plan Area, at least 17 structures that meet the 45 year threshold for listing in the California Register are located within the Plan Area. In the event that project-level analysis determines these buildings as eligible for listing in the California or National Registers, direct or indirect impacts to these resources have the potential to result in substantial adverse changes to their character, and significant impacts to historical resources may occur.

For individual projects proposed within the Plan Area, **Mitigation Measure CUL-1.SP**, below, includes multiple measures and approaches. Some approaches could reduce impacts to historic resources to a less-than-significant level, and others could reduce impacts to historic properties, but these measures are not assured to reduce all impacts to a less-than-significant level; therefore, this impact is conservatively considered significant and unavoidable.

Mitigation Measure CUL-1.SP: Historic Resources Evaluation. During the preliminary design for each project proposed for development within the Plan Area, and prior to submittal of a project application to the City of Richmond Planning Division, the project applicant shall undertake the following:

1. **Historic Resources Survey.** The historic resources survey shall include, at a minimum:

    a. An updated records search at the Northwest Information Center;

    b. An intensive historical resources survey, documenting and evaluating resources within the project footprint (area of ground disturbance) and located on adjacent parcels within 200 feet of the project footprint, that are 45 years or older for listing in the California Register and local Richmond Historic Inventory;

    c. Recommendations for any additional measures that are required to resolve adverse impacts to recorded historical resources; and

    d. A report documenting the results of this research and recommendations, for submittal to the City.

    The survey shall be carried out by a qualified historian or architectural historian meeting the Secretary of the Interior's Standards for Architectural History. Site-specific surveys and evaluations that are more than 5 years old shall be updated to account for changes which may have occurred over time.

For all historic resources identified as a result of site-specific surveys and evaluations, the project applicant shall undertake the following:

2. **Historic Resources Treatment Plan.** The historic resources treatment plan shall be prepared by a qualified historian or architectural historian, and shall discuss, but not be limited to, the following options for the resource:

    a. *Avoidance.* The City shall ensure, where feasible, that all future development activities allowable under the Specific Plan, including demolition, alteration, and new construction, would avoid historical resources (i.e., those listed on federal, state, and local registers).

    b. *Adaptive Reuse.* If avoidance is not feasible, adaptive reuse and rehabilitation of historical resources shall occur in accordance with the Secretary of Interior's Standards for the Treatment of Historic Properties.

    c. *Appropriate Relocation.* If avoidance or adaptive reuse in situ is not feasible, the project applicant shall make a good faith effort to relocate the affected building(s) to a site acceptable to the City. Projects that relocate the affected historical property to a location consistent with its historic or architectural character could reduce the impact less than significant, unless the property's location is an integral part of its significance, e.g., a contributor to a historic district.

For all historic resources identified as a result of site-specific surveys and evaluations which cannot be feasibly avoided (and including resources that would be adaptively reused, or appropriately relocated) the project applicant shall undertake the following:

3. **Recordation and Public Interpretation.** A qualified historian or architectural historian shall evaluate the feasibility and appropriateness of recordation and public interpretation of identified resources prior to any construction activities which would directly affect them. Should City staff decide recordation and or public interpretation is required, the following activities would be performed:

   - *Recordation*. Recordation shall follow the standards provided in the National Park Service's Historic American Building Survey (HABS) program, which requires photo-documentation of historic structures, a written report, and/or measured drawings (or photo reproduction of original plans if available). The photographs and report would be archived at the Richmond Planning Department and local repositories, such as public libraries, historical societies, and/or the Northwest Information Center at Sonoma State University. The recordation efforts shall occur prior to demolition, alteration, or relocation of any historic resources identified in the Plan Area. Additional recordation could include (as appropriate) oral history interviews or other documentation (e.g., video) of the resource.

   - *Public Interpretation*. A public interpretation or art program shall be developed by a qualified historic consultant or local artist in consultation with City staff, based on a City-approved scope of work and submitted to the City for review and approval. The program could take the form of plaques, commemorative markers, or artistic or interpretive displays which explain the historical significance of the properties to the general public. Such displays would be incorporated into project plans as they are being developed, and would typically be located in a publicly accessible location on or near the site of the former historical resource(s). Public interpretation displays shall be installed prior to completion of any construction projects in the Plan Area.

   Photographic recordation and public interpretation of historically significant properties does not typically mitigate the loss of resources to a less-than-significant level (CEQA *Guidelines* Section 15126.4[b][2]).

Avoidance of direct effects to historic resources is assured to reduce the impacts to historic resources to a less-than-significant level; in some, but not all, cases, adaptive reuse, rehabilitation, or relocation may also be sufficient to reduce impacts to a less-than-significant level. Therefore, if demolition, alteration, or relocation of historically significant resources is identified by the City as the only feasible option for development in the Plan Area, even with implementation of 2. (Historic Resources Treatment Plan) and 3. (Recordation and Public Interpretation), above, the impact of adoption of and development under the Specific Plan would be conservatively considered significant and unavoidable.

Significance after Mitigation: Significant (if avoidance is achieved or if adaptive reuse, rehabilitation, or relocation may also be sufficient to reduce impacts to a less-than-significant level); Significant and Unavoidable (if demolition occurs, or if adaptive reuse, rehabilitation, or relocation is not sufficient to reduce impacts to a less-than-significant level).

Mitigation: Mitigation Measure CUL-1.SP.

Archaeological Resources

Impact CUL-2.SP: Implementation of the Specific Plan could cause a substantial adverse change in the significance of a unique archaeological resource. (Criterion b.) (*Less Than Significant with Mitigation*)

Implementation of the Specific Plan would result in a significant impact if a project developed within the Plan Area could cause a substantial adverse change to an archaeological resource through physical demolition, destruction, relocation, or alteration of the resource.

Records at the NWIC indicate that five prehistoric archaeological sites comprising the National Register-eligible Stege Mound Archaeological District are located in the Plan Area. The disturbance of these archaeological resources would be a potentially significant impact. Implementation of **Mitigation Measure CUL-2a.SP (Archaeological Assessment and Evaluation)** would reduce potential impacts to a less-than-significant level. Due to the very high sensitivity of the Plan Area for archaeological sites and the high potential for unknown buried sites, and in the absence of development proposals with a specific ground-disturbing footprint (i.e., due to the programmatic, versus location- and project-specific, nature of the Specific Plan), a requirement that comprehensive archaeological studies and surveys for individual projects (once development plans have been outlined) is warranted, in order to determine the presence or absence of known and potential unknown archaeological resources, in relation to the impacts of site-specific development.

In addition, during ground disturbance within the Plan Area and/or the area of the Lark Drive Variant, there is the potential to uncover previously unidentified archaeological resources. The disturbance of unknown archaeological resources would be a potentially significant impact. Implementation of **Mitigation Measure CUL-2b.SP (Inadvertent Discovery of Archaeological Resources)** would reduce potential impacts to a less-than-significant level by ensuring that work would halt in the vicinity of an unanticipated find so that a qualified archaeologist can make additional recommendations if required.

> **Mitigation Measure CUL-2a.SP: Archaeological Resources Evaluation.** During the preliminary design for each project proposed for development within the Plan Area and the Lark Drive Variant, and prior to submittal of a building permit application to the City of Richmond Planning Division as needed, the project applicant (or City, in the case of the Lark Drive Variant) shall undertake the following:
>
> 1. **Archeological Resources Survey.** The archeological resources survey shall be completed by a qualified archeologist, and shall include, at a minimum:
>
>   a. An updated records search at the Northwest Information Center (per Mitigation Measure CUL-1.SP);
>
>   b. A cultural resources survey of the project site that meets industry standards, including subsurface presence/absence studies;
>
>   c. Recommendations for any additional measures that are required to resolve potential adverse impacts to recorded and/or undiscovered archaeological

resources, with a preference for preservation in place for historical resources of an archaeological nature, where feasible; and

d. A report documenting the results of this research and recommendations, for submittal to the City.

If the results of the initial survey indicate the presence of or high likelihood for archaeological resources, the City shall require additional measures as outlined below.

If the archeologist determines that a significant archaeological resource that could be adversely impacted by a project is present at the site, the project applicant shall undertake the following:

2. **Preservation in Place.** If the find is determined to be potentially significant, a qualified archaeologist, in consultation with the Planning Director or designee at the City of Richmond, the project applicant, and the appropriate Native American representative, where applicable, shall determine whether preservation in place is feasible. Consistent with CEQA *Guidelines* Section 15126.4(b)(3), this may be accomplished through: planning construction to avoid the resource; incorporating the resource within open space; capping and covering the resource; or deeding the site into a permanent conservation easement.

If the archeologist determines that preservation in place is not feasible for the resource and another type of mitigation would better serve the interests protected by CEQA, mitigation shall include data recovery through archaeological investigations andthe project applicant shall undertake the following:

3. **Archaeological Research Design and Treatment Plan (ARDTP).** If avoidance/preservation in place is not feasible for the identified resource, the project applicant (or City, in the case of the Lark Drive Variant) shall hire a Secretary of the Interior-qualified archaeological consultant who shall prepare a detailed ARDTP that shall be submitted to the City for review and approval. The ARDTP shall identify a proposed data recovery program, and how the data recovery program would preserve the significant information the archaeological resource is expected to contain. Treatment of unique archaeological resources shall follow the applicable requirements of Public Resources Code Section 21083.2. Treatment for most resources would consist of (but would not be not limited to) sample excavation, artifact collection, site documentation, and historical research, with the aim of targeting the recovery of important scientific data contained in the portion(s) of the significant resource to be impacted by the project. The ARDTP shall include provisions for analysis of data in a regional context; reporting of results within a timely manner and subject to review and comments by the appropriate Native American representative, where applicable, before being finalized; curation of artifacts and data at a local facility acceptable to the City and appropriate Native American representative, if applicable; and dissemination of final confidential reports to the appropriate Native American representative, if applicable, the Northwest Information Center of the California Historical Resources Information System and the City.

Mitigation Measure CUL-2b.SP: Inadvertent Discovery of Archaeological Resources. During construction of each project proposed for development within the Plan Area and/or the Lark Drive Variant, if prehistoric or historic-era cultural materials are encountered, all

construction activities within 100 feet shall halt and the City shall be notified. Prehistoric archaeological materials might include obsidian and chert flaked-stone tools (e.g., projectile points, knives, scrapers) or toolmaking debris; culturally darkened soil ("midden") containing heat-affected rocks, artifacts, or shellfish remains; and stone milling equipment (e.g., mortars, pestles, handstones, or milling slabs); and battered stone tools, such as hammerstones and pitted stones. Historic-period materials might include stone, concrete, or adobe footings and walls; filled wells or privies; and deposits of metal, glass, and/or ceramic refuse.

The project applicant (or City, in the case of the Lark Drive Variant) shall ensure that a Secretary of the Interior-qualified archaeologist shall inspect the find within 24 hours of discovery. If the find is determined to be potentially significant, the archaeologist, shall follow the guidelines provided in Mitigation Measure CUL-2a.SP above.

With the implementation of Mitigation Measure CUL-2a.SP and CUL-2b.SP, this impact would be less than significant.

Significance after Mitigation: Less than Significant.

Mitigation: Mitigation Measure CUL-2a.SP and CUL-2b.SP.

Human Remains

Impact CUL-3.SP: Implementation of the Specific Plan could disturb human remains, including those interred outside of formal cemeteries. (Criterion c.) (*Less Than Significant with Mitigation*)

The Specific Plan would result in a significant impact if a project developed within the Plan Area or area of the Lark Drive Variant could disturb any human remains, including those interred outside of formal cemeteries.

Based on known conditions and previous archaeological research, human burial has taken place within and in the vicinity of the Plan Area in the past and there is a high potential for the discovery of human remains during construction activities that involve ground disturbance. Disturbance of human remains would be a significant impact. Implementation of **Mitigation Measure CUL-3.SP (Inadvertent Discovery of Human Remains)** would ensure that impacts to human remains would be less-than-significant. To facilitate legal compliance, project construction personnel shall be alerted to the possibility of encountering human remains during construction, and apprised of the proper procedures to follow in the event they are found.

Mitigation Measure CUL-3.SP: Inadvertent Discovery of Human Remains. Pursuant to Section 7050.5 of the Health and Safety Code, and Section 5097.94 of the Public Resources Code of the State of California, and for each project-level development proposal submitted to the City of Richmond for approval (and for construction of the Lark Drive Variant), the project applicant (or City, in the case of the Lark Drive Variant) shall ensure the following:

1. In the event of the discovery of human remains during construction, work shall stop in that area and within 100 feet of the find. The Contra Costa County Coroner shall be notified and shall make a determination as to whether the remains are Native American. If the Coroner determines that the remains are not subject to their authority, they shall notify the Native American Heritage Commission who shall attempt to identify descendants of the deceased Native American. If no satisfactory agreement can be reached as to the disposition of the remains pursuant to this State law, then the project applicant shall re-inter the human remains and items associated with Native American burials on the property in a location not subject to further ground disturbance.
2. Project construction personnel shall be informed of the potential of encountering human remains during construction, and the proper procedures to follow as described above under 1., in the event of the discovery of human remains during construction.

Significance after Mitigation: Less than Significant with Mitigation.

Mitigation: Mitigation Measure CUL-3.SP.

Paleontological Resources

Impact CUL-4.SP: Implementation of the Specific Plan could directly or indirectly destroy a unique paleontological resource or site or unique geologic feature. (Criterion d.) ***(Less Than Significant with Mitigation)***

Implementation of the Specific Plan would result in a significant impact if a project developed within the Plan Area or area of the Lark Drive Variant could directly or indirectly destroy a unique paleontological resource or site. A high percentage of the Plan Area and its vicinity is underlain by Pleistocene alluvium, which has high potential for paleontological resources. Destruction of a unique paleontological resource would result in a significant impact. Implementation of **Mitigation Measure CUL-4.SP (Paleontological Resources Mitigation Program)** would ensure that impacts to paleontological resources would be less than significant.

Mitigation Measure CUL-4.SP: Paleontological Resources Mitigation Program. For each project-level development proposal submitted to the City of Richmond for approval and the Lark Drive Variant, and prior to initial ground disturbance, the project applicant (or City, in the case of the Lark Drive Variant) will retain a qualified paleontologist or a California Registered Professional Geologist (California RPG) with appropriate paleontological expertise to carry out all mitigation measures related to paleontological resources. The qualified paleontologist or geologist will be available on-call to the project applicant (or City) throughout the duration of ground-disturbing activities. The project applicant (or City) will also ensure the following measures are undertaken:

1. All construction forepersons and field supervisors conducting or overseeing subsurface excavations will be trained in the recognition of potential fossil materials prior to ground disturbing activities. A pre-construction training on paleontological

resources will also be provided to all other construction workers, but may include videotape of the initial training and/or the use of written materials rather than in-person training by the qualified paleontologist/California RPG. In addition to fossil recognition, the training will convey procedures to follow in the event of a potential fossil discovery.

2. If potential fossils are discovered during construction, all earthwork or other types of ground disturbance within 100 feet of the find will stop until the qualified paleontologist/California RPG can assess the nature and importance of the find. Based on the scientific value or uniqueness of the find, the paleontologist/California RPG may record the find and allow work to continue, or recommend salvage and recovery of the fossil. If treatment and salvage is required, recommendations will be consistent with current professional standards. If required, treatment for fossil remains may include preparation and recovery of fossil materials so that they can be housed in an appropriate museum or university collection.

3. If found to be warranted based on experience during construction, the qualified paleontologist/California RPG, or paleontological monitor working under the supervision of the qualified paleontologist/California RPG, will monitor ground-disturbing activities. This monitoring will consist of periodically inspecting disturbed, graded, and excavated surfaces, as well as soil stockpiles and disposal sites. The frequency of monitoring will be determined by the qualified paleontologist/California RPG. If the monitor encounters a paleontological resource, it will be assessed and recorded or salvaged it as described above.

Significance after Mitigation: Less than Significant.

Mitigation: Mitigation Measure CUL-4.SP.

4.4.7 Project-Level Impacts of the Sub-Area 4 Project

Historical Resources

Impact CUL-1.SA4: Development of the Sub-Area 4 Project could cause a substantial adverse change in the significance of a historical resource. (Criterion a.) (*Less Than Significant, No Mitigation Required*)

The Sub-Area 4 Project would result in a significant impact if the Project could cause a substantial adverse change to an historical resource through the physical demolition, destruction, relocation, or alteration of the resource.

As described above and in **Appendix D,** the five buildings identified within Sub-Area 4 as 45 years or older are recommended ineligible for listing in the California or National Registers. None of the buildings identified in Sub-Area 4 possessed significant associations with important events or individuals, nor retained sufficient physical integrity to reflect their historic associations. As such, all are recommended ineligible for listing in the National and California Registers, and as such

would not be considered historical resources under CEQA. Development of the Sub-Area 4 Project would not cause a substantial adverse change to an historical resource.

Significance: Less Than Significant.

Mitigation: None Required.

Archaeological Resources

Impact CUL-2.SA4: Development of the Sub-Area 4 Project could cause a substantial adverse change in the significance of a unique archaeological resource. (Criterion b.) (*Less Than Significant with Mitigation*)

The Sub-Area 4 Project would result in a significant impact if the Project could cause a substantial adverse change to an archaeological resource through physical demolition, destruction, relocation, or alteration of the resource.

No archaeological features or artifacts have been identified in the Sub-Area 4 Project site. The records search completed by the NWIC for a portion of the Sub-Area 4 Project site concluded that there was a high potential for historic-era archaeological resources and a moderate potential for prehistoric archaeological resources. The NWIC further concluded that because ground disturbing activities would be conducted in "areas composed entirely of artificial fill," there was a low possibly of identifying Native American and historic-era archaeological resources.

Overall, the archaeological sensitivity of the Sub-Area Project site appears to be moderate, based on previous archaeological surveys, the environmental context, the NWIC recommendation, and the large amount of ground disturbance.

The disturbance of archaeological resources would be a potentially significant impact. Due to the moderate sensitivity of the Sub-Area 4 Project site for archaeological sites, implementation of **Mitigation Measure CUL-2.SP (Archaeological Resources Evaluation)**, as described above, would reduce potential impacts to a less-than-significant level.

Significance after Mitigation: Less Than Significant with Mitigation.

Mitigation: Mitigation Measure CUL-2.SP.

Human Remains

Impact CUL-3.SA4: Development of the Sub-Area 4 Project could disturb human remains, including those interred outside of formal cemeteries. (Criterion c.) (*Less Than Significant with Mitigation*)

The Sub-Area 4 Project would result in a significant impact if the Project could disturb any human remains, including those interred outside of formal cemeteries.

Based on knowledge of existing conditions and the survey performed by ESA, there is no evidence that the Sub-Area 4 Project site has been used for human burial purposes in the past. However, given the general archaeological sensitivity of the site and adjacent properties, there is the potential for the discovery of human remains during construction activities that involve ground disturbance. Disturbance of human remains would be a significant impact. Implementation of the above measure, **Mitigation Measure CUL-3.SP (Inadvertent Discovery of Human Remains)** would ensure that impacts to human remains would be less than significant. To facilitate legal compliance, project construction personnel shall be alerted to the possibility of encountering human remains during construction, and apprised of the proper procedures to follow in the event they are found.

Significance after Mitigation: Less Than Significant.

Mitigation: Mitigation Measure CUL-3.SP.

Paleontological Resources

Impact CUL-4.SA4: Development of the Sub-Area 4 Project could directly or indirectly destroy a unique paleontological resource or site or unique geologic feature. (Criterion f.) (*Less Than Significant with Mitigation*)

The Sub-Area 4 Project would result in a significant impact if the Project could directly or indirectly destroy a unique paleontological resource or site or unique geologic feature. Most of the Sub-Area 4 Project site is underlain by Pleistocene alluvium, which has high potential for paleontological resources. Destruction of a unique paleontological resource would be a significant impact. Implementation of **Mitigation Measure CUL-4.SP (Paleontological Resources Mitigation Program)** would ensure that impacts to paleontological resources within the Sub-Area 4 Project site would be less than significant.

Significance after Mitigation: Less Than Significant.

Mitigation: Mitigation Measure CUL-4.SP.

4.4.8 Cumulative Cultural and Paleontological Resources Impacts

Impact C-CUL-1.SP: Construction activity and development under the Specific Plan, in combination with past, present, existing, approved, pending and reasonably foreseeable future projects within and in the vicinity of the Plan Area, would contribute to an adverse cumulative impact to cultural resources, but the contribution would not be considerable. (*Significant and Unavoidable [Historic Resources]*)

The geographic scope for cumulative Specific Plan impacts on cultural resources includes potential cultural resources in the Plan Area, in the vicinity of the Plan Area (within approximately 500 feet), and in the city of Richmond. Development under the Specific Plan would contribute to cumulative impacts on cultural resources, including historic, archaeological, and paleontological resources, if the Plan and other projects in the vicinity adversely affect the same cultural resources or would cause impacts on other cultural resources in the vicinity.

Historic Resources

As discussed above under Impact CUL-1.SP, development of projects under the Specific Plan would have a potentially significant impact related to the potential to affect unknown/unidentified historic resources. Cumulative projects in the vicinity of the Plan Area that could also affect unknown historic resources include development within the Richmond Field Station and other approved, pending, and reasonably foreseeable future projects citywide (see Section 4.0.4, *Cumulative Analysis* in this chapter for detail). The Specific Plan's contribution to this impact could be cumulatively considerable.

There is a possibility that if demolition or major alteration of a historical resource occurs with adoption of and development under the Specific Plan; and avoidance, adaptive reuse, and appropriate relocation as identified under Mitigation Measure CUL-1.SP is not feasible; and the same circumstance occurs with other projects in the Plan Area vicinity that may affect potential historic resources (such as the development within the Richmond Field Station, see discussion below), a significant and unavoidable cumulative impact could result, even with the application of the measures detailed in Mitigation Measure CUL-1.SP.

Specifically, development within the Berkeley Global Campus/Richmond Field Station site adjacent to the developable portion of the Plan Area, as described in the EIR for that project (Tetra Tech, 2014), could result in the demolition or alteration of otherwise now unknown historic resources; this impact is identified in the Berkeley Global Campus EIR as significant and unavoidable. Implementation of mitigation measures identified in the Berkeley Global Campus EIR would reduce this impact, but not to a less-than-significant level.

Based on the information in this section and for the reasons summarized above, adoption of and development under the Specific Plan could contribute considerably to the cumulative impact to historic resources, which is conservatively considered significant and unavoidable.

Archaeological Resources, Paleontological Resources, and Human Remains

As discussed above under Impacts CUL-2.SP, CUL-3.SP, and CUL-4.SP, excavation associated with the Plan Area would have a potentially significant impact related to the potential to encounter previously unrecorded archaeological resources, paleontological resources, and/or human remains interred outside of a formal cemetery. Cumulative projects in the vicinity of the Plan Area that would also involve excavation include the Berkeley Global Campus/Richmond Field Station and Baywalk Project, and other approved, pending, and reasonably foreseeable future projects citywide (see Section 4.0.4 *Cumulative Analysis* in this chapter for detail). These projects could also encounter previously unrecorded archaeological resources, paleontological resources, or human remains, which would be a potentially significant cumulative impact, and the Specific Plan's contribution to this impact could be cumulatively considerable.

However, as discussed in Impacts CUL-2.SP, CUL-3.SP, and CUL-4.SP, the potential to encounter previously unrecorded resources and human remains would be reduced to a less-than-significant level with implementation of **Mitigation Measure CUL-2.SP, Mitigation Measure CUL-3.SP,** and **Mitigation Measure CUL-4.SP**. Implementation of these measures would effectively avoid damage to or loss of resources, and little to no residual impact would remain after mitigation.

With implementation of these mitigation measures, the Specific Plan's contribution to this cumulative impact would not be cumulatively considerable and thus would be less than significant.

Significance After Mitigation: Significant and Unavoidable.

Mitigation: Mitigation Measures CUL-1.SP, CUL-2.SP, CUL-3.SP, and CUL-4.SP.

Impact C-CUL-1.SA4: Construction activity and development of the Sub-Area 4 Project, in combination with past, present, existing, approved, pending and reasonably foreseeable future projects within and in the vicinity of the Project site, would contribute to an adverse cumulative impact to cultural resources, but the contribution would not be considerable. (*Less Than Significant with Mitigation*)

The geographic scope for cumulative Sub-Area 4 Project impacts on cultural resources includes potential cultural resources within the Project site, in the vicinity of the Project site (within approximately 500 feet), and in the city of Richmond. Development of the Sub-Area 4 Project would contribute to cumulative impacts on cultural resources, including archaeological and paleontological resources, if the Project and other projects in the vicinity adversely affect the same cultural resources or would cause impacts on other cultural resources in the vicinity.

Historic Resources

As discussed under Impact CUL-1.SA4, the Sub-Area 4 Project would not affect any historic resources. Thus, development of the Sub-Area 4 Project would not contribute to a potential cumulative impact on historic resources; no cumulative impact is identified.

Archaeological Resources, Paleontological Resources, and Human Remains

As discussed above under Impacts CUL-2.SA4, CUL-3. SA4, and CUL-4. SA4, excavation associated with the Sub-Area 4 Project could encounter previously unrecorded archaeological resources, paleontological resources, and/or human remains interred outside of a formal cemetery. Cumulative projects in the vicinity of the Sub-Area 4 Project site that would also involve excavation include the Berkeley Global Campus/Richmond Field Station, and other approved, pending, and reasonably foreseeable future projects citywide (see Section 4.0.4, *Cumulative Analysis* in this chapter for detail). These projects could also encounter previously unrecorded archaeological resources, paleontological resources, or human remains, which would be a potentially significant cumulative impact, and the Specific Plan's contribution to this impact could be cumulatively considerable.

However, as discussed in Impacts CUL-2. SA4, CUL-3. SA4, and CUL-4. SA4, the potential to encounter previously unrecorded resources and human remains would be reduced to a less-than-significant level with implementation of **Mitigation Measure CUL-2.SP, Mitigation Measure CUL-3.SP,** and **Mitigation Measure CUL-4.SP**. Implementation of these measures would effectively avoid damage to or loss of resources, and little to no residual impact would remain after mitigation.

With implementation of these mitigation measures, the Sub-Area 4 Project's contribution to this cumulative impact would not be cumulatively considerable and thus would be less than significant.

Significance after Mitigation: Less Than Significant.

Mitigation: Mitigation Measures CUL-2.SP, CUL-3.SP, and CUL-4.SP.

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4.5 Geology, Soils, and Seismicity

4.5.1 Introduction

This section identifies the existing setting and evaluates potential impacts related to geology, soils, and seismic conditions that could result from development under the Specific Plan and Sub-Area 4 Project. Existing conditions are based on regional geology and seismicity as well as previous geotechnical investigations in the Plan Area. The regulatory framework section discusses federal, state, and local policies and regulations that pertain to geologic hazards, seismic hazards, and protection of soil resources. The impact analysis determines impacts based on the significance criteria as outlined by CEQA *Guidelines* Appendix G, and appropriate mitigation measures are identified where necessary.

CEQA requires the analysis of potential adverse effects of a project on the environment. While potential effects of the environment on the project are arguably not required to be analyzed or mitigated under CEQA, this section nevertheless analyzes potential effects of the geology and soils on the Specific Plan implementation as set forth in CEQA *Guidelines,* Appendix G, Significance Criteria, and in order to provide information to the public and decision-makers. As such, the potential adverse effect of existing risk levels for expansive soils or landslides on proposed residents is analyzed below.

Public comment letters received on the Notice of Preparation of the EIR included comments requesting the EIR address the Specific Plan's potential to cause impacts related to liquefaction and subsidence from seismic events.

4.5.2 Environmental Setting

Regional Setting

The Plan Area lies within the geologically complex region of California referred to as the Coast Ranges geomorphic province.[1] The Coast Ranges province lies between the Pacific Ocean and the Great Valley (Sacramento and San Joaquin valleys) provinces and stretches from the Oregon border to the Santa Ynez Mountains near Santa Barbara. Much of the Coast Range province is composed of marine sedimentary deposits and volcanic rocks that form northwest trending mountain ridges and valleys, running subparallel to the San Andreas Fault Zone. The relatively thick marine sediments dip east beneath the alluvium of the Great Valley. The Coast Ranges can be further divided into the northern and southern ranges, which are separated by the San Francisco Bay. The San Francisco Bay lies within a broad depression created from an east-west expansion between the San Andreas and the Hayward fault systems.

The Northern Coast Ranges are composed largely of the Franciscan Complex or Assemblage, which consists primarily of graywacke, shale, greenstone (altered volcanic rocks), basalt, chert (ancient silica-rich ocean deposits), and sandstone that originated as ancient sea floor sediments.

[1] A geomorphic province is an area that possesses similar bedrock, structure, history, and age.

Franciscan rocks are overlain by volcanic cones and flows of the Quien Sabe, Sonoma and Clear Lake volcanic fields (CGS, 2002a).

Specific Plan Setting

Geology and Soils

The Custom Soil Resource Report prepared using the Natural Resource Conservation Service Web Soil Survey tool for the Plan Area, and United States Geological Survey (USGS)-provided soil type map overlays for Contra Costa County indicate that the internal and highway-adjacent parcels of the Plan Area are overlain by alluvium, while parcels adjacent to San Francisco Bay are composed of mud deposits and artificial fill (USDA, 2016; and USGS and CGS, 2006). Historically, artificial fill was placed within the Plan Area to reclaim the original low-lying lands and marshlands, while the native near-surface geology consists of Holocene alluvial fan and alluvial fan levee deposits. The alluvial fan deposits consist of stiff to dense silty clay with interbedded sand and gravel lenses. Recent geologic surveys in the vicinity of the Plan Area confirm the prevalence of artificial fill and alluvial deposits overlain by a soft to very stiff marine clay deposit, locally known as "Bay Mud," in Richmond's Southern Shoreline area (Engeo, 2015). Bay Mud is considered to be a highly compressible material that can lead to differential settlement hazards, especially when structures overlie areas of varying thicknesses of Bay Mud.

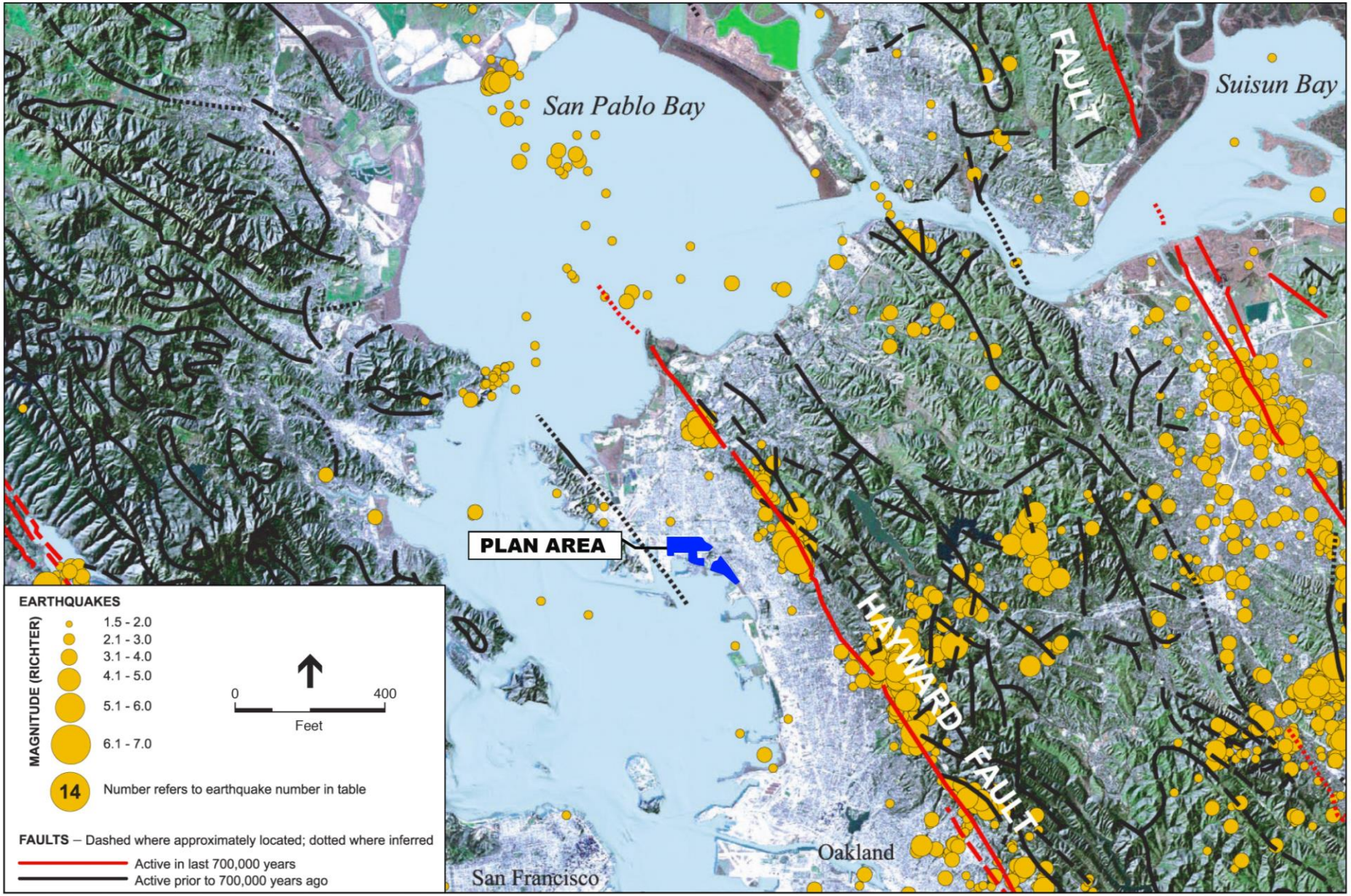
Franciscan bedrock (primarily greywacke, black shale and slate, greenstone, and chert) underlies the Plan Area at depths between 50 to 200 feet or more. The depth to the bedrock generally increases from the north-east to the south-west region of the Plan Area (City of Richmond, 2012). The depth to the groundwater table ranges from at surface at the southern Bay-adjacent portion of the Plan Area, to 80 inches below existing grade in upland areas. Based on the Plan Area's proximity to the Bay, tidal fluctuations and seasonal rain events would likely affect the elevation of the groundwater table.

Faults and Seismicity

Regional Faults

The Plan Area lies within a region of California that contains many active and potentially active faults and is considered an area of high seismic activity, as shown in **Figure 4.5-1** and described in **Table 4.5-1**.[2] The USGS along with the California Geological Survey (CGS) and the Southern California Earthquake Center formed the 2007 Working Group on California Earthquake Probabilities which has evaluated the probability of one or more earthquakes of magnitude 6.7 or higher occurring in the state of California over the next 30 years. The result of the evaluation was the formulation of the Second Uniform California Earthquake Rupture Forecast (UCERF2), which indicated a 63 percent likelihood that such an earthquake event will occur in the Bay Area (USGS, 2008).

[2] An "active" fault is defined by the State of California as a fault that has had surface displacement within Holocene time (approximately the last 11,000 years). A "potentially active" fault is defined as a fault that has shown evidence of surface displacement during the Quaternary (last 1.6 million years), unless direct geologic evidence demonstrates inactivity for all of the Holocene or longer (Hart, 2007).



SOURCE: USGS, 2004 (Earthquakes and Faults in the San Francisco Bay Area, 1970-2003, by Seeter, Calzia, Walter, Wong, and Saucedo)

Richmond Bay Specific Plan EIR . 120834

Figure 4.5-1

Regional Faults and Earthquakes between 1.5 and 7.0 between 1970 and 2003

TABLE 4.5-1
ACTIVE FAULTS IN THE PLAN AREA VICINITY

Fault	Distance and Direction from Plan Area	Recency of Movement	Historical Seismicity[a]	Maximum Moment Magnitude Earthquake (Mw)[b]
Hayward	1.5 miles northeast	Historic (1868 rupture)	M 6.8, 1868 Many <M 4.5	7.1
Concord–Green Valley	15 miles northeast	Historic (1955)	Historic active creep	6.7
Calaveras	16 miles east	Historic (1861 1911, 1984)	M 5.6–M 6.4,1861 M 6.2, 1911, 1984	6.8
San Andreas	17 miles southwest	Historic (1906; 1989 ruptures)	M 7.1, 1989 M 8.25, 1906 M 7.0, 1838 Many <M 6	7.9
Rodgers Creek	18 miles north	Historic	M 6.7, 1898 M 5.6, 5.7, 1969	7.0
Marsh Creek–Greenville	23 miles northeast	Historic (1980 rupture)	M 5.6 1980	6.9
San Gregorio	31 miles southwest	Prehistoric (Sometime prior to 1775 but after 1270 A.D.)	n/a	7.3

[a] Richter magnitude (M) and year for recent and/or large events. The Richter magnitude scale reflects the maximum amplitude of a particular type of seismic wave.

[b] Moment Magnitude (Mw) is related to the physical size of a fault rupture and movement across a fault. Moment magnitude provides a physically meaningful measure of the size of a faulting event (CGS, 2002b). The Maximum Moment Magnitude Earthquake, derived from the joint CGS/USGS Probabilistic Seismic Hazard Assessment for the State of California (Peterson, 1996).

SOURCES: Hart, 2007; Jennings et al., 2010; Peterson et al., 1996; USGS, 2003a, and USGS and CGS 2006.

In 2010 the group developed an updated method to account for weaknesses in the UCERF2. This updated report, the Uniform California Earthquake Rupture Forecast, Version 3 (UCERF3)—The Time-Independent Model was published by the USGS in 2013 identified a 72 percent likelihood of an earthquake with magnitude 6.7 or higher in the Bay Area region (USGS, 2015).

The San Andreas, Hayward and Calaveras Faults pose the greatest threat of significant damage in the Bay Area according to the USGS Working Group (USGS, 2003a). These three faults exhibit strike-slip orientation and have experienced movement within the last 150 years.[3] Other principal faults capable of producing significant ground shaking in the Bay Area are listed in Table 4.5-1 and include the Concord-Green Valley, Marsh Creek-Greenville, San Gregorio and Rodgers Creek Faults.

Of the faults in the vicinity of the Plan Area, the closest active fault to the site is the Hayward fault. Inactive faults are also located throughout the Bay Area. Occasionally, faults classified as inactive can exhibit secondary movement during a major event on another active fault.

[3] A strike-slip fault is a fault on which movement is parallel to the fault's strike or lateral expression at the surface.

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, and extends 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 as an active fault.

Historically, the Hayward fault generated one sizable earthquake in the 1800s.[4] In 1868, a Richter magnitude 7 earthquake on the southern segment of the Hayward Fault ruptured the ground for a distance of about 30 miles. Recent analysis of geodetic data indicates surface deformation may have extended as far north as Berkeley. Lateral ground surface displacement during these events was at least 3 feet.

A large earthquake could occur on the Hayward fault with an estimated Mw 7.1 (Table 4.5-1). The USGS Working Group on California Earthquake Probabilities includes the Hayward–Rodgers Creek Fault Systems in the list of those faults that have the highest probability of generating earthquakes of magnitude (M) 6.7 or greater in the Bay Area (USGS, 2003a).

San Andreas Fault

The San Andreas Fault Zone (fault) is a major structural feature that forms at the boundary between the North American and Pacific tectonic plates, extending from the Salton Sea in Southern California near the border with Mexico to north of Point Arena, where the fault trace extends out into the Pacific Ocean. The main trace of the San Andreas fault runs through the Bay Area and trends northwest through the Santa Cruz Mountains and the eastern side of the San Francisco Peninsula. As the principal strike-slip boundary between the Pacific plate to the west and the North American plate to the east, the San Andreas is often a highly visible topographic feature, such as between Pacifica and San Mateo, where Crystal Springs Reservoir and San Andreas Lake clearly mark the rupture zone. Near San Francisco, the San Andreas fault trace is located immediately off-shore near Daly City and continues northwest through the Pacific Ocean approximately 6 miles due west of the Golden Gate Bridge.

In the San Francisco Bay Area, the San Andreas fault was the source of the two major seismic events in recent history that affected the San Francisco Bay region. The 1906 San Francisco earthquake was estimated at M 7.9 and resulted in approximately 290 miles of surface fault rupture, the longest of any known continental strike slip fault. Horizontal displacement along the fault approached 17 feet near the epicenter. The more recent 1989 Loma Prieta earthquake, with a magnitude of Mw 6.9, resulted in widespread damage throughout the Bay Area.

[4] Prior to the early 1990s, it was thought that a Richter magnitude 7 earthquake occurred on the northern section of the Hayward Fault in 1836. However, a study of historical documents by the California Geological Survey concluded that the 1836 earthquake was not on the Hayward Fault (Bryant and Cluett, 2000).

Calaveras Fault

The Calaveras fault is a major right-lateral strike-slip fault that has been active during the last 11,000 years. The Calaveras Fault is located in the eastern San Francisco Bay region and generally trends along the eastern side of the East Bay Hills, west of San Ramon Valley, and extends into the western Diablo Range, to eventually join the San Andreas Fault Zone south of Hollister. The northern extent of the fault zone is somewhat conjectural and could be linked with the Concord Fault.

The Calaveras Fault has been the source of numerous moderate magnitude earthquakes, and the probability of a large earthquake, greater than M 6.7, is much lower than on the San Andreas or Hayward Faults (USGS, 2003a). However, this fault is considered capable of generating earthquakes with upper bound Mw ranging from 6.6 to 6.8.

Seismic Hazards

Surface Fault Rupture

Seismically induced ground rupture is defined as the physical displacement of surface deposits in response to an earthquake's seismic waves. The magnitude, sense, and nature of fault rupture can vary for different faults or even along different strands of the same fault. Ground rupture is considered more likely along active faults.

The Plan Area and Sub-Area 4 Project site are not within an Alquist-Priolo Fault Rupture Hazard Zone, as designated through the Alquist-Priolo Earthquake Fault Zoning Act, and no mapped active faults are known to pass through the immediate region.

Ground Shaking

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. In general, ground shaking tends to be more severe in softer sediments such as alluvial deposits, where surface waves can be amplified causing a longer duration of ground shaking compared to bedrock materials. For this reason, earthquake intensities are also measured in terms of their observed effects at a given locality. The Modified Mercalli (MM) intensity scale in **Table 4.5-2** 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); intensities ranging from IV to X could cause moderate to significant structural damage.[5] The intensities of an earthquake will vary over the region of a fault and generally decrease with distance from the epicenter of the earthquake.

[5] The damage level represents the estimated overall level of damage that will occur for various MM intensity levels. The damage, however, will not be uniform. Not all buildings perform identically in an earthquake. The age, material, type, method of construction, size, and shape of a building all affect its performance.

TABLE 4.5-2
MODIFIED MERCALLI INTENSITY SCALE

Intensity Value	Intensity Description	Average Peak Acceleration (% g[a])
I	Not felt except by a very few persons under especially favorable circumstances.	< 0. 17 g
II	Felt only by a few persons at rest, especially on upper floors on buildings. Delicately suspended objects may swing.	0.17-1.4 g
III	Felt noticeably indoors, especially on upper floors of buildings, but many people do not recognize it as an earthquake. Standing motor cars may rock slightly, vibration similar to a passing truck. Duration estimated.	0.17-1.4 g
IV	During the day felt indoors by many, outdoors by few. At night, some awakened. Dishes, windows, doors disturbed; walls make cracking sound. Sensation like heavy truck striking building. Standing motor cars rocked noticeably.	1.4–3.9g
V	Felt by nearly everyone, many awakened. Some dishes and windows broken; a few instances of cracked plaster; unstable objects overturned. Disturbances of trees, poles may be noticed. Pendulum clocks may stop.	3.5 – 9.2 g
VI	Felt by all, many frightened and run outdoors. Some heavy furniture moved; and fallen plaster or damaged chimneys. Damage slight.	9.2 – 18 g
VII	Everybody runs outdoors. Damage negligible in buildings of good design and construction; slight to moderate in well-built ordinary structures; considerable in poorly built or badly designed structures; some chimneys broken. Noticed by persons driving motor cars.	18 – 34 g
VIII	Damage slight in specially designed structures; considerable in ordinary substantial buildings, with partial collapse; great in poorly built structures. Panel walls thrown out of frame structures. Fall of chimneys, factory stacks, columns, monuments, walls. Heavy furniture overturned. Sand and mud ejected in small amounts. Changes in well water. Persons driving motor cars disturbed.	34 – 65 g
IX	Damage considerable in specially designed structures; well-designed frame structures thrown out of plumb; great in substantial buildings, with partial collapse. Buildings shifted off foundations. Ground cracked conspicuously. Underground pipes broken.	65 – 124 g
X	Some well-built wooden structures destroyed; most masonry and frame structures destroyed with foundations; ground badly cracked. Rails bent. Landslides considerable from riverbanks and steep slopes. Shifted sand and mud. Water splashed (slopped) over banks.	> 124 g
XI	Few, if any, (masonry) structures remain standing. Bridges destroyed. Broad fissures in ground. Underground pipelines completely out of service. Earth slumps and land slips in soft ground. Rails bent greatly.	> 1.24 g
XII	Damage total. Practically all works of construction are damaged greatly or destroyed. Waves seen on ground surface. Lines of sight and level are distorted. Objects are thrown upward into the air.	> 1.24 g

[a] g (gravity) = 980 centimeters per second squared. 1.0 g of acceleration is a rate of increase in speed equivalent to a car traveling 328 feet from rest in 4.5 seconds.

SOURCE: ABAG, 2003; USGS, 2003b

Richter magnitude is a measure of the size of an earthquake as recorded by a seismograph, a standard instrument that records ground shaking at the location of the instrument. The reported Richter magnitude for an earthquake represents the highest amplitude measured by the seismograph at a distance of 100 kilometers from the epicenter. Richter magnitudes vary logarithmically with each whole number step representing a tenfold increase in the amplitude of the recorded seismic waves. Earthquake magnitudes are also measured by their Moment Magnitude (Mw) which is related to the physical characteristics of a fault including the rigidity of the rock, the size of fault rupture, and movement or displacement across a fault (CGS, 2002b).

Ground shaking may affect areas hundreds of miles distant from the earthquake's epicenter. Historic earthquakes have caused strong ground shaking and damage in the San Francisco Bay Area – the 1989 Loma Prieta earthquake, for example, caused severe damage. This nearly 20-second earthquake generated a moment magnitude of 6.9 with average peak ground acceleration 0.7 g. At Oakland and San Francisco recording sites over 50 miles away, the average peak ground acceleration was measured at 0.3 g (CGS, 1990).

Strong ground shaking from earthquakes generated by active faults in the Bay Area is a significant hazard to the Plan Area and could affect the Plan Area during the next 30 years. During the life of Specific Plan-generated development, improvements are likely to be subjected to at least one moderate to severe earthquake that would cause strong ground shaking.

The severity of ground shaking within the Plan Area resulting from a specific earthquake would depend on the characteristics of the generating fault, distance to the energy source, the magnitude of the event, and the site-specific geologic conditions. Earthquakes on the active faults (listed in Table 4.5-1) are expected to produce a range of ground shaking intensities within the Plan Area.

Liquefaction

Liquefaction is the sudden temporary loss of shear strength in saturated, loose to medium-density granular sediments subjected to ground shaking. It generally occurs when seismically-induced ground shaking causes the pressure of the water between granules to increase to a point equal to the pressure of the soil overburden. When this occurs, the soil can move like a fluid, hence the term liquefaction. Liquefaction can cause foundation failure of buildings and other facilities due to the reduction of foundation bearing strength.

The potential for liquefaction depends on the duration and intensity of ground shaking, particle size distribution of the soil, density of the soil, and elevation of the groundwater. Areas at risk due to the effects of liquefaction are typified by a high groundwater table and underlying loose to medium-density granular sediments, particularly younger alluvium and artificial fill sediments and other reclaimed areas along the margin of San Francisco Bay.

According to maps compiled by the Association of Bay Area Governments (ABAG), the Plan Area is overlain by soil considered to have a very high (between the Bay and along Regatta Boulevard) to moderate, low and very low (upland of Regatta Boulevard) potential for liquefaction (ABAG, 2015). This indicates that mud deposits and artificial fill onsite have the highest potential for liquefaction.

Differential Settlement

Soils tend to settle at different rates and by varying amounts depending on the load weight or changes in properties over an area, which is referred to as differential settlement. Earthquake shaking can produce compaction and densification of dry, uniformly graded, granular, and loose soil material. The amount of compaction across an area can vary due to differences in soil types, producing differential settlement. Artificial fill may also be susceptible to differential settlement. Differential settlement can affect existing and proposed foundations, slabs, and pavements.

The Plan Area is underlain primarily by alluvial deposits, artificial fill, and compressible Bay Mud that varies in depth and thickness. Development under the Specific Plan could be subjected to earthquake-induced settlement, especially in areas of greater fill depth within the Plan Area.

Landslides/Slope Failure

Landslide risk includes risk related to mudflows, earth slumps, rock falls and other types of slope failure, and is dependent on the slope and geology of an area as well as the amount of rainfall, excavation, and seismic activity. A landslide, or slope failure, is a mass of rock, soil, and debris displaced downslope by sliding, flowing, or falling. Steep slopes and downslope creep of surface materials characterize landslide-susceptible areas. Landslides can occur on slopes of 15 percent or less; however, the probability is greater on steeper slopes, with old landslide deposits being the most likely to experience failure (Contra Costa County, 2000).

Slope instability can also occur resulting from lateral loading (e.g., placement of new structures) on softBay Mud, such as the Bay Mud deposits underlying the Plan Area. Shoreline locations can be prone to this instability depending on the characteristics of the Bay Mud, which generally tends to get thicker the closer it is to the center of the Bay, as well as the location and amount of loading associated with proposed improvements.

The City of Richmond has identified the Plan Area as including areas of Landslide Potential identified as Category 1 (Stable) and Category 1A (Unstable). Within the Plan Area, lands bordering I-580, the rail lines, and upland of Regatta Boulevard are characterized as Category 1 (Stable) with 0 to 5 percent slope and not underlain by landslide deposits. The shoreline regions of the Plan Area south of Regatta are generally characterized as Category 1A (Unstable) with 0 to 5 percent slopes and include tidelands, marshlands, and swamplands that are underlain my moist, unconsolidated muds (City of Richmond, 2012).

Other Geologic Hazards

Soil Erosion

Soil erosion is the process whereby soil materials are worn away and transported to another area either by wind or water. Rates of erosion can vary depending on the soil material and structure, soil placement, and human activity. Excessive soil erosion can eventually lead to damage of building foundations and other improvements. Erosion is most likely on sloped areas with exposed soil, especially when unnatural slopes are created by cut and fill activities. Soil erosion rates can therefore be higher during the construction phase. Typically, soil erosion potential during construction is

reduced by using modern construction practices; and once an area is graded and covered with concrete, structures, asphalt, or vegetation, the soil erosion potential is nearly eliminated.

Soil erosion within the Plan Area is affected by relative sea level fluctuations and changes in the rate of precipitation. Consistent with the sedimentological conditions of the Bay Area, which is in an interglacial period of heavy sedimentation, the Plan Area does not experience excessive soil erosion.

Expansive Soil

Expansive soils exhibit a "shrink-swell" behavior. Shrink-swell is the cyclic change in volume (expansion and contraction) that occurs in fine-grained clay sediments from the process of wetting and drying. Structural damage may result over an extended period of time, usually as the result of inadequate soil and foundation engineering or the placement of structures directly on expansive soils. Typically, soils that exhibit expansive characteristics comprise the upper 5 feet of the surface. The effects of expansive soils could damage foundations of above-ground structures, paved roads and streets, and concrete slabs. Expansion and contraction of on-site soils within the Plan Area, depending on the season and the amount of surface water infiltration, could exert enough pressure on structures to result in cracking, settlement, and uplift.

Settlement

Settlement can occur from immediate settlement, consolidation, shrinkage of expansive soil, and liquefaction. Immediate, or static, settlement occurs when a load from a structure or placement of new fill material is applied, causing distortion in the underlying materials. This settlement occurs quickly and is typically complete after placement of the final load. Consolidation settlement occurs in saturated clay from the volume change caused by squeezing out water from the pore spaces. Consolidation occurs over a period of time and is followed by secondary compression, which is a continued change in void ratio under the continued application of the load. Soils tend to settle at different rates and by varying amounts depending on the load weight or changes in properties over an area, which is referred to as differential settlement.

The Plan Area is underlain by poorly engineered artificial fill that varies in depth and thickness, with compressible Bay Mud. In areas of greater fill depth on the Plan Area, static settlement would likely occur.

4.5.3 Regulatory Setting

Federal Regulations

Earthquake Hazards Reduction Act

The Earthquake Hazards Reduction Act was enacted in 1997 to "reduce the risks to life and property from future earthquakes in the United States through the establishment and maintenance of an effective earthquake hazards and reduction program." To accomplish this, the Act established the National Earthquake Hazards Reduction Program (NEHRP). This program was significantly amended in November 1990 to refine the description of agency responsibilities, program goals, and objectives.

NEHRP's mission includes improved understanding, characterization, and prediction of hazards and vulnerabilities; improvement of building codes and land use practices; risk reduction through post-earthquake investigations and education; development and improvement of design and construction techniques; improvement of mitigation capacity; and accelerated application of research results. The NEHRP designates the Federal Emergency Management Agency (FEMA) as the lead agency of the program and assigns it with several planning, coordinating, and reporting responsibilities. Programs under NEHRP help inform and guide planning and building code requirements such as emergency evacuation responsibilities and seismic code standards.

Occupational Safety and Health Administration Regulations

Excavation and trenching are among the most hazardous construction activities. The Occupational Safety and Health Administration's (OSHA) Excavation and Trenching standard, Title 29 of the Code of Federal Regulations (CFR), Part 1926.650, covers requirements for excavation and trenching operations. OSHA requires that all excavations in which employees could potentially be exposed to cave-ins be protected by sloping or benching the sides of the excavation, supporting the sides of the excavation, or placing a shield between the side of the excavation and the work area.

State Regulations

California Building Code

The California Building Code (CBC) has been codified in the California Code of Regulations (CCR) as Title 24, Part 2. Title 24 is administered by the California Building Standards Commission, which by law, is responsible for coordinating all building standards. Under State law, all building standards must be centralized in Title 24 or they are not enforceable. The purpose of the CBC is to establish minimum standards to safeguard the public health, safety, and general welfare through structural strength, means of egress facilities, and general stability by regulating and controlling the design, construction, quality of materials, use and occupancy, location, and maintenance of all building and structures within its jurisdiction. The 2013 CBC is based on the 2012 International Building Code (IBC) published by the International Code Conference. In addition, the CBC contains necessary California amendments, which are based on reference standards obtained from various technical committees and organizations such as the American Society of Civil Engineers (ASCE), the American Institute of Steel Construction (AISC), and the American Concrete Institute (ACI). ASCE Minimum Design Standards 7-05 provides requirements for general structural design and includes means for determining earthquake loads as well as other loads (e.g., flood, snow, wind, etc.) for inclusion into building codes. The provisions of the CBC apply to the construction, alteration, movement, replacement, and demolition of every building or structure or any appurtenances connected or attached to such buildings or structures throughout California.

The earthquake design requirements take into account the occupancy category of the structure, site class, soil classifications, and various seismic coefficients, which are used to determine a Seismic Design Category (SDC) for a project as described in Chapter 16 of the CBC. The SDC is

a classification system that combines the occupancy categories with the level of expected ground motions at the site and ranges from SDC A (very small seismic vulnerability) to SDC E (very high seismic vulnerability and near a major fault). Design specifications are then determined according to the SDC in accordance with Chapter 16 of the CBC. Chapter 16, Section 1613 provides earthquake loading specifications for every structure, and portion thereof, including nonstructural components that are permanently attached to structures and their supports and attachments, which shall be designed and constructed to resist the effects of earthquake motions in accordance with ASCE 7-05.

Chapter 18 of the CBC covers the requirements of geotechnical investigations (Section 1803), excavation, grading, and fills (Section 1804), load-bearing of soils (1805), as well as foundations (Section 1808), shallow foundations (Section 1809), and deep foundations (Section 1810). Chapter 18 also describes analysis of expansive soils and the determination of the depth to groundwater table. For Seismic Design Categories D, E, and F, Chapter 18 requires analysis of slope instability, liquefaction, and surface rupture attributable to faulting or lateral spreading, plus an evaluation of lateral pressures on basement and retaining walls, liquefaction and soil strength loss, and lateral movement or reduction in foundation soil-bearing capacity. It also addresses mitigation measures to be considered in structural design, which may include ground stabilization, selecting appropriate foundation type and depths, selecting appropriate structural systems to accommodate anticipated displacements, or any combination of these measures. The potential for liquefaction and soil strength loss must be evaluated for site-specific peak ground acceleration magnitudes and source characteristics consistent with the design earthquake ground motions.

Construction General Permit

The California Construction Storm Water Permit (Construction General Permit)[6], adopted by the State Water Resources Control Board (SWRCB), regulates construction activities that include clearing, grading, and excavation resulting in soil disturbance of at least one acre of total land area. The Construction General Permit authorizes the discharge of storm water to surface waters from construction activities. It prohibits the discharge of materials other than storm water and authorized non-storm water discharges and all discharges that contain a hazardous substance in excess of reportable quantities established at 40 Code of Federal Regulations 117.3 or 40 Code of Federal Regulations 302.4, unless a separate National Pollutant Discharge Elimination System (NPDES) Permit has been issued to regulate those discharges.

The Construction General Permit requires that all developers of land where construction activities will occur over more than one acre do the following:

- Complete a Risk Assessment to determine pollution prevention requirements pursuant to the three Risk Levels established in the General Permit;
- Eliminate or reduce non-storm water discharges to storm sewer systems and other waters of the Nation;

6 *General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities*, Order No. 2009-0009-DWQ, as amended by Order No. 2010-0014-DWQ, National Pollutant Discharge Elimination System No. CAS000002.

- Develop and implement a Storm Water Pollution Prevention Plan (SWPPP), which specifies best management practices (BMPs) that will reduce pollution in storm water discharges to the Best Available Technology Economically Achievable/Best Conventional Pollutant Control Technology standards; and
- Perform inspections and maintenance of all BMPs.

In order to obtain coverage under the NPDES Construction General Permit, the Legally Responsible Person must electronically file all permit registration documents with the SWRCB prior to the start of construction. Permit registration documents must include:

- Notice of Intent;
- Risk Assessment;
- Site Map;
- SWPPP;
- Annual Fee; and
- Signed Certification Statement.

Typical BMPs contained in SWPPPs are designed to minimize erosion during construction, stabilize construction areas, control sediment, control pollutants from construction materials, and address post construction runoff quantity (volume) and quality (treatment). The SWPPP must also include a discussion of the program to inspect and maintain all BMPs.

Local Regulations

Richmond General Plan 2030

The City has established goals, policies, and implementing actions in the General Plan in regards to geologic hazards. Goals and actions as outlined in the Public Safety and Noise Element that would apply to the Specific Plan and Sub-Area 4 Project are listed as follows:

- **Goal SN1 Risk Management of Natural and Human-Caused Disasters.** Minimize the risk of injury, loss of life, property damage and environmental degradation from seismic activity, geologic hazards, flooding and fire and the storage, use and transport of hazardous materials and operations. Promote a sustainable approach to reduce impacts of natural disasters such as flooding and fire.

  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.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.

  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.

Action 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.

- **Goal SN3 Emergency Preparedness.** Develop effective mechanisms for a coordinated response to emergencies and natural disasters to best protect residents, businesses and the environment.

The City has also established goals, policies, and implementing actions in the General Plan in regards to soils. Goals and actions as outlined in the Conservation, Natural Resources and Open Space Element that are applicable to the Specific Plan and Sub-Area 4 are listed as follows:

- **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.

4.5.4 Significance Criteria

Consistent with Appendix G of the State CEQA *Guidelines*, a project would cause adverse impacts related to geology, soils, or mineral resources if it would:

a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:

   1. 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 (refer to Division of Mines and Geology Special Publication 42);
   2. Strong seismic ground shaking;
   3. Seismic-related ground failure, including liquefaction;
   4. Landslides;

b) Result in substantial soil erosion or the loss of topsoil;

c) 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;

d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property;

e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste disposal systems where sewers are not available for the disposal of wastewater;

Approach to Analysis

Richmond Bay Specific Plan

The analysis of the Specific Plan in this section and throughout this document is based on a realistic future buildout scenario within which development could take place anywhere within the developable portion of the Plan Area, and pays particular attention to underlying site conditions as site-specific conditions typically dictate the range and scope of geotechnical and seismic hazards that may be present.

Sub-Area 4 Project

The analysis of the Sub-Area 4 Project in this document is based on conditions that are likely present, as determined by geotechnical investigations for locations near the Sub-Area 4 Project site. The existing conditions on the Sub-Area 4 Project site are relatively similar to those of the broader Plan Area and thus the results of analysis of project-related impacts are similar to those identified for the Specific Plan.

Cumulative Analysis

The Specific Plan's, as with the Sub-Area 4 Project's, contribution to cumulative impacts on geology, soils and seismicity would be considered significant if, either together or independently, combined with other cumulative projects, their contribution to a significant cumulative effect (if one is found) is determined to be considerable.

Topics with No Impact or Otherwise Not Addressed in this EIR

Review and comparison of the setting circumstances and characteristics with the significance criteria stated above clearly indicate that no impacts would be associated with criteria a.1. The closest active faults to the Plan Area are the Hayward fault, located approximately 1.5 miles to the east, followed by the Concord-Green Valley Fault approximately 15 miles northeast, the Calaveras Fault approximately 16 miles east, and the San Andreas fault approximately 17 miles to the southeast. Although fault rupture is not necessarily limited to areas that coincide with the mapped fault trace, the Plan Area and Sub-Area 4 Project site are sufficiently distant from the nearest active fault to be considered not at risk of fault rupture. Therefore, there would be no fault rupture-related impact.

Additionally, the Specific Plan and Sub-Area 4 Project would have no impacts associated with criteria e, because buildout of neither the Specific Plan nor the Sub-Area 4 Project would include septic tanks or alternative wastewater disposal systems. Control of wastewater would be through the existing wastewater collection, treatment, and disposal system. Therefore, there would be no impact.

4.5.5 Program-Level Impacts of the Specific Plan

Impact GEO-1.SP: Development under the Specific Plan could expose people or structures to seismic hazards such as ground shaking and seismic-related ground failure such as liquefaction, differential settlement, and landslides. (Criteria a.2, a.3, and a.4) ***(Less Than Significant, No Mitigation Required)***

According to the USGS, the Plan Area is likely to experience at least one major earthquake (i.e., greater than M 6.7) within the next 30 years. The intensity of such an event would depend on the causative fault and the distance to the epicenter, the moment magnitude, and the duration of shaking. The closest active fault to the site is the Hayward fault. In general, ground shaking tends to be more severe in softer sediments such as alluvial deposits, where surface waves can be amplified, causing a longer duration of ground shaking compared to bedrock materials. As discussed above in the setting, the Plan Area and surroundings could be subject to substantial ground shaking because, in some areas, they overlay softer alluvial deposits that are between 80 to 160 feet deep, which could in turn cause significant damage in structures that are not adequately engineered.

In addition, seismic-induced liquefaction typically occurs in areas underlain with loose, saturated, cohesion-less soils within the upper 50 feet of subsurface materials. These soils (including some fill materials), when subjected to ground shaking, can lose their strength resulting from the buildup of excess pore water pressure, causing them to behave closer to a liquefied state. Liquefaction within the Plan Area could result in loss of bearing pressure, lateral spreading, sand boils (liquefied soil exiting at the ground surface), and earthquake-induced differential settlement causing damage in proposed structures if not designed appropriately. Mapping compiled by ABAG indicates that the Plan Area comprises soil with a very high potential for liquefaction (between the Bay and along Regatta Boulevard) as well as soils with moderate, low and very low potential for liquefaction (upland of Regatta Boulevard) (ABAG, 2015). The Plan Area is predominately identified as having a low to very low potential for liquefaction (ibid). Parts of the Plan Area overlying artificial fill and soft compressible Bay Mud deposits have the highest potential for liquefaction and if not addressed during site preparation and/or in foundation design, people could be harmed and structures may be damaged from earthquake-induced liquefaction, rapid differential settlement, or other earthquake-induced ground failures.

With regard to seismic-induced landslides within the Plan Area, the risk remains relatively low as most of the Plan Area (lands bordering I-580, the rail lines, and upland of Regatta Boulevard) is overlain by City-identified “Stable” soils. The shoreline parts of the Plan Area south of Regatta Boulevard (including tidelands, marshlands, and swamplands that are underlain my moist, unconsolidated muds) are overlain with soils characterized as “Unstable” (City of Richmond, 2012).

While earthquakes are unavoidable hazards, the resultant damage can be minimized through appropriate seismic design and engineering. The City requires that all construction meet the latest standards of the California Building Code (CBC) for construction which considers proximity to potential seismic sources and the maximum anticipated groundshaking possible. Proposed construction associated with any future development in the Plan Area would be in accordance with applicable City ordinances and policies and consistent with the most recent version of the

CBC, which requires structural design that can accommodate ground motions expected from known active faults.

Site-specific geotechnical investigations are required for all individual project sites, and would be prepared by a California-registered geotechnical engineer or engineering geologist and include recommendations for final design parameters for walls, foundations, foundation slabs, and surrounding related improvements (utilities, roadways, parking lots and sidewalks). Similarly, any construction fill materials would be appropriately compacted and engineered as directed by the California-certified engineering geologist or geotechnical engineer.

Due to the potential presence of hazardous materials in some parts of the Plan Area (see further discussion in Section 4.7, *Hazards and Hazardous Materials)*, removal of fill may not be prudent or allowed in some cases, in which case other methods of ground treatment may be more suitable, as determined in the final design-level geotechnical investigation.

Implementation of the geotechnical recommendations made in each final design-level geotechnical report for individually proposed projects in accordance with current CBC building code requirements would reduce the potential impacts associated with seismically-related ground failure, including liquefaction, differential settlement, and landslides within the Plan Area to less-than-significant levels.

Significance: Less Than Significant.

Mitigation: None required.

Impact GEO-2.SP: Development under the Specific Plan could result in soil erosion during excavation, grading, and construction activities. (Criterion b.) ***(Less Than Significant, No Mitigation Required)***

Construction of future development projects under the Specific Plan would require earthwork and grading, which would expose soil and potentially subject it to wind and water erosion. The extent of erosion that could occur varies depending on soil type, slope steepness and stability, vegetation/cover, and weather conditions. Water- and wind-induced erosion could occur during the construction phase of specific projects when concrete and asphalt are removed and soils are stockpiled and exposed.

However, projects would be required to implement construction best management practices (BMPs), as detailed in the Storm Water Pollution Prevention Plan (SWPPP) prepared for each project as required by the Construction General Permit from the National Pollution Discharge Elimination System program. Although these measures are intended to prevent sedimentation from entering runoff from construction sites, they generally prevent soil erosion and loss of topsoil occurring at a construction site. Thus, with adherence to the required BMPs, potential construction-related erosion would be minimized. Following completion of construction

activities, disturbed areas would be either revegetated through landscaping or covered by impervious surfaces such as structures or asphalt which limits the potential for erosion. Thus, projects developed under the Specific Plan would not result in significant soil erosion impacts, and implementation of required BMPs as part of the requirements NPDES Construction General Permit would minimize erosion impacts during construction and reduce potential impacts to less–than-significant levels. For further discussion of soil erosion and sedimentation, see also Section 4.8, *Hydrology and Water Quality*, in this document.

Significance: Less Than Significant.

Mitigation: None required.

Impact GEO-3.SP: Development under the Specific Plan could result in on- or off-site slope failure, (lateral spreading), subsidence, liquefaction, or collapse from placement of improvements on unstable geologic units or soils. (Criterion c.) ***(Less Than Significant, No Mitigation Required)***

Parts of the Plan Area are underlain by alluvial deposits, artificial fill, and compressible Bay Mud materials which are considered unstable soils susceptible to lateral spreading, settlement and subsidence. Structural loads are generally too great for Bay Mud to support with conventional foundations. Instead, support systems composed of driven piles are commonly recommended. Settlement across this compressible material is dependent upon the thickness of Bay Mud in conjunction with the thickness of fill at any given location. To minimize settlement in areas receiving fill a surcharge program is often utilized. Surcharging consists of placing excess fill in areas where settlement is a concern and leaving it in place a sufficient amount of time to partially pre-consolidate the material. Gravity utilities constructed in areas of Bay Mud are designed to avoid grade reversal, joint separation, and leakage. Flexible connections are used when utilities enter a building or other structure. Construction activities in areas of Bay Mud usually require the use of light grading equipment. Because settlement across this compressible material is generally dependent upon the thickness of Bay Mud in conjunction with the thickness of fill at any given location, future development within the Plan Area located nearest the Bay, where soft deposits experience a greater depth, would experience greater sensitivity to soil that would become unstable.

Consistent with Impact GEO-1.SP, proposed construction associated with future development in the Plan Area would take place in accordance with applicable City ordinances and policies and consistent with the most recent version of the CBC, that would effectively mitigate unstable soils. These investigations would be prepared by a California registered geotechnical engineer or engineering geologist and include recommendations for final design parameters for the walls, foundations, foundation slabs, and surrounding related improvements (utilities, roadways, parking lots and sidewalks). Similarly, any fill materials would be appropriately compacted and engineered as directed by California-certified engineering geologists or geotechnical engineers that would be assigned to ensure the safety of construction of specific projects developed under the Specific Plan.

For future development located in close proximity to the Bay, further investigation of slope stability would also be conducted as part of the design-level geotechnical investigation that would be required prior to building permit issuance. Shoreline stabilization measures, if necessary, would be included in this investigation and would similarly be in accordance with current CBC building code requirements and industry practices. Design measures which would include shoreline slope stabilization measures would be required to be incorporated into project design prior to approval of a building permit.

Implementation of geotechnical recommendations made by the final design-level geotechnical report in accordance with currently required geotechnical design criteria would reduce the potential impacts associated with unstable geologic units or materials to less-than-significant levels for future development under the Specific Plan. With these standard measures the proposed Specific Plan would thus generate a less-than-significant impact.

Significance: Less Than Significant.

Mitigation: None required.

Impact GEO-4.SP: Implementation of the Specific Plan could result in development on expansive soils, creating risks to life and property. (Criterion d.) (*Less Than Significant, No Mitigation Required*)

The effects of expansive soils, where present at the site, could damage foundations of aboveground structures. Surface structures with foundations constructed in expansive soils could experience expansion and contraction depending on the season and the amount of surface water infiltration. This expansion and contraction could exert enough pressure on a structure to result in cracking, settlement, and uplift. As stated above, future projects that would be developed under the Specific Plan would be required to complete a site-specific design-level geotechnical investigation. As part of this investigation, site materials would be evaluated for potential expansive soils. Any use of imported fill materials or the reuse of existing fills would be required to meet minimum standards for expansion potential. The final design-level geotechnical report would include recommendations for mitigating any potential hazards associated with expansive soils, if present. Recommended geotechnical practices could include replacement of surface soils with engineered fill that is not susceptible to expansion or treatment of on-site soils with lime that is a proven method of reducing expansive properties. Therefore, implementation of the geotechnical recommendations made by the final design-level geotechnical report in accordance with currently required geotechnical design criteria would reduce the impacts associated with the potential presence of expansive soils to less–than-significant levels.

Significance: Less Than Significant.

Mitigation: None required.

4.5.6 Project-Level Impacts of the Sub-Area 4 Project

Impact GEO-1.SA4: Development of the Sub-Area 4 Project could expose people or structures to seismic hazards such as ground shaking and seismic-related ground failure such as liquefaction, differential settlement, and landslides. (Criteria a.2, a.3, and a.4) ***(Less Than Significant, No Mitigation Required)***

As described above, the Plan Area, which includes the Sub-Area 4 Project site, is located in a seismically active region that contains a number of active faults. Estimates by the Working Group on Earthquake Probabilities indicated a 72 percent chance that a magnitude 6.7 or greater earthquake would occur in the Bay Area region over the following 30 years (USGS, 2015). The intensity of such an event would depend on the causative fault and the distance to the epicenter, the moment magnitude, and the duration of shaking. The closest active fault to the site is the Hayward fault, although a number of other active faults are found in the region. In general, ground shaking tends to be more severe in softer sediments such as alluvial deposits, where surface waves can be amplified causing a longer duration of ground shaking compared to bedrock materials. As discussed above in the setting, the Sub-Area 4 Project site within the Plan Area could be subject to substantial ground shaking as it overlays some softer alluvial deposits, which could in turn cause significant damage in structures that are not adequately engineered. If not designed appropriately, a 6.7 or greater magnitude earthquake on an active regional faults could produce significant groundshaking at the Sub-Area 4 Project site causing substantial damage. However, damage can be minimized through appropriate seismic design and engineering. The City requires that all construction meet the latest standards of the CBC for construction which considers proximity to potential seismic sources and the maximum anticipated groundshaking possible. Proposed construction associated with any future development within the Sub-Area 4 Project site would be in accordance with applicable City ordinances and policies and consistent with the most recent version of the CBC, which requires structural design that can accommodate ground motions expected from known active faults. Compliance with these building safety design standards would reduce potential impacts associated with ground shaking to less-than-significant levels.

According to mapping provided to ABAG by the USGS, the Sub-Area 4 Project site is located in an area predominantly deemed to have very low susceptible to liquefaction hazards – a small part of the southeastern part of the Sub-Area 4 Project site however, is categorized as having a very high susceptibility for liquefaction (ABAG, 2015). Artificial fill and soft compressible Bay Mud deposits in the Sub-Area 4 Project site are especially susceptible to seismic-induced liquefaction. These soils have highest potential for liquefaction and if not addressed during site preparation and/or in foundation design, people could be harmed and structures may be damaged from earthquake-induced liquefaction, rapid differential settlement, or other earthquake-induced ground failures.

With regard to seismic-induced landslides within the Sub-Area 4 Project site, the risk remains relatively low for most of the site, which is overlain by City-identified “Stable” soils, while a small part of the southeastern part of the site, adjacent to the Bayview Avenue overpass, is generally characterized as Category 1A (Unstable) (City of Richmond, 2012).

Required geotechnical investigations would identify all potential liquefiable materials and adherence to building code requirements and proven geotechnical design measures would minimize the potential for liquefaction, differential settlement, lateral spreading or collapse through foundation design, treatment of site soils and/or replacement of liquefiable soils with engineered fills. These investigations would be prepared by a California-registered geotechnical engineer or engineering geologist and include recommendations for final design parameters for walls, foundations, foundation slabs, and surrounding related improvements (utilities, roadways, parking lots and sidewalks). Similarly, any fill materials would be appropriately compacted and engineered as directed by the Sub-Area 4 Project's California-certified engineering geologist or geotechnical engineer.

Therefore, with implementation of the seismic design requirements into construction specifications in accordance with building code requirements, as discussed above and in Impact GEO-1.SP, impacts associated with the effects of ground shaking and seismic-related ground failure such as liquefaction, differential settlement, collapse, or lateral spreading would be reduced to less-than-significant levels.

Significance: Less Than Significant.

Mitigation: None required.

Impact GEO-2.SA4: Development under the Sub-Area 4 Project could result in soil erosion during excavation, grading, and construction activities. (Criterion b.) ***(Less Than Significant, No Mitigation Required)***

The Sub-Area 4 Project would involve construction of buildings and open space along and near the Bay. As such, development of Sub-Area 4 is more likely to result in impacts related to erosion of soils into the Bay than other parts of the Plan Area. As described above for Specific Plan Impact GEO-2.SP, all construction activities associated with the Sub-Area 4 Project would be required to implement BMPs, as detailed in the Storm Water Pollution Prevention Plan (SWPPP) required for projects as part of the Construction General Permit from the National Pollution Discharge Elimination System program. Although these measures are intended to prevent sedimentation from entering runoff from the site, they generally also prevent soil erosion and loss of topsoil occurring at a construction site. Thus, with adherence to the required BMPs potential construction-related erosion would be minimized to a less-than-significant level.

Significance: Less Than Significant.

Mitigation: None required.

Impact GEO-3.SA4: The Sub-Area 4 Project could result in on- or off-site slope failure, (lateral spreading), subsidence, liquefaction, or collapse from placement of improvements on unstable geologic units or soils. (Criterion c.) ***(Less Than Significant, No Mitigation Required)***

The Sub-Area 4 Project site is generally underlain by artificial fill materials, Bay Mud and marsh deposits which are known to be generally insufficient to support substantive improvements without appropriate site preparations and/or incorporation of foundation design measures such as deep foundation systems that can be anchored in more competent materials at depth. If not engineered appropriately, improvements could be susceptible to subsidence, liquefaction, or differential settlement. The Sub-Area 4 Project site is, however, as described above, relatively level, and not susceptible to landslide.

A detailed, site-specific and project-specific geotechnical analysis would be required prior to approval of any building permit and would include an evaluation of the potential for subsidence, liquefaction and differential settlement. The final, design-level geotechnical report would provide detailed recommendations and corrective grading plans to depict any specific geotechnical design measures necessary, such as the placement of imported fill or recompaction of onsite soils. These design measures would be in accordance and consistent with CBC requirements as well as any City building code amendments. Engineering recommendations included in the Sub-Area 4 Project engineering and design plans would be reviewed and approved by the City. Therefore, with adherence to building code requirements as described above (and in Impacts GEO-1.SP and GEO-1.SA4), the potential for unstable soils to adversely affect proposed improvements developed as part of the Sub-Area 4 Project would be reduced to a less-than-significant level.

Significance: Less Than Significant.

Mitigation: None required.

Impact GEO-4.S4: Implementation of the Specific Plan could result in development on expansive soils, creating risks to life and property. (Criterion d.) ***(Less Than Significant, No Mitigation Required)***

Expansive soils increase in volume when their moisture content becomes elevated. Structures built on expansive soils could experience foundation cracking as a result of seasonal expanding and contracting of soils over time. However, building damage due to volume changes associated with expansive soils can be reduced through proper foundation design. Replacement of native soils with engineered fill or addition of soil amendments are effective means of mitigating expansive soils. As required by the CBC, the Sub-Area 4 Project would be required to complete a final geotechnical investigation that includes site-specific recommendations for the mitigation of potentially expansive soils, if present. The site-specific analysis of site foundation soils guides the recommended building foundation design, such that damage from geologic hazards such as expansive and corrosive soils is minimized and reduced to levels that can be accommodated by the final design. Therefore, implementation of standard geotechnical engineering practices and adherence to building code

requirements as above (and in Impacts GEO-1.SP and GEO-1.SA4) would reduce potential impacts from expansive soils and other adverse soil properties to less-than-significant levels.

Significance: Less Than Significant.

Mitigation: None required.

4.5.7 Cumulative Impacts

Impact C-GEO-1.SP: Development of the Specific Plan, in conjunction with past, present and reasonably foreseeable future projects, would not result in significant cumulative impacts with respect to geology, soils or seismicity. (*Less Than Significant, No Mitigation Required*)

The geographic area considered for the assessment of cumulative impacts related to geology, soils, and seismic hazards effects for the consideration of Specific Plan impacts is the entire San Francisco Bay Area region. This region is considered seismically active, and any development exposes people and structures to potentially adverse effects associated with earthquakes, including seismic ground shaking and seismic-related ground failure. Development under the Specific Plan, combined with past, present, and other reasonably foreseeable development in the area, would result in increased population and development in an area subjected to seismic risks and hazards. However, projects developed under the proposed Specific Plan, as well as all other future projects in the region, would be constructed in accordance with the most current version of CBC seismic safety requirements, and recommendations contained in each site-specific geotechnical report as required prior to approval of a building permit. Future development would be constructed to standards similar to those that are described above, which likely would exceed those of older structures within the region. Therefore, impacts to area geology and soils resulting from future development generated by the Specific Plan, combined with other past, present, or probable future projects, would not result in a cumulatively significant impact. The cumulative impact would be less than significant given mandatory compliance with existing state and local building codes.

Significance: Less Than Significant.

Mitigation: None required.

Impact C-GEO-1.SA4: Development of the Sub-Area 4 Project, in conjunction with past, present and reasonably foreseeable future projects, would not result in significant cumulative impacts with respect to geology, soils or seismicity. (*Less Than Significant, No Mitigation Required*)

The geographic area considered for the assessment of cumulative impacts related to geology, soils, and seismic hazards effects for the consideration of Sub-Area 4 Project impacts is the entire San Francisco Bay Area region. This region is considered seismically active, and any development

exposes people and structures to potentially adverse effects associated with earthquakes, including seismic ground shaking and seismic-related ground failure. Development of the Sub-Area 4 Project, combined with past, present, and other reasonably foreseeable development in the area, would result in increased population and development in an area subjected to seismic risks and hazards. However, the Sub-Area 4 Project, as well as all other future projects in the region, would be constructed in accordance with the most current version of CBC seismic safety requirements, and recommendations contained in each site-specific geotechnical report as required prior to approval of a building permit. Future development would be constructed to standards similar to those that are described above, which likely would exceed those of older structures within the region. Therefore, impacts to area geology and soils resulting from development of the Sub-Area 4 Project combined with other past, present, or probable future projects, would not result in a cumulatively significant impact. The cumulative impact would be less than significant given mandatory compliance with existing state and local building codes.

Significance: Less Than Significant.

Mitigation: None required.

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4.6 Climate Change and Greenhouse Gas Emissions

4.6.1 Introduction

This section identifies and evaluates the impacts related to climate change and greenhouse gas (GHG) emissions that could result from development under the Specific Plan and the Sub-Area 4 Project. This section presents an overview of global and local climate change, and examines the potential for buildout under the Specific Plan and the Sub-Area 4 Project to result in increased GHG emissions, which contribute to climate change. The impact analysis also includes an evaluation of the consistency of the Specific Plan and Sub-Area 4 Project with statewide and local planning efforts to reduce GHG emissions. Issues pertaining to sea level rise are address in the hydrology section, section *4.8 Hydrology and Water Quality* of this EIR.

4.6.2 Environmental Setting

"Global warming" and "global climate change" are the terms used to describe the increase in the average temperature of the earth's near-surface air and oceans since the mid-20th century and its projected continued rise in temperature. Warming of the climate system is now considered to be unequivocal (IPCC, 2007), with global surface temperature increasing approximately 1.33 degrees Fahrenheit (°F) over the last 100 years. Continued warming is projected to increase global average temperature between 2 and 11°F over the next 100 years (CCCC, 2006).

Natural processes and human actions have been identified as the causes of this warming. The International Panel on Climate Change (IPCC) concludes that variations in natural phenomena such as solar radiation and volcanoes produced most of the warming from pre-industrial times to 1950 and had a small cooling effect afterward due to particulate loading of the stratosphere from volcanic eruptions. After 1950, however, increasing GHG concentrations resulting from human activity such as fossil fuel burning and deforestation have been responsible for most of the observed temperature increase. These basic conclusions have been endorsed by more than 45 scientific societies and academies of science, including all of the national academies of science of the major industrialized countries. Since 2007, no scientific body of national or international standing has maintained a dissenting opinion.

Increases in GHG concentrations in the earth's atmosphere are the main cause of human-induced climate change. GHGs naturally trap heat by impeding the exit of solar radiation that has reached the earth. Some GHGs occur naturally and are necessary for keeping the earth's surface inhabitable. However, increases in the concentrations of these gases in the atmosphere during the last 100 years have decreased the amount of solar radiation that is reflected back into space, intensifying the natural greenhouse effect and resulting in the increase of global average temperature.

Greenhouse Gases

Carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O) are the principal GHGs. When concentrations of these gases exceed natural concentrations in the atmosphere, the greenhouse effect may be enhanced. CO_2, CH_4, and N_2O occur naturally but are also generated through

human activity. Emissions of CO_2 are largely by-products of fossil fuel combustion, whereas CH_4 results from off-gassing[1] associated with agricultural practices and landfills. Other human-generated GHGs, which have much higher heat-absorption potential than CO_2, include fluorinated gases such as hydrofluorocarbons (HFCs), perfluorocarbons (PFC), and sulfur hexafluoride (SF_6), which are byproducts of certain industrial processes.

CO_2 is the reference gas for climate change because it is the predominant GHG emitted. The effect that each of the aforementioned gases can have on global warming is a combination of the mass of their emissions and their global warming potential (GWP). GWP indicates, on a pound-for-pound basis, how much a gas is predicted to contribute to global warming relative to how much warming would be predicted to be caused by the same mass of CO_2, CH_4, and N_2O are substantially more potent GHGs than CO_2, with GWPs of 25 and 310 times that of CO_2, respectively.

In emissions inventories, GHG emissions are typically reported in terms of pounds or metric tons (MTs) of CO_2 equivalents (CO_2e). CO_2e are calculated as the product of the mass emitted of a given GHG and its specific GWP. While CH_4 and N_2O have much higher GWPs than CO_2, CO_2 is emitted in such vastly higher quantities that it accounts for the majority of GHG emissions in CO_2e.

Fossil fuel combustion, especially for the generation of electricity and powering of motor vehicles, has led to substantial increases in CO_2 emissions (and thus substantial increases in atmospheric concentrations of CO_2). In pre-industrial times (c. 1860), concentrations of atmospheric CO_2 were approximately 280 parts per million (ppm) (GRID-Arendal, 2014). By August 2013, atmospheric CO_2 concentrations had increased to 395 ppm, by over 40 percent above pre-industrial concentrations (ESRL, 2016). There is international scientific consensus that human-caused increases in GHGs have contributed and will continue to contribute to global warming.

Impacts of Climate Change

Impacts in California

Global warming impacts in California include loss in snow pack, rise in sea level, more extreme heat days per year, more high ozone days, more large forest fires, and more drought years. Secondary effects are likely to include the displacement of thousands of coastal businesses and residences, loss of infrastructure, impacts to agriculture, changes in disease vectors, and changes in habitat and biodiversity. Global warming would cause detrimental effects to some of the state's largest industries, including agriculture, winemaking, tourism, skiing, commercial and recreational fishing, forestry, and electrical power generation: "[t]he impacts of global warming are already being felt in California. The Sierra snowpack, an important source of water supply for the state, has shrunk 10 percent in the last 100 years. It is expected to continue to decrease by as much as 25 percent by 2050. World-wide changes are causing sea levels to rise – about 8 inches of increase has been recorded at the Golden Gate Bridge over the past 100 years – threatening low coastal areas with inundation and serious damage from storms" (CARB, 2008).

[1] Off-gassing is defined as the release of chemicals under normal conditions of temperature and pressure.

Ecosystem and Biodiversity Impacts

Climate change is expected to have effects on diverse types of ecosystems, from alpine to deep-sea habitat (USEPA, 2016). As temperatures and precipitation change, seasonal shifts in vegetation would occur; this 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 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" (IPCC, 2007). Shifts in existing biomes could also make ecosystems vulnerable to encroachment by invasive species. 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 generate disproportionate negative impacts related to vector-borne diseases, waterborne illnesses, temperature-related risks, air quality, extreme weather, food safety, to minority populations and persons with mental health illness (USEPA, 2016b). Climate change may increase the risk of vector-borne infectious diseases, particularly those found in tropical areas and spread by insects such as malaria, dengue fever, and yellow fever; and encephalitis Cholera, which is associated with algal blooms, could also increase (NCBI, 1993). While these health impacts would largely affect tropical areas, effects would also be felt in California. For example, warming of the atmosphere is expected to increase smog and particulate pollution, which will adversely affect individuals with heart and respiratory problems, such as asthma. Extreme heat events are also expected to occur with more frequency. The elderly, children, and the homeless are particularly vulnerable to extreme heat events. Finally, 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.

Greenhouse Gas Emissions Estimates

Global Emissions

Worldwide emissions of GHGs in 2011 were 45 billion tons of CO_2e per year (CAIT, 2014). This figure includes ongoing emissions from industrial and agricultural sources, but excludes emissions from land use changes.

U.S. Emissions

In 2014, the United States emitted about 6.87 billion tons of CO_2e per year or about 21.5 tons/ person/ year. Of the five major sectors nationwide — residential and commercial, industrial, agriculture, transportation, and electricity— electricity accounts for the highest fraction of GHG emissions (approximately 30 percent), closely followed by transportation (approximately 26 percent); these emissions from energy are primarily generated from the combustion of fossil fuels

(approximately 82 percent), and emissions from transportation are entirely generated from direct fossil fuel combustion (USEPA, 2016c).

State of California Emissions

In 2014, California emitted approximately 441.5 million tons of CO_2e. This represents about 6.4 percent of total U.S. emissions. This large number is due primarily to the sheer size of California compared to other states. By contrast, at 11.4 tons/ person/ year California has one of the lowest per capita GHG emission rates in the country (CARB, 2016). This is in part due to the success of the state's energy efficiency and renewable energy programs and commitments that have lowered the GHG emissions rate of growth by more than half of what it would have been otherwise (CEC, 2007). Another factor that has reduced California's fuel use and GHG emissions is its mild climate compared to that of many other states.

The latest California Air Resources Board (CARB) inventory also reports that the composition of gross climate change pollutant emissions in California in 2016 (expressed as CO_2e) were as follows:

- Carbon dioxide (CO_2) accounted for 84.3 percent;
- Methane (CH_4) accounted for 9 percent;
- Nitrous oxide (NO_2) accounted for 2.8 percent; and
- High GWP gasses (HFCs, PFC, and SF_6) accounted for 3.9 percent.

Of these gases, CARB found that transportation is the source of approximately 37 percent of the state's GHG emissions, followed by industrial sources at 24 percent and electricity generation (both in-state and out-of-state) at 20 percent. Agriculture is the source of approximately 8 percent, and residential activity is the source of about 6 percent, followed by commercial activities at 5 percent (CARB, 2016).

Bay Area Emissions

In the San Francisco Bay Area, the last inventory prepared by the Bay Area Air Quality Management District (BAAQMD; dated 2011, and updated in 2015) indicates that the transportation sector and industrial/commercial sector represent the largest sources of GHG emissions, accounting for 39.7 percent and 35.7 percent, respectively, of the Bay Area's 86.6 million tons of CO_2e in 2011. Electricity/co-generation sources account for about 14 percent of the Bay Area's GHG emissions, followed by residential fuel usage at about 7.7 percent. Off-road equipment sources currently account for approximately 1.5 percent of total Bay Area GHG emissions (BAAQMD, 2015).

City of Richmond Emissions

The General Plan contains an Energy and Climate Change Element. Adopted in in 2012, this element presents baseline GHG inventories and future year inventory projections. A Climate Action Plan has been developed by the City and is currently under public review. The City's baseline year (2005) community inventory shows that industries, businesses, and residents in the

city generated over 5.8 million metric tons (MT) of CO_2e, and is made up of various sources. Of the sources in this total, the largest contributors include the commercial/industrial sector and transportation-related emissions, which contribute 88 percent and 10 percent, respectively (City of Richmond, 2012). A recent study of consumption-based GHG Inventories of San Francisco Bay Area neighborhoods, cities and counties indicates that the City of Richmond has the lowest carbon footprint per household (37 MT of CO_2e) compared to the 40 other the San Francisco Bay Area cities analyzed in the study (Jones et.al., 2015).

In 2013 the City of Richmond joined Marin Clean Energy (MCE) to increase renewable energy choices for local businesses and residents. A "Community Choice Aggregation" program, MCE procures electricity from renewable sources – solar, wind, bioenergy, geothermal, and small hydro – and then partners with PG&E to deliver electricity to homes and businesses. As of 2015, over 80 percent of Richmond's electrical customers have enrolled in MCE; of these, 99 percent are enrolled in the Light Green Option that sources 56 percent of its energy supply from renewable energy sources, and less that 1 percent were enrolled in the Deep Green option, which provides a 100 percent renewable energy option (City of Richmond, 2016)

4.6.3 Regulatory Setting

International Treaties and Other Developments

The Kyoto Protocol is an international agreement linked to the United Nations Framework Convention on Climate Change. It was adopted in Kyoto, Japan, on December 11, 1997 and entered into force on February 16, 2005. The major feature of the Kyoto Protocol is that it sets binding targets for 37 industrialized countries and the European community for reducing GHG emissions. The targets amount to d 2008-2012. The major distinction between the Protocol and the Convention is that while the an average of five percent reduction against 1990 levels over the five-year period Convention encouraged industrialized countries to stabilize GHG emissions, the Protocol commits them to do so. Recognizing that developed countries are principally responsible for the current high levels of GHG emissions in the atmosphere as a result of more than 150 years of industrial activity, the Protocol places a heavier burden on developed nations under the principle of "common but differentiated responsibilities." (UN, 1997).

Negotiations after Kyoto have continued in an attempt to address the period after the first "commitment period" of the Kyoto Protocol, concluded at the end of 2012. In Durban, South Africa in 2011, parties to the protocol agreed in principle to negotiate a new comprehensive and legally binding climate agreement by 2015 and to enter it into force for all parties starting from 2020. However, significant divisions remain in determining the parameters of any such new protocol, including its enforcement mechanisms and the degree to which developing economies will begin to be subject to binding emissions targets.

Federal

U.S. Environmental Protection Agency "Endangerment" and "Cause or Contribute" Findings

In *Massachusetts v. Environmental Protection Agency* et al., 12 states and cities, including California, together with several environmental organizations, sued to require the USEPA to regulate GHGs as pollutants under the Clean Air Act (127 S. Ct. 1438 (2007)). The U.S. Supreme Court ruled that GHGs fit within the Clean Air Act's definition of a pollutant and the USEPA had the authority to regulate GHGs.

On December 7, 2009, the USEPA Administrator signed two findings regarding GHGs under Section 202(a) of the federal Clean Air Act:

- **Endangerment Finding:** The current and projected concentrations of six key GHGs—CO_2, CH_4, N_2O, HFCs, PFCs, and SF_6—in the atmosphere threaten the public health and welfare of current and future generations.
- **Cause or Contribute Finding:** The combined emissions of these GHGs from new motor vehicles and new motor vehicle engines contribute to the GHG pollution that threatens public health and welfare.

Mandatory Greenhouse Gas Reporting Rule

On September 22, 2009, the USEPA released its final Greenhouse Gas Reporting Rule (Reporting Rule). The Reporting Rule is a response to the fiscal year (FY) 2008 Consolidated Appropriations Act (H.R. 2764; Public Law 110-161), that required the USEPA to develop "…mandatory reporting of GHGs above appropriate thresholds in all sectors of the economy…." The Reporting Rule applies to most entities that emit 25,000 metric tons of CO_2e or more per year. Starting in 2010, facility owners were required to submit an annual GHG emissions report with detailed calculations of facility GHG emissions. The Reporting Rule also mandates recordkeeping and administrative requirements in order for the USEPA to verify annual GHG emissions reports.

Light-Duty Vehicle Greenhouse Gas Emissions Standards and Corporate Average Fuel Economy Standards

In response to the Massachusetts v. EPA ruling discussed above, the Bush Administration issued an Executive Order on May 14, 2007, directing the United States Environmental Protection Agency (USEPA), the Department of Transportation (DOT), and the Department of Energy (DOE) to establish regulations that reduce GHG emissions from motor vehicles, non-road vehicles, and non-road engines by 2008.

On October 10, 2008, the National Highway Traffic Safety Administration (NHTSA) released a final environmental impact statement analyzing proposed interim standards for passenger cars and light trucks in model years 2011 through 2015. The NHTSA issued a final rule for model year 2011 on March 30, 2009 (NHTSA, 2009).

On May 7, 2010, the USEPA and the NHTSA issued a final rule regulating fuel efficiency and GHG pollution from motor vehicles for cars and light-duty trucks for model years 2012–2016 (USEPA, 2010). On May 21, 2010, President Obama issued a memorandum to the Secretaries of Transportation and Energy, and the Administrators of the USEPA and the NHTSA calling for establishment of additional standards regarding fuel efficiency and GHG reduction, clean fuels, and advanced vehicle infrastructure. (GPO, 2010). In response to this directive, USEPA and NHTSA issued a Supplemental Notice of Intent announcing plans to propose stringent, coordinated federal greenhouse gas and fuel economy standards for model year 2017-2025 light-duty vehicles (GPO, 2011). The agencies proposed standards projected to achieve 163 grams/mile of CO_2 in model year 2025, on an average industry fleet wide basis, which is equivalent to 54.5 miles per gallon if this level were achieved solely through fuel efficiency. California has announced its support of this national program (CARB, 2011). The final rule was adopted in October 2012, and NHTSA intends to set standards for model years 2022-2025 in a future rulemaking (USEPA, NHTSA, 2012).

Heavy-duty Engines and Vehicles Fuel Efficiency Standards

In addition to the regulations applicable to cars and light-duty trucks, on August 9, 2011, the USEPA and the NHTSA announced fuel economy and GHG standards for medium- and heavy-duty trucks, which applies to vehicles from model year 2014-2018 (USEPA, 2011). USEPA and NHTSA adopted standards for CO_2 emissions and fuel consumption respectively, tailored to each of three main vehicle categories: combination tractors, heavy-duty pickup trucks and vans, and vocational vehicles. According to USEPA, this program will reduce GHG emissions and fuel consumption for affected vehicles by nine percent to 23 percent.

Energy Independence and Security Act

On December 19, 2007, the Energy Independence and Security Act of 2007 (EISA) was signed into law (GPO, 2007). Among other key measures, the Act would do the following, which would aid in the reduction of national mobile and non-mobile GHG emissions:

1. Increase the supply of alternative fuel sources by setting a mandatory Renewable Fuel Standard (RFS) requiring fuel producers to use at least 36 billion gallons of biofuel in 2022.
2. Prescribe or revise standards affecting regional efficiency for heating and cooling products, procedures for new or amended standards, energy conservation, energy efficiency labeling for consumer electronic products, residential boiler efficiency, electric motor efficiency, and home appliances.
3. While superseded by NHTSA and USEPA actions described above, EISA also set miles per gallon targets for cars and light trucks and directed the NHTSA to establish a fuel economy program for medium- and heavy-duty trucks and create a separate fuel economy standard for work trucks.

Additional provisions of the EISA address energy savings in government and public institutions, promoting research for alternative energy, additional research in carbon capture, international energy programs, and the creation of "green jobs."

American Recovery and Reinvestment Act

On February 17, 2009, President Obama signed the American Recovery and Reinvestment Act (ARRA) of 2009. ARRA was passed in response to the economic crisis of the late 2000s with the primary purpose to maintain existing jobs and create new jobs. Among the secondary objectives of ARRA was investment in "green" energy programs including funding the following through grants, loans, or other funding, private companies developing renewable energy technologies, local and state governments implementing energy efficiency and clean energy programs, research in renewable energy, biofuels, and carbon capture, and development of high efficiency or electric vehicles (USEPA, 2009).

CEQ NEPA Guidelines on GHG

On August 2, 2016 the Federal Council on Environmental Quality (CEQ) released final guidance for Federal agencies on how to consider the impacts of their actions on global climate change in their National Environmental Policy Act (NEPA) reviews. This final guidance does not recommend quantitative thresholds that would indicate a substantial impact related to GHG emissions but, rather, provides a framework for agencies to consider both the effects of a proposed action on climate change, as indicated by its estimated GHG emissions, and the effects of climate change on a proposed action. The final guidance applies to proposed federal agency actions that are subject to NEPA analysis and guides agencies on how to address the GHG emissions from federal actions and the effects of climate change on their proposed actions within the existing NEPA regulatory framework (CEQ, 2010).

State

The legal framework for GHG emission reduction in California has come about through Executive Orders, legislation, and regulation. The major components of California's climate change initiative are reviewed below.

Assembly Bill 32 and the California Climate Change Scoping Plan

In 2006, the California legislature passed Assembly Bill 32 (California Health and Safety Code Division 25.5, Sections 38500, et seq., or AB 32), also known as the Global Warming Solutions Act. AB 32 requires CARB to design and implement feasible and cost-effective emission limits, regulations, and other measures, such that statewide GHG emissions are reduced to 1990 levels by 2020 (representing a 25 percent reduction in emissions). AB 32 anticipates that the GHG reduction goals will be met, in part, through local government actions. CARB has identified a GHG reduction target of 15 percent from current levels for local governments themselves and notes that successful implementation of the plan relies on local governments' land use planning and urban growth decisions because local governments have primary authority to plan, zone, approve, and permit land development to accommodate population growth and the changing needs of their jurisdictions. Pursuant to AB 32, CARB adopted a Scoping Plan in December 2008 (re-approved by CARB on August 24, 2011 [CARB, 2008]) outlining measures to meet the 2020 GHG reduction goals. In order to meet these goals, California must reduce its GHG emissions by 30 percent below projected 2020 business-as-usual emissions levels or about 15 percent from today's levels. The Scoping Plan recommends measures for further study and possible State

implementation, such as new fuel regulations. It estimates that a reduction of 174 million metric tons of CO_2e (about 191 million U.S. tons) from the transportation, energy, agriculture, forestry, and other sources could be achieved should the State implement all of the measures in the Scoping Plan. The Scoping Plan relies on the requirements of Senate Bill (SB) 375 (discussed below) to implement the carbon emission reductions anticipated from land use decisions.

A draft Update to the initial Scoping Plan was developed by CARB in collaboration with the California Climate Action Team (CCAT) to address the requirement by AB 32 that the Scoping Plan be updated at least every five years. The draft Update builds upon the initial Scoping Plan with new strategies and expanded measures, and identifies opportunities to leverage existing and new funds to drive GHG emission reductions through strategic planning and targeted program investments. The first update to the AB 32 Scoping Plan was approved on May 22, 2014 by CARB. [2]

The Update described the state's progress towards AB 32 goals. It found that, "California is on track to meet the near-term 2020 greenhouse gas limit and is well positioned to maintain and continue reductions beyond 2020 as required by AB 32." In addition, the update stated, "if California realizes the expected benefits of existing policy goals (such as 12,000 megawatts [MW] of renewable distributed generation by 2020, net zero energy homes after 2020, existing building retrofits under AB 758, and others) it could reduce emissions by 2030 to levels squarely in line with those needed in the developed world and to stay on track to reduce emissions to 80 percent below 1990 levels by 2050."

In addition, as part of the update to the Scoping Plan, the emissions reductions required to meet the 2020 statewide GHG emissions limit were adjusted. The primary reason for adjusting the 2020 statewide emissions limit was based on the fact that the original Scoping Plan relied on the IPCC's 1996 Second Assessment Report (SAR) to assign the GWPs of greenhouse gases. Recently, in accordance the United Nations Framework Convention on Climate Change (UNFCCC), international climate agencies have agreed to begin using the scientifically updated GWP values in the IPCC's Fourth Assessment Report (AR4) that was released in 2007. Because CARB has begun to transition to the use of the AR4 100-year GWPs in its climate change programs, CARB recalculated the Scoping Plan's 1990 GHG emissions level with the AR4 GWPs (CARB, 2016).

Cap-and-Trade Program

The Scoping Plan identifies cap-and-trade as a key strategy for helping California reduce its GHG emissions (CARB, 2008). A cap-and-trade program sets the total amount of greenhouse gas emissions allowable for facilities under the cap and allows covered sources, including producers and consumers of energy, to determine the least expensive strategies to comply. AB 32 required CARB to complete major rulemakings for reducing GHGs including market mechanisms by January 1, 2011. AB 32 also required the program itself was to begin in 2012. The first auction of "carbon offset credits" was held in November 2012.

[2] Available online at www.arb.ca.gov/cc/scopingplan/2013_update/first_update_climate_change_scoping_plan.pdf (last accessed 7/11/16).

Carbon offset credits are created through the development of projects, such as renewable energy generation or carbon sequestration projects, that achieve a reduction of emissions or an increase in the removal of carbon from the atmosphere from activities not otherwise regulated, covered under an emissions cap, or resulting from government incentives. Offsets are verified reductions of emissions whose ownership can be transferred to others. As required by AB 32, any reduction of GHG emissions used for compliance purposes must be real, permanent, quantifiable, verifiable, enforceable, and additional. Offsets used to meet regulatory requirements must be quantified according to CARB-adopted methodologies, and CARB must adopt a regulation to verify and enforce the reductions. The criteria developed will ensure that the reductions are quantified accurately and are not double-counted within the system (CARB, 2008).

California Supreme Court Ruling in Center for Biological Diversity v. Department of Fish and Wildlife

In its recent decision, Center for Biological Diversity v. Department of Fish and Wildlife, S217763 (Newhall), the Court evaluated the California Department of Fish and Wildlife's (DFW) analysis of potential impacts caused by GHG emissions contained in the EIR for the proposed land development called Newhall Ranch. (California, 2015) In the EIR, the DFW analyzed GHG emissions under AB 32, using the business-as-usual (BAU) comparison as its sole criterion of significance.

In Newhall, the California Supreme Court concluded that a finding of consistency with meeting statewide emission reduction goals is a legally permissible criterion of significance when analyzing potential impacts of GHG emissions under CEQA. However, the Court found that the EIR's conclusion that the project's emissions would be less than significant under that criterion was not supported by substantial evidence, and remanded back to the appellate court the narrow issue of whether substantial evidence supported the application of AB 32 statewide GHG reduction goal of 29 percent to new land use projects.

The Court then identified "potential options" for lead agencies evaluating cumulative significance of a proposed land use development's GHG emissions in future CEQA documents, but the Court was careful to note that there was no "guarantee" that any of these would be sufficient.

The "potential pathways to compliance" suggested by the Court include the numerical GHG significance thresholds used in this EIR. Specifically, the Court favorably cites to the Bay Area Air Quality Management District (BAAQMD) GHG significance thresholds, which are based on compliance with AB 32 and use a "service population" GHG ratio threshold for land use projects and a 10,000 ton annual GHG emission threshold for industrial projects.

Executive Order S-3-05

In 2005, in recognition of California's vulnerability to the effects of climate change, then-Governor Arnold Schwarzenegger established Executive Order S-3-05, which announced target dates by which statewide GHG emissions would be progressively reduced: by 2010, reduce GHG emissions to 2000 levels; by 2020, reduce GHG emissions to 1990 levels; and by 2050, reduce GHG emissions to 80 percent below 1990 levels.

Executive orders do not have the same status as a law because in California's constitutional system, it is the Legislature, not the Governor, who is entrusted with the role of making statewide laws. (California 1997, p. 836; California 1990.). The Legislature declined to include the Executive Order's 2050 goal in AB 32 (discussed below), and again declined to use the EO's 2050 goal in adopting SB 375 (discussed below); nor has it incorporated it in any implementing legislation or applicable plans. Additionally, although CARB has the requisite authority to adopt whatever regulations are necessary beyond the AB 32 horizon year 2020 to meet the target set forth in S-3-05, the agency has not done so. Since the Legislature has never enacted EO S-3-05's 2050 target, and no expert agency has interpreted CEQA to require it, the 2050 target has only the force and effect of an executive order issued by a former Governor. There is no authority that suggests that the constitutional authority to establish CEQA significance thresholds resides in the Governor. CEQA is a statute, and the authority to amend and revise its requirements falls first to the Legislature. The Legislature alone has the authority to enact, amend, or revise legislation, absent some express delegation of authority to the Governor or an executive branch agency through statutory enactments. (California, 2010, p. 1015.) If the Legislature has delegated any of its authority to define CEQA's requirements, it delegated that authority to OPR and not to the Governor's office.

Moreover, CARB's Scoping Plan to implement AB 32 looked beyond 2020 to assess whether implementing the Scoping Plan would achieve the State's long-term climate goals and determined that it would: "Climate scientists tell us that the 2050 target represents the level of greenhouse gas emissions that advanced economies must reach if the climate is to be stabilized in the latter half of the 21st century. Full implementation of the Scoping Plan will put California on a path toward these required long-term reductions. Just as importantly, it will put into place many of the measures needed to keep us on that path." (CARB 2008, p.117.) The 2014 Scoping Plan Update confirms this: "California is on track to meet the near-term 2020 greenhouse gas limit and is well positioned to maintain and continue reductions beyond 2020 as required by AB 32"; and it recognizes the potential for California to "reduce emissions by 2030 to levels squarely in line with those needed in the developed world and to stay on track to reduce emissions to 80 percent below 1990 levels by 2050." (CARB 2014, p. 2.) However, the 2014 Scoping Plan Update also concludes that additional actions will be needed to continue reducing emissions and meet the 2050 goals in the face of anticipated population and economic growth. (CARB 2014) In fact, overwhelming scientific evidence supports the conclusion that significant technological innovation, well beyond the scope of an individual development project, are absolutely necessary components of any plausible path to achieving the EO S-3-05's 2050 target. These new innovations to change fuel technology and energy generation are entirely outside the jurisdiction and control of the City. Achieving these goals will require wholesale shifts in fuel and energy technology, neither of which are currently available, rendering any further analysis of a given development project's impacts relative to the 2050 target too speculative for purposes of determining CEQA significance.

Although the Court in the Newhall decision noted that an analysis of goals beyond 2020 may be necessary for new development, the target set by EO S-3-05 and the interim goal set in EO B-30-

15 (discussed below) are inappropriate significance criteria in analyzing impacts related to GHG emissions and climate change under CEQA for the abovementioned reasons.

Executive Order B-30-15

California EO B-30-15 (April 29, 2015) set an "interim" statewide emission target to reduce greenhouse emissions to 40 percent below 1990 levels by 2030, and directed state agencies with jurisdiction over greenhouse gas emissions to implement measures pursuant to statutory authority to achieve this 2030 target and the 2050 target of 80 percent below 1990 levels. Specifically, the Executive Order directed CARB to update the Scoping Plan to express this 2030 target in metric tons. Since CARB has not yet prepared a GHG Inventory for 2030, it is not possible to prepare a numeric analysis that incorporates the 2030 target. This new Executive Order is subject to all the same limitations and infeasibility as discussed above for EO S-03-05. However, EO B-30-15 is more specific in its direction to state agencies so it remains to be seen how it will be implemented, and like EO S-3-05, neither CARB nor the legislature have incorporated the target set forth in B-30-15 in any implementing legislation or applicable plans. However, SB 350 was signed into law and (discussed below) it requires the state to double energy efficiency savings in electricity and natural gas by retail customers by 2030 and raises the Renewable Portfolio Standard (RPS) so that half of the state's electricity must be procured from renewable sources by 2030.

Although the Court in the Newhall decision noted that an analysis of goals beyond 2020 may be necessary for new development, the interim target set by EO B-30-15 and the goal set by EO S-3-05 (discussed above) are inappropriate significance criteria in analyzing impacts related to GHG emissions and climate change under CEQA for the reasons stated in the section above that discusses EO S-3-05.

Senate Bill 605

On September 21, 2014, Governor Jerry Brown signed Senate Bill 605 (Chapter 523, Statutes of 2014), which requires CARB to complete a comprehensive strategy to reduce emissions of short-lived climate pollutants in the state no later than January 1, 2016. As defined in the statute, short-lived climate pollutant means "an agent that has a relatively short lifetime in the atmosphere, from a few days to a few decades, and a warming influence on the climate that is more potent than that of carbon dioxide." SB 605, however, does not prescribe specific compounds as short-lived climate pollutants or add to the list of GHGs regulated under AB 32. In developing the strategy, the CARB must complete an inventory of sources and emissions of short-lived climate pollutants in the state based on available data, identify research needs to address any data gaps, identify existing and potential new control measures to reduce emissions, and prioritize the development of new measures for short-lived climate pollutants that offer co-benefits by improving water quality or reducing other air pollutants that impact community health and benefit disadvantaged communities. The draft strategy released by CARB in September 2015 focuses on methane, black carbon, and fluorinated gases, particularly hydrofluorocarbons, as important short-lived climate pollutants. The draft strategy recognizes emission reduction efforts implemented under AB 32 (e.g., refrigerant management programs) and other regulatory programs (e.g., in-use diesel engines, solid waste diversion) along with additional measures to be developed. At this time, CARB has not released its final strategy and it is not clear whether any of the projects emissions

will be effected by the strategy but SB 605 is part of the larger statewide effort to reduce GHG emissions that will allow the state to meet its statewide GHG reduction goals.

Senate Bill 375

In addition to policy directly guided by AB 32, the legislature in 2008 passed SB 375 (Chapter 728, Statutes of 2008), which provides for regional coordination in land use and transportation planning and funding to help meet the AB 32 GHG reduction goals. SB 375 aligns regional transportation planning efforts, regional GHG emissions reduction targets, and land use and housing allocations. SB 375 requires Regional Transportation Plans (RTPs) developed by the state's 18 metropolitan planning organizations (MPOs) to incorporate a "sustainable communities strategy" (SCS) that will achieve GHG emission reduction targets set by CARB and coordinate regional housing and transportation. MTC is the federally recognized metropolitan planning organization (MPO) for the nine county Bay Area, which includes Contra Costa County and the City of Richmond.

On July 18, 2013, the Plan Bay Area was jointly approved by ABAG's Executive Board and by MTC. Plan Bay Area includes the region's SCS and the 2040 RTP. The SCS lays out how the region will meet GHG reduction targets set by CARB. CARB's targets call for the region to reduce per capita emissions seven percent by 2020 and 15 percent by 2035 from a 2005 baseline.

A central greenhouse gas reduction strategy of Plan Bay Area is the concentration of future growth within PDAs. To be eligible for PDA designation, an area must be within an existing community, near existing or planned fixed transit or served by comparable bus service, and planned for more housing. Within the Bay Area, PDAs are expected to accommodate 78 percent (or over 509,000 units) of new housing and 62 percent (or nearly 690,000) of new jobs. (ABAG, MTC 2013a, p. 57).

Plan Bay Area includes the South Richmond Area PDA, and designates it as a "Transit Neighborhood." Plan Bay Area expects the PDA to add 1,380 housing units by 2040, as part of the plan's overall goal of reducing greenhouse gas emissions. (Appendix B in ABAG, MTC 2013b).

Assembly Bill 1493 (Pavley Standards)

In 2002, then-Governor Gray Davis signed Assembly Bill 1493 (Chapter 200, Statutes of 2002), which required the CARB to develop and adopt, by January 1, 2005, regulations that achieve "the maximum feasible reduction of GHGs emitted by passenger vehicles and light-duty trucks and other vehicles determined by CARB to be vehicles whose primary use is noncommercial personal transportation in the state."

To meet the requirements of AB 1493, CARB approved amendments to the California Code of Regulations (CCR) in 2004, adding GHG emissions standards to California's existing standards for motor vehicle emissions. Amendments to Title 13 CCR, Sections 1900 and 1961 (13 CCR 1900, 1961), and adoption of Section 1961.1 (13 CCR 1961.1), require automobile manufacturers to meet fleet-average GHG emissions limits for all passenger cars, light-duty trucks within various weight criteria, and medium-duty passenger vehicle weight classes (i.e., any medium-duty vehicle with a gross vehicle weight [GVW] rating of less than 10,000 pounds and that is

designed primarily for the transportation of persons), beginning with model year 2009. For passenger cars and light-duty trucks with a loaded vehicle weight (LVW) of 3,750 pounds or less, the GHG emission limits for model year 2016 are approximately 37 percent lower than the limits for the first year of the regulations, model year 2009. For light-duty trucks with an LVW of 3,751 pounds to a GVW of 8,500 pounds, as well as for medium-duty passenger vehicles, GHG emissions will be reduced approximately 24 percent between 2009 and 2016.

Because the Pavley standards (named for the bill's author, State Senator Fran Pavley) would impose stricter standards than those under the Federal Clean Air Act, California applied to the USEPA for a waiver under the Federal Clean Air Act; this waiver was denied in 2008. In 2009, however, the USEPA granted the waiver.

Executive Order S-1-07

Executive Order S-1-07, signed by then-Governor Arnold Schwarzenegger in 2007, proclaimed that the transportation sector is the main source of GHG emissions in California, at over 40 percent of statewide emissions. The order established a goal of reducing the carbon intensity of transportation fuels sold in California by a minimum of 10 percent by 2020. It also directed CARB to determine whether this Low Carbon Fuel Standard could be adopted as a discrete, early-action measure after meeting the mandates in AB 32. CARB adopted the Low Carbon Fuel Standard on April 23, 2009.

Advanced Clean Cars

In January 2012, CARB approved the Advanced Clean Cars Program, a new emissions-control program for model year 2017 through 2025.

The program combines the control of smog, soot, and GHGs with requirements for greater numbers of zero-emission vehicles. By 2025, when the rules will be fully implemented, the new automobiles will emit 34 percent fewer global warming gases and 75 percent fewer smog-forming emissions.

The program also requires car manufacturers to offer for sale an increasing number of zero-emission vehicles (ZEVs) each year, including battery electric, fuel cell, and plug-in hybrid electric vehicles.

In December 2012, CARB adopted regulations allowing car manufacturers to comply with California's GHG emissions requirements for model years 2017-2025 through compliance with the EPA GHG requirements for those same model years (CARB, 2012).

CEQA and Senate Bill 97

CEQA requires lead agencies to disclose, consider, and mitigate the adverse environmental effects of projects they are considering for approval. GHG emissions have the potential to adversely affect the environment because they contribute to global climate change. Senate Bill 97 (Chapter 185, Statutes of 2007) and other California regulations address global climate change

through revisions to the CEQA *Guidelines* and implementation of GHG emission reduction programs as described below.

SB 97, signed in August 2007, acknowledges that climate change is a prominent environmental issue requiring analysis under CEQA. This bill directed the Governor's Office of Planning and Research (OPR) to prepare, develop, and transmit to the California Natural Resources Agency guidelines for the feasible mitigation of GHG emissions or the effects of GHG emissions, as required by CEQA, no later than July 1, 2009. The California Natural Resources Agency was required to certify or adopt those guidelines by January 1, 2010.

On December 30, 2009, the Natural Resources Agency adopted the CEQA *Guidelines* amendments, as required by SB 97 (CRNA, 2009). These CEQA *Guidelines* amendments provide guidance to public agencies regarding the analysis and mitigation of the effects of GHG emissions in draft CEQA documents. The amendments became effective March 18, 2010.

Section 15064.4 of the CEQA *Guidelines* specifically addresses the significance of GHG emissions. Section 15064.4 calls for a "good-faith effort" to "describe, calculate or estimate" GHG emissions in CEQA environmental documents. Section 15064.4 further states that the analysis of GHG impacts should include consideration of (1) the extent to which the project may increase or reduce GHG emissions, (2) whether the project emissions would exceed a locally applicable threshold of significance, and (3) the extent to which the project would comply with "regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of GHG emissions." The revisions also state that a project's incremental contribution to a cumulative effect is not cumulatively considerable if the project will comply with the requirements in a previously approved plan or mitigation program (including plans or regulations for the reduction of greenhouse gas emissions) that provides specific requirements that will avoid or substantially lessen the cumulative problem within the geographic area in which the project is located (Section [h]{3}). The CEQA *Guidelines* revisions do not, however, set a numerical threshold of significance for GHG emissions.

The revisions also include the following guidance (Section 15126.4[c]) on measures to mitigate GHG emissions, when such emissions are found to be significant:

> Consistent with Section 15126.4(a), lead agencies shall consider feasible means, supported by substantial evidence and subject to monitoring or reporting, of mitigating the significant effects of greenhouse gas emissions. Measures to mitigate the significant effects of greenhouse gas emissions may include, among others:
>
> (1) Measures in an existing plan or mitigation program for the reduction of emissions that are required as part of the lead agency's decision;
>
> (2) Reductions in emissions resulting from a project through implementation of project features, project design, or other measures;
>
> (3) Off-site measures, including offsets that are not otherwise required, to mitigate a project's emissions;

(4) Measures that sequester greenhouse gases; and

(5) In the case of the adoption of a plan, such as a general plan, long range development plan, or plans for the reduction of greenhouse gas emissions, mitigation may include the identification of specific measures that may be implemented on a project-by-project basis. Mitigation may also include the incorporation of specific measures or policies found in an adopted ordinance or regulation that reduces the cumulative effect of emissions.

Senate Bill 1368

SB 1368 (Chapter 598, Statutes of 2006) is the companion bill of AB 32 and was signed by then-Governor Schwarzenegger in September 2006. SB 1368 requires the California Public Utilities Commission (PUC) to establish a GHG emission performance standard for baseload generation from investor-owned utilities by February 1, 2007. The California Energy Commission was also required to establish a similar standard for local publicly owned utilities by June 30, 2007. These standards cannot exceed the GHG emission rate from a baseload combined-cycle natural gas-fired plant. The legislation further requires that all electricity provided to California, including imported electricity, must be generated from plants that meet the standards set by the PUC and California Energy Commission.

Senate Bills 1078 and 107 and Executive Orders S-14-08 and S-21-09

SB 1078 (Chapter 516, Statutes of 2002) requires retail sellers of electricity, including investor-owned utilities and community choice aggregators, to provide at least 20 percent of their supply from renewable sources by 2017. SB 107 (Chapter 464, Statutes of 2006) changed the target date to 2010.

In November 2008, then-Governor Schwarzenegger signed Executive Order S-14-08, which increased the state's Renewable Portfolio Standard to 33 percent renewable power by 2020. In September 2009, Governor Schwarzenegger continued California's commitment to the Renewable Portfolio Standard by signing Executive Order S-21-09, which directs CARB under its AB 32 authority to enact regulations to help the state meet its Renewable Portfolio Standard goal of 33 percent renewable energy by 2020.

The 33 percent by 2020 goal was codified in April 2011 with Senate Bill X1-2 (Chapter 1, Statutes of 2011-12 First Extraordinary Session), which was signed by Governor Brown. This new Renewable Portfolio Standard preempts the CARB 33 percent Renewable Electricity Standard and applies to all electricity retailers in the state, including publicly owned utilities (POUs), investor-owned utilities, electricity service providers, and community choice aggregators. All of these entities must adopt the new Renewable Portfolio Standard goals of 20 percent of retail sales from renewables by the end of 2013 and 25 percent by the end of 2016, with the 33 percent requirement being met by the end of 2020.

Senate Bill 1

Senate Bill 1 of 2006 (Chapter 132, Statutes of 2006) established the statewide California Solar Initiative, also required the California Energy Commission (CEC) to implement regulations that

required sellers of production homes to offer a solar energy system option to all prospective homebuyers. Besides offering solar as an option to prospective homebuyers, sellers of homes constructed on land for which an application for a tentative subdivision map has been deemed complete on or after January 1, 2011, must disclose to the prospective homebuyer the total installed cost of the solar option, the estimated cost savings associated with the solar energy system option, information about California solar energy system incentives, and information about the Go Solar California website. Sellers of production homes affected by this law may opt for the solar offset program rather than offer solar as an option to prospective homebuyers. The solar offset program requires sellers to install a solar system elsewhere which is equivalent to the aggregate capacity of solar that would have been installed in an affected subdivision if 20 percent of the buyers had opted for the solar option.

Assembly Bill 1109

Assembly Bill 1109 (Chapter 534, Statutes of 2007), the Lighting Efficiency and Toxic Reduction Act, required the establishment of minimum energy efficiency standards for all general purpose lights. The standards are structured to reduce average statewide electrical energy consumption by not less than 50 percent from the 2007 levels for indoor residential lighting and not less than 25 percent from the 2007 levels for indoor commercial and outdoor lighting by 2018.

Senate Bill 350

Senate Bill 350 (Chapter 547, Statutes of 2015), signed October 7, 2015, is the *Clean Energy and Pollution Reduction Act of 2015*. SB 350 is the implementation of some of the goals of EO B-30-15. The objectives of SB 350 are,

1. To increase from 33 percent to 50 percent, the procurement of our electricity from renewable sources.
2. To double the energy efficiency savings in electricity and natural gas final end uses of retail customers through energy efficiency and conservation.

Title 24 Building Energy Efficiency Standards

Title 24 of the California Code of Regulations (CCR) is the means by which California regulates energy consumption. The Title 24 Building Energy Efficiency Standards apply to energy consumed for heating, cooling, ventilation, water heating, and lighting in new residential and nonresidential buildings. The Title 24 standards, first adopted by the CEC in 1978, are updated periodically to incorporate new energy efficiency technologies and methods.

The California Green Building Standards Code was adopted as part of Title 24 in 2008. The code establishes voluntary standards for planning and design for energy efficiency (in excess of the California Energy Code requirements), water conservation, material conservation, sustainable site development, and internal air contaminants.

Renewables Portfolio Standard

California's Renewables Portfolio Standard (RPS), established in 2002 and amended in 2006 and 2011, requires retail sellers of electric services to increase procurement from eligible renewable energy resources to 33 percent of total retail sales by 2020. The RPS also requires 20 percent of retail sales to be sourced from renewable energy by 2013, and 25 percent of retail sales to be sourced from renewable energy by 2016. The RPS provisions apply to investor-owned utilities, community choice aggregators, electric service providers, and publicly owned utilities.

California Green Buildings Standards Code (CALGreen)

On July 17, 2008, the California Building Standards Commission adopted the nation's first green building standards. The California Green Building Standards Code (Part 11, Title 24) was adopted as part of the California Building Standards Code (Title 24 CCR). The 2013 California Green Building Standards Code (24 CCR, Part 11), also known as the CALGreen code, contains mandatory requirements for new residential and nonresidential buildings (including buildings for retail, office, public schools and hospitals) throughout California (CBSC, 2014). The development of the CALGreen Code is intended to (1) cause a reduction in greenhouse gas (GHG) emissions from buildings; (2) promote environmentally responsible, cost effective, healthier places to live and work; (3) reduce energy and water consumption; and (4) respond to the directives by the Governor. In short, the code is established to reduce construction waste; make buildings more efficient in the use of materials and energy; and reduce environmental impact during and after construction.

The CALGreen Code contains requirements for construction site selection, storm water control during construction, construction waste reduction, indoor water use reduction, material selection, natural resource conservation, site irrigation conservation, and more. The code provides for design options allowing the designer to determine how best to achieve compliance for a given site or building condition. The code also requires building commissioning, which is a process for the verification that all building systems, such as heating and cooling equipment and lighting systems, are functioning at their maximum efficiency.

The CALGreen Code provides standards for bicycle parking, carpool/vanpool/electric vehicle spaces, light and glare reduction, grading and paving, energy efficient appliances, renewable energy, graywater systems, water efficient plumbing fixtures, recycling and recycled materials, pollutant controls (including moisture control and indoor air quality), acoustical controls, storm water management, building design, insulation, flooring, and framing, among others.

Beyond the mandatory standards, optional Tier 1 status can be achieved by complying with voluntary measures for energy and water efficiency, material conservation, and other design features. Examples of Tier 1 requirements are 15 percent less energy use in residential construction than required by existing regulations and 30 percent less indoor water use in non-residential construction. Tier 2 status can be achieved by complying with additional voluntary measures; example requirements are 30 percent less energy use in residential construction and 35 percent less indoor water use in non-residential construction.

California Integrated Waste Management Act of 1989 and Assembly Bill 341

The California Integrated Waste Management Act of 1989 (Public Resources Code Sections 40000 et seq.) required each jurisdiction's source reduction and recycling element to include an implementation schedule that shows (1) diversion of 25 percent of all solid waste by January 1, 1995, through source reduction, recycling, and composting activities; and (2) diversion of 50 percent of all solid waste on and after January 1, 2000, through source reduction, recycling, and composting facilities.[3] Additionally, jurisdictions were not prohibited from implementing source reduction, recycling, and composting activities designed to exceed these requirements.[4]

AB 341 (Chapter 476, Statutes of 2011) amended the California Integrated Waste Management Act of 1989 to include a provision declaring that it is the policy goal of the state that not less than 75 percent of solid waste generated be source reduced, recycled, or composted by the year 2020, and annually thereafter.[5] In addition, AB 341 required the California Department of Resources Recycling and Recovery (CalRecycle) to develop strategies to achieve the state's policy goal.[6] CalRecycle conducted several stakeholder workshops and published a discussion document in May 2012 titled *California's New Goal: 75 Percent Recycling*, which identifies concepts that CalRecycle believes would assist the state in reaching the 75 percent goal by 2020.[7]

California Water Code

California Water Code Sections 10910–10915 require preparation of a project-specific Water Supply Assessment for developments consisting of 500 or more dwelling units, inter alia. Water Code Section 10610.4, 10617, and 10620 require urban water suppliers to develop water management plans to actively pursue the efficient use of available supplies.

State Model Water Efficient Landscape Ordinance (MWELO) and Executive Order B-29-15

The MWELO (CCR Title 23, Division 2, Chapter 2.7) establishes an outdoor water budget for new and renovated landscaped areas that are 500 square feet or larger. EO B-29-15 calls for revising the Model Ordinance to increase water efficiency standards for new and retrofitted landscapes through more efficient irrigation systems, greywater usage, onsite storm water capture, and by limiting the portion of landscapes that can be covered in turf. It also establishes a goal of achieving a statewide reduction in potable urban water usage of 25 percent relative to water use in 2013. The California Department of Water Resources updated the ordinance to incorporate these elements.

CARB Airborne Toxic Control Measures and Emission Standards

CARB adopted an airborne toxic control measure to limit heavy-duty diesel motor vehicle idling in order to reduce public exposure to diesel PM and other toxic air contaminants, and promulgated emission standards for off-road diesel construction equipment such as bulldozers, loaders, backhoes, and forklifts, as well as many other self-propelled off-road diesel vehicles (CARB).

[3] Cal. Pub. Res. Code Section 41780(a).
[4] Cal. Pub. Res. Code Section 41780(b).
[5] Cal. Pub. Res. Code Section 41780.01(a).
[6] Cal. Pub. Res. Code Section 41780.02.
[7] Available online at www.calrecycle.ca.gov/75percent/Plan.pdf (last accessed September 2013).

Regional

Bay Area Air Quality Management District

The BAAQMD adopted updated *CEQA Air Quality Guidelines* (Guidelines), including new thresholds of significance for GHGs in June 2010, and revised them in May 2011 (BAAQMD, 2012). The Guidelines advise lead agencies on how to evaluate potential air quality and GHG impacts, including establishing quantitative and qualitative thresholds of significance. The thresholds BAAQMD adopted were called into question by a minute order issued January 9, 2012 in *California Building Industry Association v. BAAQMD,* Alameda Superior Court Case No. RGI0548693. The minute order states that "The Court finds [the BAAQMD's adoption of thresholds] is a CEQA Project, the court makes no further findings or rulings." The claims made in the case concerned the CEQA impacts of adopting the thresholds, and in particular, how the thresholds would affect land use development patterns. Petitioners argued that the thresholds for Health Risk Assessments encompassed issues not addressed by CEQA. As a result, the BAAQMD resolutions adopting and revising the significance thresholds in 2011 were set aside by a judicial writ of mandate on March 5, 2012. In May 2012, the BAAQMD updated its Guidelines to continue to provide direction on recommended analysis methodologies, but without recommended quantitative significance thresholds. On August 13, 2013, the First District Court of Appeal ordered the trial court to reverse the judgment and upheld the BAAQMD's CEQA thresholds (*California Building Industry Association v. Bay Area Air Quality Management District,* Case No. A135335 & A136212 [Court of Appeal, First District, August 13, 2013]).

The California Supreme Court granted review of the appeal, but only to address whether or not CEQA requires an analysis of how existing environmental conditions will impact future residents or users of a proposed project and did not review or address the adequacy of specific thresholds adopted by the BAAQMD in 2011. On December 17, 2015, the Supreme Court concluded that agencies subject to CEQA generally are not required to analyze the impact of existing environmental conditions on a project's future users or residents, reversing the Court of Appeal's judgment on that issue. The case was the remanded back to the Court of Appeal on August 12, 2016 which concluded that "the challenged thresholds are not invalid on their face, but may not be used for the primary purpose envisioned by District, namely, to routinely assess the effect of existing environmental conditions on future users or occupants of a project" (CBIA v. BAAQMD [2016] 1 Cal.App.5th 715).

BAAQMD has not formally readopted these thresholds. Notwithstanding formal adoption, the 2011 Thresholds are based on substantial evidence provided by BAAQMD (BAAQMD, 2009), and have been accepted by the City of Richmond for use in this EIR.

The threshold for stationary sources is 10,000 metric tons of CO_2e per year (i.e., emissions above this level may be considered significant). For non-stationary sources, three separate thresholds have been established:

- Compliance with a Qualified Greenhouse Gas Reduction Strategy (i.e., if a project is found to be out of compliance with a Qualified Greenhouse Gas Reduction Strategy, its GHG emissions may be considered significant); or

- 1,100 metric tons of CO_2e per year (i.e., emissions above this level may be considered significant); or
- 4.6 metric tons of CO_2e per service population (SP) per year (i.e., emissions above this level may be considered significant). "Service population" is the sum of residents plus employees expected for a development project.

For quantifying a project's GHG emissions, BAAQMD recommends that all GHG emissions from a project be estimated, including a project's direct and indirect GHG emissions from operations. Direct emissions refer to emissions produced from on-site combustion of energy, such as natural gas used in furnaces and boilers, emissions from industrial processes, and fuel combustion from mobile sources. Indirect emissions are emissions produced offsite from energy production and water conveyance due to a project's energy use and water consumption. BAAQMD has provided guidance on detailed methods for modeling GHG emissions from proposed projects (BAAQMD, 2012). The above stated thresholds apply only to operational emissions. To date, BAAQMD has not adopted numeric thresholds for the assessment of construction-related emissions.

Local

In 2008, the City Council adopted Resolution 108- 08 committing to the GHG emissions target established by AB 32 (1990 emissions levels by 2020), and to achieving an 80 percent reduction below 1990 levels by 2050. Subsequently, the City has developed the following plans and strategies for achieving this 2008 commitment:

City of Richmond General Plan

Chapter 8 (Energy and Climate Change Element), of the General Plan includes the following goals, policies and actions that are relevant to GHG emissions and energy consumption from land use development within Richmond:

- **Goal EC-4: Sustainable Development.** Reduce energy consumption by promoting sustainable land uses and development patterns. Pursue infill development opportunities and encourage the construction of higher-density, mixed-use projects around existing public transit infrastructure, schools, parks, neighborhood-serving retail and other critical services. Incorporate ecologically sustainable practices and materials into new development, building retrofits and streetscape improvements
    - ***Policy EC-2.4*: *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

- ***Policy EC-2.6*: *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.

- *Action 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.

- *Action 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.

- *Action EC2.F: Promote Bicycle Use.* 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.

- ***Policy EC-3.1*: *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.

- ***Policy EC-3.2*: *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. Collaborate with local workforce development programs to train and employ Richmond residents in these other green jobs sectors.

- ***Policy EC-3.3*: *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. Develop a comprehensive recycling and composting program for all city-owned facilities.

- ***Policy EC-3.3*: *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 and water catchment 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.

- *Action 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 in accordance with EBMUD Water Service Regulations;

    - 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.

- *Action 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.

- ***Policy EC-4.1*: *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. Protect existing affordable housing and develop strategies to prevent the displacement of renters and low-income

residents. Require property owners to comply with and pay for state and federal requirements for site remediation as a condition for approving development on contaminated sites.

- ***Policy EC-4.2: 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.

- ***Policy EC-4.3: 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.

- *Action EC4.H: 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.

- ***Policy EC-6.2: 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.

- ***Policy EC-6.3: Adapting to Climate Change.*** Prepare for and adapt to future impacts of changing weather patterns and sea level fluctuations. Protect neighborhoods, infrastructure and facilities, the shoreline and natural resources from the impacts of climate change. Require new developments to include an evaluation of climate change impacts in the project review process. Shoreline and public access improvements shall be designed to allow future increases in elevation along the shoreline edge to keep up with higher sea level values, when they occur.

Design elements shall include providing adequate setbacks to allow for future elevation increases of at least three feet from the existing elevation along the shoreline.

City of Richmond Commercial and Residential Green Building Standards

In July 2009, Richmond adopted its green building ordinance codified in Section 6.46 of the Municipal Code (see Action EC4.H above). Program requirements are based on the size of the structure, as follows:

- Single family residences under 1,750 square feet must earn 50 green points on the GreenPoint Rated checklist; larger buildings must earn 55 points, plus two additional points for every 100 additional square feet over 1,750 square feet.
- Additions to single family and duplexes that are subject to design review must earn 50 green points, plus two more points for each 100 square feet over 1,200 square feet.
- Multi-family projects must earn 60 points on the GreenPoint Rated checklist.
- New commercial buildings between 5,000 – 20,000 square feet must meet LEED certification standards; larger buildings must meet LEED Silver standards.
- Renovations on commercial buildings 5,000 – 20,000 square feet must earn 35 percent of all possible LEED points.
- Renovations on commercial buildings larger than 20,000 square feet must earn 45 percent of all possible LEED points.

City of Richmond Draft Climate Action Plan

The Climate Action Plan, under preparation by the City, is an implementing action of the Energy and Climate Change Element adopted in 2012. The Climate Action Plan is developed to further the goals of the Energy and Climate Change Element, Community Health and Wellness Element, and other General Plan Elements and will serve as a roadmap for significantly reducing energy consumption and meeting or exceeding state GHG emissions reduction targets. The Climate Action Plan will also update the City's emissions inventory, establish an emissions reduction target, and identify and prioritize potential City and community actions to reduce emissions. Consistent with Resolution No. 108-08 and with BAAQMD guidance, the City has established a 2020 GHG reduction target for the CAP of 15 percent below 2005 levels by 2020. In addition, although executive orders do not have the same status as legislation, the City is committed to supporting the state's progress toward the deeper reductions called for in Executive Orders S-3-05 and B-3-15.

4.6.4 Significance Criteria

This analysis evaluates the Specific Plan and Sub-Area 4 Project impacts related GHG emissions and energy. The evaluation considers the Specific Plan and Sub-Area 4 Project development programs (foreseeable maximum theoretical buildout program), current CEQA *Guidelines* Appendix G significance thresholds, conditions within the Plan Area, and applicable regulations and guidelines.

Significance criteria used in this analysis are based on Appendix G of the CEQA *Guidelines*, and the BAAQMD's 2011 Thresholds for GHG emissions. Specifically, the Specific Plan or Sub-Area 4 Project would have a significant effect on the environment if they were to:

a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment;

b) Conflict with any applicable plan, policy or regulation of an agency adopted for the purposes of reducing greenhouse gas emissions including:

   i. Result in an inconsistency with Plan Bay Area, taking into account the land use types within the South Richmond Shoreline Priority Development Area; and

   ii. Result in an inconsistency with the Energy and Climate Element of the City's General Plan.

The above stated thresholds apply only to operational emissions. To date, the BAAQMD has not adopted numeric thresholds for the assessment of construction-related emissions.

Approach to Analysis

For quantifying a project's GHG emissions, BAAQMD recommends that all GHG emissions from the project be estimated, including direct and indirect GHG emissions from operations. Direct emissions include emissions produced from onsite combustion of energy, such as natural gas used in furnaces and boilers, emissions from industrial processes, and fuel combustion from mobile sources. Indirect emissions are emissions produced offsite by energy production and water conveyance due to a project's energy use and water consumption. BAAQMD has provided guidance on detailed methods for modeling GHG emissions from proposed projects (BAAQMD, 2012).

As discussed under 4.6.3 Regulatory Setting, above, the City of Richmond has not yet finalized its CAP; therefore, it does not currently represent a "Qualified GHG Reduction Strategy" pursuant to the BAAQMD thresholds. However, because the CAP is anticipated to be approved within the comment period of this EIR, consistency of the Specific Plan and Sub-Area 4 Project with the Draft CAP is evaluated as a part of this analysis at a general level of detail.

In lieu of applying compliance with a qualified GHG reduction strategy as a significance threshold, the use of the service population threshold (or "efficiency threshold") is a commonly used tool when assessing potential GHG impacts relative to CEQA (i.e., emissions of 4.6 metric tons of CO_2e per year per capita for projects and Specific Plans).[8]

Potential GHG impacts are assessed using a three-step process. First, GHG emissions are compared to the service population threshold in the BAAQMD 2011 *CEQA Air Quality Guidelines* as a screening test for potential significance, to determine whether total operational emissions would exceed the 1,100 MT CO_2e screening threshold (mass threshold). Next the

[8] As stated under Significance Criteria above, emissions of 4.6 metric tons of CO_2e per year per capita are used for projects and Specific Plans, and are therefore applied to the proposed Specific Plan and project.

operational emissions are compared to the 4.6 MT CO_2e/ service population (residents + employees)/ year screening threshold that BAAQMD identifies as appropriate for Specific Plan and mixed-use development.

These screening threshold, however, does not lend itself to application to Specific Plans and large development projects because the threshold penalizes large scale development without consideration of the nature of such large-scale development, in terms of GHG impacts – for example, a large-scale infill development with a higher density of development that is well-served by transit could be preferable in terms of GHG impacts to low-intensity development in peripheral portions of the Bay Area region. Consequently, the following analysis, while evaluating Specific Plan and Sub-Area 4 Project emissions with respect to the screening threshold above, also takes the second step of employing a regional GHG analysis, in which consistency with Plan Bay Area (i.e., confirmation of a project's or plan's location within a Priority Development Area [PDA] and its implementation of TDM practices) is evaluated, to determine whether GHG emissions attributed to population and economic growth (inclusive of residential/commercial development and mobile source emissions) are significant for CEQA purposes.

Potential impacts are assessed by modeling the estimated CO_2 emissions generated by Specific Plan and Sub-Area 4 Project construction and operations, using the CalEEMod version 2013.2.2 land use emissions model, and comparing modeled emissions to the significance thresholds.

Richmond Bay Specific Plan Assumptions

For the purposes of quantifying GHG emissions the "foreseeable maximum theoretical buildout" Specific Plan scenario, as presented in Table 3-3 of Chapter 3, *Project Description*, of this EIR, is evaluated.

Development under the Specific Plan is anticipated to occur during the course of 20 to 40 years. The timing and sequence of development will depend upon numerous factors, including future market conditions, public investment, and private initiative and investment. Although the Specific Plan program likely would be developed at a slower pace, for the purposes of conservative analysis, the construction period is assumed to span from 2017 to 2040 (23 years). The first full year of operation of all uses developed under the Specific Plan is assumed to be 2040.

Sub-Area 4 Project Assumptions

For the purposes of quantifying GHG emissions the "foreseeable maximum theoretical buildout" Sub-Area 4 Project scenario, as presented in Table 3-5 of Chapter 3, *Project Description*, of this EIR, is evaluated.

As described above for the Specific Plan, the timing and sequence of development of the Sub-Area 4 Project will depend upon numerous factors. Therefore, for the estimate of emissions, one construction period is assumed, and CalEEMod default construction phase length assumptions, which are based on hundreds of projects throughout California, are used where necessary. Although the Sub-Area 4 Project may be developed at a slower pace, in order to apply a

conservative assumption, the construction period is assumed to span from 2017 to 2030 (13 years). The first full year of operation of all uses developed under the Project is assumed to be 2030.

Cumulative

Both BAAQMD and the California Air Pollution Control Officers Association (CAPCOA) consider GHG impacts to be exclusively cumulative impacts, in that no single project could, by itself, result in a substantial change in climate. (BAAQMD, 2012; CAPCOA, 2008). Therefore, the evaluation of cumulative GHG impacts presented below evaluates whether the Specific Plan or Project would make a considerable contribution to cumulative climate change effects.

4.6.5 Program-Level Impacts of the Richmond Bay Specific Plan

Impact GHG-1.SP: Construction and operation of development under the Specific Plan would generate greenhouse gas emissions that may have a significant impact on the environment. (Criterion a.) (*Significant and Unavoidable*)

Construction and operation of development under the Specific Plan would generate GHG emissions, with the majority of energy consumption (and associated generation of GHG emissions) occurring during operation. Overall, the following activities associated with development under the Specific Plan could contribute to the generation of GHG emissions:

- ***Motor Vehicle Use*.** Transportation associated with development under the Specific Plan would result in GHG emissions from the combustion of fossil fuels in daily automobile and truck trips.

- ***Gas, Electric and Water Use.*** Natural gas use results in the emissions of two GHGs: methane (the major component of natural gas) and carbon dioxide from the combustion of natural gas. Methane is released prior to initiation of combustion of the natural gas (as before a flame on a stove is sparked), and from the small amount of methane that is uncombusted in a natural gas flame. Electricity use can result in GHG production if the electricity is generated by combusting fossil fuel. California's water conveyance system is energy intensive (CEC, 2005).

- ***Removal of Vegetation.*** The net removal of vegetation for construction results in a loss of the carbon sequestration in plants. However, planting of additional vegetation would result in additional carbon sequestration and lower the carbon footprint of a project. (See City's Standard Conditions of Approval regarding *Landscape Requirements and Tree Replacement*, below).

- ***Construction Activities.*** Construction equipment typically uses fossil-based fuels to operate. The combustion of fossil-based fuels creates GHGs such as carbon dioxide, methane and nitrous oxide. Furthermore, methane is emitted during the fueling of heavy equipment.

As stated above, although development of projects under the Specific Plan would likely occur at a slower pace, for the purposes of conservative analysis, the construction period is assumed to span from 2017 to 2040 (23 years).

GHG Emissions from Development under the Specific Plan

Emissions included in the BAAQMD 2011 *CEQA Air Quality Guidelines* addressing GHG impact analysis, and therefore included in the GHG emissions estimated to be generated by development under Specific Plan, are described below and quantified in **Table 4.6-1**:

- ***Area Source Emissions.*** These are direct emissions from sources that include natural gas combustion for heating, cooking, fireplaces, or boilers, as well as emissions from landscape maintenance equipment.
- ***Transportation Emissions.*** These are direct emissions from mobile sources including automobiles, trucks, motorcycles, and buses.
- ***Operational Electricity Consumption.*** These are indirect emissions emitted off-site via non-renewable, non-nuclear electricity generators as a result of increased electrical demand. Indirect GHG emissions from electricity were calculated conservatively using a year 2020 CO_2 emission factor for PG&E. While the City will acquire a large proportion of electricity from Marin Clean Energy by 2030 the percentage of clean energy will depend on participation level of users within the City and hence a reduction beyond the state-mandated PG&E, while likely, was not assumed.
- ***Solid Waste Disposal Emissions.*** These are indirect emissions associated with waste generation. A large percentage of waste generated by uses developed under the Specific Plan would be diverted from landfills by waste reduction, recycling, and composting. Richmond currently diverts a large portion of its waste and has goals to further reduce the amount of waste sent to a landfill. The remainder of the waste not diverted would be disposed of at a landfill. Landfills emit anthropogenic methane from the anaerobic breakdown of material. While the City's zero Waste policy and a diversion goal of 90 percent by 2030, it was conservatively assumed that waste reductions would be at the 2005 baseline diversion rate of 49 percent.
- ***Operational Fugitive (Direct) Emissions.*** These direct emissions are most commonly associated with inadvertent emissions into the atmosphere due to leakage or inherent imperfections in a gas transport or collection system. Direct fugitive GHG emissions that may reasonably be expected to be generated by commercial buildings would consist of GHG refrigerants emitted from leaks or other imperfections in refrigeration or air cooling equipment.
- ***Operational Water Emissions (embedded energy).*** These indirect emissions are associated with the electricity used to convey water, due to increased water demand from adoption and development under the Specific Plan.
- ***Operational Wastewater (non-biogenic).*** These are indirect emissions from wastewater treatment associated with the electricity use in wastewater treatment (and not the biogenic CO_2 process emissions).

Short-term GHG Emissions from Construction

Construction-generated GHG emissions from development under the Specific Plan were estimated based on potential land use development within the Plan Area and default construction equipment, schedule and area estimates of the CalEEMod model. Default assumptions were used for a majority of the model input values as a foreseeable projection of actual construction

parameters. An estimated total of approximately 12,894 metric tons (MT) of CO_2e would be emitted from construction of projects under the Specific Plan during the peak construction year.

Construction emissions are annualized because the proposed operational GHG emissions thresholds are analyzed in terms of metric tons "per year." Assuming a 40-year life of the Specific Plan projects until development is demolished or remodeled for energy efficiency (which is the common standard currently used in practice), total construction emissions represent approximately 4,719 MT CO_2e annually, over 40 years.

As previously discussed, the BAAQMD 2011 *CEQA Air Quality Guidelines* do not include a specific threshold or methodology for assessing construction-related GHG emissions for CEQA analysis. The analysis of construction emissions considers improvements in construction equipment exhaust emissions through manufacturer requirements and turnover. Dust control measures that would be implemented under Specific Plan buildout (as discussed in Section 4.2, *Air Quality*, of this EIR) include actions that would reduce construction exhaust emissions.

Long-term GHG Emissions from Operation

Emissions sources that are not discussed or included in the BAAQMD 2011 *CEQA Air Quality Guidelines* are not included in the estimates of GHG emissions that would be generated by development under the Specific Plan. These sources include emissions generated from permitted stationary source equipment, vegetation sequestration changes, fugitive refrigeration emissions, agricultural emissions, and off-road equipment emissions because such sources are not within the project description and it would be speculative to assume the equipment needs of future occupants of land uses proposed under the Specific Plan and Sub-Area 4 Project.

TABLE 4.6-1
ESTIMATED OPERATIONAL GHG EMISSIONS FROM DEVELOPMENT UNDER THE SPECIFIC PLAN (2040)

Emission Source	Total Emissions (MT/Year)			
	CO_2	CH_4	N_2O	Total CO_2e
Area Sources	259	<1	<1	261
Energy Sources	19,053	1	<1	19,147
Mobile Sources	33,664	1	<1	33,689
Solid Waste	888	53	<1	1,990
Water and Wastewater	2,767	3	2	3,890
Total	**56,631**	**57**	**2**	**58,977**
Project Mass Emission Screening Threshold				1,100
Exceeds Mass Emission Screening Threshold?				**Yes**
Service Population (11,490 residents and 12,800 employees)				24,290
Total Plan GHG Emissions by Service Population				**2.42**
Mixed Use Project and Specific Plan Level Efficiency Screening Threshold[a]				4.6
Exceeds Efficiency Screening Threshold?				**No**

Note: Columns may not total precisely due to rounding.

[a] The BAAQMD 2011 *CEQA Air Quality Guidelines* state that the plan-level service threshold of 6.6 metric tons of CO2e per service population annually should only be applied to general plans. For other types of plans, such as redevelopment plans and specific plans, the Guidelines state that the project-level service threshold of 4.6 metric tons of CO2e of service population annually should be used.

SOURCE: ESA, 2016 (Appendix B)

As shown in Table 4.6-1, estimated GHG emissions from buildout under the Specific Plan would exceed the project-level mass emissions screening threshold of 1,000 MT Co_2e per year but would not exceed BAAQMD's service population screening threshold for mixed-use project and specific plans of 4.6 MT CO_2e per year per service population.

In addition, development under the Specific Plan would add higher densities within the City of Richmond that exceed the densities assumed in Plan Bay Area, the SCS developed by local regional planning agencies in the Bay Area. This increased development would be consistent with the increased density anticipated in Plan Bay Area. The existing, relatively low overall per capita VMT within the City (as discussed in Section 4.13, *Transportation and Traffic*) would be further reduced after implementation of development under the Specific Plan, and would further help the region achieve GHG reduction targets more effectively than accommodating growth in distant suburban and exurban areas. The resultant low overall per capita VMT within the City as intensified by the Specific Plan will help the region achieve GHG reduction targets more effectively than accommodating growth in distant suburban and exurban areas. Trip generation conducted as a part of the transportation analysis, (see *Section 4.13, Transportation and Traffic*) made adjustments to ITE the estimated trip generation rates developed by the Institute of Transportation Engineers to account for internal trips afforded by the proposed mixed-use development as well as for pedestrian, bicycle, and transit connectivity. This analysis indicated a 20 percent decrease in daily external auto trips made by residents of the Specific Plan by non-automobile means, over what would occur for development without this mixed use character and higher pedestrian, bicycle, and transit connectivity. This reduction in external trips indicates that development under the Specific Plan would result in a per capita reduction of VMT for Plan Area occupants of more than 10 percent, when compared to per capita VMT for a less mixed use, pedestrian/bicycle/transit-friendly development, indicating that development under the Specific Plan would meet the 10 percent VMT reduction goal of the Plan Bay Area.

The Plan Area's infill location and proximity to major transportation corridors reduces the distance that customers would drive in motor vehicles to shop by providing increased retail opportunities within the Plan Area. In addition, the Plan Area is located in direct proximity to nearby employment hubs. As discussed under Impact AIR-1.SP in Section 4.2, *Air Quality* with respect to air quality, planned improvements to transit service in the Plan Area include improvements to local AC Transit routes within the City and commencement of public passenger ferry service to San Francisco from Richmond. The area is also anticipated to be served by existing UC Berkeley and Lawrence Berkeley National Laboratory (LBNL) shuttle transit services, with pending enhancements. Taken together, these locational characteristics of the Plan Area help reduce the number and length of motor vehicle trips.

Additionally, the Specific Plan would encourage sustainable travel behavior by establishing a Transportation Management Association (TMA). All projects with new construction, or that include additions to existing buildings in excess of 5,000 square feet would be required to join the TMA, while other property owners and tenants are encouraged to join and participate based on incentives and benefits that the TMA will offer.

Implementation of the Specific Plan would foster bicycle and pedestrian friendliness via reinforcing Marina Way South as an important north/south connector through improvements to the Regatta Way intersection; establishing a new north-south connector across the rail line; and bridging I-580 to provide direct access for pedestrians and bicycles between Sub-Area 4 of the Plan Area and the El Cerrito Del Norte BART Station.

Consequently, although development under the Specific Plan would result in an increase in GHG mass emissions, the accommodation of the development within a designated PDA combined with TDM and mass transit opportunities would significantly reduce the severity of growth-generated GHG emissions within the Bay Area as a region, as envisioned in Plan Bay Area.

GHG Emissions of the Specific Plan and 2030 and 2050 GHG Reduction Goals

Executive orders do not have the same status as a law because in California's constitutional system, it is the Legislature, not the Governor, who is entrusted with the role of making statewide laws. (California, 1997, p. 836; California, 1990). The Legislature declined to include the Executive Order's 2050 goal in AB 32, and again declined to use the EO's 2050 goal in adopting SB 375; nor has it incorporated it in any implementing legislation or applicable plans. Additionally, although CARB has the requisite authority to adopt whatever regulations are necessary beyond the AB 32 horizon year 2020 to meet the target set forth in S-3-05, the agency has not done so. Since the Legislature has never enacted EO S-3-05's 2050 target, and no expert agency has interpreted CEQA to require it, the 2050 target has only the force and effect of an executive order issued by a former Governor. There is no authority that suggests that the constitutional authority to establish CEQA significance thresholds resides in the Governor. CEQA is a statute, and the authority to amend and revise its requirements falls first to the Legislature. The Legislature alone has the authority to enact, amend, or revise legislation, absent some express delegation of authority to the Governor or an executive branch agency through statutory enactments (CA, 2010; p. 1015.) If the Legislature has delegated any of its authority to define CEQA's requirements, it delegated that authority to OPR and not to the Governor's office.

Moreover, CARB's Scoping Plan to implement AB 32 looked beyond 2020 to assess whether implementing the Scoping Plan would achieve the State's long-term climate goals and determined that it would: "Climate scientists tell us that the 2050 target represents the level of greenhouse gas emissions that advanced economies must reach if the climate is to be stabilized in the latter half of the 21st century. Full implementation of the Scoping Plan will put California on a path toward these required long-term reductions. Just as importantly, it will put into place many of the measures needed to keep us on that path." (CARB, 2008, p.117.) The 2014 Scoping Plan Update confirms this: "California is on track to meet the near-term 2020 greenhouse gas limit and is well positioned to maintain and continue reductions beyond 2020 as required by AB 32"; and it recognizes the potential for California to "reduce emissions by 2030 to levels squarely in line with those needed in the developed world and to stay on track to reduce emissions to 80 percent below 1990 levels by 2050." (CARB 2014, p. 2.) However, the 2014 Scoping Plan Update also concludes that additional actions will be needed to continue reducing emissions and meet the 2050 goals in the face of anticipated population and economic growth. (CARB, 2014) In fact, overwhelming scientific evidence supports the conclusion that significant technological

innovation, well beyond the scope of an individual development project, are absolutely necessary components of any plausible path to achieving the EO S-3-05's 2050 target. These new innovations to change fuel technology and energy generation are entirely outside the jurisdiction and control of the City. Achieving these goals will require wholesale shifts in fuel and energy technology, neither of which are currently available, rendering any further analysis of a given development project's impacts relative to the 2050 target too speculative for purposes of determining CEQA significance.

Although the Court in the Newhall decision noted that an analysis of goals beyond 2020 may be necessary for new development, the target set by EO S-3-05 and the interim goal set in EO B-30-15 (discussed below) are inappropriate significance criteria in analyzing impacts related to GHG emissions and climate change under CEQA for the abovementioned reasons. Notwithstanding these reasons, the following analysis is provided for informational purposes.

Executive Order B-30-15 was issued by Governor Jerry Brown in April 2015, which established a mid-term GHG reduction target for California of 40 percent below 1990 levels by 2030. Although the Order does not include any specific requirements that pertain to the Specific Plan and it is not a law, it is considered under this EIR.

Table 4.6-2 below presents year 1990 emissions for the Specific Plan as calculated with the CalEEMod model. These estimated 1990 emissions do not reflect the PG&E's state-mandated renewable portfolio standards that did not exist in 1990 or the more recent energy reduction requirements of Title 24 for 2013 or 2016. The estimated 1990 emissions do reflect a much less efficient vehicle fleet that existed at the time. As shown in Table 4.6-2, GHG emissions under the Specific Plan in 2040 would be 65 percent below emissions generated by the same land use development were it to be implemented in 1990. Consequently, development under the Specific Plan would achieve a reduction in GHG emissions relative to 1990 conditions that would be commensurate with, and in fact much lower than, the 40 percent reduction goal established in Executive Order B-30-15.

TABLE 4.6-2
GHG EMISSIONS INVENTORY FROM DEVELOPMENT OF THE SPECIFIC PLAN UNDER 1990 BUSINESS AS USUAL SCENARIO

Emission Source	Total Emissions (MT/Year)			
	CO_2	CH_4	N_2O	Total CO_2e
Area Sources	277	1	<1	299
Energy Sources	37,111	1	<1	37,276
Mobile Sources	122,168	44	<1	123,101
Solid Waste	1,741	103	<1	3,903
Water and Wastewater	5,120	3	2	5,752
Total 1990 Emissions	**166,417**	**152**	**2**	**170,331**
Total 2040 Emissions from Table 4.6-3				**58,977**
Specific Plan Percentage Decrease from 1990				**65%**

Note: Columns may not total precisely due to rounding.

SOURCE: ESA, 2016 (Appendix B)

Executive Order S-3-05 was established by Governor Arnold Schwarzenegger in June 2006, and establishes a statewide emission reduction target to reduce GHG emissions to 80 percent below 1990 levels. While it is also not a law, it is also, nonetheless, considered in this EIR.

As can be seen in Table 4.6-2, the proposed Specific Plan, will help achieve the GHG reduction goal. Full achievement of the 2050 goal will require reductions from many economic sectors, not just from land use development, and will be aided by the City's pending adoption of its CAP. Given the substantial reduction of the Specific Plan emissions relative to a 1990 baseline year, and recognizing the continuing efforts of the City of Richmond and CARB in reducing GHGs statewide to further realize reductions, and given that the Plan Area is located within a PDA pursuant to a SCS (Plan Bay Area), the GHG emissions of the Specific Plan would be entirely consistent with the long-term GHG reduction efforts within the state.

Taking into consideration regional planning goals with regard to air quality and sustainability and the attributes of the proposed Specific Plan, and with the implementation of measures that will be required by agencies and other levels of government, including those at the state, federal and international level, emissions of GHGs resulting from implementation of the Specific Plan would be consistent with the GHG reduction goals of the state and City. However, it is recognized that many sources of GHG are outside the City's jurisdiction and control, and attainment of atmospheric concentrations of GHG that will reverse or reduce the effects of global climate change are likewise outside the City's jurisdiction and control. Therefore, implementation of the proposed Specific Plan would result in the generation of GHGs that may have a significant effect on the environment. Implementation of mitigation measures required pursuant to the CEQA Findings of Fact, Statement of Significance and MMRP for the Richmond General Plan 2030 EIR would ensure that construction-related emissions of GHG would be less than significant. Notwithstanding General Plan policies and EIR mitigation measures and the city's commitment to Marin Clean Energy procurements and aggressive goals for diversion of municipal solid waste, because many sources and controls of GHG emissions are outside of the City's jurisdiction and control, the City will adopt **Mitigation Measure. GHG-1.SP** to work with air quality agencies involved in GHG reduction strategies including BAAQMD, CARB and USEPA to adopt more stringent GHG reduction mandates.

> **Mitigation Measure GHG-1.SP: GHG Prevention and Control.** The City will continue to work proactively with the Bay Area Air Quality Management District, the California Air Resources Board, and the United States Environmental Protection Agency to help these agencies implement and enforce GHG prevention and control mandates within the City, and will work with the community to identify and advocate for GHG measures that are within the jurisdiction of these agencies and can and should be implemented to further reduce GHG emissions from the Richmond Bay Specific Plan and Sub-Area 4 Project.

The Lark Drive Variant would have similar impacts as those described above for the Specific Plan with respect to construction-related emissions of GHGs. Roadway construction activities would generate 237 MT CO_2e which, when amortized over an assume 40 year project life, would result in construction-related emissions increasing from approximately 4,719 MT CO_2e annually to 4,725 MR CO_2e annually.

The Lark Drive Variant would have the same impact as described above for the Specific Plan with respect to operational emissions of GHGs. The Lark Drive Variant would not result in an increase in vehicle trip generation or in the operation of any new area sources or stationary sources of GHGs, increase electrical demand or water or wastewater treatment demand or result in an increase in solid waste generation.

Given the uncertainties associated with the GHG reduction realized through the efforts of these agencies, the generation of GHGs that may have a significant effect on the environment by the Specific Plan is identified as significant and unavoidable with mitigation.

Significance after Mitigation: Significant and Unavoidable.

Mitigation: Mitigation Measure GHG-1.SP.

Impact GHG-2.SP: Adoption and development under the Specific Plan would not conflict with an applicable plan, policy or regulation of an appropriate regulatory agency adopted for the purpose of reducing greenhouse gas emissions. (Criterion b.) (*Less Than Significant*)

Consistency with Plan Bay Area

The proposed Specific Plan is within a priority development area identified in Plan Bay Area, which is the Bay Area's SCS developed pursuant to SB 375. Plan Bay Area provides a strategy for meeting 80 percent of the region's future housing needs in PDAs, which are neighborhoods within walking distance (generally considered to be one-half mile) of frequent transit service, offering a wide variety of housing options, and featuring amenities such as grocery stores, community centers, and restaurants. Plan Bay Area projects that PDAs will accommodate over two-thirds of all housing and employment growth through the year 2040, on less than 5 percent of the land within the Bay Area. By creating a land use plan that includes a substantial amount of housing with a high intensity of development within a PDA, the proposed Specific Plan is, in effect, aiding in implementation of Plan Bay Area.

As discussed above under Impact GHG-1.SP, development under the Specific Plan would add higher densities within the City of Richmond that exceed the densities assumed in Plan Bay Area. As discussed above in Impact GHG-1.SP, the transportation analysis indicated a 20 percent decrease in daily external auto trips made by residents of the Specific Plan by non-automobile means, over what would occur for development without this mixed use character and higher pedestrian, bicycle, and transit connectivity. This reduction in external trips indicates that development under the Specific Plan would result in a per capita reduction of VMT for Plan Area occupants of more than 10 percent, when compared to per capita VMT for a less mixed use, pedestrian/bicycle/transit-friendly development, indicating that development under the Specific Plan would meet the 10 percent VMT reduction goal of the Plan Bay Area Combined with the existing, relatively low overall per capita VMT within the City would be further reduced after implementation of development under the Specific Plan, and would further help the region achieve GHG reduction targets more effectively than accommodating growth in distant suburban and

exurban areas. Consequently, the proposed Specific Plan would be consistent with and would facilitate the goals envisioned in Plan Bay Area.

Consistency with the Energy and Climate Element of the City of Richmond General Plan

Adoption of and development under the Specific Plan would also be subject to other plans, policies, and actions, including applicable policies in the General Plan as well as the City's Green Building Ordinance.

The Energy and Climate Change Element of the General Plan includes goals, policies, and actions that are relevant to GHG emissions and energy consumption from land use development within Richmond. These policies and actions are individually identified in **Table 4.6-3** (more detail on these policies and actions is provided above under *Regulatory Setting*) and an assessment is made in the table as to whether these policies and actions are reasonably applicable to the Specific Plan. If applicable, a determination is made as to whether the Specific Plan is consistent with the policy or action, and, if not, what measures may be available to ensure consistency and avoid a potential significant impact with regard to conflicts with the goal, policy, or action. As discussed above under Impact GHG-1.SP, emissions from buildout of the Specific Plan would be below the BAAQMD's service population threshold of 4.6 metric tons of CO2e/ service population/ year. As shown in Table 4.6-3**,** the Specific Plan is largely consistent with most of the applicable goals, policies and actions within the Energy and Climate Change Element of the General Plan and the City's Green Building Ordinance.

TABLE 4.6-3
SPECIFIC PLAN CONSISTENCY WITH APPLICABLE POLICIES AND ACTIONS OF THE ENERGY AND CLIMATE CHANGE ELEMENT OF THE GENERAL PLAN

General Plan Policies and Actions	Elements of Specific Plan Foreseeable Maximum Theoretical Buildout Development Program Consistent with the Policy or Action, or Explanation of Non-applicability, or Mitigation Measure to be Implemented to Address Consistency	Consistency of Specific Plan with Policy or Action?
Policy EC-2.4*: *Safe and Convenient Walking and Bicycling.	The Specific Plan Thoroughfare Regulating Plan and Standards include standards for three distinct types of bicycle transit lines within the Plan Area: lanes, routes, and trails, as well as designated public transit routes, and slower speed limits to discourage automobile travel. The Plan Area includes linkage trails and open spaces to improve pedestrian connectivity, includes improvements to the Bay Trail near Sub-Area 4, and includes bicycle paths throughout the Plan Area. The Specific Plan also includes pedestrian wayfinding and other strategies to connect to the Richmond Field Station. The Specific Plan would thus provide bicycle-friendly and pedestrian-centric design and facilities including livable streets, consistent with General Plan Policy EC-2.4.	Generally consistent
Policy EC-2.6*: *Private Automobile Use	The Specific Plan proposes to reduce vehicle parking ratios over time during development within the Plan Area, and employs other strategies as well to reduce reliance on private automobile use consistent with the General Plan Policy EC-2.6	Generally consistent

TABLE 4.6-3 (Continued)
SPECIFIC PLAN CONSISTENCY WITH APPLICABLE POLICIES AND ACTIONS OF THE ENERGY AND CLIMATE CHANGE ELEMENT OF THE GENERAL PLAN

General Plan Policies and Actions	Elements of Specific Plan Foreseeable Maximum Theoretical Buildout Development Program Consistent with the Policy or Action, or Explanation of Non-applicability, or Mitigation Measure to be Implemented to Address Consistency	Consistency of Specific Plan with Policy or Action?
Action EC2.A: Climate-Friendly Fuel Using Vehicles.	Projects developed under the Specific Plan would adopt TDM programs which would incorporate the use of renewable energy, including non-fossil fuels, and clean technology for transportation. Development under the Specific Plan would also provide designated parking for zero emission vehicles, with electric vehicle charging capabilities and carpool/vanpool vehicles.	Generally consistent
Action EC2.D: Transit Incentives Program	The Specific Plan is designed to provide public transit corridors, and also includes the formation of a Transportation Management Association (TMA) and a requirement that projects developed under the Specific Plan adopt TDM plans which would improve connectivity with Downtown Richmond and the new ferry terminal, consistent with Action EC2.D.	Generally consistent
Action EC2.F: Promote Bicycle Use	The Specific Plan Thoroughfare Regulating Plan provides the alignment of future bike lanes/bikeways. The Specific Plan also includes Bicycle Parking Standards which outline bicycle facility standards for various uses within the Plan Area including showers, lockers, and short and long-term secured parking.	Generally consistent
Policy EC-3.1*: *Renewable Energy	In 2013 the City joined Marin Clean Energy to increase renewable energy choices for local businesses and residents. As of 2015, over 80 percent of Richmond's electrical customers have enrolled in Marin Clean Energy. Projects developed under the Specific Plan will be enrolled in Marin Clean Energy, and implementation of the Specific Plan will support the City in its goal to provide 100 percent of its electricity from renewable sources by 2025.	Generally consistent
Policy EC-3.2*: *Energy Efficiency and Conservation	The Specific Plan Green Building Standards, through requiring compliance with CALGreen, would require energy efficient appliances for all projects developed under the Specific Plan. Additionally, development under the Specific Plan would be required to implement the City of Richmond's Commercial and Residential Green Building Standards which would require LEED building measures and "GreenPoint" rated checklists on new projects to improve energy efficiency and conservation.	Generally consistent
Policy EC-3.3*: *Solid Waste Reduction and Recycling	The City, through its franchise agreement with Republic Services, currently offers garbage collection, recycling, and food-scrap composting collection services to residents and businesses within Richmond. Garbage, recyclables and green waste are picked up weekly for residential customers. Customers pay for garbage collection services, while recycling and composting services and materials are offered free of charge. Richmond has implemented a volume-based fee structure for garbage collection services, or Pay-As-You-Throw (PAYT) collection, that charges customers based on the volume of the garbage container service subscription, and the frequency of pickup. Customers who use smaller containers for garbage are charged less money, thus creating a financial incentive to increase composting and recycling. Projects developed under the Specific Plan would be subject to incentives to reduce solid waste and increase recycling.	Generally consistent

TABLE 4.6-3 (Continued)
SPECIFIC PLAN CONSISTENCY WITH APPLICABLE POLICIES AND ACTIONS OF THE ENERGY AND CLIMATE CHANGE ELEMENT OF THE GENERAL PLAN

General Plan Policies and Actions	Elements of Specific Plan Foreseeable Maximum Theoretical Buildout Development Program Consistent with the Policy or Action, or Explanation of Non-applicability, or Mitigation Measure to be Implemented to Address Consistency	Consistency of Specific Plan with Policy or Action?
Policy EC-3.3*: *Water Conservation and Reuse	The Specific Plan Green Building Standards, through requiring compliance with CALGreen, would require projects developed under the Specific Plan to implement the CALGreen Code, which requires new construction and major remodels to use high efficiency plumbing fixtures, including toilets, urinals, showerheads, and faucet fixtures. For outdoor water use, CALGreen requires that irrigation controllers shall be weather- or soil-moisture based, and shall automatically account for rainfall, or else be attached to a rainfall sensor. The City may also offer incentives to comply with water efficiency requirements.	Generally consistent
Action EC3.F: Water Conservation	See consistency with Policy EC-3.3.	Generally consistent
Action EC3.G: Water Recycling	Projects developed under the Specific Plan would be evaluated by the City to determine whether recycled water infrastructure and facilities can and/or should be included as part of the project. The Specific Plan, however, does not include requirements for the extension or development of infrastructure for recycled water.	Generally consistent, but does not promote water recycling
Policy EC-4.1*: *Mixed Use and Infill Development	The overall design and purpose of the Specific Plan is structured in order to meet Policy EC-4.1 by providing for a mixed-use infill development on vacant and underutilized parcels along commercial corridors. The Specific Plan outlines design standards for local-serving mixed-use in residential areas to provide needed services and amenities close to where people live and work.	Generally consistent
Policy EC-4.2: Compact Walkable Neighborhoods and Livable Streets	See consistency with Policy EC-2.4.	Generally consistent
Policy EC-4.3: Green Buildings and Landscaping	See consistency with Policy EC-3.2 and Action EC3.F.	Generally consistent
Action EC4.H: Green Building Ordinances	See consistency with Policy EC-3.2 and Action EC3.F.Development under the Specific Plan would be required to comply with the City of Richmond's Green Building Ordinance adopted in 2009.	Generally consistent
Policy EC-6.2: Low-Lying Areas in Richmond	See discussion in Section 4.8, *Hydrology and Water Quality*.	Generally consistent
Policy EC-6.3: Adapting to Climate Change	See discussion in Section 4.8, *Hydrology and Water Quality*.	Generally consistent

Additionally, development under the Specific Plan would be subject to **Mitigation Measure 3.6-1 (Climate Change)** of the Richmond General Plan 2030 EIR. This measure includes extensive requirements (16 specific measures) addressing GHG reductions and is incorporated here by reference (City of Richmond, 2012). These measures are also individually itemized in Appendix B, Air Quality and Greenhouse Gas Emissions Technical Data.

The Lark Drive Variant would have the same less-than-significant impact as described above for the Specific Plan with respect to consistency with plans to reduce GHGs. The Lark Drive Variant would not result in an increase in vehicle trip generation or in the operation of any new area sources or stationary sources of GHGs, increase electrical demand or water or wastewater treatment demand or result in an increase in solid waste generation.

Therefore, the implementation of the Specific Plan would have a less-than-significant impact with regard to consistency with an applicable plan, policy or regulation of an appropriate regulatory agency adopted for the purpose of reducing greenhouse gas emissions.

Significance: Less Than Significant.

Mitigation: None required.

4.5.6 Project-Level Impacts of the Sub-Area 4 Project

Impact GHG-1.SA4: Development under the Sub-Area 4 Project would produce greenhouse gas emissions that could have a significant impact on the environment. (Criterion a.) (*Significant and Unavoidable*)

Construction and operation of the Sub-Area 4 Project would generate GHG emissions. The use of fossil fuels in construction equipment used to develop the Sub-Area 4 Project would generate GHGs such as carbon dioxide, methane and nitrous oxide. Once operational, the Sub-Area 4 Project would generate GHG emissions primarily from motor vehicle use, gas, electricity, solid waste generation and water use.

GHG emissions resulting from the Sub-Area 4 Project were calculated using the same methodology as that described for the Specific Plan in Impact GHG-1.SP, above.

Short-term GHG Emissions from Construction of the Sub-Area 4 Project

GHG emissions from construction of the Sub-Area 4 Project were estimated using CalEEMod. Project-specific data were used for equipment fleet, construction schedule and phasing. Model default emission factors were used. An estimated total of approximately 3,792 metric tons (MT) of CO_2e would be emitted from construction activities during the peak construction year.

Construction emissions are annualized because the proposed operational GHG emissions thresholds are analyzed in terms of metric tons "per year." This analysis assumes a 40-year development life of the Sub-Area 4 Project, after which it is assumed to be demolished or remodeled for energy efficiency.[9] Total construction emissions therefore, represent approximately 912 MT CO_2e annually, over 40 years.

[9] 40 years of useful life the common standard currently used in practice.

The BAAQMD 2011 *CEQA Air Quality Guidelines* do not include a specific threshold or methodology for assessing construction-related GHG emissions for CEQA analysis. The analysis of construction emissions only considers improvements in construction equipment exhaust emissions through manufacturer requirements and turnover. The Sub-Area 4 Project would incorporate dust control measures recommended by BAAQMD (as detailed in Mitigation Measure AIR-1.SP, in Section 4.2 *Air Quality*, in this EIR), which primarily include dust abatement measures and measures to reduce construction exhaust emissions. Construction equipment would be subject to all applicable BAAQMD Rules and Regulations. (See applicable supplemental discussion under Impact GHG-1.SP, above.) Required compliance with these measures would ensure that the annualized GHG emissions from construction of the Sub-Area 4 Project would not conflict with the goals of AB 32.

Long-term GHG Emissions from Operation of the Sub-Area 4 Project

Table 4.6-4 summarizes the GHG emissions that would result from operation of uses under the Sub-Area 4 Project. The table includes those emission sources that are included in the BAAQMD 2011 *CEQA Air Quality Guidelines*, such as area sources, transportation, operational electricity consumption, solid waste disposal, operational fugitive emissions, water usage and wastewater generation. Emission sources that are not included in the BAAQMD 2011 *CEQA Air Quality Guidelines* or are not relevant to the Sub-Area 4 Project, such as emissions generated from permitted stationary source equipment, change in vegetation sequestration, fugitive refrigeration emissions, agricultural emissions, and off-road equipment emissions, are not included.

TABLE 4.6-4
ESTIMATED GHG EMISSIONS GENERATED BY THE SUB-AREA 4 PROJECT

Emission Source	Total Emissions (MT/Year)			
	CO_2	CH_4	N_2O	Total CO_2e
Area Sources	69	<1	<1	70
Energy Sources	4,558	<1	<1	4,580
Mobile Sources	13,130	<1	<1	13,139
Solid Waste	438	26	0	981
Water and Wastewater	642	1	<1	786
Total	**18,837**	**27**	**<1**	**19,556**
Service Population (3,070 residents and 2,900 employees)				7,260
Total Sub-Area 4 Project GHG Emissions by Service Population				**2.69**
Project-level Screening Threshold				4.6
Exceeds Significance Threshold?				**No**

Note: Columns may not total precisely due to rounding.

SOURCE: ESA, 2016 (Appendix B)

As shown in the table above, like the Specific Plan, the GHG emissions that would be generated by uses developed under the Sub-Area 4 Project would exceed the project-level mass emissions screening threshold of 1,000 MT CO_2e per year but would not exceed BAAQMD's service population screening threshold for mixed-use project and specific plans of 4.6 MT CO_2e per year

per service population. In addition, development under the Specific Plan would add higher densities within the City of Richmond that exceed the densities assumed in Plan Bay Area. The existing, relatively low overall per capita VMT within the City (as discussed in Section 4.13, *Transportation and Traffic*) would be further reduced after implementation of development of the Sub-Area 4 Project, and would further help the region achieve GHG reduction targets more effectively than accommodating growth in distant suburban and exurban areas. Trip generation conducted as a part of the transportation analysis, (see *Section 4.13, Transportation and Traffic*) made adjustments to ITE the estimated trip generation rates developed by the Institute of Transportation Engineers to account for internal trips afforded by the proposed mixed-use development as well as for pedestrian, bicycle, and transit connectivity. This analysis indicated a 19 percent decrease in daily external auto trips made by residents of the Sub-Area 4 Project by non-automobile means, over what would occur for development without this mixed use character and higher pedestrian, bicycle, and transit connectivity. This reduction in external trips indicates that development under the Specific Plan would result in a per capita reduction of VMT for Plan Area occupants of more than 10 percent, when compared to per capita VMT for a less mixed use, with less pedestrian/bicycle/transit-friendly development, indicating that development under the Sub-Area 4 Project would meet the 10 percent VMT reduction goal of the Plan Bay Area.

The Sub-Area 4 Project site's infill location and proximity to major transportation corridors reduces the distance that customers would drive in motor vehicles to shop by providing increased retail opportunities within the Sub-Area 4 Project site. In addition, the Sub-Area 4 Project site is located in direct proximity to nearby employment hubs. As discussed under Impact AIR-1.SP in Section 4.2, *Air Quality*, planned improvements to transit service in and near the Sub-Area 4 Project site include improvements to local AC Transit routes within the City and commencement of public passenger ferry service to San Francisco from Richmond. The Sub-Area 4 Project site would also be served by existing UC Berkeley and LBNL shuttle transit services, with pending enhancements. Taken together, these locational characteristics of the Sub-Area 4 Project site help reduce the number and length of motor vehicle trips. Additionally, the Sub-Area 4 Project would encourage sustainable travel behavior by establishing a TMA, as required under the Specific Plan.

Development of the Sub-Area 4 Project would also foster bicycle and pedestrian friendliness via reinforcing Marina Way South as an important north/south connector through improvements to the Regatta Way intersection; establishing a new north-south connector across the rail line; and bridging I-580 to provide direct access for pedestrians and bicycles between the Sub-Area 4 Project site and the El Cerrito Del Norte BART Station.

Consequently, although development of the Sub-Area 4 Project would result in an increase in GHG emissions, the accommodation of the development within a designated PDA would ultimately reduce the severity of growth-generated GHG emissions within the Bay Area as a region, as envisioned in Plan Bay Area.

GHG Emissions of the Sub-Area 4 Project and 2030 and 2050 GHG Reduction Goals

As Discussed in Impact GHG-1.SP, with respect to executive orders to reduce GHG emissions, there is no authority that suggests that the constitutional authority to establish CEQA significance thresholds resides in the Governor. Achieving the goals of Executive Order B-30-15 and Executive Order S-3-05 will require wholesale shifts in fuel and energy technology, neither of which are currently available, rendering any further analysis of a given development project's impacts relative to the 2050 target too speculative for purposes of determining CEQA significance. Although the Court in the Newhall decision noted that an analysis of goals beyond 2020 may be necessary for new development, the target set by EO S-3-05 and the interim goal set in EO B-30-15 (discussed below) are inappropriate significance criteria in analyzing impacts related to GHG emissions and climate change under CEQA for the abovementioned reasons. Notwithstanding these reasons, the following analysis is provided for informational purposes.

Executive Order B-30-15 established a mid-term GHG reduction target for California of 40 percent below 1990 levels by 2030. The Order does not include any specific requirements that pertain to the Sub-Area 4 Project site but future actions taken by the state to implement the goals may affect how the Sub-Area 4 Project is designed and developed.

Table 4.6-5, below, presents year 1990 emissions for the Sub-Area 4 Project as calculated with the CalEEMod model. These estimated 1990 emissions do not reflect the City's Marin Clean Energy procurements that did not exist in 1990 or the more recent energy reduction requirements of Title 24 for 2013 or 2016. The estimated 1990 emissions do reflect a much less efficient vehicle fleet that existed at the time. As shown in Table 4.6-5, GHG emissions that would be generated by buildout of the Sub-Area 4 Project in 2040 would be 52 percent below emissions generated by the same land use development were it to be implemented in 1990. Consequently, development of the Sub-Area 4 Project would achieve a reduction in GHG emissions relative to 1990 conditions that would be commensurate with, and in fact greater than, the 40 percent reduction goal established in Executive Order B-30-15.

TABLE 4.6-5
GHG EMISSIONS INVENTORY FROM DEVELOPMENT OF THE SUB-AREA 4 PROJECT UNDER 1990 BUSINESS AS USUAL SCENARIO

Emission Source	Total Emissions (MT/Year)			
	CO_2	CH_4	N_2O	Total CO_2e
Area Sources	74	<1	<1	77
Energy Sources	8,846	<1	<1	8,885
Mobile Sources	30,366	11	<1	30,598
Solid Waste	86	5	<1	192
Water and Wastewater	1,188	1	<1	1,334
Total 1990 Emissions	**40,560**	**17**	**1**	**41,086**
Total 2040 Emissions from Table 4.6-4				**19,556**
Sub-Area 4 Project percentage decrease from 1990				**52%**

Note: Columns may not total precisely due to rounding.

SOURCE: ESA, 2016 (Appendix B)

Executive Order S-3-05 was established by Governor Arnold Schwarzenegger in June 2006, and establishes a statewide emission reduction target to reduce GHG emissions to 80 percent below 1990 levels. As can be seen in Table 4.6-2, the Project would fall short of achieving a GHG reduction goal commensurate with this goal. Full achievement of the 2050 goal will require reductions from many economic sectors, not just from land use development, and will be aided by the City's pending adoption of its CAP currently under development. Given the substantial reduction of the Sub-Area 4 Project emissions relative to a 1990 baseline year, and recognizing the continuing efforts of the City of Richmond and CARB in reducing GHGs statewide to further realize reductions, and given that the Sub-Area 4 Project site is located within a PDA, the GHG emissions of the Specific Plan would not be inconsistent with the long-term GHG reduction efforts within the state.

However, it is recognized that many sources of GHG are outside the City's jurisdiction and control, and attainment of atmospheric concentrations of GHG that will reverse or reduce the effects of global climate change are likewise outside the City's jurisdiction and control. Therefore, the proposed Sub-Area 4 Project would result in the generation of GHGs that may have a significant effect on the environment. Implementation of mitigation measures required pursuant to the CEQA Findings of Fact, Statement of Significance and MMRP for the Richmond General Plan 2030 EIR would ensure that construction-related emissions of GHG would be less than significant. Notwithstanding General Plan policies and EIR mitigation measures and the city's commitment to Marin Clean Energy procurements and aggressive goals for diversion of municipal solid waste, because many sources and controls of GHG emissions are outside of the City's jurisdiction and control, the City will adopt **Mitigation Measure. GHG-1.SP** to work with air quality agencies involved in GHG reduction strategies including BAAQMD, CARB and USEPA to adopt more stringent GHG reduction mandates. Given the uncertainties associated with the GHG reduction realized through the efforts of these agencies, the generation of GHGs that may have a significant effect on the environment by the Sub-Area 4 Project is identified as significant and unavoidable with mitigation.

Significance after Mitigation: Significant and Unavoidable.

Mitigation: Mitigation Measure GHG-1.SP.

Impact GHG-2.SA4: Development of the Sub-Area 4 Project would not conflict with an applicable plan, policy or regulation of an appropriate regulatory agency adopted for the purpose of reducing greenhouse gas emissions. (Criterion b.) (*Less Than Significant*)

Consistency with Plan Bay Area

The Sub-Area 4 Project site is within a priority development area identified in Plan Bay Area. Plan Bay Area provides a strategy for meeting 80 percent of the region's future housing needs in PDAs. Plan Bay Area projects that PDAs will accommodate over two-thirds of all housing and employment growth through the year 2040. By creating a development project that includes a

substantial amount of housing with a high intensity of development within a PDA, the proposed Specific Plan is, in effect, aiding in implementation of Plan Bay Area.

As discussed above under Impact GHG-1.SP, development of the Sub-Area 4 Project would add higher densities within the City of Richmond. As discussed above in Impact GHG-1.SA4, the transportation analysis indicated a 19 percent decrease in daily external auto trips made by residents of the Sub-Area 4 Project by non-automobile means, over what would occur for development without this mixed use character and higher pedestrian, bicycle, and transit connectivity. This reduction in external trips indicates that development under the Sub-Area 4 Project would result in a per capita reduction of VMT for Sub-Area 4 Project occupants of more than 10 percent, when compared to per capita VMT for a less mixed use, pedestrian/ bicycle/ transit-friendly development, indicating that development under the Sub-Area 4 Project would meet the 10 percent VMT reduction goal of the Plan Bay Area Combined with the existing, relatively low overall per capita VMT within the City would be further reduced after development of the Sub-Area 4 Project, and would further help the region achieve GHG reduction targets more effectively than accommodating growth in distant suburban and exurban areas. Consequently, the Sub-Area 4 Project would be consistent with and would facilitate the goals envisioned in Plan Bay Area.

Consistency with the Energy and Climate Element of the City of Richmond General Plan

Development of the Sub-Area 4 Project would also be subject to other plans, policies, and actions, including applicable policies in the General Plan as well as the City's Green Building Ordinance.

The Energy and Climate Change Element of the General Plan includes goals, policies, and actions that are relevant to GHG emissions and energy consumption from land use development within Richmond. These policies and actions are individually identified in **Table 4.6-3** (more detail on these policies and actions is provided above under Regulatory Setting) and an assessment is made in the table as to whether these policies and actions are reasonably applicable to the Specific Plan, of which the Sub-Area 4 Project would be a part. As shown in Table 4.6-3**,** the Specific Plan is generally consistent with the applicable policies and actions of the General Plan Energy and Climate Change Element. Consequently, the Sub-Area 4 Project, which would be a part of the Specific Plan and subject to the same development standards, would similarly be generally consistent with the applicable policies and actions of the General Plan Energy and Climate Change Element.

Additionally, development of the Sub-Area 4 Project would be subject to mitigation of the Richmond General Plan 2030 EIR, including Mitigation Measure 3.6-1 (Climate Change). This measure includes extensive requirements (16 specific measures) addressing GHG reductions and is incorporated here by reference (City of Richmond, 2012). These measures are also individually itemized in Appendix B, Air Quality and Greenhouse Gas Emissions Technical Data. Therefore, the Sub-Area 4 Project would have a less-than-significant impact with regard to consistency with

an applicable plan, policy or regulation of an appropriate regulatory agency adopted for the purpose of reducing greenhouse gas emissions.

Significance: Less Than Significant.

Mitigation: None required.

4.6.7 Cumulative Impacts

Impact C-GHG-1.SP: Development under the Specific Plan, combined with cumulative development, including past, present, existing, approved, pending, and reasonably foreseeable future development in the Plan Area and its vicinity, would result in cumulative impacts regarding GHG emissions and climate change. (Criteria a., b.) (*Significant and Unavoidable*)

GHGs are global pollutants, and also pollutants of regional and local concern. Whereas pollutants with localized air quality effects have relatively short atmospheric lifetimes (about 1 day), GHGs have long atmospheric lifetimes (1 year to several thousand years). GHGs persist in the atmosphere for long enough time periods to be dispersed around the globe. Therefore, the effects of GHGs are also experienced globally. The atmospheric concentration of GHGs determines the intensity of climate change, with current levels already leading to increases in global temperatures, sea level rise, severe weather, and other environmental impacts. The continued increase in atmospheric GHG concentrations will only worsen the severity and intensity of climate change, leading to irrevocable environmental changes. Therefore, from the standpoint of CEQA, GHG impacts to global climate change are inherently cumulative. No single project could generate enough GHG emissions to contribute noticeably to a change in the global average temperature. However, the combination of GHG emissions from past, present, and future projects contribute substantially to the phenomenon of global climate change and its associated environmental impacts.

Taking into consideration regional planning goals with regard to air quality and sustainability and the attributes of the proposed Specific Plan and Sub-Area 4 Project, and with the implementation of measures that will be required by agencies and other levels of government, including those at the state, federal and international level, emissions of GHGs resulting from implementation of the Specific Plan, the Sub-Area 4 Project and other cumulative development within the City of Richmond would result in a less-than-significant impact related to generation of GHG emissions that may have a significant impact on the environment. However, it is recognized that many sources of GHG are outside the City's jurisdiction and control, and attainment of atmospheric concentrations of GHG that will reverse or reduce the effects of global climate change are likewise outside the City's jurisdiction and control. Therefore, the City will adopt **Mitigation Measure GHG-1.SP** to work with regional and state partners to address GHG reduction goals.

Consequently, cumulative GHG emissions from the construction and development of the Specific Plan and the Sub-Area 4 Project would be cumulatively considerable and significant and unavoidable with mitigation.

Significance after Mitigation: Significant and Unavoidable.

Mitigation: Mitigation Measure GHG-1.SP.

Impact C-GHG-1.SA4: Development under the Sub-Area 4 Project, combined with cumulative development, including past, present, existing, approved, pending, and reasonably foreseeable future development in the vicinity of the Sub-Area 4 Project site, would result in cumulative impacts regarding GHG emissions and climate change. (Criteria a., b.) (*Significant and Unavoidable*)

GHGs are global pollutants, and also pollutants of regional and local concern. Whereas pollutants with localized air quality effects have relatively short atmospheric lifetimes (about 1 day), GHGs have long atmospheric lifetimes (1 year to several thousand years). GHGs persist in the atmosphere for long enough time periods to be dispersed around the globe. Therefore, the effects of GHGs are also experienced globally. The atmospheric concentration of GHGs determines the intensity of climate change, with current levels already leading to increases in global temperatures, sea level rise, severe weather, and other environmental impacts. The continued increase in atmospheric GHG concentrations will only worsen the severity and intensity of climate change, leading to irrevocable environmental changes. Therefore, from the standpoint of CEQA, GHG impacts to global climate change are inherently cumulative. No single project could generate enough GHG emissions to contribute noticeably to a change in the global average temperature. However, the combination of GHG emissions from past, present, and future projects contribute substantially to the phenomenon of global climate change and its associated environmental impacts.

As discussed above for the Specific Plan and as discussed under Impact GHG-1.SA4, GHG emissions from the development of the Sub-Area 4 Project would be significant with application of **Mitigation Measure GHG-1.SP**. Therefore, their contribution to the global cumulative impact would be significant and unavoidable with mitigation.

Significance after Mitigation: Significant and Unavoidable.

Mitigation: Mitigation Measure GHG-1.SP.

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4.7 Hazards and Hazardous Materials

4.7.1 Introduction

This section discusses hazardous materials and hazards conditions within the Plan Area, and evaluates the potential for implementation of the Specific Plan or Sub-Area 4 Project to result in significant impacts related to exposing people or the environment to adverse effects related to hazards and hazardous materials. A review of the applicable regulatory framework for implementation of the Specific Plan and Sub-Area 4 Project is also provided.

CEQA requires the analysis of potential adverse effects of a project on the environment, but, as discussed in Chapter 1.0, *Introduction*, of this EIR, potential effects of the environment on the project are not required to be analyzed or mitigated under CEQA. Notwithstanding this fact, this section analyzes both the potential effects of hazards and hazardous materials associated with implementation of the Specific Plan and Sub-Area 4 Project and the potential effects of existing hazards and hazardous materials on sensitive uses and receptors within the Plan Area and Sub-Area 4 Project site, in order to provide information to the public and decision-makers.

Similar to other sections and chapters of this EIR, this section incorporates by reference both the Specific Plan and information contained in the supporting documents for the Specific Plan, including the *South Shoreline Specific Plan: Existing Conditions* report, and also presents updates to this information. In addition, this section also incorporates by reference the reports and documents discussed, herein.

As discussed below, the remediation of contamination at the Zeneca cleanup site is addressed separately from this EIR, although this section describes the cleanup action and addresses related impacts that may occur within the Plan Area. DTSC stated in a July 1, 2016, letter that "[t]he Department of Toxic Substances Control has determined that the City of Richmond's Draft Richmond Bay Specific Plan… provides the basis of the reasonably foreseeable land use for the geographical area where [the Zeneca site] is located (DTSC, 2016c)." Therefore, DTSC is requiring the draft FS/RAP be revised to take into account the land uses included in the Specific Plan.

4.7.2 Definitions

Hazardous Material and Waste

Materials and waste are generally considered hazardous if they are poisonous (toxicity), can be ignited by open flame (ignitability); corrode other materials (corrosivity); or react violently, or explode or generate vapors when mixed with water (reactivity).

The term "hazardous material" is defined in the State Health and Safety Code (Chapter 6.95, Section 25501[n][1]) to include any material that, because of quantity, concentration, or physical or chemical characteristics, poses a significant present or potential hazard to human health and safety or to the environment if released into the workplace or the environment.

A hazardous waste, for the purpose of this EIR, is any hazardous material that is discarded, stored and treated, or recycled, as defined in the State Health and Safety Code (Chapter 6.95, Section 25124).

The transportation, use, and disposal of hazardous materials, as well as the potential releases of hazardous materials to the environment, are closely regulated through many state and federal laws.

Potential Receptors/Exposure

The sensitivity of potential receptors in the areas of known or potential hazardous materials contamination is dependent on several factors, the primary factor being the potential pathway for human exposure. Exposure pathways include external exposure, inhalation, and ingestion of contaminated soil, air, water, or food. The magnitude, frequency, and duration of human exposure can cause a variety of health effects, from short-term acute symptoms to long-term chronic effects. Potential health effects from exposure can be evaluated in a health risk assessment. The main elements of exposure assessments typically include:

- Evaluation of the fate and transport processes for hazardous materials at a given site;
- Identification of potential exposure pathways;
- Identification of potential exposure scenarios;
- Calculation of representative chemical concentrations; and
- Estimation of potential chemical uptake.

Soil and Groundwater Contamination

In California, regulatory databases listing hazardous materials sites provided by numerous federal, state, and local agencies were consolidated in the "Cortese List" pursuant to Government Code Section 65962.5, originally enacted in 1985. The Cortese List is no longer consolidated as originally intended, but is now available as web-based information from the responsible organizations as linked on the California Environmental Protection Agency's (CalEPA) website, and includes:

- List of Hazardous Waste and Substances sites from Department of Toxic Substances Control (DTSC) EnviroStor database;
- List of Leaking Underground Storage Tank Sites by County and Fiscal Year from the 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 Cleanup and Abatement Orders (CAO) from the SWRCB; and
- List of hazardous waste facilities subject to corrective action pursuant to Section 25187.5 of the Health and Safety Code, identified by DTSC and listed in the EnviroStor database (DTSC, 2016a).

The SWRCB GeoTracker database includes leaking underground storage tanks (LUSTs); permitted underground storage tanks (USTs); and spills, leaks, investigations, and cleanup database (SLIC) sites. The DTSC EnviroStor database includes federal and state response sites, voluntary, school, and military cleanups and corrective actions, and permitted sites. The five databases cited above identify sites with suspected and confirmed releases of hazardous materials to the subsurface soil and/or groundwater. The statuses of these sites change as identification, monitoring and clean-up of hazardous materials progress. Typically, a site is considered "closed" (i.e., no further action is needed to address hazardous materials at the site) once it has been demonstrated that existing site uses combined with the levels of identified contamination present no significant risk to human health or the environment.

Underground Fuel Tanks

An underground fuel tank (UFT) system is a tank and any underground piping connected to the tank that has at least 10 percent of its combined volume underground. Until the mid-1980s, most UFTs were made of single-walled bare steel which could corrode over time, resulting in leakage. Faulty installation or maintenance procedures also resulted in UFT leakage, in addition to potential releases associated with spills. Revised UFT regulations in the late 1990s significantly reduced the incidents of leakage from new UFT systems and the resulting soil and groundwater contamination. However, some older UFT systems remain in service, and many sites contaminated by UFTs are still undergoing investigation and cleanup.

Underground storage tanks installed prior to the mid-1980s that have leaked, as well as improperly installed UFTs, have resulted in fuel spills that can present contamination issues. In addition, it is not uncommon for older UFTs to have been abandoned in place with no documentation of location or abandonment technique. Unknown and undocumented UFTs can be found during ground disturbances associated with redevelopment activities of commercial and industrial properties.

Case closure for leaking underground fuel tanks (LUFTs, also referred to as leaking underground storage tanks or LUSTs) is typically granted by the oversight agency when soil or groundwater affected by a release of petroleum hydrocarbons (PHCs) and the constituents of PHCs (such as benzene, toluene, ethylbenzene, xylenes and methyl tertiary butyl ether) have been substantially cleaned up, and the contamination no longer poses a substantial threat to human health or the environment. However, it should be noted that residual contaminants may remain in soil or groundwater at closed sites. PHCs tend to naturally degrade over time; excavation for project construction at closed LUFT sites, however, may encounter low levels of PHCs in soil, soil vapor, or groundwater.

Hazardous Building Materials

Redevelopment of infill sites often involves the need to demolish existing older structures. Many older buildings contain building materials that can be hazardous to people and the environment once disturbed. These materials include lead-based paint, asbestos-containing materials (ACM), polychlorinated biphenyls (PCBs), and mercury.

Lead and Lead-Based Paint

Prior to the U.S. Environmental Protection Agency (USEPA) ban in 1978, lead-based paint was commonly used on interior and exterior surfaces of buildings. Through such disturbances as sanding and scraping activities, renovation work, and gradual wear and tear, old peeling paint and paint dust particulates have been found to contaminate surface soils or cause lead dust to migrate and affect indoor air quality. Exposure to residual lead can cause severe adverse health effects, especially in children.

Asbestos

Asbestos is a naturally-occurring fibrous material that was extensively used as a fireproofing and insulating agent in building construction materials before such uses were banned by the USEPA in the 1970s. Asbestos containing materials (ACM) were commonly used for insulation of heating ducts as well as ceiling and floor tiles. Similar to lead-based paint, ACM contained within the building materials present no significant health risk because there is no exposure pathway. However, once these tiny fibers are disturbed, they can become airborne and become a respiratory hazard. Once they are inhaled, they can become lodged in the lung, potentially causing lung disease or other pulmonary complications.

State laws and regulations prohibit emissions of asbestos from asbestos-related manufacturing, 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 governmental agencies prior to beginning renovation or demolition that could disturb asbestos. The San Francisco Bay Area Air Quality Management District (BAAQMD) has the authority to regulate airborne pollutants, including asbestos, through both inspection and law enforcement, and must be notified ten days in advance of any proposed demolition or abatement work. (See *Regulatory Setting,* below, for further regulations regarding asbestos removal.)

Polychlorinated Biphenyls (PCBs)

PCBs are organic oils that were formerly used primarily as insulators in many types of electrical equipment, including transformers and capacitors. After PCBs were determined to be a carcinogen in the mid to late 1970s, the USEPA banned PCB use in most new equipment and began a program to phase out certain existing PCB-containing equipment. Fluorescent lighting ballasts manufactured after January 1, 1978, do not contain PCBs and are required to have a label clearly stating that PCBs are not present in the unit.

Mercury

Spent fluorescent light tubes, thermostats, and other electrical equipment contain heavy metals such as mercury that, if disposed of in landfills, can leach into soil or groundwater. Lighting tubes typically contain concentrations of mercury that may exceed regulatory thresholds for hazardous waste and, as such, must be managed in accordance with hazardous waste regulations. Elemental mercury waste is considered hazardous. Mercury can also be present in the plumbing of older buildings in which mercury-containing equipment has been used.

4.7.3 Environmental Setting

Regional and Local Setting

The Plan Area and vicinity are primarily characterized by a mix of industrial uses, with office, commercial, and residential uses, and water-oriented open space also interspersed throughout the area. Historical uses on and around the Plan Area involved shipping and a range of industrial activities dating back to the 1890s, prior to the establishment of the Port of Richmond.

Hazardous materials are known to exist within the Plan Area either as part of existing operations or previous site uses. Businesses may need to store chemicals on-site or may bring materials on-site for production purposes. Currently documented cleanup sites within the Plan Area are described below.

Summary of Existing Listed Cleanup Sites

Due to a history of varied industrial uses, multiple sites within the Plan Area are affected by environmental contamination. Current and former commercial and industrial activities such as gasoline service stations, dry cleaners, and other facilities that stored or utilized solvents, chemicals or other hazardous materials have affected a wide array of sites within the Plan Area. (City of Richmond, 2013). Residual contamination from fuel or hazardous materials stored in former above-ground or underground storage tanks has also affected sites within the Plan Area. This section provides a summary table (**Table 4.7-1**) of cleanup sites within the Plan Area, within the adjacent Richmond Field Station, or otherwise adjacent to the Plan Area (Marina Bay neighborhood). These sites have been identified in regulatory databases as being affected by potentially hazardous materials. A description of ongoing restrictions, investigations or remedial measures associated with these sites is also included. Sites located within Sub-Area 4 are shown as bolded in the table. Sites located within the Sub-Area 4 Project site are shown as bolded and green-highlighted. Sites identified in the table are also shown on **Figure 4.7-1**.

Sites identified in **Table 4.7-1** and **Figure 4.7-1** include only those properties that:[1]

1. Have experienced documented and known releases of potentially hazardous materials to the environment and are in the process of assessing and/or mitigating the problem, or
2. Have been previously characterized and remediated to the satisfaction of a lead oversight regulatory agency, where a “no further action” (NFA) determination has been made which may include administrative controls such as land use and/or other deed restrictions.

Sites with soil and groundwater contamination in and adjacent to the Plan Area were identified by an electronic database records search provided by Environmental Data Resources, Inc. (EDR), as well as a regulatory agency database search using the California Regional Water Quality Control Board’s GeoTracker and the DTSC’s EnviroStor databases (City of Richmond, 2013).

[1] Sites that have been identified within the Plan Area include only those that have documented hazardous materials releases and not those that simply store or utilize hazardous materials.

TABLE 4.7-1
REGULATORY (CLEANUP) SITES LISTED IN THE PLAN AREA AND VICINITY

Site No.[a]	Sub-Area[b]	Site Name	Address	Summary of Potential Media Affected (by Specific Contaminants of Concern)
Closed, "No Further Action" Leaking Underground Fuel Tank Sites				
2	1	Navistar International Transportation	830 Marina Way South	Groundwater; by Petroleum
3	1	Global Construction & Maint. I	867 South 19th Street	Groundwater; by Petroleum
4	1	San Francisco French Bread Company	833 19th Street South	Groundwater; by Petroleum
17	2	Richmond Wholesale Meat	2920 Regatta Blvd	Groundwater; by Diesel
7	3	Marina Peninsula Townhouses	Marina Parkway & Peninsula Drive	Soil; by total petroleum hydrocarbons-diesel (TPH-D), total petroleum hydrocarbons-motor oil (TPH-MO)
8	3	Safeway Distribution Center	900 Marina Bay Parkway	Groundwater; by TPH-D
21	**4**	**Western Record Sales**	**5021 Seaport Avenue**	**Groundwater; by Petroleum**
19	**4**	**ICI Americas Inc.**	**1415 South 47th Street**	**Groundwater; by Petroleum**
15	Plan Area	Price Club, and Fleming Foods	3200 Regatta Blvd	Groundwater; by Petroleum
Active Assessment/Characterization Sites				
16	2	Bio Rad Labroratories	3110 Regatta Boulevard	Groundwater, Soil, Surface Water, Soil Vapor; by Volatile Organic Compounds (VOCs) including**,** Naphthalene, Acetone, Tetrahydrofuran, VOCs 1,1-Dichlroethane, 1,1-Dichlroethylene, 1,2,4-Trimethylbenzene, 1,2-Dichlroethylene (cis), 1,2-Dichlroethylene (trans), 1,3,5-Trimethylbenzene, Benzene, Bromodichlromethane, Carbon Tetrachloride, Chloroform, Chloromethane (Methyl Chloride), Methylene Chloride, Tetrachlroethylene (PCE), Trichlroethylene (TCE), and Vinyl Chloride
22	**4**	**Pacific Hard Chrome (i.e., Harborfront Tract Area)**	**1305 South 51st Street**	**Groundwater, Soil, Soil Vapor; Chromium VI, VOCs 1,1-Dichlroethylene, 1,2-Dichlroethane (EDC), 1,2-Dichlroethylene (cis), Benzene, TCE**
24	**4 (Special Planning Area)**	**Blair Southern Pacific Landfill**	**South 51st Street**	**Soil; by Organic liquids with metals; asbestos containing materials (ACM)**
11	Richmond Field Station	Syngenta Crop Protection, Inc.,/ Richmond Research Center,/ & Stege Marsh Cleanup	1200 South 47th Street	Groundwater, Soil; by Petroleum
14	Richmond Field Station	University of California – Richmond Field Station	1301 South 46th Street	Sediments, Soil; by Metals, Organochlorine pesticides (OCPs), Polychlorinated biphenyls (PCBs)

TABLE 4.7-1 (Continued)
REGULATORY (CLEANUP) SITES LISTED IN THE PLAN AREA AND VICINITY

Site No.[a]	Sub-Area[b]	Site Name	Address	Summary of Potential Media Affected (by Specific Contaminants of Concern)
Sites with Active Investigation or Remedial Measures and Land Use Restrictions ("Certified/O&M/LUCs")				
1	1	Summer Del Caribe	2020 Wright Avenue	Groundwater, Soil; by Lead and Zinc, and VOCs including PCE and TCE, and other constituents
5	1	Off-site Summer Chemical/Meeker Avenue	Meeker Avenue	Groundwater, Soil; by Lead and Zinc, and VOCs including PCE and TCE, and other constituents
9	1	Catellus Commercial Center aka Regatta Industrial Park	23rd Street Railyard	Soil; by Metals-Lead
18	**4**	**Zeneca Richmond AG Products**	**1415 South 47th Street**	**Groundwater, Sediments, Soil, Soil Vapor; by Carbon disulfide, Metals, OCPs, PCBs, Polynuclear Aromatic Hydrocarbons (PAHs), Sulfuric Acid, VOCs, including, 1,2-Dichlorethylene (cis), Benzene, PCE, Toluene, TCE, and Vinyl Chloride, and other constituents**
13	Adjacent to Plan Area	Portions of Marina Bay	Marina Way South and Regatta Boulevard	Groundwater, Soil, Soil Vapor; by Acetone, Metals, Petroleum, Polynuclear Aromatic Hydrocarbons (PAHs), and VOCs (Dichlorodifluoromethane and Ethylbenzene).
23	**4 (Special Planning Area)**	**Liquid Gold Oil Corporation**	**Hoffman Blvd & South 47th Street (former Pistol Range)**	**Sediments, Soil; by Polychlorinated Biphenyls (PCBs), PAHs, TPH-MO**
Sites Not Yet Assessed or Unknown				
6	1	NA	2157 Meeker Avenue	Soil, Groundwater Soil Vapor; by Chlorinated Solvents
10	2	Richmond Plant	2300 Pierson Avenue	Soil, Groundwater; by Petroleum
12	2	PG&E Richmond Service Center	1100 South 27th Street	Soil, Groundwater; by Petroleum
20	**4**	**NA**	**1320 South 51st Street**	**Groundwater; by Petroleum**

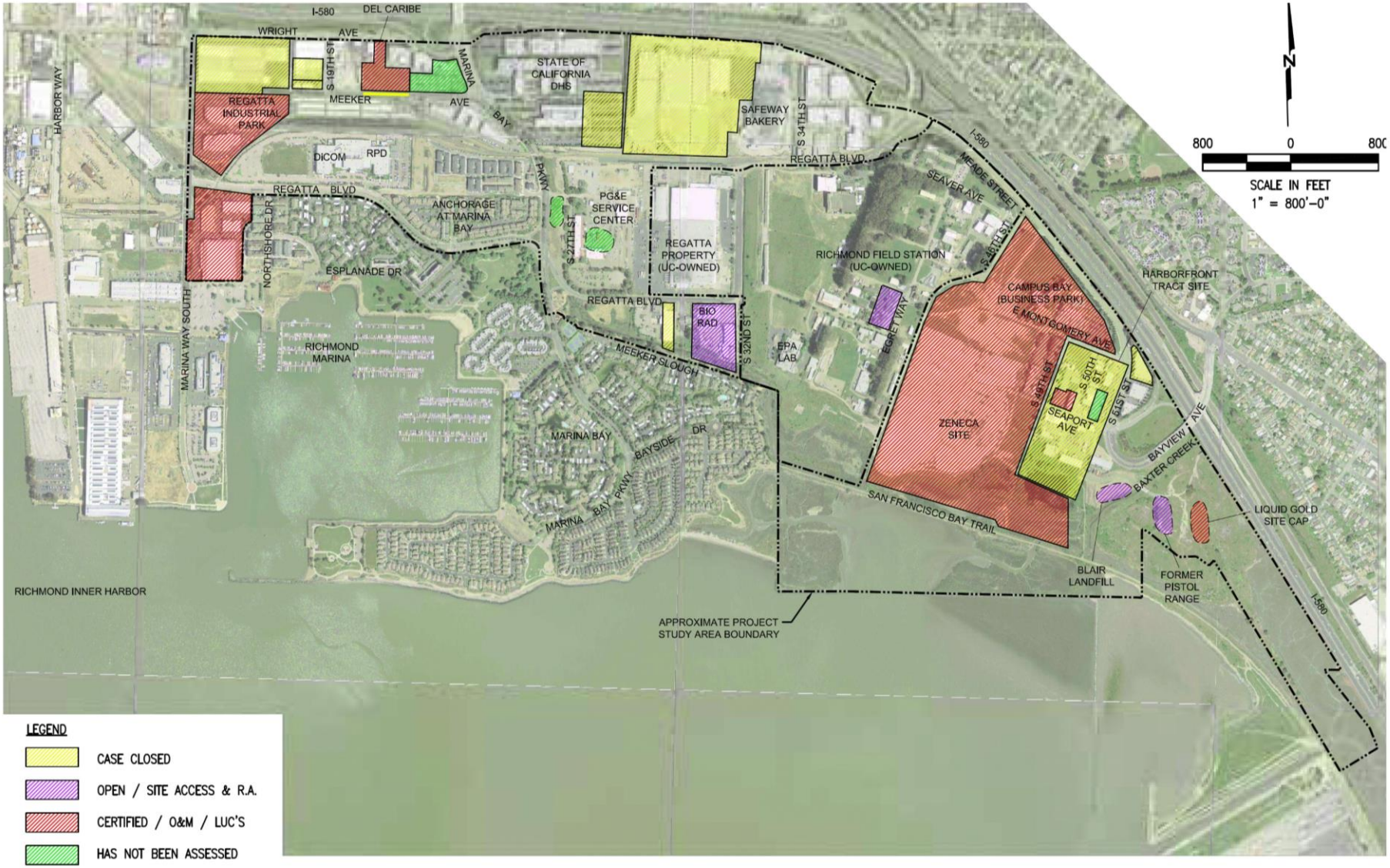
NOTES: Sites located within Sub-Area 4 are shown as bolded. Sites located within the Sub-Area 4 Project site are green-highlighted.

[a] Site numbers correspond with sites shown on **Figure 4.7-1**.
[b] "Plan Area" indicates sites that are located within the larger, overall area of the Specific Plan (rather than within the developable area of one of the Plan Area sub-areas.

Acronyms used in the table include:

ACM - Asbestos containing materials
OCPs - Organochlorine Pesticides
PAHs - Polynuclear Aromatic Hydrocarbons
PCBs - Polychlorinated Biphenyls (PCBs)
TPH-D - Total petroleum hydrocarbons-diesel
TPH-MO - Total petroleum hydrocarbons-motor oil
TCE - Trichlroethylene
PCE - Tetrachlroethylene
VOCs – Volatile Organic Compounds

SOURCES: City of Richmond, 2013.



SOURCE: City of Richmond, 2015

Figure 4.7-1
Environmental Contamination Sites

The identified sites in Table 4.7-1 are grouped into the following four categories:

1. **Closed ("No Further Action"):** Closed leaking underground fuel tank (LUFT) sites that have received a "no further action" (NFA) determination from a lead oversight regulatory agency, including those categorized by EDR as Spills, Leaks, Investigation, and Cleanup (SLIC) sites;

2. **Active Assessment/Characterization:** Sites that are currently in an active assessment and characterization process; at these sites, there may be interim remedial measures that have been performed but no final remedy is yet in place;

3. **Certified/O&M/LUCs:** Sites that have been assessed and certified by a lead oversight agency and have some form of remedy in place, operations and maintenance plans that are being followed, and land use conditions or restrictions in place; and

4. **Not Yet Assessed or Unknown:** Sites that have not yet been assessed and where characterization efforts have not yet been initiated.

As presented in Table 4.7-1, of the 24 sites identified within and in the immediate vicinity of the Plan Area, 9 are considered "no further action" (case closed) LUFT sites, 5 are considered under active assessment, 6 are considered certified/O&M/LUC sites, and 4 are not yet assessed. Sites identified in the vicinity of the Plan Area and within the Richmond Field Station are not further discussed in detail in this section. Sites which are located within the Plan Area in sub-areas 1, 2, and 3 are discussed below under subheading *Plan Area*, and sites located within the Sub-Area 4 Project site are described in further detail under subheading *Sub-Area 4 Project Site*.

Sites that have been closed under regulatory authority, and/or may be closed in the near future, are typically evaluated using the properties' reasonably anticipated land use. Several sites within the Plan Area will be closed prior to future development. In circumstances where the reasonably anticipated use of the property changes following the completion of remedial activities, the NFA determination by the lead oversight regulatory agency and the "closed" status may require re-evaluation and potentially further site cleanup to support the new anticipated use.

The four sites within the Plan Area listed as "open assessment" are currently performing active assessment and characterization. At these sites, there may be interim remedial measures that have been performed but no final remedy is yet in place. These sites include:

- Syngenta Crop Protection, Inc., Richmond Research Center, & Stege Marsh Cleanup (petroleum releases located at the Richmond Field Station site). Because this site is located within the Richmond Field Station, it is not analyzed in greater detail;
- Bio Rad Laboratories site along Regatta Boulevard, located within Sub-Area 2 of the Plan Area, with further information provided below;
- Blair Southern Pacific Landfill site located within Sub-Area 4, with further information provided below; and
- Former Pistol Range site on Union Pacific Railroad Company's Stege property, located within Sub-Area 4, with further information provided below.

Six sites within the Plan Area are considered "Certified/O&M/LUCs" and have some form of remedy in place or are following an operations and maintenance plan. Some level of assessment and characterization efforts may still be conducted at some of these sites in certain areas, as described further below, but in general the horizontal and vertical extent of contamination has been determined. In some cases, substantial additional remediation will be required. Sites identified as Certified/O&M/LUCs include:

- Summer Del Caribe site, located within Sub-Area 1 and discussed below;
- Off-Site Summer Chemical/Meeker Avenue site, located within Sub-Area 1 and discussed below;
- Catellus Commercial Center site, also known as Regatta Industrial Park, located within Sub-Area 1 and discussed below;
- Portions of the Marina Bay neighborhood, located outside of the Plan Area and therefore not discussed in greater detail;
- Zeneca Richmond AG Products (referred to in this section and EIR as the "Zeneca Site" or "Campus Bay Property"), located within Sub-Area 4 and discussed below; and
- Liquid Gold Oil Corporation, located within the Special Planning Area in Sub-Area 4, and discussed further below.

Plan Area Sites

This section provides an extended summary of the "active assessment" and "Certified/O&M/ LUCs" sites identified as within sub-areas 1, 2, and 3 of the Plan Area.

Bio-Rad Laboratories (Sub-Area 2; active assessment). The active Bio-Rad Laboratory facility manufactures laboratory reagents and separation products for biotechnology clients. An environmental investigation was initiated in 1998 following submittal of a Phase I Checklist to DTSC. Further investigation as identified and recommended in the Phase I Checklist was conducted in 1998. The results of the investigations indicated that groundwater beneath the site contained elevated levels of chlorinated methanes and chlorinated ethenes, as well as naphthalene (all solvents).

In 2007, several groundwater monitoring wells were installed and a groundwater remediation system was brought online as an interim remedial action to address volatile organic compounds (VOCs) in groundwater. The system was designed to extract VOCs from groundwater and prevent potentially impacted groundwater from affecting Meeker Slough (Geosyntec, 2005). Review of a recent groundwater monitoring report indicates that VOC concentrations overall are decreasing or relatively stable (Geosyntec, 2016).

Summer Del Caribe, Inc. (Sub-Area 1; certified/O&M /LUCs). This approximately 2.8-acre site is located at Meeker Avenue near Marina Bay Parkway. This site, abandoned by its owner/operator, was a metal reclamation facility where lead and tin were recovered from solder dross generated by can manufacturing. Improper handling and disposal of materials resulted in lead and zinc contamination in soil. Other potential chemicals of concern (COCs) at this site

include tetrachloroethylene (PCE) and trichloroethylene (TCE). Remediation of the lead and zinc was implemented by a group of potentially responsible parties comprising companies that sent solder dross to the site.

Currently, the property is a vacant, undeveloped field with no structures. Because VOCs are present across the site in groundwater, two covenants to Restrict Use of Property (Deed Restrictions) were executed between Harbor Gate Partners, the current property owner, and DTSC, and recorded with the Contra Costa County Recorder on January 21, 2003 (DTSC, 2011). DTSC recently conducted a Five-Year Review to determine whether the Land Use Covenants that are in place continue to be a protective measure. As part of the review, DTSC personnel conducted a site inspection on November 20, 2015. No significant changes in the site conditions were observed during this site inspection nor were any significant changes observed during site inspections that DTSC has conducted since the last Five-Year Review was completed in November 2010. DTSC concluded that site conditions remain in compliance with the restrictions of the Land Use Covenants and that they continue to be protective of human health and the environment (DTSC, 2016b).

Off-Site Summer Chemical/Meeker Avenue (Sub-Area 1; certified/O&M /LUCs). This site, adjacent to and associated with the Summer Del Caribe, Inc. site, has been affected by operations at the adjacent facility, where lead and tin were recovered from solder dross obtained from can manufacturing companies. Soil contamination by lead and zinc resulted on the site from improper materials handling and on-site disposal of residual material from the recovery process. Other potential COCs at this site include PCE and TCE.

Surface water runoff caused lead-and zinc-contaminated materials to be carried from the site and deposited in a drainage ditch. As part of construction work related to the John T. Knox Freeway (I-580), Caltrans performed soil and sediment sampling in this area. See the above description of the Summer Del Caribe site for more information.

Catellus Commercial Center (Sub-Area 1; certified/O&M /LUCs). This site is located between Meeker and Regatta Boulevard and between Marina Way South and Marina Bay Parkway. The site is a vacant 49-acre parcel known as the 23rd Street Railyard.

An approximately one-acre railroad right-of-way, owned by Southern Pacific Transportation Company, was formerly located in the center of the site. During World War II, this one-acre area was used to supply materials to shipbuilding facilities located south of the site. Most of the onsite area south of the right-of-way was used for material storage and staging. Other areas on this site were used for parking and a cold storage warehouse, which was demolished in in the early 1990s.

Previous environmental investigations at this site identified lead-contaminated soil. Accordingly, a deed restriction was executed between DTSC and the owner of the site, Catellus Development Corporation, for an approximately 8.9-acre portion of the site (northwest corner), and the lead-affected soils were covered by a cap consisting of building foundations, asphaltic concrete and landscaping.

The third Five-Year Review for the site was completed in 2015 to evaluate the performance of the site remedy and determine whether the remedy remains protective of human health and the environment. This review concluded that the remedy (removal action) accomplished the human health and environment objectives with respect to chemicals present in soil and groundwater (DTSC, 2016b). Other recent (summer of 2016) activities include management/minor re-paving of the site cap.

Sub-Area 4 Sites

This section provides an extended summary of the "active assessment" and "Certified/O&M/ LUC's" sites identified within Sub-Area 4, to present information and context for existing conditions on the Sub-Area 4 Project site. This section includes information presented in the *South Shoreline Specific Plan: Existing Conditions* report (City of Richmond, 2013), as well as updates to this information.

Blair Southern Pacific Landfill (active assessment). This site is the location of a former uncontrolled landfill. Records indicate that Stauffer Chemical Company used the site to dispose of various wastes. Potential COCs include organic liquids with metals and asbestos-containing materials (ACMs). Union Pacific Railroad (UPRR), the current owner of the site, is undertaking assessment and remediation activities at this site under a DTSC Site Investigation Order.

A Human Health Risk Assessment (HHRA) based on sampling data collected from 2006 through 2014 and current exposure setting information was completed in 2014, to determine potential human exposure risks for commercial/industrial workers, trespassers, construction workers, and residents (CH2M HILL, 2014). The results of the HHRA determined that no further action is required to address human exposure risks associated with surface and subsurface soil, groundwater in open trenches, creek sediment, and creek surface water, for commercial/industrial workers, trespassers, and construction workers. Risks of exposure to surface water and groundwater were determined to be within the risk management range or below risk management thresholds. However, risks of exposure to soil by residents indicated risk and hazards that exceed target levels. The primary contributors to residential risk are arsenic, 4,4'-DDT, and dieldrin.

Under a Voluntary Cleanup Agreement, UPRR is currently investigating and characterizing the release or threatened release of any technologically enhanced naturally occurring radioactive material (TENORM)[2] at or from the site, with the assistance of the California Department of Public Health – Radiologic Health Branch (DTSC, 2016a).

Zeneca Richmond AG Products (certified/O&M /LUCs[3]). Also known as the Zeneca site or Campus Bay Property, this 86-acre site is located south of I-580, east of the Richmond Field

[2] The U.S. Environmental Protection Agency describes TENORM in two parts: NORM, "Naturally occurring radioactive materials that have been concentrated or exposed to the accessible environment as a result of human activities such as manufacturing, mineral extraction, or water processing," and TE or "Technologically enhanced," which means that "the radiological, physical, and chemical properties of the radioactive material have been concentrated or further altered by having been processed, or beneficiated, or disturbed in a way that increases the potential for human and/or environmental exposures (USEPA, 2016).

[3] This site is certified for HEA 1 only.

Station site and north of the San Francisco Bay shoreline. In regulatory and technical documents, the property is referenced as consisting of several areas, now known as Lots 1, 2, and 3, Habitat Enhancement Areas (HEA) 1 and 2, and the Southeast Parcel, as shown on Figure X. HEA 1 borders the main upland to the south, and is situated between the Bay Trail and the terrestrial upland. HEA 2 includes the two lagoons (former industrial process ponds) and the adjacent transitional habitat or habitat buffer area. The Southeast Parcel is located east of HEA 2, across Baxter Creek. Most of the marsh, lagoon and habitat areas are protected from development by a Conservation Easement recorded in favor of the East Bay Regional Park District.

Historically, this site was divided into three main areas: the manufacturing plant area, the Western Research Center and the unimproved open space area. Stauffer Chemical Co., and later Zeneca Inc. manufactured sulfuric acid and pesticides at the site from the late 1800s until the late 1990s. The central and southern portion of the uplands property began to be used for operation of an agricultural and specialty chemical (including fertilizers and sulfuric acid) manufacturing plant by Stauffer in the late 1800s. The site was also used for specialty metal work, including the experimental melting of uranium, associated with the World War II wartime effort. The northeastern portion of the property was developed with administrative and research/development office buildings; greenhouses and vacant office buildings associated with these uses are present on this part of the property.

The industrial portion of the former uses was dismantled in the late 1990s. Through a series of acquisitions, AstraZeneca Plc (Zeneca) became the owner of the property in the mid-1980s. Zeneca sold the property to Cherokee Simeon Venture I LLC (CSV) in 2002 for remediation and redevelopment. The planned CSV project was not completed, though a number of environmental response actions intended to accommodate redevelopment were carried out between 2002 and 2007. While no longer the site owner, Zeneca continues to manage environmental matters at the property, including the continuation of response actions directed by DTSC.

As a consequence of its long industrial history, the uplands portion of the site contains a variety of process-related contamination in site soil, groundwater and soil vapor, as confirmed by on-site testing. Contamination was also detected in surface water and sediments in the marsh/freshwater portion of the property adjoining the uplands to the south. Assessment and remediation of the marsh adjoining the upland (HEA 1) is complete and is in a post-remedy monitoring phase of activity. Contaminants present in the highest concentrations at the site include metals, halogenated volatile organic compounds (predominantly tetrachloroethylene (PCE) and trichloroethylene (TCE), as well as dichloroethylene, benzene, toluene, and vinyl chloride), petroleum hydrocarbons, and pesticides. Other contaminants include carbon disulfide, PCBs, polynuclear aromatic hydrocarbons (PAHs), and sulfuric acid.

In the period since decommissioning the former facility, and especially since 2002, the nature, magnitude and extent of environmental contamination at the site has been studied and, based on the results of site characterization activities, partially remediated. The site was initially remediated under the jurisdiction of the RWQCB. The most substantial remediation activities at the site took place in the central and southern portion of the property in 2002 and 2003, when pyrite cinders (waste product from sulfuric acid manufacturing process) were excavated,

neutralized by mixing with dolomitic limestone, replaced in the ground and compacted, and capped. The area of treated cinders makes up most of the 39-acre upland area of Lot 3. Other completed/ongoing remedial activities include targeted removal actions (excavation), in-situ treatment by injection (targeting VOC contamination), and injection/soil vapor extraction pilot testing.

The RWQCB issued No Further Action (NFA) letters for Lots 1 and 2. The RWQCB also issued restrictive covenants and an associated Risk Management Plan for Lots 1, 2, and 3, which describe site conditions and precautionary requirements to be taken during construction and post-construction monitoring and maintenance. The covenants also restrict future site uses, prohibiting single-family detached residential construction as well as sensitive uses such as schools, hospitals, and day-care centers. The covenants also require RWQCB approval prior to development of residential uses.

DTSC was subsequently given jurisdiction over the site, and two regulatory orders (2005 and 2006) were issued for the site's further investigation and remediation. Following additional investigation under DTSC oversight, a proposed draft Feasibility Study and Remedial Action Plan (FS/RAP) was prepared for Lots 1 and 2, and the upland portion of Lot 3. On January 9, 2009, the DTSC issued a letter describing the scope of the document and outlining the uses to which that portion of the property could be placed following cleanup. The letter states:

> *Because the future use of this property has not been determined, this draft Feasibility Study/Remedial Action Plan (FS/RAP), dated 22 December 2008, contains a menu option of proposed remedies to allow for flexibility when future redevelopment of the property occurs. The City of Richmond will be overseeing the planning process that will determine the future use of the property.*
>
> *DTSC feels the proposed selected remedies are reasonable and appropriate given site conditions and potential future uses identified in the draft FS/RAP. With this draft FS/RAP, the City of Richmond may choose to initiate its land use planning process with the knowledge that the property can support a variety of uses, from an environmental prospective, including residential, recreational, commercial and industrial.*

While the 2008 FS/RAP was not formally released to the public for comment (the document was posted to DTSC's public online database and provided to DTSC's South Shoreline Community Advisory Group), since that time the City of Richmond and other government bodies such as Association of Bay Area Governments (ABAG) and the Metropolitan Transportation Commission (MTC) have further clarified the planned uses for the Plan Area, which includes Lots 1, 2, and 3, in the Specific Plan. The Specific Plan establishes Sub-Area 4 as part of a proposed mixed use community hub, including, as summarized in Chapter 3, *Project Description*, of this EIR, housing (including ground floor residential uses); more than 2,000,000 square feet of R&D/Business/Service and retail uses; open space; and other recreational uses.

While DTSC subsequently identified that the draft Specific Plan will serve as the basis for cleanup levels, a proposed draft FS/RAP covering Lots 1 and 2 and the upland portion of Lot 3 prepared in 2014 only provided for mitigation of residual upland soil, groundwater and soil vapor contamination to levels that would be protective of commercial/industrial uses and ecological

resources. This proposed draft FS/RAP, which was not submitted by DTSC for public comment or approved, does not provide for residential ground floor uses; however, it would allow for residential uses over podium-style construction. Under the proposed draft 2014 FS/RAP other types of residential housing construction would require specific evaluation by DTSC before being allowed.

DTSC stated in a July 1, 2016, letter that "[t]he Department of Toxic Substances Control has determined that the City of Richmond's Draft Richmond Bay Specific Plan… provides the basis of the reasonably foreseeable land use for the geographical area where [the Zeneca site] is located (DTSC, 2016c)." Therefore, DTSC is requiring the draft FS/RAP be revised to take into account the land uses included in the Specific Plan.[4]

On August 10, 2016, DTSC issued a draft FS/RAP covering HEA 2 (DTSC, 2016d) and an accompanying CEQA initial study (DTSC, 2016e) and draft negative declaration (DTSC, 2016f).[5] DTSC determined that cleanup of HEA 2 is necessary after tests showed elevated levels of arsenic, lead, copper, mercury, selenium, dieldrin, DDE, DDT, PCBs, and other chemicals, including proprietary pesticides that were previously used or manufactured at the site. Six different alternatives were analyzed in the draft FS/RAP for HEA 2. DTSC determined that Alternative 4, which is the proposed remedy, would be protective of human health and ecological receptors. Alternative 4 would require soil excavation and off-site disposal of contaminated soils and sediment, physical barriers (sediment cap) to eliminate potential exposure pathways, and in-situ treatment of pesticides.

The implementation of remedial actions within HEA 1was completed in 2006; monitoring of the completed remedy and habitat restoration at HEA 1 has taken place since 2006 (Arcadis, 2015). The nature of DTSC's oversight of HEA 1, including whether further monitoring and maintenance of the site will be required, is dependent on the chosen remedy for HEA 2 (DTSC, 2016c).

Pacific Hard Chrome/Harborfront Tract (active assessment). The site is an active commercial area east of the Zeneca site. The area has been used for commercial and industrial purposes except from 1946 to 1957 when it was owned by the federal government and was the site of the Seaport Village housing complex. The current investigation of soil, soil gas, and groundwater is designed to determine whether any on-site contamination remains and, if so, whether the sources are from historical or current site operations, and/or from adjacent properties.

The Pacific Hard Chrome site is located within the larger Harborfront Tract site. Pacific Hard Chrome was a former hard chrome plating facility located at 1305 South 51st Street. Potential

[4] DTSC issued a CEQA Initial Study on August 10, 2016, covering the 2014 proposed draft FS/RAP for Lots 1 and 2, and the upland portions of Lot 3 (DTSC, 2016d). However, on August 12, 2016, DTSC also reaffirmed its July 1, 2016, commitment that "the City of Richmond's Draft Richmond Bay Specific Plan (Draft Specific Plan) provides the basis of the reasonably foreseeable land use for the area where the Campus Bay/Zeneca site is located." DTSC further clarified that "DTSC is requiring the revision of the Lots 1, 2, 3 FS/RAP to consider ground floor residential use as contemplated in the Draft Specific Plan[]. The CEQA Initial Study will be updated to address the recommended alternative in the revised Lots 1, 2, 3 FS/RAP" (DTSC, 2016g).

[5] The initial study (DTSC, 2016e) also provided analysis covering the proposed draft 2014 FS/RAP for Lots 1 and 2 and the upland portions of Lot 3 (see prior footnote).

COCs for this site from the historical plating operations include benzene, TCE, chromium VI, 1,2-dichloroethane (EDC), 1,1-dichlroethylene, and cis-1,2-dichlroethylene. In 2012, a pilot test to treat hexavalent chromium (chromium VI) was conducted at the site to convert hexavalent chromium to the less toxic and less soluble trivalent form. The treatment was successful, and hexavalent chromium levels were reduced from as high as 14,000 micrograms per liter (ug/L) to levels below the laboratory reporting limit of 0.5 ug/L (DTSC, 2012). The wells used for the test were then decommissioned and the DTSC required no further remediation for chromium VI.

Former Pistol Range (certified/O&M /LUCs). This site is located in the Special Planning Area, within UPRR's Stege property adjacent to the deed-restricted portion of the Liquid Gold site. The Stege property, which includes the former Pistol Range and Liquid Gold sites, is currently vacant. The Pistol Range was constructed in 1976 and was used by police and security departments in the area for handgun training until 1997. Soil investigations conducted at the Pistol Range during 2004 and 2008 indicated that portions of the site contain lead at elevated concentrations up to 209,000 mg/kg. The 2013 removal action work plan for this site developed a cleanup goal of 320 milligrams per kilogram (mg/kg) of lead, based on a future commercial reuse scenario, and presented a proposed methodology to re-grade the site using on-site soils (UPRC, 2013). This voluntary removal action was completed in December 2013 and a vegetated cap was placed at the site (DTSC, 2015). Further remedial activities took place in 2015, after which DTSC confirmed that the cleanup goals had been achieved, and issued a Remedial Action Certification confirming that no further remedial action was required (DTSC, 2015).

Liquid Gold Oil Corp (certified/O&M /LUCs). This site, also within UPRR's Stege property, was owned by the Southern Pacific Transportation Company and is now owned by UPRR. From 1974 to 1982, the site was leased by Liquid Gold Oil Corporation to store, re-refine and recycle oil and other substances. Hazardous substances previously stored in over 20 storage tanks and drums included waste motor oil, organic solvents, bunker oil, diesel fuel, oil-water emulsions and mixtures and tank bottom waste. As a result of site operations, hazardous substances leaked or spilled onto the ground and were discharged into ponds, sumps and ditches and drained into wetland areas. Subsequently, site remedial investigations were performed, remedial actions completed, and the site was de-listed by the U.S. Environmental Protection Agency from the National Priorities List in 1996 (USEPA, 2016). The completed remedial actions included excavating contaminated sediments from drainage channels, placing the soils in another area of the site along with contaminated soils from a used oil recycler, and constructing a vegetated soil cap to cover these soils and sediments. A deed restriction prohibiting residential development at the site was also signed and recorded.

Further corrective action is being addressed under the CERCLA Program, under DTSC oversight (DTSC, 2016a). Three Five-Year Reviews, which report on monitoring of the vegetated cap and groundwater at the site, were completed in 2000, 2005, and 2010; all reviews conclude that the site is currently protective of human health and the environment (USEPA, 2016).

Wildland Fire

Factors that contribute to the risk of fire include dense and fire-prone vegetation, poor access to fire-fighting equipment because of slopes or inadequate roads, lack of adequate water pressure and

service in fire-prone locations, and seasonal atmospheric conditions that result in warm, dry fire seasons with strong afternoon winds. Some properties adjacent to the Plan Area include vegetated open space and urban areas that can become very dry during summer months. Wildfire hazard maps compiled by ABAG show the developed portion of the Plan Area as being within approximately one mile of an area subject to wildland urban interface fire threat (ABAG, 2016).[6] Maps prepared by the California Department of Forestry and Fire Protection (CAL FIRE) demarcate Fire Hazard Severity Zones for land under local and State responsibility as to wildland fire hazard. Areas mapped as fire hazard severity zones by CAL FIRE (Local Responsibility Area) are located more than 1.9 miles from the Plan Area (CAL FIRE, 2016). While these maps are not intended for site specific planning, they do indicate potential risks based on existing conditions.

Airports and Air Hazards

Airport Influence Areas are used in land use planning to identify areas commonly overflown by aircraft as they approach and depart an airport, or as they fly within established airport traffic patterns. The Plan Area and Sub-Area 4 Project site are located approximately 13 miles northwest of Oakland International Airport, the nearest airport.

Other Hazards

As discussed in Section 4.12, Public Services, the Office of Emergency Services (OES), a subsidiary of the Richmond Fire Department, maintains a comprehensive emergency response plan which includes the planning and preparedness for, response and recovery from, and mitigation of natural, manmade, and accidental occurrences (City of Richmond, 2015). The Contra Costa County Operational Area (OA) Emergency Operations Plan further directs the response to emergency incidents affecting the county as a whole.

Fire and Explosion Risks

Some existing uses in the Plan Area include facilities that are governed by federal, State, and local regulations and permits addressing fire and explosion risks. The Allied Propane Service facility (Allied Propane), located in Sub-Area 4, is the sole-source distributor of propane, a liquefied petroleum gas (LPG), from the Chevron Richmond Refinery, under a State-issued permit and a County Hazardous Materials Business Plan which both address the safety of the facility in the context of surrounding properties and uses. The regulations governing the operation of LPG facilities such as Allied Propane include requirements for minimum buffers to be maintained between LPG uses and other properties or buildings (established in Chapter 61 [Liquefied Petroleum Gases] of the California Fire Code), and special fire suppression systems. The Allied Propane facility includes two above-ground LPG storage tanks with capacities of 55,000 and 60,000 gallons, respectively. According to Table 6104.3 of Chapter 61, the "minimum separation between LPG containers and buildings, public ways or lot lines of adjoin properties that can be built upon" for containers with capacities of between 30,001 and 70,000 gallons is 75 feet.

[6] The mapping tool used for this interface is not intended for site specific analysis and as a result this discussion is generalized.

Per a review of the last 25 years of accident investigations completed by the U.S. Chemical Safety Board and reported by the Contra Costa Health Services Department (CCHS), there have been no industrial chemical accidents at the Allied Propane facility or at any other facility within the Plan Area (CSB, 2016; CCHS, 2016). An analysis conducted by the National Fire Protection Association of LPG fire damage and casualty data also indicates that LPG storage facility operations in the United States have an extremely small incident rate. The number of reported fires at LPG bulk storage facilities remains small and has fallen since 1980 once improvements to rail car safety were made and use of Emergency Shutoff Valves established (NFPA and NPGA, 2006).

The presence of underground gas lines that transport pressurized hazardous materials such as natural gas or liquid petroleum products can also present a hazard. A review of the National Pipeline Mapping System's map viewer indicated that no major gas transmission pipelines or hazardous liquid trunklines are present in the Plan Area (NPMS, 2016).

Sub-Area 4 Project Accidental Release Assessment. An Accidental Release Assessment was developed for the Sub-Area 4 project site by BASELINE Environmental Consulting (BASELINE) to assess the risk of a potential accidental release of hazardous materials from existing commercial or industrial facilities within a mile of the Sub-Area 4 Project site.[7] The assessment was based in part on the standards of the California Accidental Release Prevention (CalARP) program, which regulates businesses that handle toxic and/or flammable substances that the State and/or USEPA has determined to potentially pose the greatest risk of immediate harm to the public and the environment if accidentally released. Facilities subject to the CalARP program are required to develop and implement a Risk Management Plan (RMP) that includes a hazard assessment to determine whether public receptors could be affected in the event of an accidental release of hazardous materials.

The Sub-Area 4 Project site is located within one mile of two CalARP facilities: Dreisbach Enterprises (Dreisbach) located at 3151 Regatta Boulevard, and Safeway Beverage Plant (Safeway Beverage) located at 1921 San Joaquin Street. In accordance with the CalARP regulations, Driesbach and Safeway Beverage have submitted RMPs to CCHS. BASELINE reviewed the hazard assessment for the RMP of each CalARP facility to determine whether the Sub-Area 4 Project site could be affected if an accidental release were to occur.

In addition to the two CalARP facilities, the Sub-Area 4 Project site is located approximately 325 feet west of Allied Propane, located at 5000 Seaport Avenue. Allied Propane is an existing propane storage and distribution facility that is not listed as a CalARP facility because of its designation as a retail facility which is exempt from CalARP requirements. While not a CalARP facility, the Allied Propane facility was evaluated in general accordance with the U.S. EPA's (2009) Risk Management Program Guidance for Offsite Consequence Analysis to determine whether an accidental release of propane could affect receptors within the Sub-Area 4 Project site.

[7] This study is available at the City Planning and Building Division office for review.

Below are the findings of the assessment of a worst-case release scenario (WCRS) for these three sites:

- **Safeway Beverage:** Located approximately 0.6 miles southeast of the Sub-Area 4 Project site, this facility operates an ammonia refrigeration system that stores and uses liquefied anhydrous ammonia. The WRCS modeled the release of anhydrous ammonia from the largest vessel at the facility and determined that an accidental release would not be expected to affect future receptors within the Sub-Area 4 Project site.
- **Dreisbach Enterprises:** The Dreisbach facility is located approximately 0.5 miles northwest of the Sub-Area 4 Project site and operates an ammonia refrigeration system. Similar to the findings for the Safeway Beverage site, the WCRS modeling found that an accidental release of anhydrous ammonia would not be expected to affect future receptors at the Sub-Area 4 Project site.
- **Allied Propane:** This facility is located approximately 325 feet from the Sub-Area 4 Project site and includes the storage of liquefied propane in two 55,000-gallon above ground storage tanks. To assess if an accidental release of propane could potentially affect future receptors at the Sub-Area 4 Project site, BASELINE conducted a comparative risk and off-site consequence analysis for the two propane ASTs. The offsite consequence analysis determined that, under the WCRS, there could be a potential off-site consequence related to a vapor cloud (flash fire) explosion, and that more refined alternative release scenario (ARS) modeling was required. Based on the results of this modeling, which included a site visit, this would be unlikely, and results of the modeling indicated that a potential flash fire resulting from an accidental pipe break would not be expected to affect receptors at the Sub-Area 4 Project site.

Risks Related to Train Activities

As discussed in Section 4.9, *Land Use and Planning*, active railway corridors, including a BNSF rail line, run through the Plan Area and parallel to the eastern boundary of Sub-Area 4 and I-580. The rail corridor connects the Port of Richmond to areas west of the Plan Area. This corridor is also used by Amtrak and UPRR. Two major rail switching yards, the 23rd Street Switching Yard (located within Sub-Area 1 as shown on Figure 3.27 of the Specific Plan) and Safeway Switching Yard (located south of Sub-Area 3 as shown on Figure 3.27 of the Specific Plan) are also active within the Plan Area.

The Specific Plan community workshops resulted in the following conclusions regarding railways and switching yards in the Plan Area, which were built into the Plan:

- A rail line needs to be maintained through the Plan Area;
- The existing switching yards are already being used to their full capacity; and
- Residential uses should not be located near switching yards.

The Specific Plan assumes in the short term that the 23rd Street and Safeway switching yards will continue to operate within the Plan Area. The long-term vision for the Specific Plan also provides land use direction in the event that the switching yards are voluntarily relocated.

As in the case of the relocation of the switching yards, rail line consolidation is a long-term goal that will require additional, site-specific studies prior to implementation.

Train Operations Within the City of Richmond. According to the General Plan, an average of 18 trains per week moved along the BNSF railway in the city, and an average of 12 UPRR trains and 10 Amtrak trains moved per week along the UPRR railway in the city, in 1990 (Caltrans, 2012), although the number of trains that move along these railways varies depending on time of year and economic conditions. A recently conducted study also indicates that approximately 5 trains are involved in line haul operations and approximately 14 trains are involved in switching operations per day along the BNSF line in Richmond (City of Richmond, 2014). Train speeds for both BNSF and UPRR range from 10 to 40 miles per hour. Freight trains may move along the railways at any time during the day or night, and passenger trains generally operate between 7:00 AM and 10:00 PM.

Statewide, the number of trains transporting crude oil is expected to increase in the future (IRSWG, 2014). California has been experiencing some increases statewide in spill incidents. Incidents involving oil by rail in California increased from 3 in 2011 to 25 in 2013 (IRSWG, 2014). Total petroleum spills by rail in California (crude oil and other) increased from 98 in 2010 to 182 in 2013. In the first half of 2016, a total of 6 railway derailments were reported to CalEMA, but none reported any release of hazardous materials and none were located within Contra Costa County (CalEMA, 2016). Most reported incidents document a relatively small volume of oil released, but rail transport still has the potential to be the source of higher consequence events (IRSWG, 2014). However, there are no recorded incidents of rail spills occurring on or near the Plan Area (DTSC, 2016a).

4.7.4 Regulatory Setting

Federal

The primary federal agencies with responsibility for hazardous materials management include the USEPA, U.S. Department of Labor Occupational Safety and Health Administration (Fed/OSHA), and the U.S. Department of Transportation (DOT). Federal laws, regulations, and responsible agencies are summarized in **Table 4.7-2**.

State and local agencies often have either parallel or more stringent regulations than federal agencies. In most cases, state law mirrors or overlaps federal law and enforcement of these laws is the responsibility of the state or of a local agency to which enforcement powers are delegated. For these reasons, the requirements of the law and its enforcement are discussed under either the state or local agency section.

TABLE 4.7-2
FEDERAL LAWS AND REGULATIONS RELATED TO HAZARDOUS MATERIALS MANAGEMENT

Classification	Law or Responsible Federal Agency	Description
Accidental Release Prevention	USEPA Risk Management Plan (RMP) Rule	Regulates flammable substances, including propane, manufactured and stored in quantities over 10,000 pounds.
Hazardous Materials Management	Community Right-to-Know Act of 1986 (also known as Title III of the Superfund Amendments and Reauthorization Act (SARA)	Imposes requirements to ensure that hazardous materials are properly handled, used, stored, and disposed of and to prevent or mitigate injury to human health or the environment in the event that such materials are accidentally released.
Hazardous Site Cleanup	Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA, also known as Superfund)	CERCLA establishes a program to address and clean up abandoned sites contaminated with hazardous substances and pollutants.
Hazardous Waste Handling	Resource Conservation and Recovery Act of 1976 (RCRA)	Under RCRA, the USEPA regulates the generation, transportation, treatment, storage, and disposal of hazardous waste from "cradle to grave."
	Hazardous and Solid Waste Act	Amended RCRA in 1984, affirming and extending the "cradle to grave" system of regulating hazardous wastes. The amendments specifically prohibit the use of certain techniques for the disposal of some hazardous wastes.
Hazardous Materials Transportation	U.S. Department of Transportation (DOT)	Has the regulatory responsibility for the safe transportation of hazardous materials. The DOT regulations govern all means of transportation except packages shipped by mail (49 CRF).
	U.S. Postal Service (USPS)	USPS regulations govern the transportation of hazardous materials shipped by mail.
Occupational Safety	Occupational Safety and Health Act of 1970	Fed/OSHA sets standards for safe workplaces and work practices, including the reporting of accidents and occupational injuries (29 Code of Federal Regulations [CFR]).
Structural and Building Components; PCB Release (Lead-based paint, PCBs, and asbestos)	Toxic Substances Control Act (TSCA)	Regulates the use and management of PCBs in electrical equipment, and sets forth detailed safeguards to be followed during the disposal of such items as well as soil containing PCBs. Also, addresses releases of PCBs, e.g., associated with transformer releases.
	USEPA	The USEPA monitors and regulates hazardous materials used as structural and building components and their effects on human health.
Rail Safety	Federal Railroad Administration (FRA)	The FRA adopts and enforces railroad safety regulations, including regulations relating to rack safety, grade crossings, rail equipment, operating practices, and the transport of hazardous materials by rail.
	Pipeline and Hazardous Materials Safety Administration (PHMSA)	PHMSA is another department within the DOT. Pursuant to the Hazardous Materials Transportation Act, PHMSA adopts regulations governing the transport of hazardous materials by rail, highway, air, and water. The PHMSA regulations are set forth in Chapter I of Subtitle B of Title 49 of the Code of Federal Regulations (CFR). The FRA enforces the requirements set forth in PHMSA regulations.
	National Transportation Safety Board (NTSB)	The National Transportation Safety Board (NTSB) is an independent federal agency. The NTSB reviews transportation accidents, including rail accidents, and makes recommendations to FRA and PHMSA for regulatory changes.
	The American Association of Railroads (AAR)	The American Association of Railroads (AAR) is an industry trade association that represents railroads, including the major freight railroads in the United States, Canada, and Mexico. AAR adopts standards for the design and construction of tank cars carried by its members. In some cases, these standards are more stringent than the requirements set forth in FRA or PHMSA regulations. In addition, USDOT's predecessor delegated to AAR regulatory authority to approve the construction, alteration, repair, and conversion of tank cars and to certify facilities engaged in these activities.

State

California Environmental Protection Agency (CalEPA)

Agencies within CalEPA include the State Water Resources Control Board (SWRCB), Regional Water Quality Control Boards (RWQCBs), and Department of Toxic Substances Control (DTSC), as described below.

In January 1996, the California Environmental Protection Agency (CalEPA) adopted regulations implementing a Unified Hazardous Waste and Hazardous Materials Management Regulatory Program (Unified Program). The plan is implemented at the local level, by the certified uniform program agencies (CUPAs). The Secretary of CalEPA is directly responsible for coordinating the administration of the Unified Program. The Secretary certifies Unified Program Agencies, and has certified 83 CUPAs to date. These 83 CUPAs carry out certain responsibilities previously handled by approximately 1,300 State and local agencies. The responsibilities of the CUPAs are described below.

State Water Resources Control Board (SWRCB) and Regional Water Quality Control Boards (RWQCBs)

The SWRCB protects water quality in California by setting statewide policy. The SWRCB supports the nine RWQCBs, which, within their areas of jurisdiction, protect surface water and groundwater from pollutants discharged or threatened to be discharged to the waters of the state. For the majority of the San Francisco Bay Area, the San Francisco Bay RWQCB maintains jurisdiction within the subject basin. This protection is carried out by the RWQCB through the issuance and enforcement of National Pollutant Discharge Elimination System (NPDES) permits under the federal Clean Water Act, called Waste Discharge Requirements (WDRs), regulation of leaking underground storage tanks and contaminated properties through the Leaking Underground Storage Tank (LUST) and Spills, Leaks, Investigation, and Cleanup (SLIC) programs respectively. USTs are regulated under Chapter 6.7 of the California Health and Safety Code and 23 CCR Chapter 16.

California Environmental Screening Levels. The interim final Environmental Screening Levels (ESLs) for Bay Area sites were issued by the San Francisco Bay RWQCB in February 2016. ESLs are guidelines for evaluation of potential environmental risks at contaminated sites and are not enforceable regulatory criteria. The presence of a chemical at concentrations in excess of a screening level does not necessarily indicate adverse effects on human health or the environment, but rather that additional evaluation is warranted (SFRWQCB, 2013) ESLs address media including soil, groundwater, soil gas, and indoor air as well as a range of impacts, including vapor intrusion and impacts to aquatic life. The ESLs are updated frequently to reflect current toxicological data.

Department of Toxic Substances Control (DTSC)

DTSC is authorized by the USEPA to enforce and implement federal hazardous waste laws and regulations. In addition, DTSC generally acts as the lead agency for soil and groundwater cleanup projects that primarily affect public health (especially residential projects requiring environmental

site mitigation), and establishes cleanup levels for subsurface contamination that are equal to, or more restrictive than, federal levels. The DTSC's principal cleanup authority is established under the Carpenter-Presley Tanner Hazardous Substance Account Act (HSAA; Cal. Health and Safety Code sections 25300–25395.45). Most State hazardous materials regulations are contained in Title 22 of the California Code of Regulations (CCR).

DTSC has established that "[it is the Department's] goal that sites requiring response actions, where sensitive land uses are anticipated, be remediated to the degree that allows unrestricted use (DTSC, 2002)." The HSAA also expressly relies on the current and reasonably foreseeable future use of the site to establish cleanup standards, stating that risk assessments "shall include the development of reasonable maximum estimates of exposure for both current land use conditions and reasonably foreseeable future land use conditions at the site (DTSC, 2002; California Health and Safety Code Section 25356.1.5[d]).

DTSC has an established process for determining what land uses are foreseeable. This process, in general, refers to the municipality in which the site is located for guidance. The DTSC has stated:

> "…local government will normally be the source of information about anticipated land uses. In cases where the future land use is relatively certain, the remedial action objective must reflect such land use. Conversely, where the future land use is less certain, a range of uses should be considered. Selection of cleanup levels must be based on consideration of public health and environmental risk, technical and cost limitations, and the performance and risk uncertainties inherent in all waste remediation efforts (DTSC, 2000)."

Certified Unified Program Agencies (CUPAs)

The Unified Program consolidates, coordinates, and makes consistent the administrative requirements, permits, inspections, and enforcement activities of six environmental and emergency response programs (see below). The State agency partners involved in the Unified Program have the responsibility of setting program element standards, working with CalEPA on ensuring program consistency, and providing technical assistance to the CUPAs. The Unified Program Administration and Advisory Group (UPAAG) was created to foster effective working partnerships between local, State and federal agencies. The UPAAG's goals and objectives are listed in the UPAAG Strategic Plan. The six programs are:

- Hazardous Materials Release Response Plans and Inventories (Business Plans)
- California Accidental Release Prevention (CalARP) Program
- Underground Storage Tank Program
- Aboveground Petroleum Storage Act (APSA) Program
- Hazardous Waste Generator and Onsite Hazardous Waste Treatment (tiered permitting) Programs
- California Uniform Fire Code: Hazardous Material Management Plans and Hazardous Material Inventory Statements

Along with the CalEPA agencies described above (SWRCB, DTSC, and RWQCBs), the following State agencies are involved with the Unified Program:

Governor's Office of Emergency Services (OES)

The Governor's Office of Emergency Services is responsible for providing technical assistance and evaluation of the Business Plan Program and the CalARP Program. Propane stored in quantities over 10,000 pounds is a regulated flammable substance under the CalARP program rules.

Office of the State Fire Marshal (OSFM) and California Fire Code

The Office of the State Fire Marshal is responsible for ensuring the implementation of the Hazardous Material Management Plans and the Hazardous Material Inventory Statement Programs. These programs tie in closely with the Business Plan Program. The State Fire Marshal is also responsible for approving the State Fire Code which is included in the California Building Standards Code, Title 24 California Code of Regulations. Chapter 61 of the California Fire Code covers regulations on the storage, handling and transportation of LPG. In addition, the 2016 California Fire Code adopts by reference the 2016 Edition of the National Fire Protection Association's NFPA 2 (Hydrogen Technologies Code), which provides fundamental safeguards for the generation, installation, storage, piping, use and handling of hydrogen in compressed gas or liquid form.

California Department of Public Health – Radiological Health Branch

The Radiologic Health Branch (RHB) enforces laws and regulations that protect the public, workers, and the environment from radiologic hazards, including the Radiation Control Law (Health and Safety Code Section 114960 et seq.). The RHB is responsible for inspecting facilities using radiation, investigation of radiation incidents, and surveillance of radioactive contamination in the environment.

Hazardous Materials Transportation

The State has adopted federal DOT regulations for the intrastate movement of hazardous materials. State regulations are contained in Title 26 of the California Code of Regulations (CCR). In addition, the State of California regulates the transportation of hazardous waste originating in the state and passing through the state (26 CCR). Both regulatory programs apply in California. The two state agencies that have primary responsibility for enforcing federal and state regulations and responding to hazardous materials transportation emergencies are the California Highway Patrol (CHP) and the California Department of Transportation (Caltrans).

Occupational Safety and Health Administration

The California Occupational Safety and Health Administration (Cal/OSHA) assumes primary responsibility for developing and enforcing workplace safety regulations in California. Because California has a federally-approved OSHA program, it is required to adopt regulations that are at least as stringent as those found in Title 29 of the Code of Federal Regulations (CFR). Cal/OSHA standards are generally more stringent than federal regulations.

Cal/OSHA regulations (8 CCR) concerning the use of hazardous materials in the workplace require employee safety training, safety equipment, accident and illness prevention programs,

hazardous substance exposure warnings, and emergency action and fire prevention plan preparation. Cal/OSHA enforces hazard communication program regulations, which contain training and information requirements, including procedures for identifying and labeling hazardous substances, and communicating hazard information relating to hazardous substances and their handling. State laws, like federal laws, include special provisions for hazard communication to employees in research laboratories, including training in chemical work practices. Specific, more detailed training and monitoring is required for the use of carcinogens, ethylene oxide, lead, asbestos, and certain other chemicals listed in 29 CFR.

Cal/OSHA also regulates asbestos removal to ensure the health and safety of workers removing asbestos containing materials and also must be notified of asbestos abatement activities. Cal/OSHA also administers California's hazardous waste operations and emergency response (HAZWOPER) rules for general industry workplaces, which mirror federal rules, with additional requirements for training, safety and health plans, and personal protective equipment that are stricter than the federal rules (Title 8 CCR Section 5192).

Regional and Local

Bay Area Air Quality Management District (BAAQMD)

In the San Francisco Bay Area, the BAAQMD regulates airborne pollutants, including asbestos, particulate matter, toxic air contaminants, and volatile organic compounds through both regulations, permitting, inspection and law enforcement. The BAAQMD must be notified ten days in advance of any proposed demolition or abatement work.

Contra Costa Health Services (CCHS) Hazardous Materials Business Plan Program

The Hazardous Materials Business Plan Program is the means by which the CCHS oversees the regulatory programs for Hazardous Materials Business Plans. The California Hazardous Materials Release Response Plans and Inventory Law of 1985 (Business Plan Act) requires that any business that handles hazardous materials prepare a business plan, which must include the following:

- Details, including floor plans, of the facility and business conducted at the site;
- An inventory of hazardous materials that are handled or stored on site;
- An emergency response plan; and
- A safety and emergency response training program for new employees with annual refresher courses.

Richmond Municipal Code Chapter 6.43 – Industrial Safety

Chapter 6.43 of the Richmond Municipal Code (Industrial Safety) imposes regulations which supplement the requirements of California Health and Safety Code (Article 2 of Chapter 6.95) concerning hazardous materials management, by requiring measures to prevent and reduce the likelihood of accidental releases of regulated substances that have the potential to cause

significant harm to public health. Among other requirements, this chapter requires the completion of process hazard analyses for certain processes that involve the handling of hazardous materials and are not covered by federal or State accidental release prevention programs, as well as the review of accidental release prevention efforts of stationary sources.

General Plan

The General Plan identifies goals, policies and actions that address hazards and hazardous materials. Goals and policies presented in the Public Safety and Noise, Land Use and Urban Design, and Conservation, Natural Resources and Open Space elements of the General Plan applicable to the Specific Plan and Sub-Area 4 Project are as follows:

- **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.

- **Action 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.

- **Action 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.

- **Action 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.

- **Action 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.

- **Action 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.

- **Action 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.

- **Action 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.

- **Action 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.

4.7.5 Significance Criteria

Consistent with Appendix G of the State CEQA *Guidelines*, the Specific Plan or Sub-Area 4 Project would cause adverse impacts related to hazards and hazardous materials if they would:

a) Create a significant hazard to the public or the environment through the routine transport, use or disposal of hazardous materials;

b) 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;

c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances or waste within one-quarter mile of an existing or proposed school;

d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would create a significant hazard to the public or the environment;

e) 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, would result in a safety hazard for people residing or working in the project area;

f) For a project within the vicinity of a private airstrip, would result in a safety hazard for people residing or working in the project area;

g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan; or

h) Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands.

Exposure of the public to air emission hazards associated with construction and operation of the Specific Plan and Sub-Area 4 Project is addressed in Section 4.2, *Air Quality*.

Approach to Analysis

Specific Plan

The analysis of the Specific Plan in this section reviews potential impacts associated with Specific Plan characteristics and the general type of development that might occur with implementation of the Specific Plan.

Sub-Area 4 Project

The analysis of the Sub-Area 4 Project uses a similar approach to that of the Specific Plan, but focuses on the smaller geographic area of the Sub-Area 4 Project site that would be affected.

Topics with No Impact or Otherwise Not Addressed in this EIR

Review and comparison of the setting circumstances and Specific Plan and the Sub-Area 4 Project with each of the eight significance criteria stated above clearly show that no impacts associated with hazards or hazardous materials would result for Criteria e) (airport land use plan), f) (private airstrip), and h) (wildland fires). In addition, no impacts associated with hazards or hazardous materials would result for Criteria c) (emissions near school) for the Sub-Area 4 Project. The following discusses the reasoning supporting these conclusions.

Specific Plan and Sub-Area 4 Project

The Specific Plan and Sub-Area 4 Project would not be 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. (Criterion e)

The Plan Area and Sub-Area 4 Project site are not included within any airport land use plan, and there are no public airports or public use airports within two miles of the Plan Area. As discussed above, the Plan Area and Sub-Area 4 Project site are located approximately 13 miles northwest of Oakland International Airport, the nearest airport. Therefore, implementation of the Specific Plan and the Sub-Area 4 Project would have no impact.

The Specific Plan and Sub-Area 4 Project would not be located in the vicinity of a private airstrip. (Criterion f)

There is no private airstrip in the vicinity of the Plan Area or the Sub-Area 4 Project site. Therefore, implementation of the Specific Plan and the Sub-Area 4 Project would have no impact.

The Specific Plan and Sub-Area 4 Project would not expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands. (Criterion h)

The Plan Area and Sub-Area 4 Project site are located in a developed region that is not adjacent to wildlands that would be considered at risk for wildland fires. Therefore, implementation of the Specific Plan and the Sub-Area 4 Project would have no impact.

Sub-Area 4 Project Only

The Sub-Area 4 Project would not result in hazardous emissions or handle hazardous or acutely hazardous materials, substances or waste within one-quarter mile of an existing or proposed school. (Criterion c)

No schools are currently located or proposed to be built within 0.25 miles of the Sub-Area 4 Project site. Therefore, the potential for development under the Sub-Area 4 Project to affect schools within 0.25 miles of the Sub-Area 4 Project site is very low and not discussed further.

4.7.6 Program-Level Impacts of the Richmond Bay Specific Plan

Impact HAZ-1.SP: Construction and demolition associated with development under the Specific Plan as well as operational land uses could create a significant hazard to the public or the environment through the routine transport, use or disposal of hazardous materials. (Criterion a.) ***(Less Than Significant with Mitigation)***

Contaminated Soils and Groundwater

Future development within the Plan Area could include excavation for installation of utilities, building foundations, subterranean development, or for regrading purposes. Disturbance of subsurface soils and groundwater at locations that may have been previously contaminated by prior uses could further disperse existing contamination into the environment and expose construction workers or the public to contaminants. Groundwater has been reported at depths of less than 10 feet below ground surface (bgs) in some parts of the Plan Area.

As noted above in the Environmental Setting section, prior land uses have been associated with releases of hazardous materials to the subsurface within the Plan Area and nearby that could have adverse effects on human health and the environment. Many of these sites have been closed, indicating that no further threat to human health or the environment exists, provided any required ongoing maintenance and monitoring activities are implemented and uses are limited to those identified in any required land use covenants. However, other sites are still in the process of investigation or remediation, or have land use covenants that restrict certain activities or land uses. Exposure to hazardous materials encountered in subsurface materials at high enough concentrations for sufficient time periods could cause various short-term and/or long-term health effects to workers and the public. Possible health effects could be acute (immediate, or of short-term severity), chronic (long-term, recurring, or resulting from repeated exposure), or both. Acute effects, often resulting from a single exposure, could result in a range of effects from minor to major, such as nausea, vomiting, headache, dizziness, or burns. Chronic exposure could result in

systemic damage or damage to organs, such as the lungs, liver, or kidneys. Increased risk of cancer, reproductive health issues, and other adverse impacts could result from either long-term (chronic) or short-term exposure, depending on constituent and concentrations. Potential health effects would vary, based on the nature and concentration of each hazardous material, the duration and pathway of exposure, and the susceptibility of the exposed population.

Implementation of the mitigation measure below would decrease risks to workers, future residents, the public and the environment to a less than significant level.

Mitigation Measure HAZ-1a.SP: Protection of Human Health From Environmental Contamination. Prior to issuance of a building permit for any new project proposed within the Plan Area at a location where previous hazardous materials releases have occurred or resulted in environmental impacts, the City shall ensure the project will be developed under the supervision of an environmental agency of applicable jurisdiction (e.g., Department of Toxic Substances Control, Regional Water Quality Control Board, Contra Costa County Department of Human Health Services) such that health-based goals appropriate for the proposed new use are achieved, and soil management plans and/or environmental land use covenants are observed. Measures to protect environmental health shall include one or more of the following strategies and approaches: removal of environmental contaminants from the subject area (e.g., excavation and off-site disposal, use of soil vapor extraction equipment); separation of site users from contamination (e.g., engineering or institutional controls), or treatment of environmental contamination (e.g., in situ chemical oxidation). Prior to issuance of a certificate of occupancy or similar operating permit for such new project, the project proponent shall provide evidence to the City of successful implementation of protective measures through a certificate of completion, finding of suitability for the project's intended use or similar documentation issued by the environmental agency having jurisdiction over the project.

Mitigation Measure HAZ-1b.SP: Health and Safety Plan. Prior to issuance of a building or grading permit for a new project proposed within the Plan Area at a location where previous hazardous materials releases have occurred, the City shall document that a Health and Safety Plan (HASP) has been prepared and will be implemented for the protection of workers, the public and the environment. Such HASP shall be prepared by a California licensed professional of applicable expertise (e.g., certified industrial hygienist, professional engineer). The HASP shall include measures consistent with customary protocols and applicable regulations (including, but not limited to Title 8 of the California Code of Regulations) for the protection of workers, site users, the public, and the environment (e.g., management of impacted soil; use of personal protective equipment; management, use and or treatment of water associated with construction activities; dust mitigation) and to address the discovery of any suspect soils (e.g., petroleum odor and/or discoloration) during construction activities, including notification of appropriate oversight agencies and investigation, removal, and disposal of soils as appropriate under agency directives and local, state, and Federal regulations).

Prior to the issuance of a certificate of occupancy or similar operating permit for activities covered by the grading or building permit, a completion report documenting the implementation of the HASP and any deviations shall be submitted to and approved by the City.

Demolition

Based on the age of some of the structures within the Plan Area, demolition of existing structures within the Plan Area may expose construction workers, the public, or the environment to hazardous materials such as LBP, ACM, PCBs, or other hazardous building materials. The level of potential impact is dependent upon the age, construction, and building materials of structures intended for demolition. If disturbed, these hazardous building materials could expose workers and the public during demolition. Potential exposure to these hazardous building materials can be reduced through appropriate abatement measures.

Asbestos. Potential exposure to asbestos, and its related chronic adverse health effects, is possible throughout demolition if materials that contain asbestos have not been removed, encapsulated or otherwise abated. Based on the age of some of the buildings within the Plan Area, it is likely that some ACMs are present. Affected buildings would need appropriate abatement of identified asbestos prior to demolition. ACMs are regulated both as a hazardous air pollutant under the Clean Air Act and as a potential worker safety hazard under the authority of Cal-OSHA. The renovation or demolition of buildings containing asbestos would require retaining contractors who are licensed to conduct asbestos abatement work and notify the Bay Area Air Quality Management District (BAAQMD).

Section 19827.5 of the California Health and Safety Code, adopted January 1, 1991, requires that local agencies not issue demolition or alteration permits until an applicant has demonstrated compliance with notification requirements under applicable federal regulations regarding hazardous air pollutants, including asbestos. The BAAQMD regulates airborne pollutants, including asbestos, through both inspection and law enforcement, and is to be notified ten days in advance of any proposed demolition or abatement work. However, abatement of known or suspected ACMs, as verified by survey, would occur prior to demolition or construction activities pursuant to an asbestos abatement plan developed by a State-certified asbestos consultant as required by law. All ACMs would be removed and appropriately disposed of by a State-certified asbestos contractor. The City Building Division enforces these requirements through its requirements for demolition permits, which require an approved permit from the BAAQMD verifying the complete abatement of asbestos from any structure to be demolished, prior to issuance of a demolition permit. Adherence to all the aforementioned regulatory requirements would ensure that potential impacts related to ACMs would be less than significant, and no mitigation is required.

Lead and Lead-based Paint. Lead-based paint could be separated from building materials during any demolition processes. Separated paint can be classified as a hazardous waste if the lead content exceeds 1,000 parts per million and would need to be disposed of accordingly. Additionally, lead-based paint chips can pose a hazard to workers and adjacent sensitive land uses. Both the federal and California OSHAs regulate all worker exposure during construction activities that impact lead-based paint. Interim Final Rule found in 29 CFR Part 1926.62 covers construction work where employees may be exposed to lead during such activities as demolitions, removal, surface preparation for re-painting, renovation, clean up and routine maintenance. The OSHA-specified method of compliance includes respiratory protection, protective clothing,

housekeeping, hygiene facilities, medical surveillance, training, etc. Potential violations related to lead can be reported to the USEPA and the CCHS Department for enforcement.

Demolition work could create exposure to lead-based paint present in building structures. Dust generating activities that include removal of walls, sanding, welding, and material disposal could produce airborne quantities of lead-laden material. These materials could expose workers and persons in close proximity, including occupants of offsite locations. The Plan Area contains buildings with painted surfaces, such as drywall, ceilings, and exterior stucco, which could contain lead-based paint.

Requirements for lead hazard evaluation and abatement activities, accreditation of training providers, and certification of individuals engaged in lead-based paint activities are found in California Code of Regulations Title 17, Section 35001 et seq.

PCB-containing Materials

The presence of PCB-containing materials may be present within the existing structures in the Plan Area. Fluorescent lighting ballasts manufactured prior to 1978, and electrical transformers, capacitors, and generators manufactured prior to 1977, may contain PCBs. Demolition of structures could disturb these materials and expose workers or the public to adverse effects. As with asbestos containing materials, an initial survey to determine the presence of PCBs would need to be conducted for a specific site followed by implementation of appropriate measures to handle any materials with PCBs. For the isolated locations where PCBs remain, appropriate identification and removal work would be required according to federal and State standards. PCBs are managed under the Toxic Substances Control Act (TSCA) and the PCB regulations found at 40 Code of Federal Regulations Part 761. TSCA provides USEPA's Office of Solid Waste and Emergency Response with the authority to develop, implement and enforce regulations concerning the use, manufacture, cleanup and disposal of PCBs.

Implementation of **Mitigation Measures HAZ-1c.SP** through **HAZ-1g.SP** would ensure that construction period impacts related to demolition and presence of hazardous building materials would be reduced to less-than-significant levels.

> **Mitigation Measure HAZ-1c.SP: Hazardous Building Material Assessment (ACM, LBP, PCBs, other hazardous building materials).** For any project proposed for development within the Plan Area (or in the area of the Lark Drive Variant) that would require building demolition, and prior to issuance of any demolition permit, the project applicant (or, in the case of the Lark Drive Variant, the City) shall submit to the City and/or the Contra Costa Health Services Department, according to relevant jurisdiction, a hazardous building material assessment prepared by qualified licensed contractors for any structure intended for demolition indicating whether asbestos containing materials (ACM), lead-based paint (LBP) or lead-based coatings, polychlorinated biphenyl (PCB)-containing equipment, and/or other hazardous building materials are present.
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> **Mitigation Measure HAZ-1d.SP: Hazardous Building Materials Removal Plan (ACM, LBP, PCBs).** For any project proposed for development within the Plan Area (or in the area of the Lark Drive Variant), if the assessment required by Mitigation Measure HAZ-1c.SP indicates the presence of ACM, LBP, PCBs, or other hazardous building materials,

prior to issuance of any demolition permit the project applicant (or, in the case of the Lark Drive Variant, the City) shall submit and implement a hazardous building materials removal plan in accordance with local, state, and federal requirements to protect demolition and construction workers and the public from risks associated with such hazardous materials during demolition or renovation of affected structures.

With adherence to existing regulatory requirements, impacts related to the routine transport, use or disposal of hazardous materials during operation of anticipated uses under the Specific Plan would be less than significant.

Significance After Mitigation: Less Than Significant.

Mitigation: Mitigation Measure HAZ-1a.SP, HAZ-1b.SP, HAZ-1c.SP, and HAZ-1d.SP.

Impact HAZ-2.SP: Development under the Specific Plan could 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. (Criterion b.) ***(Less Than Significant with Mitigation)***

Construction

Any future construction activities would require the use of certain hazardous materials, such as fuels, oils, lubricants, solvents, and glues. Inadvertent release of these materials into the environment could adversely impact soil, surface waters, or groundwater quality. Larger developments could potentially include onsite storage and/or use of quantities of materials capable of significantly impacting soil and groundwater. Projects that disturb more than one acre would be required to adhere to the requirements of the General Construction Permit issued by the RWQCB as discussed in Section 4.8, *Hydrology and Water Quality*. One of the requirements of the permit is the implementation of a storm water pollution prevention plan (SWPPP) which includes containment and spill cleanup measures to prevent the accidental release of hazardous materials used during construction, as required under the National Pollution Discharge Elimination System (NPDES) permit program to prevent hazardous materials from spreading off the property. Hazardous materials that would be generated during construction would be disposed of as described in the required SWPPP.

Implementation of **Mitigation Measure HYD-1.SP: Water Quality Best Management Practices for All Construction Activities** as presented in Section 4.8, *Hydrology and Water Quality*, would further reduce impacts, to a less-than-significant level.

Therefore, compliance with existing regulations (NPDES permit program), a necessary condition of construction, and the implementation of **Mitigation Measure HYD-1.SP** would address potential upsets and accidents, and any impacts during construction would be less than significant.

Operation

Once constructed, development in the Plan Area would include R&D/Business/Service, retail, and residential uses that may handle, store, and transport various hazardous materials and consequently generate hazardous wastes. In general, current regulations require that all hazardous materials and wastes are stored, handled, and disposed of according to a host of safety requirements that are intended to protect human health and the environment. For general business and service land uses as well as residential uses, hazardous materials are generally handled and transported in relatively small quantities, and significant adverse effects on human health and the environment are less common.

As noted previously, any land uses that would handle regulated quantities of hazardous materials would be required to submit a Hazardous Materials Business Plan for review and approval by CCHS. The Plan would include spill response procedures and provide information to the RFD should emergency response be required. The Hazardous Materials Business Plan includes the following:

- The type of business activities,
- The business owner/business operator identifying information,
- A hazardous materials inventory,
- A site map,
- An Emergency Response/Contingency Plan, and
- An Employee Training Plan.

Each hazardous material and/or hazardous waste in a reportable quantity must be included in the hazardous material inventory. Implementation of the Plan would minimize the potential for upset and accidental release conditions as well as provide protocols to contain and/or minimize the extent of release should one occur.

The development of Plan Area uses, including residential uses, in proximity to existing uses that could pose safety risks, such as the Allied Propane facility, would likewise be addressed through compliance with existing standards and regulations, and the requirements of existing State, County, and City permits for these facilities, including required buffer zones of from 25 to 300 feet between facilities and other uses. As stated above, Chapter 61, Liquefied Petroleum Gases, of the California Fire Code, Table 6104.3 states that the “minimum separation between LPG containers and buildings, public ways or lot lines of adjoin properties that can be built upon” for containers with capacities of 30,001 to 70,000 gallons is 75 feet. Allied Propane includes two above ground LPG storage tanks with capacities of 55,000 and 60,000 gallons.

However, as shown in the Accidental Release Assessment conducted for Sub-Area 4 (as described above), even with adherence to existing regulatory requirements, there is a potential for upset and accidental release conditions during the operational phases of future development to adversely affect workers, residents, visitors, or the environment: specifically, as discussed in the Accident Release Assessment, the estimated distance to the lower flammability limit of a vapor cloud from a pipe-break discharge at the Allied Propane facility site would be about 330 feet.

While a flash fire event originating from the Allied Propane facility was determined to be very unlikely, new sensitive uses within this radius that could be built as part of implementation of the Specific Plan could be affected. With the implementation of **Mitigation Measures HAZ-2a.SP** and **HAZ-2b.SP**, this impact, as well as other potential impacts arising from new uses that could be developed within the Plan Area that may pose a risk to human health or safety due to the potential for an accidental release of hazardous substances, would be reduced to less-than-significant level.

> **Mitigation Measure HAZ-2a.SP: Safety Management Techniques and Practices.** The City shall make an additional finding for any use permit for any facility within the Plan Area that may pose a risk to human health or safety to the public due to the potential for an accidental release of hazardous substances, as follows: the applicant has demonstrated to the satisfaction of the City of Richmond Fire Department that risk of accidental release and any off-site consequences to the public have been minimized to the extent feasible using best safety management techniques and practices and will not result in any unacceptable risk to human health or safety to the public, as determined by the City of Richmond Fire Department based on accepted industry standards. Such safety management techniques and practices may include among others: training; emergency notification systems; substitution to equipment subject to less risk of upset condition; substitution of chemicals that pose less risk to members of the public; equipment (e.g., safety shutoff valves, secondary containment) or practices to contain or lessen the off-site effect of any release.
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> **Mitigation Measure HAZ-2b.SP: Review of New Sensitive Uses.** Prior to issuance of a use permit, design review approval, or issuance of a building permit for new construction of, major renovation of, expansion of, or addition to a project within the Plan Area that includes sensitive land uses, the applicant shall demonstrate to the satisfaction of the City of Richmond Fire Department that the risk to: (1) on-site sensitive land uses (e.g., residential, schools, daycare) from an off-site accidental release of hazardous substances will not result in any unacceptable risk to human health or safety to the public once mitigated (e.g., evacuation and shelter-in-place procedures), as determined by the City of Richmond Fire Department based on accepted industry standards; and (2) off-site members of the public from an on-site release of hazardous substances will not result in any unacceptable risk to human health or safety to the public once mitigated, (e.g., best safety management techniques and practices, as described above), as determined by the City of Richmond Fire Department based on accepted industry standards.

Significance After Mitigation: Less Than Significant.

Mitigation: Mitigation Measures HAZ-2a.SP, HAZ-2b.SP and HYD-1.SP.

Impact HAZ-3.SP: Development under the Specific Plan could result in the use of hazardous materials within 0.25 miles of a school. (Criterion c.) (*Less Than Significant, No Mitigation Required*)

There are no schools within the Plan Area. Two schools, Benito Juarez Elementary School and Richmond Children's Academy, are located within 0.20 and 0.25 miles of the Plan Area,

respectively. As discussed in Chapter 3, *Project Description*, of this EIR, up to two new elementary school may be constructed within the Plan Area over the period of buildout.

As discussed in the Environmental Setting section and *Impact HAZ-1.SP* above, development under the Specific Plan could require the use, transport and storage of hazardous materials, including off-site transport. In the event of an accidental release of hazardous materials in the vicinity of a school, as outlined below, these potential risks would be less than significant given existing regulatory requirements.

Development under the Specific Plan would be required to comply with Chapter 6.43 of the Richmond Municipal Code (Industrial Safety). According to this chapter, all qualifying stationary sources are required to submit a safety plan to CCHS that includes information pertaining to the hazards of regulated substances and safe work practices to provide for the control of hazards during operations, and are required to certify compliance with the provisions of the chapter at least every three years. These safety plans are subject to review and approval by the City. Additionally, facilities and businesses handling or storing hazardous materials would be required to prepare a Hazardous Materials Business Plan (HMBP) as required by CCHS.

In addition, as discussed in the Specific Plan, any storage, use, transportation or production of hazardous materials on sites within the Plan Area would be subject to the applicable fire codes and approval of the RFD, and RFD personnel may conduct site visits to observe operations that may use hazardous materials. Burning of waste materials in open fires or unapproved incinerators is prohibited. All hazardous materials must comply with the provision of Richmond Municipal Code Section 15.04.820.020, Hazardous Materials.

Compliance with these requirements would reduce the potential for hazardous materials releases within 0.25 mile of a school to a less-than-significant level.

Significance: Less Than Significant.

Mitigation: None required.

Impact HAZ-4.SP: Development under the Specific Plan could be located on sites which are included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, create a significant hazard to the public or environment. (Criterion d.) (*Less Than Significant with Mitigation*)

As discussed above, the Plan Area has a history of industrial use, and releases of hazardous materials have been documented within the area. A review of the Envirostor database maintained by DTSC confirms that a number of active and closed cleanup sites are found within the Plan Area (DTSC, 2016a).

Construction

Development under the Specific Plan could require excavation for installation of building foundations and underground utilities. Some of the excavation could be substantial. If legacy contaminants were to be exposed during construction or left beneath new development, workers, future occupants, or the public could be adversely affected through exposure from concentrations that are above regulatory levels. Many of the sites identified within the Plan Area have been closed, indicating that no substantial threat to human health or the environment remains under existing conditions. Cleanup of sites still undergoing further investigation (e.g., the Zeneca site) is overseen by regulatory agencies to ensure that any identified contamination is fully characterized and remediated to levels below regulatory action levels. Regardless of the status of active cleanup sites, appropriate remediation efforts that take into account the nature of new uses are required prior to construction of any new development at these sites (**Mitigation Measure HAZ-1a.SP)**.

Active cleanup sites within the Plan Area have initiated some of the remedial actions necessary to reduce potential impacts to future land uses, as discussed above, and would be required to complete remedial activities that would be consistent with anticipated land uses prior to development. The remediation activities will be actively overseen by agencies such as DTSC or the San Francisco Bay RWQCB to ensure that all remediation is completed to levels that protect human health and the environment, development in the Plan Area will not interfere with ongoing environmental response actions, and proposed uses at locations subject to environmental land use controls are appropriate for the site.

Construction activities that involve ground disturbances (e.g., grading, excavation for foundations, utility connection construction, etc.) could, however, encounter previously unidentified contamination associated with past uses. If not handled appropriately, construction workers or the public could become exposed to contaminants that could cause adverse health effects. With implementation of **Mitigation Measure HAZ-1a.SP** and **HAZ1b.SP**, this impact would be less than significant.

Operation

Development of projects within the Plan Area would, where required, include implementation of required environmental response actions to address potential risks to future site users associated with legacy contamination. In such cases, approval and implementation of a cleanup plan would occur prior to or concurrent with development activities and be completed before occupancy or operating permits are issued. As described above, cleanup levels and remedial strategies and approaches, including engineering and institutional controls, are determined based on site-specific factors, including potential exposure pathways, future land uses, and the characteristics of the contaminants involved.

However, following completion of site mitigation to health-based protective levels, ongoing maintenance of engineering controls and monitoring of site conditions and adherence to institutional controls (e.g., land use covenants) may be necessary to protect future site users in the long-term.

Implementation of **Mitigation Measure HAZ-4.SP** would ensure that required response actions continue to reduce risks to future site users to less-than-significant levels.

> **Mitigation Measure HAZ-4.SP: O&M Plan.** Prior to issuance of a certificate of occupancy or similar operating permit for any project within the area of the Specific Plan at a location where a cleanup plan is being implemented, as provided under HAZ-1a.SP, where an operation and maintenance (O&M) plan is required by an agency of applicable jurisdiction, the applicant shall demonstrate that an O&M plan has been approved by the agency and will be implemented to ensure the long-term protection of environmental health of site users. The O&M plan shall ensure the maintenance of health-based goals by periodic inspection of the remedy and taking such actions (e.g., repairing any deficiencies in durable covers that cap residual environmental contamination, performing maintenance on remedial equipment). Evidence of such an O&M plan and its implementation may be demonstrated by a document issued by an agency of applicable jurisdiction.

Once constructed, projects within the Plan Area would consist of R&D/Business/Service, retail, and residential uses and would include activities that would use hazardous chemicals common to these land uses. Such chemicals could include familiar materials such as toners, paints, lubricants, and kitchen and restroom cleaners as well as relatively small quantities of fuels, oils, and other petroleum-based products. Activities such as automobile or building maintenance, as well as landscaping, can also become sources of releases of hazardous materials. Because general commercial and household hazardous materials are typically handled and transported in small quantities, operation of most of new uses would not cause an adverse effect on human health or the environment with respect to the routine transport, use, or disposal of general commercial and household hazardous materials. For commercial uses, the regulatory framework requires appropriate training of employees in the use, storage, and disposal of any hazardous materials and wastes.

As required by CCHS (in its role as the CUPA) and the City of Richmond Industrial Safety Ordinance, any businesses that would store regulated quantities of hazardous materials and/or waste would be required to submit business information and hazardous materials inventory forms, contained in a Hazardous Materials Management Plan and/or Hazardous Materials Business Plan. The purpose of the Hazardous Materials Business Plan is to ensure that employees are adequately trained to handle the materials and provide information to the Richmond Fire Department (RFD) should emergency response be required. CCHS requires all new commercial and other users to follow applicable regulations and guidelines regarding storage and handling of hazardous waste. All hazardous materials are required to be stored and handled according to manufacturer's directions and local, state and federal regulations.

Implementation of mitigation and compliance with regulatory requirements would reduce impacts to a less than significant level.

Significance After Mitigation: Less Than Significant.

Mitigation: Mitigation Measure HAZ-1a.SP, HAZ-1b.SP, and HAZ-4.SP.

Impact HAZ-5.SP: Development under the Specific Plan would not impair the implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan. (Criterion g.) (*Less Than Significant, No Mitigation Required*)

The Plan Area is located in a developed urban area with an existing road network. Development of projects within the Plan Area would increase the demand for fire protection and expand the geographic area within which services must be provided. New development in the Plan Area would not permanently interfere with the existing road network or with the ability for emergency response vehicles to access all areas within the Plan Area. Individual project circulation plans will be designed to ensure appropriate emergency access to and egress from the site in accordance with all City and Fire Code requirements (for further information, see Section 4.13, *Transportation and Traffic*). Overall, future development would not impede emergency access routes and would continue to maintain the existing city grid systems.

Development under the Specific Plan could require temporary construction activities which could affect emergency access routes. Temporary construction closures or limited emergency access could impede emergency response and create hazardous conditions for the public. As discussed in Section 4.13, *Transportation and Traffic*, and per the requirements of the City Engineering Division, project applicants will develop and implement a construction Traffic Control Plan (TCP) to the satisfaction of the City of Richmond Department of Public Works, Police Department, and Fire Department.

Compliance with all applicable requirements would reduce potential impacts to a less-than-significant level.

Significance: Less Than Significant.

Mitigation: None required.

4.7.7 Project-Level Impacts of the Sub-Area 4 Project

Impact HAZ-1.SA4: Construction and demolition associated with development of the Sub-Area 4 Project as well as operational land uses could create a significant hazard to the public or the environment through the routine transport, use or disposal of hazardous materials. (Criterion a.) (*Less Than Significant with Mitigation*)

Contaminated Soils and Groundwater

Development of the Sub-Area 4 Project could include excavation for installation of utilities, building foundations, subterranean development, or for regrading purposes. Disturbance of subsurface soils and groundwater at locations within the Sub-Area 4 Project site that may have been previously contaminated by prior uses could further disperse existing contamination into the environment and expose construction workers or the public to contaminants. Groundwater has been reported at depths of less than 10 feet bgs in some parts of the Sub-Area 4 Project site.

As noted above in the Environmental Setting section, prior land uses have been associated with releases of hazardous materials to the subsurface at the Sub-Area 4 Project site and nearby. Many of these sites have been closed, indicating that no further threat to human health or the environment exists. However, other sites are still in the process of investigation, and/or remedial action plans have either been prepared or are in the process of being prepared for sites such as the Zeneca site. Exposure to hazardous materials could cause various short-term and/or long-term health effects to workers and the public.

Implementation of **Mitigation Measure HAZ-1a.SP** as described above for the Specific Plan, would minimize the potential exposure to workers, the public and the environment.

Demolition

Based on the age of some of the structures within the Sub-Area 4 Project site, demolition of existing structures may expose construction workers, the public, or the environment to hazardous materials such as LBP, ACM, and PCBs. If disturbed, these hazardous building materials could expose workers and the public during demolition. Potential exposure to these hazardous building materials can be reduced through appropriate abatement measures.

As described above under the discussion for Impact HAZ-1.SP, compliance with all applicable regulatory requirements would ensure that potential impacts related to ACMs would be less than significant, and no mitigation is required. Implementation of **Mitigation Measures HAZ-1b.SP** through **HAZ-1d.SP**, as described above for the Specific Plan, would ensure that construction period impacts related to demolition and LBP and PCBs would be reduced to less-than-significant levels.

With adherence to existing regulatory requirements, impacts would be less than significant.

Significance after Mitigation: Less Than Significant.

Mitigation: Mitigation Measures HAZ-1a, HAZ-1b, HAZ-1c and HAZ-1d.

Impact HAZ-2.SA4: Development of the Sub-Area 4 Project could 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. (Criterion b.) (*Less Than Significant with Mitigation*)

Construction

Any future construction activities within the Sub-Area 4 Project site would require the use of certain hazardous materials, such as fuels, oils, lubricants, solvents, and glues. Inadvertent release of these materials into the environment could adversely impact soil, surface waters, or groundwater quality. Some construction activities for larger sites within the Sub-Area 4 Project site could potentially include onsite storage and/or use of quantities of materials capable of significantly impacting soil and groundwater. Development that would take place within the Sub-Area 4 Project site that would

disturb more than one acre would be required to adhere to the requirements of the General Construction Permit issued by the SFRWQCB as discussed in Section 4.8, *Hydrology and Water Quality*, including the preparation of a SWPPP which includes containment and spill cleanup measures to prevent the accidental release of hazardous materials used during construction, as required under the NPDES permit program. Hazardous materials that would be generated during project construction would be disposed of as described in the required SWPPP.

Implementation of **Mitigation Measure HYD-1.SP** as described above for the Specific Plan would further reduce impacts, to a less-than-significant level. Therefore, compliance with existing regulations (NPDES permit program), a necessary condition of construction, and the implementation of Mitigation Measure HYD-1.SP would address potential upsets and accidents, and any impacts during project construction would be less than significant.

Operation

Once constructed, development in the Plan Area would include R&D/Business/Service, retail, and residential uses that may handle, store, and transport various hazardous materials and consequently generate hazardous wastes. In general, current regulations require that all hazardous materials and wastes are stored, handled, and disposed of according to a host of safety requirements that are intended to protect human health and the environment. For general business and service land uses as well as residential uses, hazardous materials are generally handled and transported in relatively small quantities and because the health effects associated with them are generally not as serious as industrial uses, significant adverse effects on the environment are less common.

As noted previously, any land uses developed within the Sub-Area 4 Project site that would handle hazardous materials would be required to submit a Hazardous Materials Business Plan for review and approval by CCHS. The Hazardous Materials Business Plans would include spill response procedures and provide information to the RFD should emergency response be required. Implementation of the Hazardous Materials Business Plans would minimize the potential for upset and accidental release conditions as well as provide protocols to contain and/or minimize the extent of release should one occur.

Impacts related to the development of project uses, including residential uses, in proximity to existing uses that could pose safety risks, such as the Allied Propane facility, would likewise be addressed through compliance with existing standards and regulations, and the requirements of existing State, County, and City permits for these facilities, including required buffer zones of from 25 to 300 feet between facilities and other uses. As discussed above, modeling conducted as part of the Accidental Release Assessment conducted for Sub-Area 4 determined that risks associated with the Allied Propane facility, specifically a potential flash fire resulting from an accidental pipe break, would not affect receptors at the Sub-Area 4 Project site.

With the implementation of **Mitigation Measure HYD-1.SP** and adherence to existing regulatory requirements, the potential for upset and accidental release conditions during the operational phases of future development to adversely affect workers, residents, visitors, or the environment would be reduced to less-than-significant levels.

Significance after Mitigation: Less Than Significant.

Mitigation: Mitigation Measure HYD-1.SP

Impact HAZ-3.SA4: Development of the Sub-Area 4 Project could be located on sites which are included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, create a significant hazard to the public or environment. (Criterion d.) (*Less Than Significant with Mitigation*)

As discussed above, the Sub-Area 4 Project site has a history of industrial use, and a review of the Envirostor database maintained by the DTSC confirms that a number of active and closed cleanup sites are found within the Plan Area (DTSC, 2016a). If legacy contaminants were to be exposed during construction or left beneath new development, workers, future occupants, or the public could be adversely affected through exposure where concentrations are high enough to cause harm. Many of the sites identified within the Sub-Area 4 Project site have been closed, indicating that no further threat to human health or the environment remains. Cleanup of sites still undergoing further investigation (e.g., the Zeneca site) is overseen by regulatory agencies to ensure that any identified contamination is fully characterized and risks are remediated to levels below regulatory action levels. Regardless of the status of active cleanup sites, appropriate environmental response actions that take into account the nature of new uses are required during construction of any new development at these sites, as provided under HAZ-1a.SP. Development of the Sub-Area 4 Project could require excavation for installation of building foundations and underground utilities. Some of the excavation could be substantial.

Active cleanup sites within the Sub-Area 4 Project site, including the Zeneca site, have initiated some of the remedial actions necessary to reduce potential impacts to future land uses, as discussed above, and would be required to complete response actions that would be consistent with development activities. The remediation activities will be actively overseen by agencies such as DTSC and the SFRWQCB to ensure that all remediation is completed to levels that protect human health and the environment, development will not interfere with ongoing environmental response actions, and proposed uses at locations subject to environmental land use controls are appropriate.

Construction activities that involve ground disturbances (e.g., grading, excavation for foundations, utility connection construction, etc.) could, however, encounter previously unidentified contamination associated with past uses. If not handled appropriately, construction workers or the public could become exposed to contaminants that could cause adverse health effects. With implementation of **Mitigation Measures HAZ-1a.SP, HAZ 1b.SP** and **HAZ-4.SP** as described above, this potential impact would be less than significant.

Significance after Mitigation: Less Than Significant.

Mitigation: Mitigation Measures HAZ-1a.SP, HAZ-1b.SP and HAZ-4.SP.

Impact HAZ-4.SA4: The Sub-Area 4 Project would not impair the implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan. (Criterion g.) (*Less Than Significant, No Mitigation Required*)

Development of the Sub-Area 4 Project would increase the demand for fire protection and expand the geographic area within which services must be provided. New development in the Sub-Area 4 Project site would not permanently interfere with the existing road network or with the ability for emergency response vehicles to access all areas the Sub-Area 4 Project site. The Sub-Area 4 Project's circulation plans will be designed to ensure appropriate emergency access to and egress from the site in accordance with all City and Fire Code requirements (for further information, see Section 4.13, *Transportation and Traffic*).

Development of the Sub-Area 4 Project could require temporary construction activities which could affect emergency access routes. Temporary construction closures or limited emergency access could impede emergency response and create hazardous conditions for the public. As discussed in Section 4.13, *Transportation and Traffic*, and per the requirements of the City Engineering Division, the Sub-Area 4 Project applicant will develop and implement a construction TCP to the satisfaction of the City of Richmond Department of Public Works, Police Department, and RFD.

Compliance with all applicable requirements would reduce potential impacts to a less-than-significant level.

Significance: Less Than Significant.

Mitigation: None required.

4.7.8 Cumulative Impacts

Impact C-HAZ-1.SP: Development under the Specific Plan, combined with cumulative development in the Plan Area and citywide, including past, present, existing, approved, pending, and reasonably foreseeable future development, could contribute considerably to cumulative impacts related to hazards and hazardous materials. (*Less Than Significant with Mitigation*)

Hazardous material impacts typically occur in a local or site-specific context versus a cumulative context combined with other development projects. It is possible, however for combined effects of transporting and disposal of hazardous materials to be affected by cumulative development.

Future development, with implementation of the identified mitigation measures above, would have a less than significant hazardous materials impact to the public or the environment within the vicinity of the Plan Area. Other foreseeable development within the area, although likely increasing the potential to disturb existing contamination and potentially increase the handling of hazardous materials, would be required to comply with the same regulatory framework as the proposed Specific Plan. These stringent regulatory requirements include federal and State regulatory requirements for transporting hazardous materials or cargo (including fuel and other

materials used in all motor vehicles) on public roads or disposing of hazardous materials (e.g., CalEPA, Caltrans, DOT, DTSC, and CCHS requirements discussed above). Therefore, the effect of development under the Specific Plan on hazardous materials, in combination with other foreseeable projects, would be less than significant. Therefore, no additional mitigation is required.

Significance after Mitigation: Less Than Significant.

Mitigation: Mitigation Measures HAZ-1a.SP, HAZ-1b.SP, HAZ-1c.SP, HAZ-1d.SP, HAZ-2a.SP, HAZ-2b.SP, HAZ-4.SP, and Mitigation Measure HYD-1.SP.

Impact C-HAZ-1.SA4: Development under the Sub-Area 4 Project, combined with cumulative development in the Plan Area and citywide, including past, present, existing, approved, pending, and reasonably foreseeable future development, could contribute considerably to cumulative impacts related to hazards and hazardous materials. (*Less Than Significant with Mitigation*)

As discussed above for the Specific Plan, hazardous material impacts typically occur in a local or site-specific context versus a cumulative context combined with other development projects. It is possible, however for combined effects of transporting and disposal of hazardous materials to be affected by cumulative development.

Future development, with implementation of the identified mitigation measures above, would have a less than significant hazardous materials impact to the public or the environment within the vicinity of the Sub-Area 4 Project site. Other foreseeable development within the area, although likely increasing the potential to disturb existing contamination and potentially increase the handling of hazardous materials, would be required to comply with the same regulatory framework as the Sub-Area 4 Project. These stringent regulatory requirements include federal and State regulatory requirements for transporting hazardous materials or cargo (including fuel and other materials used in all motor vehicles) on public roads or disposing of hazardous materials (e.g., CalEPA, Caltrans, DOT, DTSC, and CCHS requirements discussed above). Therefore, the effect of development under the Sub-Area 4 Project on hazardous materials, in combination with other foreseeable projects, would be less than significant. Therefore, no additional mitigation is required.

Significance after Mitigation: Less Than Significant.

Mitigation: Mitigation Measures HAZ-1a.SP, HAZ-1b.SP, HAZ-1c.SP, HAZ-1d.SP, HAZ-2a.SP, HAZ-2b.SP, HAZ-4.SP, and Mitigation Measure HYD-1.SP.

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4.8 Hydrology, Sea Level Rise, and Water Quality

4.8.1 Introduction

This section describes existing hydrologic conditions in the Plan Area and Sub-Area 4 Project site vicinity and presents conditions and applicable regulations that pertain to surface water drainage, stormwater management, flooding potential, and water quality. This section also discusses the changes in hydrology and water quality that could result from implementation of the Specific Plan and Project, determines impacts, and identifies appropriate mitigation measures when necessary. This section refers to information included in the *Utility Infrastructure Analysis for South Shoreline Specific Plan* report prepared by NCE in 2015 (Utility Analysis).[1]

4.8.2 Environmental Setting

Hydrology

Regional

Richmond lies in the Central Basin within the San Francisco Bay Hydrologic Region. San Francisco Bay marks a natural topographic separation between the northern and southern coastal mountain ranges. The Bay estuarine system conveys the waters of the Sacramento and San Joaquin rivers into the Pacific Ocean. The rivers enter the Bay through the delta at the eastern end of Suisun Bay.

Within the San Francisco Bay Hydrologic Region, the City is a part of the San Francisco Bay Central planning area. This unit is divided into a number of smaller watersheds that are defined by major drainages or hydrologic features of the region (SFRWQCB, 2015). A series of linear drainage basins trending northeast to southwest extend from the ridges of the local extension of the California Coastal Range, the Berkeley Hills, across the alluvial plain[2] to San Francisco Bay. Watersheds in this this region include Refugio Creek, Pinole Creek, Garrity Creek, Rheem Creek, San Pablo Creek, Wildcat Creek, Baxter Creek, and Cerrito Creek (Sowers et al., 2006). Baxter Creek and Meeker Slough are the primary hydrologic features of the Plan Area. The Baxter Creek watershed drains into Stege Marsh and the Richmond Inner Harbor whereas Meeker Slough is fed by a natural open channel called Meeker Tidal Creek. Meeker Slough, like Stege Marsh, empties into the Bay. The Richmond Marina also provides additional hydrologic outfalls for drainage of water from the City into the Bay.

Plan Area Stormwater Infrastructure

Stormwater runoff is that portion of rainfall that is not absorbed into the ground, taken up by plants, or lost through evaporation. Coarse-grained, permeable soils and heavy vegetative cover reduce the volume of runoff, while steep slopes, fine-grained soils, and impervious surfaces (buildings and pavement) increase the volume of runoff. The duration, frequency, and total

[1] This analysis is available at the City Planning and Building Division office for review.
[2] An alluvial plain is an area formed by deposition of sediment by a stream.

amount of rainfall also affect the volume of runoff; frequent or heavy rains saturate the soil and reduce infiltration, so the percentage of rain that runs off the land increases with the severity of a storm.

The Plan Area is located north of and adjacent to the Bay, and south and southwest I-580. More specifically, the Plan Area is located within five existing drainage areas that discharge directly or indirectly into the Bay. These drainage areas include the lower portions of the Baxter Creek and Meeker Slough watersheds, and the eastern portion of Santa Fe/Harbor Channel Watershed.

Richmond Harbor

Stormwater runoff from Sub-Area 1 in the northwest part of the Plan Area (north of the Richmond Pacific Railroad line and west of Marina Bay Parkway, and including the existing commercial/light-industrial developments along Meeker Avenue and Wright Way) flows into the Richmond Harbor drainage basin. Runoff is collected and conveyed through a storm drain that varies from 30 inches to 42 inches in diameter, and extends along Marina Way South, west through a large business complex to Harbor Way, and then south within Harbor Way until discharging into Richmond Harbor at the south end of Harbor Way.

Richmond Marina

Stormwater runoff from the portion of the Plan Area that lies south of the Richmond Pacific Railroad line and west of Marina Bay Parkway (also within Sub-Area 1) is collected via a series of storm drain pipes located in Regatta Boulevard. These pipes range in diameter from 18 to 42 inches. At the intersection of Regatta Boulevard and Melville Square, a storm drain that ranges from 48 inches to 54 inches in diameter conveys these flows southwest within Melville Square and through Marina Park to an outfall structure at the Richmond Marina. Land uses in this drainage area include existing commercial/light-industrial and the Anchorage at the Bay multi-family residential development.

Meeker Slough

The majority of stormwater runoff generated in the Plan Area, including nearly all of the stormwater from the Berkeley Global Campus site as well as all stormwater from Sub-Area 2 and Sub-Area 3, is tributary to Meeker Slough, which flows into the Bay. A 54-inch diameter storm drain extending south along Marina Bay Parkway collects runoff from developed properties along the east and west sides of Marina Bay Parkway in the central portion of the Project Area. This storm drain then crosses Regatta Boulevard and discharges into Meeker Tidal Creek, a natural open channel, which quickly becomes Meeker Slough. In addition, a 54-inch diameter culvert conveys runoff under I-580 from a portion of the City north of the Project Area, and connects to the 54-inch diameter storm drain that runs in Marina Bay Parkway near the intersection of Meeker Avenue.

A 60-inch culvert crosses under I-580 and enters the Plan Area at the north end of South 34th Street, where it then transitions into a concrete trapezoidal channel that runs south along the west side of South 34th Street. At the intersection of South 34th Street and Regatta Boulevard, the flows are conveyed via culvert to another concrete trapezoidal channel that extends south along the east side of Regatta Boulevard. At the intersection of Regatta Boulevard and South 32nd Street, the channel continues to run south along the east side of South 32nd Street until it discharges into Meeker Tidal Creek.

A network of storm drain pipes ranging in diameter from 15 inches to 18 inches collect runoff from the light-industrial district located in the northeastern portion of the Plan Area, as well as the portion of the Berkeley Global Campus fronting Regatta Boulevard. These pipes join into a 24-inch diameter pipe that runs westerly along Regatta Boulevard until connecting to the culvert at the intersection of Regatta Boulevard and South 34th Street, and ultimately discharges into Meeker Tidal Creek.

Sub-Area 4 Project Site Stormwater Infrastructure

Baxter Creek

Stormwater runoff generated from existing development within Sub-Area 4, including a portion of the Berkeley Global Campus fronting Meade Avenue, and the Campus Bay/Seaport industrial district is conducted by an 18-inch to 30-inch storm drain that discharges into a tidal slough at the south end of South 51st Street, which empties into the Bay via Baxter Creek.

Open Space/Marshlands

The majority of stormwater runoff generated from the undeveloped open space at the eastern-most part of the Plan Area flows directly into the Bay. Some of the landfilled areas adjacent to Channel Avenue within the undeveloped open space at the eastern part of the Plan Area drain into Baxter Creek, which empties into the Bay. Located southeast of this drainage area is Hoffman Marsh, a stretch of marshland which extends from Sub-Area 4 between the Bay Trail and I-580 toward Point Isabel Regional Shoreline.

Water Quality and Runoff

Stormwater runoff is the source of up to 80 percent of the pollution which eventually empties into the Bay, and can contain the following pollutants: oil, grease, or antifreeze from leaking cars or trucks; paint or paint products; leaves or yard waste; pesticides, herbicides, or fertilizers from yards and gardens; solvents and household chemicals; animal wastes, litter, or sewer leakage; and construction debris such as fresh concrete, mortar, or cement.

Regional

The San Francisco Bay is a large estuary with complex hydrodynamics that result in intricate sediment and chemical fate transport processes. The water quality in the Bay is influenced by a

variety of factors including a mix of point and non-point source[3] discharges, groundwater and surface water interactions, and water quality/water quantity relationships. A number of water bodies in the Bay Region are impaired due to excessive siltation, but it is very difficult to distinguish between excessive siltation and impairment due to flow alterations. Central San Francisco Bay, San Pablo Bay, San Pablo Creek, and Wildcat Creek are among the impaired water bodies in the San Francisco Bay Region. In accordance with Clean Water Act requirements, pollutants in these water bodies have been identified and include chlordane, pesticides, dioxins, furans, mercury, polychlorinated biphenyls (PCBs), and selenium (SWRCB, 2010).

During periods of wet weather, rain carries pollutants and sediments from all parts of a watershed into surface water bodies such as storm drains, streams, rivers, reservoirs, or marshes. In an urban setting, natural drainage patterns have been altered and stormwater runoffs as well as non-storm discharges (irrigation water, accidental spills, washdown water, etc.) pick up sediments and contaminants from land surfaces, and transport these pollutants into surface and ground water. The diffuse sources of these pollutants range from parking lots, bare earth at construction sites, agricultural sites and a host of many other sources.

Plan Area (Sub-Area 4 Project Site)

Baxter Creek, to the south of the Plan Area, near Sub-Area 4, has been listed as impaired due to trash (USEPA, 2012). As discussed in Section 4.14, *Utilities and Service Systems*, of this EIR, most of the Plan Area is currently covered with pavement or buildings associated with industrial uses, which limit pervious surfaces and have been sources of trash that has impaired the water quality of Baxter Creek.

In the Plan Area and its surroundings, the storm drain system is designed to prevent flooding by channeling stormwater runoff south via channels, culverts, and overland flow toward eventual discharge to San Francisco Bay using the hydrologic and stormwater features described above. However, much of this runoff is not treated, and can potentially deliver pollutants to the Bay from any impermeable surface within the Plan Area.

Precipitation

The climate of the San Francisco Bay Area is characterized as Mediterranean with cool, wet winters and relatively warm, dry summers. Annual rainfall in this region is variable depending on the year, but averages approximately 22 inches (City of Richmond, 2011). Nearly 95 percent of this precipitation falls during the winter rainy season, October through April, with the heaviest rainfall typically occurring in December, January, and February (WRCC, 2016). Analysis of long-term precipitation records indicates that wetter and drier cycles, lasting several years each, are common in the region.

[3] A point source is any discernible, confined, and discrete conveyance (e.g., a pipe discharge) of pollutants to a water body from such sources as industrial facilities or wastewater treatment plants. Nonpoint pollutant sources are sources that do not have a single, identifiable discharge point but are rather a combination of many sources.

Floods in the San Francisco Bay Area generally result from intense rainstorms following prolonged rainfall that has saturated the ground. Peak flows are usually of short duration.

Groundwater Basins

The Plan Area is located within the East Bay Plain portion of the 580-square-mile Santa Clara Valley Groundwater Basin (East Bay Plain Subbasin) which occupies a northwest trending alluvial plain bounded on the north by San Pablo Bay, on the east by an expanse of Franciscan Basement rock (the East Bay hills that rim the Bay), and on the south by the Niles Cone groundwater basin. The East Bay Plain Subbasin is underlain by unconsolidated sediments. The water-bearing units in the subbasin include alluvial fan deposits and artificial fill. The combined thickness of these deposits is about 1,000 feet (DWR, 2004).

The East Bay Plain Subbasin consists of younger, water-bearing alluvial deposits that are mainly recharged by percolation through the coarse, gravelly material found in the region's streambeds and, to a lesser extent, by the direct percolation of rainfall within relatively pervious soils found in some upland valleys. Water quality is generally acceptable within the bayside areas of the county, and well yields can be adequate for a range of uses, including municipal supply (DWR, 2004).

Groundwater within the Plan Area is generally found at shallow depths (4 to 14 feet below existing grade; Arcadis, 2014) at locations near the Bay, to depths of from 8 to 26 feet below existing grade in the more northern parts of the Plan Area (AEI Consultants, 2013), and is contained within the alluvial sediments. Groundwater resources are not generally used in this area for water supply purposes because the water quality is typically brackish due to the proximity to the Bay. The Plan Area's proximity to the Bay also affects the elevation of the groundwater table, due to the effects of tidal fluctuations and rainfall.

Flooding

Flooding is inundation of normally dry land as a result of rise in the level of surface waters or rapid accumulation of stormwater runoff. Flooding can also occur due to tsunamis, seiches, or failure of dams. For areas located along the Bay, increased flooding is experienced during the combination of high tides and major storm events. During storm events, high tides may be augmented with atmospheric "storm surge" effects that increase Bay water levels. Winds accompanying the storms can generate waves with crests above Bay water levels that can cause further inundation where the waves runup on the shoreline. Elevated Bay water levels may also raise the water surface elevation within creeks, which can result in inundation of adjacent, low-lying lands.

The Federal Emergency Management Agency (FEMA), through its Flood Insurance Rate Map (FIRM) program, designates areas where flooding could occur during a 1.0 percent annual chance (100-year) flood event or a 0.2 percent annual chance (500-year) flood event. The FIRM defines

the Base Flood Elevation (BFE).[4] FEMA defines the areas of inundation by a 100-year flood event as Zone A in the FIRMs. Zone A areas with a specified BFE are further delineated as Zone AE. Areas designated as Zone V are subject to inundation by a 100-year flood event with additional hazards that result from storm-induced velocity wave action by a 3-foot or higher wave. Similar to Zone AE, Zone VE indicates that a BFE has been designated for Zone V. Most municipalities do not allow construction within Zone A unless the development is raised to a level above the BFE.

Plan Area

The September 30, 2015 FIRM for the Plan Area (**Figure 4.8-1)** indicates that portions of the Plan Area are within a Zone AE with a BFE elevation of 10 feet. The 2015 FIRM additionally shows that a portion of the Plan Area is subject to a 500-year storm flood hazard. This 500-year flood zone is identified primarily on the northwest corner of Sub-Area 1 between I-580 and Meeker Avenue near Marina Way South as well as within Sub-Area 2, adjacent to Meerker Tidal Creek and along Marina Bay Parkway.

Sub-Area 4 Project Site

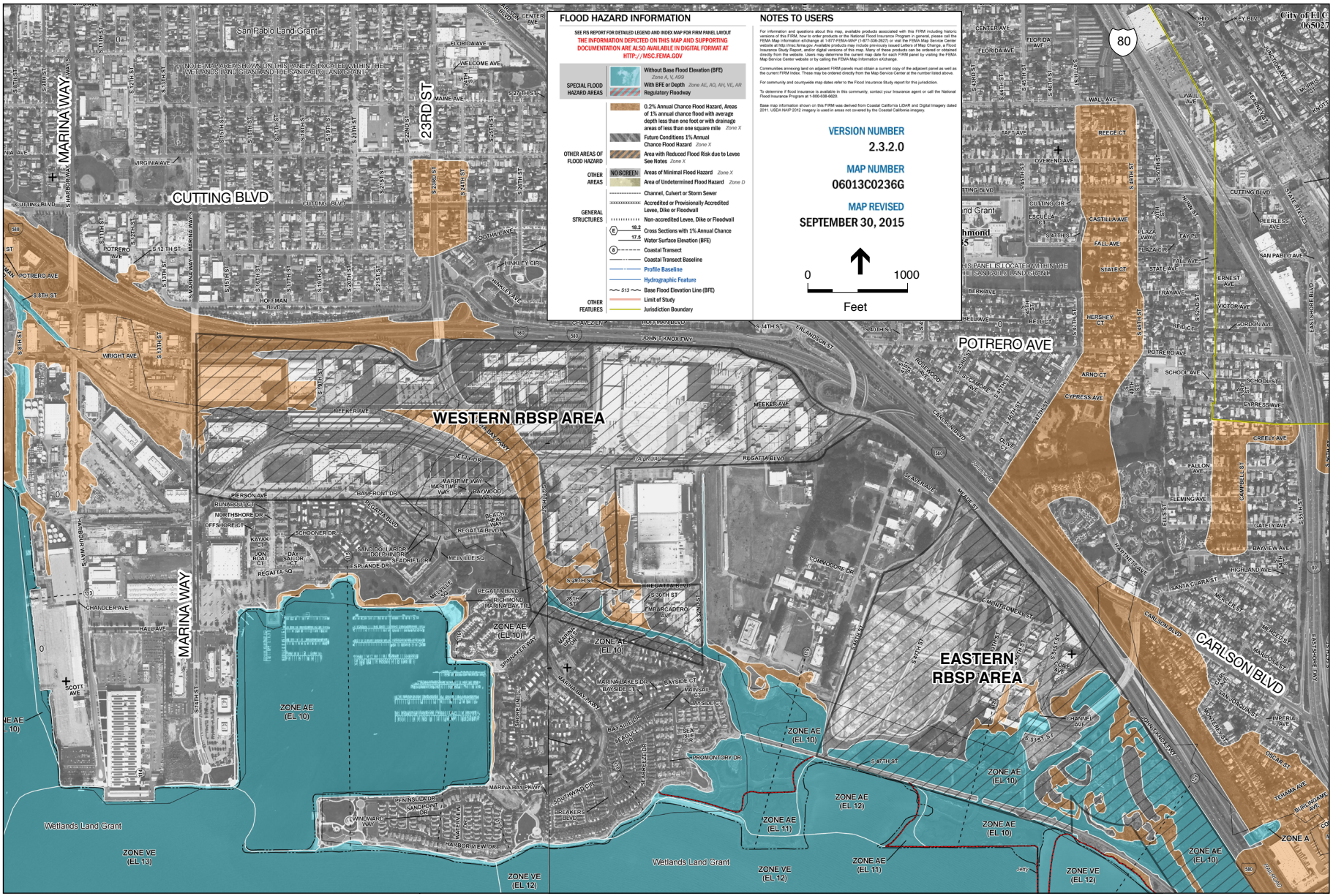
The parts of the Plan Area designated as Zone AE with a BFE elevation of 10 feet are primarily located within or adjacent to the Sub-Area 4 Project site shoreline extending inland along the San Francisco Bay Trail to the Berkeley Global Campus, and along Meeker Tidal Creek through Meeker Slough, Stege Marsh, and the eastern lagoon just between the southern ends of 49th Street and 51st Street. The Zone AE also covers areas near Channel Avenue and Bayview Avenue, including the existing pistol range. However, the upland portion of the Zeneca site (Lots 1 and 2 and the upland portion of Lot 3), is not subject to inundation during either 100-year or 500-year flood events.

Dam Failure

Flooding can also occur due to dam failure. The California DWR, Division of Safety of Dams (DSOD) oversees the construction of dams that are more than 25 feet high and impound more than 15 acre-feet of water, or more than six feet high and impound more than 50 acre-feet of water. Due to DSOD regulatory oversight, monitoring, and design review, the potential is minimal for the catastrophic failure of a properly designed and constructed dam, whether caused by a seismic event, flood event, unstable slope conditions, or damage from corrosive or expansive soils.

Some areas in Richmond are located within the dam failure inundation area for the San Pablo Reservoir, which includes the area of the city west of 23rd Street (City of Richmond, 2011). None of the Plan Area is located within this dam failure inundation area.

[4] FEMA bases the BFE on the North American Vertical Datum of 1988.



SOURCE: FEMA-National Flood Insurance Program

Figure 4.8-1

Existing FEMA FIRM for Plan Area

Tsunami and Seiches

Tsunami are waves caused by an underwater earthquake, landslide, or volcanic eruption. Flooding from tsunami is more likely to affect Pacific Ocean coastlines. Although low-lying areas along San Francisco Bay are susceptible to waves entering the Bay, waves are expected to attenuate or diminish with distance from the Golden Gate entrance (URS, 2013). Within the Plan Area, parts of Sub-Area 4 are located within a mapped tsunami inundation area (City of Richmond, 2012; CGS, 2009).

A seiche is defined as a surface water free or standing wave oscillation that is contained within a partially or completely enclosed basin. Seiche waves are initiated by some event occurring within the enclosed basin – commonly meteorological (e.g., wind or pressure changes), geologic (e.g., earthquake), or other mass movement such as a surface or subsurface landslide, which results in a movement of water within the basin as it reflects off the perimeter of the basin. San Francisco Bay is partially enclosed, with outlets to San Pablo Bay, as well as the Pacific Ocean via the Golden Gate, and is relatively shallow, with a mean depth of approximately 27.6 feet.[5] Geologic-induced seiche events have not been documented in San Francisco Bay and meteorological effects are quickly dissipated due to the connection with the Pacific Ocean. A seiche event at San Pablo Dam could lead to dam failure and potential flooding, although not within the Plan Area (City of Richmond, 2011; City of Richmond, 2012).

Sea Level Rise

As discussed in Section 4.6, *Climate Change and Greenhouse Gas Emissions*, a rise in average global temperature due largely to an increase in greenhouse gas (GHG) emissions is expected to be accompanied by a rise in global sea levels.

The State of California has provided planning guidance for assessing and adapting to the impacts of sea level rise. The State's current guidance (Ocean Protection Council, 2013) incorporates the most recent scientific findings from the National Academy of Science National Research Council (NRC, 2012). For the San Francisco Bay Region, the National Research Council projects sea level rise of 11 inches by 2050 and 36 inches by 2100. These projections consider regional sea levels and vertical land motion. The NRC's possible range for San Francisco Bay sea level rise in 2050 is 5 to 24 inches and in 2100 is 17 to 66 inches. The ranges account for uncertainty in future GHG emissions and Earth's response to these emissions. In spite of the uncertainty in NRC's and other projections, all trends are upward and are similar in magnitude when rounded to the nearest foot and allowing for variability of one or two decades. Consistent with these two primary resources, the Contra Costa County Adapting to Rising Tides (ART) Program, led by the San Francisco Bay Conservation and Development Commission (BCDC), prepared a report which presents a broad assessment of Contra Costa County's shoreline exposure to flooding or inundation from sea level rise and extreme tide events from the 1-year to the 500-year extreme tide event. The report considers 36 inches plus or minus 10 inches the most likely 2100 sea level rise scenario, with 66 inches at the highest end of the range (BCDC, 2016).

[5] Calculated from U.S. Geological Survey. San Francisco Bay Bathymetry 2007. http://sfbay.wr.usgs.gov/sediment/sfbay/geostat.html.

Figure 4.8-2 illustrates a scenario of the 100-year storm event, which currently yields a BFE of 10 ft NAVD88, with the addition of 3 feet of sea level rise, resulting in a future projected BFE of 13 ft NAVD88. **Figure 4.8-3** presents the 100-year storm event with the addition of 5.5 feet of sea level rise, resulting in a future projected BFE of 5.5 feet NAVD88. Note that the future projected BFEs assume that that Bay Trail embankment continues to block waves that emanate from the open Bay, thereby eliminating the contribution of waves to the BFE. If the Bay Trail embankment and/or Stege Marsh degrade and erode, the future BFE would likely be higher due to wave runup.

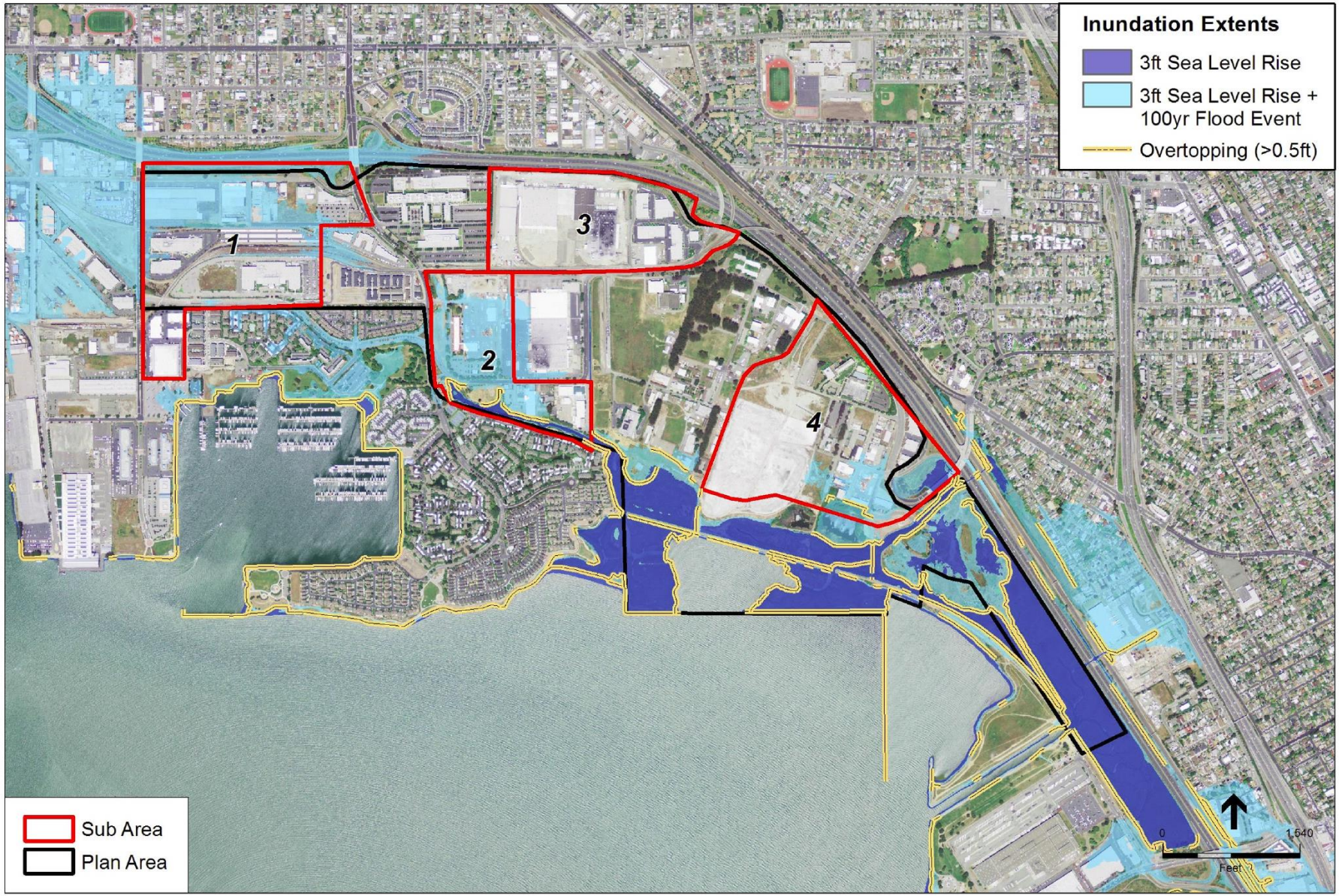
4.8.3 Regulatory Setting

Federal

Federal Clean Water Act

The Clean Water Act (CWA) (33 U.S.C. 1251 – 1376) established the basic structure for regulating discharges of pollutants into the waters of the U.S. and gave the United States Environmental Protection Agency (USEPA) the authority to implement pollution control programs such as wastewater standards for industry. The CWA sets water quality standards for all contaminants in surface waters. The statute employs a variety of regulatory and nonregulatory tools to reduce direct pollutant discharges into waterways, finance municipal wastewater treatment facilities, and manage polluted runoff. The U.S. Army Corps of Engineers (Corps) has jurisdiction over all waters of the U.S. including, but not limited to, perennial and intermittent streams, lakes, and ponds, as well as wetlands in marshes, wet meadows, and side hill seeps. Under Section 401 of the CWA, every applicant for a federal permit or license for any activity which may result in a discharge to a water body must obtain State Water Quality Certification that the proposed activity will comply with state water quality standards.

Section 303(d) of the CWA requires that each state identify water bodies or segments of water bodies that are "impaired" (i.e., not meeting one or more of the water quality standards established by the state). These waters are identified in the Section 303(d) list as waters that are polluted and need further attention to support their beneficial uses. Once the water body or segment is listed, the state is required to establish Total Maximum Daily Load (TMDL) for the pollutant causing the conditions of impairment. TMDL is the maximum amount of a pollutant that a water body can receive and still meet water quality standards. Generally, TMDL is the sum of the allowable loads of a single pollutant from all contributing point and nonpoint sources. The intent of the Section 303(d) list is to identify water bodies that require future development of a TMDL to maintain water quality.

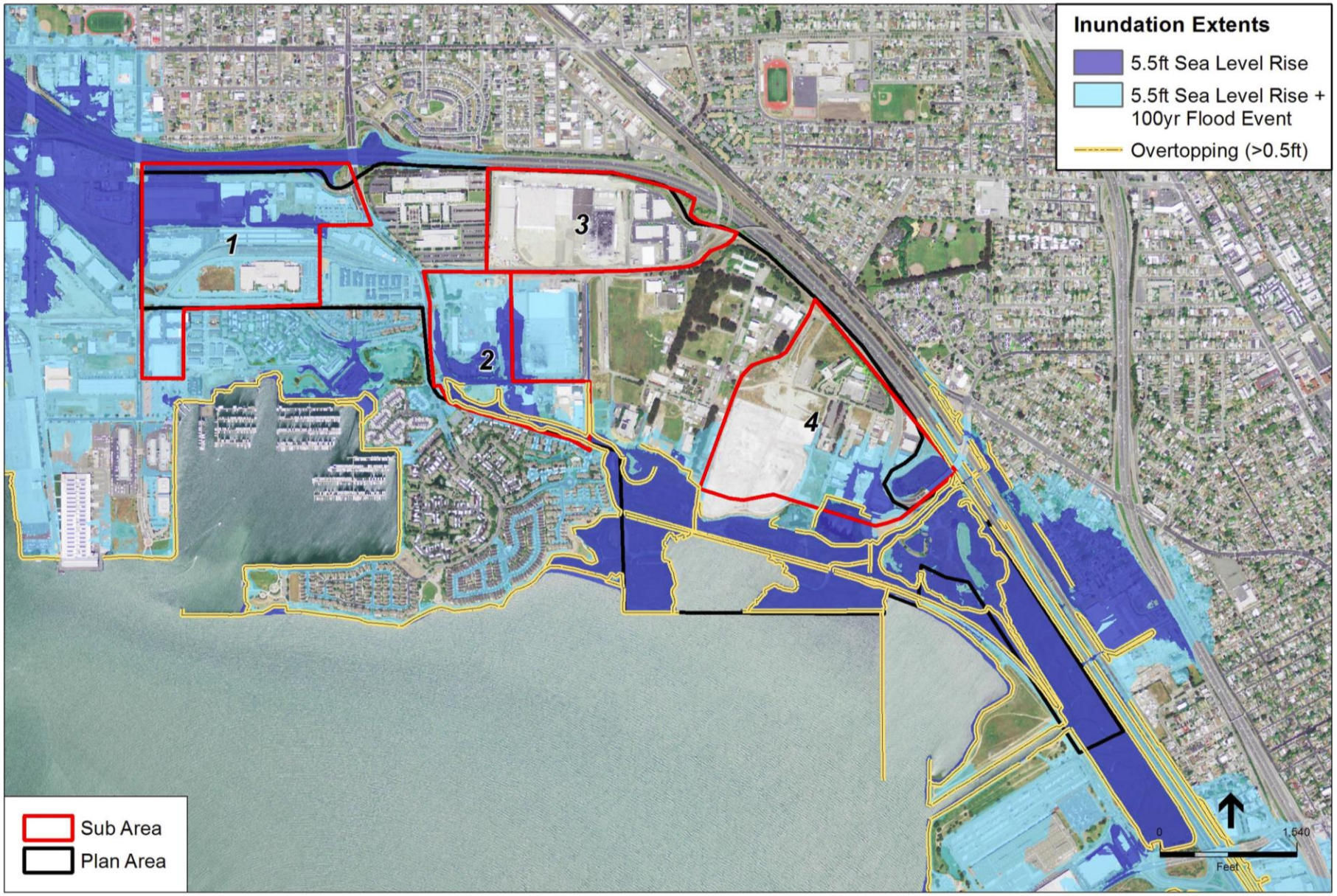


Richmond Bay Specific Plan EIR . 120834

SOURCE: Aerial (NAIP 2014), SLR (AECOM 2015)

Figure 4.8-2

3-foot Sea Level Rise + MHHW + 100 Year Storm Event



SOURCE: Aerial (NAIP 2014), SLR (AECOM 2015)

Figure 4.8-3

5.5-foot Sea Level Rise + MHHW + 100 Year Storm Event

United States Environmental Protection Agency

The USEPA is responsible for implementing federal laws designed to protect air, water, and land. While numerous federal environmental laws guide USEPA's activities, its primary mandate with respect to water quality is the CWA. USEPA has developed national technology-based water quality standards and states have developed water quality standards in accordance with the CWA. USEPA also has authority to establish water quality standards if a state fails to do so. In the National Toxics Rule (NTR) and CTR, USEPA has established such standards for certain toxic pollutants applicable to California waters. These standards are used to determine the amount and the conditions under which pollutants can be discharged.

National Pollutant Discharge Elimination System

The National Pollutant Discharge Elimination System (NPDES) permit program under the CWA controls water pollution by regulating point and nonpoint sources that discharge pollutants into "waters of the U.S." California has an approved state NPDES program. The USEPA has delegated authority for NPDES permitting to the California State Water Resources Control Board (SWRCB), which has nine Regional Water Quality Control Boards (RWQCBs). Under this system, municipal and industrial facilities are required to obtain a NPDES permit from the applicable RWQCB that specifies allowable limits, based on available wastewater treatment technologies, for pollutant levels in their effluent.

Stormwater discharges are regulated somewhat differently than pollutant discharges. Discharge of stormwater runoff from construction areas of one acre or more requires either an individual permit issued by the RWQCB or coverage under the statewide Construction General Stormwater Permit for stormwater discharges (discussed below). Specific industries and public facilities, including wastewater treatment plants that have direct stormwater discharges to navigable waters, are also required to obtain either an individual permit or obtain coverage under the statewide General Industrial Stormwater Permit.

State, Regional and Local

The SWRCB through its RWQCBs have implemented the Water Management Initiative as the model for which water resources are to be protected. The RWQCBs are structured to promote a watershed-based approach towards implementation of programs. The San Francisco Bay RWQCB (SFRWQCB) regulates water quality in the Plan Area and surroundings. San Francisco Bay Regional Water Quality Control Board staff has identified issues for the San Francisco Watershed Management Area based on consideration of a combination of water quality, customer service, and program requirements.

Porter-Cologne Act

The SWRCB and the RWQCBs share responsibility under the Porter-Cologne Act to formulate and adopt water policies and plans, and to adopt and implement measures to fulfill CWA requirements. In order to meet these requirements for the San Francisco Bay Area, the San Francisco Bay Basin Plan (Basin Plan) (discussed below) was prepared by the SFRWQCB to

protect the water quality of the State according to the beneficial uses identified for each water body. Prior to authorizations of waste discharge by the RWQCB, the Porter-Cologne Act requires reports of waste discharges to be filed. The RWQCB then prescribes Waste Discharge Requirements, which serve as NPDES permits under a provision of the Porter-Cologne Act.

Water Quality Control Plan for the San Francisco Region (Basin Plan)

The SFRWQCB is responsible for developing and implementing the San Francisco Bay Basin Plan, which documents approaches to implementing State and federal policies in the context of actual water quality conditions. The SFRWQCB's other activities include permitting of waste discharges and implementing monitoring programs of pollutant effects (as discussed above).

The SFRWQCB most recently revised the Basin Plan on March 20, 2015, which the SWRCB and the Office of Administrative Law previously adopted in 1995. The Basin Plan identifies beneficial uses of receiving waters, water quality objectives imposed to protect the designated beneficial uses, and strategies and schedules for achieving water quality objectives. Section 303(c)(2)(B) of the CWA requires basin plans to include water quality objectives governing approximately 68 of USEPA's list of 126 pollutants.

Water quality objectives are achieved primarily through the establishment and enforcement of Waste Discharge Requirements for each wastewater discharger, as discussed under *Porter-Cologne Act*, above. State policy for water quality control in California is directed toward achieving the highest water quality consistent with maximum benefit to the people of the State. Therefore, all water resources must be protected from pollution and nuisance that may occur from waste discharges. Beneficial uses of surface waters, ground waters, marshes, and mud flats serve as a basis for establishing water quality standards and discharge prohibitions to attain this goal.

Construction General Permit

The California Construction Stormwater Permit (Construction General Permit)[6], adopted by the SWRCB, regulates construction activities that include clearing, grading, and excavation resulting in soil disturbance of at least one acre of total land area. The Construction General Permit authorizes the discharge of storm water to surface waters from construction activities. It prohibits the discharge of materials other than stormwater and authorized non-storm water discharges and all discharges that contain a hazardous substance in excess of reportable quantities established at 40 Code of Federal Regulations 117.3 or 40 Code of Federal Regulations 302.4, unless a separate NPDES Permit has been issued to regulate those discharges.

The Construction General Permit requires that all developers of land where construction activities will occur over more than one acre do the following:

- Complete a Risk Assessment to determine pollution prevention requirements pursuant to the three Risk Levels established in the General Permit;

6 *General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities*, Order No. 2009-0009-DWQ, as amended by Order No. 2010-0014-DWQ, National Pollutant Discharge Elimination System No. CAS000002.

- Eliminate or reduce non-storm water discharges to storm sewer systems and other waters of the Nation;

- Develop and implement a Stormwater Pollution Prevention Plan (SWPPP), which specifies Best Management Practices (BMPs) that will reduce pollution in storm water discharges to the Best Available Technology Economically Achievable/Best Conventional Pollutant Control Technology standards; and

- Perform inspections and maintenance of all BMPs.

Typical BMPs contained in SWPPPs are designed to minimize erosion during construction, stabilize construction areas, control sediment, control pollutants from construction materials, and address post construction runoff quantity (volume) and quality (treatment). The SWPPP must also include a discussion of the program to inspect and maintain all BMPs.

Dewatering Permit

Construction activities such as excavation and trenching in areas with shallow groundwater would require dewatering, which would be subject to the SFRWQCB construction dewatering permit requirements. Dewatering operations are regulated under State requirements for stormwater pollution prevention and control. Discharge of untreated non-stormwater from a trench or excavation that contains sediments or other pollutants above regulatory thresholds to sanitary sewer, storm drain systems, creek bed (even if dry), or receiving waters is prohibited. Discharge of uncontaminated groundwater from dewatering is a conditionally exempted discharge by the SFRWQCB. However, the removed water could potentially be contaminated with chemicals released from past site uses, construction equipment, or sediments from excavation. Therefore, disposal of dewatering discharge would require pre-discharge testing and permits either from the SFRWQCB for discharge to surface creeks and groundwater or from local agencies for discharge to storm or sanitary sewers. The SFRWQCB lists non-stormwater discharge controls specifically for dewatering operations. Discharge of water resulting from dewatering operations would require a NPDES Permit, or a waiver (exemption) from the SFRWQCB, which would establish discharge limitations for specific chemicals (if they occur in the dewatering flows).

Dredging Permitting

Construction activities associated with implementation of the Specific Plan, such as shoreline improvements in the area of Sub-Area 4, could involve dredging. The project sponsor for such improvements would be required to apply for and obtain a CWA Section 404 permit from the Corps prior to dredging. (See also Section 4.3, *Biological Resources*, for additional discussion of Section 404 permitting). As a part of the Section 404 permitting process, the project sponsor would be required to obtain a water quality certification from the SFRWQCB under Section 401 of the CWA. The project would be required to dredge and dispose material in accordance with the requirements of the SFRWQCB Basin Plan and the Corps. The SFRWQCB may choose to act under the authority of the state Porter Cologne Water Quality Control Act and issue waste discharge requirements for the project in conjunction with the water quality certification. Typically, the dredged material is disposed at ocean or in-bay disposal sites or reused for wetland restoration or dike maintenance. In the event an in-bay disposal is proposed, the project sponsor

would be required to provide an adequate alternatives analysis showing that there are no practicable alternatives to in-bay disposal.

The Dredged Material Management Office (DMMO) regulates dredging and dredged material in the San Francisco Bay region. The DMMO consists of representatives from USEPA (Region 9), U.S. Army Corps of Engineers (San Francisco), SFRWQCB, BCDC, and the State Lands Commission. The DMMO serves as the single point of entry for applicants to the dredging and disposal permitting process. The DMMO regulates two types of dredging projects; 1) small dredging projects defined by a project depth of less than -12 feet mean lower low water (MLLW) and generating less than 50,000 cubic yards per year on average; and 2) other dredging projects defined by project depth greater than -12 feet MLLW or average annual volumes greater than 50,000 cubic yards (USACE, 2001). Projects involving wetland areas of the Plan Area (Sub-Area 4 Project site), which would require dredging permits, (e.g., potential road realignment, shoreline trail maintenance or enhancement) would likely fall into the first category.

Contra Costa Clean Water Program and Municipal Regional Permit

The Contra Costa Clean Water Program has been established as the local entity responsible for implementing compliance with the federal CWA to control stormwater pollution. It comprises Contra Costa County, 16 incorporated cities, and the Contra Costa County Flood Control and Water Conservation District. The program is being conducted in compliance with the NPDES Municipal Regional Permit (MRP) issued by the SFRWQCB for municipal separate storm sewer systems (also referred to as MS4s). The permit contains a comprehensive plan to reduce the discharge of pollutants to the "maximum extent practicable" and mandates that participating municipalities implement an approved stormwater management plan. The program incorporates BMPs that include construction controls (such as a model grading ordinance), legal and regulatory approaches (such as stormwater ordinances), public education and industrial outreach (to encourage the reduction of pollutants at various sources), inspection activities, wet-weather monitoring, and special studies.

The SFRWQCB first added Provision C.3 to the stormwater permit in February 2003. The MRP was then adopted in October 2009 (Order R2-2009-0074 NPDES Permit No. CAS612008), updated and adopted Novembr 2015, and effective January 2016. The MRP governs discharges from municipal storm drains operated by 76 local government entities, including those in Contra Costa County.

In accordance with these updated requirements, new development and redevelopment projects in Richmond are required to incorporate treatment measures and other appropriate source control and site design features to reduce the pollutant load in stormwater discharges and manage runoff flows. The Specific Plan and Project would be subject to these requirements.

Provision C.3 Permit Requirements

The NPDES MS4 permit includes Provision C.3 that governs storm drain systems and regulates post-construction stormwater runoff. The provision requires new development and redevelopment

projects to incorporate treatment measures and other appropriate source control and site design features to reduce the pollutant load in stormwater discharges and to manage runoff flows. "Redevelopment" is defined as a project on a previously developed site that results in the addition or replacement of a minimum of 10,000 square feet of impervious surface. Projects that would add or replace more than 10,000 square feet of impervious surfaces would be required to implement treatment measures and appropriate source control and site design measures under the NPDES permit. Other thresholds outlined in the C.3 Guidebook are summarized below.

Example Thresholds and Requirements of the C.3 Guidebook (CCCWP, 2012) include:

- *All projects requiring municipal approvals or permits (includes single-family residences):* As encouraged or directed by local staff, preserve or restore open space, riparian areas, and wetlands as project amenities, minimize land disturbance and impervious surfaces (especially parking lots) cluster structures and pavements, include micro-detention in landscaped and other areas, and direct runoff to vegetated areas; use Bay-friendly landscaping features and techniques; include Source Controls specified in Appendix D.

- *Projects between 2,500 and 10,000 square feet requiring approvals or permits (includes single-family residences):* Install one or more of the following: direct roof runoff into cisterns or rain barrels for reuse; direct roof runoff onto vegetated areas; direct runoff from sidewalks, walkways, and/or patios on to vegetated areas; direct runoff from driveways and/or uncovered parking lots on to vegetated areas; construct sidewalks, walkways, and/or patios with permeable surfaces; construct bike lanes, driveways, and uncovered parking lots with permeable surfaces.

- *Auto service facilities, gas stations, restaurants, and uncovered parking lots over 5,000 square feet, as well as projects between 10,000 square feet and one acre:* Prepare and submit a Stormwater Control Plan, including features and facilities to ensure runoff is treated before leaving the site; evaluate feasibility of storage for later use; use the Low-Impact Design (LID) Design Guide, including sizing factors and criteria for "treatment only."

- *Projects an acre and larger:* Select one of four flow-control compliance options in Appendix C. Where required, design project features and facilities for hydrograph modification management (flow-control) as well as stormwater treatment; evaluate feasibility of storage for later use; prepare and submit a Stormwater Control Plan and use the LID Design Guide, including the sizing factors and criteria for "treatment and flow control."

City of Richmond

Richmond General Plan 2030

The Richmond General Plan 2030 identifies multiple policies in order to provide for adequate storm drainage flood control facilities to meet both current and future needs. These policies consider potential development areas and their relation to flood hazard zones, maintenance of existing facilities while prioritizing those areas already prone to flooding, as well as minimizing impervious surfaces to reduce runoff and peak flows.

> *Policy ED1.3 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.
>
> *Policy LU6.4 Long-Term Environmental Sustainability.* Promote development standards and land use patterns that encourage long-term sustainability. Support the restoration of natural features such as creeks and wetlands in urban areas and existing neighborhoods as a means of connecting residents with nature and reversing damage to natural systems. Promote landscaping that incorporates native, drought-tolerant plants and sustainable maintenance practices and standards. Provide trees on residential and mixed-use streets and green infrastructure to reduce stormwater runoff. Encourage compact development close to amenities and green buildings to reduce energy use.
>
> *Policy CR5.3 Green Streets.* Promote the development of street design elements that incorporate natural stormwater drainage and landscaping in new and retrofitted streets. (*See also: CR5.F; HW4.L; EC4.F*)
>
> *Action 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.
>
> *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 and require them to maintain and upgrade gas and fuel lines at their own expense to preserve the public health and safety. 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.

Policy CF3.2 Green Infrastructure and Landscape. Promote ecologically-sensitive approaches in landscaping, stormwater drainage, groundwater recharge and flood control. Work with EBMUD and local nurseries to promote "waterwise" landscaping. Continue to gather and distribute new information that will assist residents and businesses to establish planted areas that require fewer chemicals or pesticides and help to filter stormwater and recharge groundwater aquifers.

- **Goal CN3: Improved Water Quality.** Pursue a multi-jurisdictional approach to protecting, maintaining and improving water quality and the overall health of the watershed. A comprehensive, integrated approach will ensure compliance with federal and state standards, and address a range of interconnected priorities including: water quality and runoff; stormwater capture, storage and flood management techniques that focus on natural drainage; natural filtration and groundwater recharge through green infrastructure and habitat restoration; and water recycling and conservation.

  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.

  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.
  (See also: HW9.3)

  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.
  See also: SN1.2

  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.

(See also: HW9.L.)

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 Contra Costa County Flood Control and Water Conservation 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.

The City of Richmond's General Plan includes an Energy and Climate Change element, which contains a goal to prepare to respond to and protect residents and businesses from increased risks of natural disasters, including flooding. Policy EC6.3 of this element requires new development along the shoreline to be designed to provide enough of a setback from the water to allow for future elevation increases of at least three feet from the existing elevation along the shoreline:

Policy EC6.3 Adapting to Climate Change. Prepare for and adapt to future impacts of changing weather patterns and sea level fluctuations. Protect neighborhoods, infrastructure and facilities, the shoreline and natural resources from the impacts of climate change. Require new developments to include an evaluation of climate change impacts in the project review process. Shoreline and public access improvements shall be designed to allow future increases in elevation along the shoreline edge to keep up with higher sea level values, when

they occur. Design elements shall include providing adequate setbacks to allow for future elevation increases of at least three feet from the existing elevation along the shoreline.

City of Richmond Municipal Code

Stormwater Management and Discharge Control

The City's formal stormwater management and discharge control ordinance is described in Chapter 12.22 of Richmond Municipal Code. The program describes triggers and requirements for stormwater control plans, illicit discharge prohibitions, and BMPs for development projects. The stormwater management and discharge control ordinance requires new development that could result in the release of stormwater pollutants to take all practicable measures to reduce pollutants, in compliance with the CWA.

Flood Damage Protection

Chapter 12.56 of the Richmond Municipal Code includes detailed standards of construction for building within designated flood zones. Per this chapter, a development permit is required for any construction or other development within any area designated on a FEMA FIRM map as Zone A or Zone VE (subject to a 100-year flood hazard), or Zone X (subject to a 500-year flood hazard). The City of Richmond Public Works Department reviews all development permits to determine that permit requirements have been satisfied, all other State and federal permits have been obtained, the site is reasonably safe from flooding, and the proposed development does not adversely affect the carrying capacity of areas where base flood elevations have been determined but a floodway has not been designated.

4.8.4 Significance Criteria

Based on California Environmental Quality Act (CEQA) Guidelines Appendix G, the Specific Plan or Project would cause adverse impacts to hydrology and water quality if they would:

a) Violate any water quality standards or waste discharge requirements;

b) 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 (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);

c) 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 which would result in substantial erosion or siltation on- or off-site;

d) 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 run-off in a manner which would result in flooding on-or off-site;

e) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff;

f) Otherwise substantially degrade water quality;

g) 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;

h) Place within a 100-year flood hazard area structures which would impede or redirect flood flows;

i) 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; or

j) Result in or cause inundation by seiche, tsunami, or mudflow.

Approach to Analysis

As discussed in Chapter 3.0, *Project Description*, the proposed Plan Area stormwater system would include gravity storm drain pipes and drainage inlets installed within the new roadways to collect and convey runoff generated from the new and redeveloped portions of the Plan Area. Existing storm drain facilities would remain in place.

New stormwater management systems established for individual projects within the Plan Area would integrate water quality treatment features designed to meet current Contra Costa County and SFRWQCB design criteria, and would be designed to treat project-specific runoff. The LID biotreatment measures that would be implemented throughout the Plan Area would include bioretention planters, street planters, bioswales, subgrade infiltration areas, permeable paving and other approved treatments. New backbone streets are anticipated to include linear bioretention planters, bioswales, and street planters within landscape strips. To maintain groundwater quality, infiltration management techniques would not be employed in areas with engineered low permeability environmental caps, or would be implemented as directed by an environmental agency of applicable jurisdiction. New stormwater management systems will also be designed to address the potential impacts of future sea level rise, which primarily affects the low lying areas in the southeast portion of the Plan Area. **Figure 4.8-5** shows storm drain system improvements as outlined in the NCE infrastructure report; as shown in this figure, a new stormwater outfall is proposed in the area of Stege Marsh.

Specific Plan

The analysis of the Specific Plan in this section is based on the "foreseeable maximum theoretical buildout" of the Specific Plan presented in Table 3-3 of Chapter 3, *Project Description*, of this EIR. This buildout program represents the maximum foreseeable future development scenario within which development under the guidelines of the Specific Plan could take place within the developable portion of the Plan Area. This analysis focuses particularly on water quality impacts related to stormwater runoff, as well as impacts related to a projected 3 and 5.5 feet of sea level rise, and associated adaptation in accordance with current BCDC policies and requirements.

Recommended features and opportunities, and stormwater quality standards included in the Specific Plan that affect hydrology and water quality include the following:

Specific Plan Recommended Features and Opportunities:

- *Sea Level Rise:*
    - Community Parks*:* The Specific Plan recommends the design of the community park in Sub-Area 4 be "elevated to the level of surrounding development" to avoid inundation from sea level rise.
    - Shoreline Promenade: The Shoreline Promenade, which would traverse the community park in Sub-Area 4, would include a rail, wall, or balustrade to demarcate the bayside. The Specific Plan recommends that the Shoreline Promenade be elevated along with the shoreline road to avoid inundation and serve as a barrier from anticipated sea level rise. In the future, it could also be considered as an alternative route to the Bay Trail that is less prone to flooding.
    - Shoreline Street (Short-Term and Long-Term): Shoreline Street at the south end of the Sub-Area 4 Project site could be constructed at an elevation to accommodate potential sea-level rise.
    - Wetland Lagoons (Long-Term): The existing wetland lagoons south of the Sub-Area 4 Project site could be restored and reconfigured to help absorb the future impacts of sea level rise.
    - Bay Trail (Long-Term): Future studies may explore widening and elevating the Bay Trail south of the Sub-Area 4 Project site to mitigate sea level rise impacts.

- *Creek Restoration and Protection*: The Specific Plan includes several recommended features addressing creek restoration and protection, including:
    - Improvements to Meeker Tidal Creek, including daylighting.
    - Installation of infrastructure to safeguard parcels adjacent to Meeker Tidal Slough from future flooding due to sea level rise.
    - The installation of flow-thru screens or continuous deflection system (CDS) units in main drainage systems to intercept trash prior to entering Meeker Slough.

Stormwater Quality Standards:

- *Creekside Greenway (Sub-Area 1 and Sub-Area 2):* The Creekside Greenway would be a linear park located along Marina Bay Parkway to the west within Sub-Area 1, and along Meeker Slough in Sub-Area 2. The greenway would be landscaped with trees and plantings, and would provide an opportunity to create a natural swale that drains into Meeker Slough.
    - Stormwater Quality Standards: Stormwater quality treatment systems would be installed along the greenway to capture and filter runoff from adjacent streets.
- *Bay Trail (Sub-Area 2)*: The Bay Trail would extend through and adjacent to Sub-Area 2.
    - Stormwater Quality Standards: Stormwater quality treatment systems will be appropriately integrated into any improvements on the Bay Trail to protect adjacent habitat.
- *General Stormwater Quality Standards*: Throughout the Plan Area, stormwater quality treatment will be provided through use of urban approaches and best management practices (BMP) such as flow-through planters, bio-retention basins, vegetated swales, water quality tree wells, and modular supported soil structures for trees near pavement

and roads. Typically, stormwater will be treated at the edges of project sites, and located in focused, smaller areas.

- Stormwater Quality Standards: Overall, water-quality treatment will follow the guidelines and standards as required by Contra Costa County, described in the *Stormwater C.3 Guidebook*.

Sub-Area 4 Development Project

The Sub-Area 4 project proposes develop up to approximately 1,270,000 square feet of R & D/Business/Service uses, 190,000 square foot of ground floor retail uses, up to 1,520 residential units (of mixed sizing), and 6.5 acres of open space, exclusive of the lagoons, wetlands, and marsh habitat south of the Project site. Changes to stormwater runoff and system improvements analyzed in project level impacts are described under Section 3.0, *Project Description*.

Recommended features and opportunities, and stormwater quality standards included in the Specific Plan that affect hydrology and water quality specific to locations within the Sub-Area 4 Project site include the following:

Recommended Features and Opportunities:

- *Sea Level Rise:*
  - Community Parks*:* The Specific Plan recommends the design of the community park in Sub-Area 4 be "elevated to the level of surrounding development" to avoid inundation from sea level rise.
  - Shoreline Promenade: The Shoreline Promenade, which would traverse the community park in Sub-Area 4, would include a rail, wall, or balustrade to demarcate the bayside. The Specific Plan recommends that the Shoreline Promenade be elevated along with the shoreline road to avoid inundation and serve as a barrier from anticipated sea level rise. In the future, it could also be considered as an alternative route to the Bay Trail that is less prone to flooding.
  - Shoreline Street (Short-Term and Long-Term): Shoreline Street at the south end of the Sub-Area 4 Project site could be constructed at an elevation to accommodate potential sea-level rise.
  - Wetland Lagoons (Long-Term): The existing wetland lagoons south of the Sub-Area 4 Project site could be restored and reconfigured to help absorb the future impacts of sea level rise.
  - Bay Trail (Long-Term): Future studies may explore widening and elevating the Bay Trail south of the Sub-Area 4 Project site to mitigate sea level rise impacts.

Stormwater Quality Standards:

- *Bay Trail*: The Bay Trail would extend through and adjacent to Sub-Area 4.
  - Stormwater Quality Standards: Stormwater quality treatment systems will be appropriately integrated into any improvements on the Bay Trail to protect adjacent habitat.

- *Natural Preserve Area*: The shoreline/marshland area south of Sub-Area 4 and the Berkeley Global Campus is described in the Specific Plan as a natural preserve area that would maintain its natural open space character.
    - Stormwater Quality Standards: Stormwater quality treatment systems will be appropriately integrated in adjoining development areas to minimize habitat impacts.

Topics with No Impact or Otherwise Not Addressed in this EIR

Review and comparison of the setting circumstances and the Specific Plan and Sub-Area 4 Project with each of the significance criteria stated above clearly show that no impacts associated with hydrology and water quality would result for Significance Criterion f) (otherwise substantially degrade water quality). Other than the change in drainage patterns that would result from redevelopment, which is addressed by Significance Criteria a), c), and d), the Specific Plan and Project would not otherwise include any other discharges of water that could degrade water quality, as discussed below. Overflows associated with insufficient capacities of sanitary sewer infrastructures would be addressed by improvements would include upsizing of existing pipes, repair of damaged or aging pipelines, and extension of facilities to service new development areas such that wastewater conveyance would not represent a potential source of water quality impacts.

4.8.5 Program-Level Impacts of the Specific Plan

Impact HYD-1.SP: The Specific Plan could result in an increase of stormwater pollutants due to construction activities and/or the introduction of new impervious surfaces with development but would not violate any water quality standards or waste discharge requirements. (Criterion a.) (*Less than Significant with Mitigation*)

During both construction and operation of projects that would be developed within the Plan Area, stormwater could become polluted, and could include oils, fuels, heavy metals, pesticides, and other contaminants of concern that originate from new development including rooftops, parking lots, and other new or replacement impervious surfaces that would discharge into receiving waters during storm events. Pollutants could also include sedimentation caused by erosion from such activities as ground clearing for construction, chemicals used for lawn and garden maintenance, and litter. New and increased levels of urban land uses within the Plan Area could increase the volume of potential sources of stormwater pollution that could ultimately discharge to San Francisco Bay. Any increased pollution that would violate water quality standards is considered a potentially significant impact.

New Project Construction within Plan Area

The entire Plan Area is greater than one acre and as a result, each new development project proposed under the Specific Plan would be subject to the NPDES General Construction Permit requirements which include preparation of a SWPPP along with a Notice of Intent, to be submitted to the SFRWQCB prior to construction. Implementation of each SWPPP would begin with the commencement of construction for each project and continue through completion of construction. At a minimum, each SWPPP would include a description of construction materials,

construction practices, a list of pollutants likely to contact stormwater, site specific erosion and sedimentation control practices, a list of provisions to eliminate or reduce discharge of materials to stormwater, and BMPs for fuel and equipment storage.

Each applicant for a project to be developed within the Plan Area would implement a monitoring program as required under the General Construction Permit. Each project applicant would require the contractor to conduct inspections of the construction site prior to anticipated storm events and after the actual storm events. During extended storm events, inspections would be conducted after every 24-hour period. The goals of these inspections are:

- to identify areas contributing to stormwater discharge;
- to evaluate whether measures to reduce pollutant loadings identified in the SWPPP are adequate, properly installed, and functioning in accordance with the General Construction Permit; and
- to evaluate whether additional control practices or corrective maintenance activities are needed.

Equipment, materials and workers would be available for rapid response to spills and/or emergencies. All corrective maintenance or BMPs would be performed as soon as possible, depending upon worker safety. Upon project completion, the project applicant would submit a Notice of Termination to the SFRWQCB.

Construction activities could also involve the need to temporarily depress groundwater levels in accordance with a dewatering permit issued either by the SFRWQCB or East Bay Municipal Utility District. The dewatering permit would ensure that any groundwater that would be extracted would be tested for potential contaminants prior to discharge. If necessary, in accordance with the permit requirements, the pumped groundwater could require treatment prior to discharge to ensure that receiving waters are not adversely affected from any contamination that may exist from past site uses or construction activities (See Also Section 4.7, *Hazards and Hazardous Materials* for a discussion of legacy contaminants). Adherence to the dewatering permit requirements would ensure that water quality impacts are less than significant.

Even with the implementation of project-specific SWPPPs and permit requirements, construction activities could result in the release of chemical contaminants into receiving waters which could be toxic to sensitive wildlife or the benthic community in and within proximity to the adjacent open canals, Meeker Creek, Baxter Creek, Meeker Slough, Stege Marsh, and the Bay. Implementation of Mitigation Measure HYD-1.SP, below, would require the inclusion of measures that would be protective of water quality, and would protect the Bay from turbidity and contaminant impacts during construction.

> **Mitigation Measure HYD-1.SP: Water Quality Best Management Practices for All Construction Activities.** All applicants for projects proposed for development within the area of the Specific Plan shall ensure that best management practices consistent with the most recent version of the California Stormwater Quality Association (CASQA) Construction BMP Handbook are included in the Stormwater Pollution Prevention Plan

(SWPPP) prepared in accordance with the NPDES Construction General Stormwater Permit. BMPs may include without limitation:

1. Straw bales, wattles, fiber rolls, gravel bags, or equivalent devices shall be installed around the perimeter of stockpiled materials and construction sites adjacent to water bodies (i.e., Meeker Channel and Slough, Baxter Creek, and Stege Marsh), to prevent debris from being transported to any receiving waters or open channel via runoff;
2. The use of hazardous materials during construction shall be minimized to the extent practical, and the amount of hazardous materials stored adjacent to waterbodies shall be limited to what is needed to immediately support construction activities. Hazardous materials shall be centrally stored safely and securely in approved containers, under cover or in an approved storage shed, and in adequate secondary containment. Fueling of generators and other equipment shall be conducted in a central location with secondary containment, and adequate spill cleanup materials shall be provided during all fueling operations;
3. Well-maintained equipment shall be used to perform the construction work, and, except in the case of a failure or breakdown, equipment maintenance shall be performed off site. Equipment shall be inspected daily by the operator for leaks or spills. If leaks or spills are encountered, the source of the leak shall be identified, leaked material will be cleaned up, and the cleaning materials shall be collected and properly disposed;
4. Inactive material stock piles must be covered at all times;
5. Construction material shall be covered in anticipation of any rainfall event;
6. Active debris boxes shall be covered during rain events to prevent contact with rainwater;
7. Non-stormwater discharges to the Bay shall be prohibited unless specified in the SWPPP and approved by the City; and
8. A Materials Management and Disposal Plan (MMDP) shall be prepared to prevent any debris from falling into waterbodies in the Plan Area during construction to the maximum extent practicable and also ensure the appropriate disposal of all construction-related materials. The MMDP shall be submitted to the San Francisco Bay Regional Water Quality Control Board for review and approval. The measures identified in the MMDP shall be based on Best Available Technology, and will include, but not be limited to, the following:
    - During construction, in the event that debris does reach the Bay or a tributary, personnel within the work area shall immediately retrieve the debris for proper handling and disposal. All debris shall be disposed of at an authorized upland disposal site;
    - Construction waste shall be collected and transported to an authorized upland disposal area, per federal, State, and local laws and regulations; and,
    - All construction material, wastes, debris, sediment, rubbish, trash, fencing, etc., shall be removed from the project site once project construction is completed, and transported offsite in compliance with applicable federal, State, and local laws and regulations.

Plan Area Operations

The Specific Plan proposes to change land use designations and land uses within the Plan Area. New development associated with these land use changes could introduce new impervious surfaces and change existing drainage patterns. Changes in drainage patterns could provide new sources of stormwater pollutants that would adversely affect water quality of receiving waters.

The management of landscaped areas would also present the potential for runoff and/or infiltration of herbicides and pesticides. These types of common urban pollutants could be transported in runoff, potentially adversely affecting the quality of receiving surface waters or groundwater. Nonpoint source pollutants would still be washed by rainwater from rooftops and landscaped areas into onsite and local drainage networks. Potential nonpoint source pollutants include products used in landscaping (e.g., pesticides, herbicides and fertilizers); oil, grease, and heavy metals from automobiles; and petroleum hydrocarbons from fuels.

Implementation of the stormwater quality standards described in the Specific Plan and summarized above would address stormwater runoff quality. As specified for these stormwater quality standards, new development (including new stormwater infrastructure) would follow the guidelines and standards in Contra Costa County's Stormwater C.3 Guidebook.

A number of recommended features and opportunities described in the Specific Plan and summarized above, including creek restoration and protection, and stormwater treatment features integrated along the Creekside Greenway (Sub-Area 1 and Sub-Area 2) and Bay Trail, could be implemented as part of the Specific Plan. New stormwater infrastructure developed within the Plan Area, such as the new outfall at Stege Marsh, would be designed in accordance with NPDES MS4 requirements and Chapter 12.22 of City's Municipal Code regarding stormwater management, water quality, and discharge standards.

In general, existing stormwater management plans and policies, and SFRWQCB requirements, which implement federal Clean Water Act requirements, would prevent these potential impacts from rising to a level of significance under CEQA through requirements that minimize the creation of pollution generating surfaces. Future development within the Plan Area would be required to comply with existing federal, State, and local regulatory requirements for stormwater management – in particular, Provision C.3 of the NPDES MS4 permit and the City's stormwater requirements – as detailed above under *Regulatory Setting*. Future development proposed under the Specific Plan would be reviewed by the City Public Works Department to confirm that proposed projects provide sufficient stormwater treatment features that meet the requirements of the Contra Costa Clean Water Program and the NPDES MS4 permit. With compliance with existing regulation and implementation of Mitigation Measure HYD-1.SP, construction and operation (buildout) of the Specific Plan would not result in increases in stormwater pollutants that could violate any water quality standards or waste discharge requirements, and therefore this impact would be less than significant.

Significance: Less Than Significant with Mitigation.

Mitigation: Mitigation Measure HYD-1.SP.

Impact HYD-2.SP: The Specific Plan could increase impervious surfaces which would incrementally increase the amount of stormwater runoff available for recharge but not to the extent that it would substantially deplete groundwater supplies or interfere substantially with groundwater recharge. (Criterion b) (*Less Than Significant, No Mitigation Required*)

The Specific Plan would not include groundwater extraction for the purposes of water supply, and groundwater is not used as a source of drinking water due to its quality. Fresh water used for future project uses would be provided by the public water supply, the source of which is imported surface waters. Dewatering may be necessary during construction on a temporary basis, and potentially longer term in locations with a high groundwater table and potential underground improvements. Final design measures for each project developed within the Plan Area would determine whether the improvements would be fully waterproofed with the basement walls and building foundation designed for hydrostatic pressure or whether an under drainage system will be used to depress the groundwater level. Regardless, any dewatering would be permitted through either the City of Richmond Municipal Sewer District or the SFRWQCB.Given that the groundwater beneath the Plan Area is not a source for municipal or agricultural uses, dewatering would not deplete groundwater supplies and development under the Specific Plan would not affect groundwater resources. The SWPPPs for construction of individual projects would include measures to prevent contamination of groundwater that could occur from chemicals associated with construction (e.g., fuels, solvents, etc.)

Buildout of the Specific Plan would result in changes to the total amount of impervious surfaces within the Plan Area. A comparison of the weighted runoff coefficients for the different sub-areas as can be seen in **Table 4.8-1** and **Table 4.8-2** below, was used to evaluate the changes in proposed conditions under full development of the Specific Plan.[7]

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[7] The method of analysis is based on the use of runoff coefficients, which represent an estimate of the percentage of total rainfall expected to result in runoff. For each sub-area of a watershed, the runoff coefficient is multiplied by the number of acres within the contributing drainage area and by the expected peak rainfall intensity (expressed in inches per hour) to calculate the peak rate of storm water runoff (expressed as cubic feet per second). This relationship is expressed in the following equation:

- Peak Runoff = Runoff Coefficient x Drainage Area x Rainfall Intensity

It is noted that in watersheds with mixed uses, the runoff coefficient represents a weighted average of the coefficients assigned to each land use. Since Rainfall Intensity is a function of site location and local climate, it will remain constant for both the existing and proposed conditions. Consequently, a comparison of the product of the Area and Coefficient variables under existing and proposed conditions is sufficient to determine how the proposed development will affect peak rates of stormwater runoff.

TABLE 4.8-1
EXISTING WEIGHTED COEFFICIENT OF RUNOFF IN THE PLAN AREA

Sub-Area	Industrial (%)	Commercial (%)	Undeveloped (%)	% of Total Specific Plan Area	Weighted C[b]
	C = 0.75	C = 0.80	C = 0.40		
1	75	25	0	30	0.76
2	100	0	0	17	0.75
3	90	10	0	19	0.76
4	60	0	40	34	0.61
			Total	**100**	**0.71**

[a] C = Runoff coefficient.
[b] Weighted C = Weighted runoff coefficient.
SOURCE: (NCE, 2015)

TABLE 4.8-2
WEIGHTED COEFFICIENT OF RUNOFF IN THE PLAN AREA UNDER SPECIFIC PLAN BUILDOUT

Sub-Area	Industrial / Commercial (%)	Retail (%)	Residential (%)	Open Space (%)	% of Total Specific Plan Area	Weighted C[b]
	C = 0.77	C = 0.80	C = 0.75	C = 0.40		
1	30	6	42	22	30	0.68
2	46	5	12	38	17	0.63
3	96	0	0	4	19	0.76
4	58	6	28	9	34	0.73
				Total	**100**	**0.69**

[a] C = Runoff coefficient.
[b] Weighted C = Weighted runoff coefficient.
SOURCE: (NCE, 2015)

As shown in the tables, the overall impact of Plan Area buildout is anticipated to result in an increase in the availability of pervious surfaces which would allow increased infiltration. The Specific Plan stormwater quality standards, and stormwater design features as required by the NPDES MS4 permit, would provide additional infiltration features to assist in groundwater recharge. As a result, there would be no significant decrease in the amount of stormwater recharging underlying water supplies and could even result in an overall increase in groundwater recharge. Therefore, the Specific Plan would have a less-than-significant impact on groundwater levels.

Significance: Less Than Significant.

Mitigation: None required.

Impact HYD-3.SP: The Specific Plan would not alter the drainage pattern of the Plan Area such that it would result in substantial erosion or siltation on or off the site. (Criterion c.) (*Less Than Significant with Mitigation*)

As described above, development under the Specific Plan would increase the availability of pervious surfaces and would not result in increased surface runoff within the Plan Area. Runoff within the Plan Area would continue to flow into existing stormwater retention features and/or storm drains described above and in Chapter 3, *Project Description*, of this EIR, as well as through new infrastructure such as the new storm drain systems and improvements along Meeker Tidal Creek, and then ultimately into the San Francisco Bay. All stormwater improvements would be designed in accordance with NPDES MS4 permit requirements which include measures to minimize any erosion or siltation of stormwater runoff.

Although the overall area of impervious surfaces within the Plan Area is anticipated to decrease under Specific Plan buildout, construction activities and runoff from new uses could regardless cause erosion of exposed soils, resulting in sedimentation and siltation of discharge flows on- or off-site. Implementation of **Mitigation Measure HYD-1.SP: Water Quality Best Management Practices for All Construction Activities** would reduce construction impacts related to erosion and siltation to a less than significant level. In addition to the Specific Plan's proposed measures to improve runoff filtration and infiltration through its storm drain system improvements, each project applicant within the Specific Plan would be required to implement LID features that would minimize erosion or siltation. Implementation would require pollutant source control features such as use of landscaped areas for infiltration of stormwater, and treatment planters or bioretention features onsite to treat runoff from the impervious surfaces. The City's Public Works Department would review the final project plans for each development to ensure they incorporate design standards consistent with the requirements of the Contra Costa Clean Water Program and the NPDES MS4 permit. Implementation of Specific Plan would therefore result in a less-than-significant impact to erosion.

Significance: Less Than Significant with Mitigation.

Mitigation: Mitigation Measure HYD-1.SP.

Impact HYD-4: Development under the Specific Plan would not alter the drainage pattern of the site such that it would result in a flooding on- or off- the Plan Area. (Criterion d.) (*Less Than Significant, No Mitigation Required*)

As noted above, implementation of the Specific Plan would include new development that would change existing drainage patterns largely through changes to impervious surfaces and stormwater management in the Plan area. NPDES MS4 requirements for stormwater facilities would apply to new development under the Specific Plan and address any potential runoff rate change as a result of the Specific Plan development. However, as also noted above, the overall change in

impervious surfaces within the Plan Area is anticipated to result in an increase of available pervious surfaces (NCE, 2015).

As discussed above, projects developed under the Specific Plan would be required to implement adequate stormwater features and requirements to direct and treat the anticipated stormwater flow that would occur after buildout. Each project developed within the Plan Area would be required to develop a drainage plan that will comply with the City's drainage design standards, which include requirements for flow control. The City's drainage design standards require that project drainage infrastructure be designed to adequately convey all runoff from peak storm events. Project-specific hydrologic analysis for proposed development would be required to determine peak flow calculations and provide drainage control improvements that can adequately manage peak flows. The proposed storm drainage improvements that would be implemented would be designed to accommodate the 100-year design storm flow as is currently required.

New development would also be subject to Provision C.3 requirements which not only address stormwater quality but also quantity such that stormwater runoff volumes are not increased through development. Stormwater management can include use of detention or retention facilities that allow for adequate control of stormwater to minimize the potential for any on- or off-site flooding. Similarly, each project within the Plan Area would be reviewed by the City for compliance with applicable regulatory requirements and standards. Accordingly, buildout under the Specific Plan would not substantially increase surface water runoff during storm events and would not increase the potential for flooding, on- or off-site.

With the implementation of these existing stormwater management requirements for all new development under the Specific Plan, the impact would be less than significant.

Significance: Less Than Significant.

Mitigation: None required.

Impact HYD-5.SP: The Specific Plan would not create or contribute runoff water which would exceed the capacity of existing drainage systems or provide additional sources of polluted runoff. (Criterion e.) (*Less Than Significant with Mitigation)*

As discussed above for Impact HYD-1.SP and HYD-3.SP, development under the Specific Plan would not generate an overall increase in runoff compared to that of existing conditions. Regardless, all new projects developed within the Plan Area would be required to adhere to the existing stormwater management requirements of the City's Municipal Code as well as the NPDES Regional MS4 permit which include design requirements to ensure adequate capacity of estimated peak storm flows under proposed conditions. Buildout under the Specific Plan includes installation of new stormwater infrastructure, and the City has prepared an initial analysis of stormwater infrastructure that would be required for full buildout. New projects to be developed within the Plan Area will contribute to the development of new stormwater infrastructure as

needed. Buildout under the Specific Plan would not cause flows to exceed the capacity of existing drainage systems.

During construction of development under the Specific Plan, pollutants that could be released into stormwater runoff and discharged into the San Francisco Bay would include oil, gasoline and diesel motor fuel, industrial solvents, and other chemicals necessary for project construction. With the implementation of **Mitigation Measure HYD-1.SP: Water Quality Best Management Practices for All Construction Activities** as discussed above, impacts of construction-related contaminated runoff would be reduced to less than significant. Additionally, infrastructure and individual project development under the Specific Plan would be required to adhere to the requirements of the Contra Costa Clean Water Program and the NPDES MS4 permit. This would require implementation of construction and final operation measures such as pollutant source control features including landscaped areas for infiltration of stormwater, and treatment-planters onsite to treat runoff from the impervious surfaces which could improve runoff conditions as compared to the existing setting. Therefore, with implementation of Mitigation Measure HYD-1.SP, this impact would be less than significant.

Significance: Less Than Significant.

Mitigation: Mitigation Measure HYD-1.SP.

Impact HYD-6.SP: Development under the Specific Plan could result in the placement of housing or structures within a 100-year flood hazard area as mapped on a Federal Flood Hazard Boundary or Flood Insurance Rate Map; or place within a 100-year flood hazard area structures which could impede or redirect flood flows. (Criteria g., h.) (*Less Than Significant, No Mitigation Required)*

According to the September 2015 FEMA FIRM, some parts of the Plan Area are located within Flood Hazard Zone AE, with a BFE of 10 feet. The AE flood zones are primarily located Sub-Area 4 in proximity to the shoreline, extending inland from the San Francisco Bay Trail from near Channel Avenue and Bayview Avenue, including the existing pistol range, to the Berkeley Global Campus, as well as to Meeker Slough and along Meeker Tidal Creek in Sub-Area 2. The 2015 FIRM additionally shows that a portion of the Plan Area is subject to a 500-year storm flood hazard. This 500-year flood zone is identified primarily on the northwest corner of Sub-Area 1 between I-880 and Meeker Avenue near Marina Way South as well as within Sub-Area 2, adjacent to Meeker Tidal Creek and along Marina Bay Parkway (FEMA, 2015). No other parts of the Plan Area are located in areas mapped as 100-year flood hazard areas.

The Special Planning Area in Sub-Area 4 includes Flood Hazard Zone AE areas with a BFE of 10 feet. The area south of the proposed Seaport Avenue within Sub-Area 4 near Channel Avenue and South 51st Street, which includes Flood Hazard Zone AE areas with a BFE of 10 feet, could be developed with housing and retail uses.

All grading activities associated with future development under the Specific Plan would require raising the ground level above the effective FEMA 100-year still water elevation of 10 feet NAVD88 (North American Vertical Datum of 1988) in locations where housing is planned. Furthermore, as discussed below, the Specific Plan, City Municipal Code, and General Plan requires that the grade of all parts of the Plan Area be increased to 1 foot above the BFE at 3 feet of sea level rise (NAVD88) to address up to 3 feet of sea level rise. The Plan Area would also receive some protection from higher levels of sea level rise through other measures, such as the construction of the Shoreline Promenade as discussed below under Impact HYD-7.SP, which could be elevated along with the shoreline road to serve as a barrier from anticipated sea level rise.

In addition, per Municipal Code requirements, each project developed within the Plan Area would be required to obtain a development permit for all project plans that would be reviewed to ensure that projects are safe from flooding and do not impede flood flows. Chapter 12.56 of the Richmond Municipal Code includes detailed standards of construction for building within designated flood zones. Per this chapter, a development permit is required for any construction or other development within any area designated on a FEMA FIRM map as subject to a 100-year flood hazard or a 500-year flood hazard. The City of Richmond Public Works Department reviews all development permits to confirm that proposed development is reasonably safe from flooding.

With compliance with existing City of Richmond Municipal Code requirements, and implementation of the requirements of the Specific Plan, including which would increase ground elevations above flood hazard levels, impacts related to development within flood hazard zones would be less than significant.

Significance: Less Than Significant.

Mitigation: None required**.**

Impact HYD-7.SP: Development under the Specific Plan could expose people or structures to a significant risk of loss, injury or death involving flooding related to sea level rise. (Criterion i.) (*Less Than Significant with Mitigation)*

Global warming trends are causing sea levels to rise at rates that are accelerating. Over time, rising sea levels will cause noticeable changes to shorelines and increase shoreline flood hazard areas. The National Research Council estimates the possible range for San Francisco Bay sea level rise in 2050 to be 5 to 24 inches and in 2100 to be 17 to 66 inches (NRC, 2012). The National Research Council's projections for sea level rise within these ranges are 11 inches by 2050 and 36 inches by 2100.

Existing grades in the Plan Area gradually slope from northeast toward the south and west, with elevations ranging from approximately 20 feet NAVD88 along the northeast corner of Sub-Area

3 near I-580, to approximately 9 to 13 feet NAVD88 along the Plan Area's western and southern boundaries, next to adjacent development and the Bay. According to the recent mapping tool compiled by the Contra Costa County Adapting to Rising Tides (ART) Program, led by BCDC, the Plan Area would see increasing inundation from the south in the location of the marshlands (Meeker Slough, East Stege Marsh, and Hoffman Marsh), and along Meeker Tidal Creek and Baxter Creek with 3 feet of sea level rise (**Figure 4.8-3**). The Plan Area would see further increasing inundation in this area (especially within the Special Planning Area) with more than 3 feet of sea level rise.

To assess potential impacts associated with sea level rise on Specific Plan features, two scenarios were studied, consistent with the City's General Plan as discussed below and BCDC's San Francisco Bay Plan, which provides the criteria for BCDC to determine whether permit applications can be approved for projects within their jurisdiction. The first scenario projects an increase in sea level of 3 feet; the second considers a sea level increase of 5.5 feet.

3 feet of Sea Level Rise Plus 100-year Flood Event and Wave Overtopping

Figure 4.8-3 illustrates the potential flooding impacts on the Plan Area that would be associated with a rise in sea level of 3 feet, assuming a present-day BFE of 10 feet. As this figure shows, with this increase in sea level, areas within and adjacent to Sub-Area 4, including the Special Planning Area and East Stege Marsh, and areas along Meeker Creek would be affected by inundation. With the addition of 100-year flood effects, more parts of the Plan Area would be affected, including substantial portions of Sub-Area 1 and Sub-Area 2, and more areas of Sub-Area 4, including the Lower Lagoon and the Harborfront Tract. As shown in the figure, the additional threat of wave action ("overtopping") would further affect areas where water from waves could extend over existing topographical barriers, such as earthern berms in the location of the Special Planning Area.

In order to ensure the Specific Plan is consistent with General Plan Policy EC6.3, Adapting to Climate Change, which requires adequate design features to allow for future water level increases of at least 3 feet from the existing elevation along the shoreline, the Specific Plan requires any projects constructed within the Plan Area to be developed at a grade at least 1 foot above the BFE at 3 feet of sea level rise (NAVD88) to address up to 3 feet of sea level rise. This elevation addresses both the 100-year flood water level and, assuming that the Bay Trail embankment and Stege Marsh remain relatively intact, wave action. In addition, the Specific Plan includes specific recommendations to increase the elevation of the Shoreline Promenade and shoreline road, to protect against sea level rise. Even with the implementation of this requirement and possible implementation of design recommendations, sites within the Plan Area are anticipated to experience intermittent flooding related to sea level rise. Streets within the Plan Area, especially within Sub-Area 4, may experience infrequent flooding events resulting from backflow of drainage through storm drain inlets. This drainage system back-up can be avoided through the installation of backflow prevention devices either as part of the storm drain infrastructure as initially constructed or as a future adaptive solution on an as-needed basis. **Mitigation Measure HYD-7a.SP** would address this impact.

Mitigation Measure HYD-7a.SP: Sea Level Rise Measures. All applicants for projects proposed for development within the area of the Specific Plan will ensure that the project design includes the installation of appropriate stormwater inlet infrastructure, and/or the installation of back flow prevention devices on storm drain lines, and/or the design of the stormwater infrastructure to accommodate the future installation of back flow prevention devices on an as-needed basis. Stormwater infrastructure shall be designed to address up to 3 feet of sea level rise, as well as include capacity to adapt to up to 5.5 feet of sea level rise.

5.5 feet of Sea Level Rise Plus 100-year Flood Event and Wave Overtopping

Figure 4.8-4 illustrates the potential flooding impacts associated with a rise in sea level of 5.5 feet, assuming a present-day BFE of 10 feet and that the Bay Trail embankment and Stege Marsh remain relatively intact. As this figure shows, with this increase in sea level, greater portions of the Plan Area, including more parts of Sub-Area 1 and Sub-Area 2, and more of Sub-Area 4 would be affected by inundation. With the addition of 100-year flood effects, more parts of the Plan Area would be affected, including nearly all of Sub-Area 1 and Sub-Area 2, and more areas of Sub-Area 4, including the Upper Lagoon, Lower Lagoon and the Harborfront Tract. As shown in the figure, the additional threat of wave action ("overtopping") would further affect areas where water from waves could extend over existing topographical barriers. As shown in both figures, the Zeneca site is currently adequately graded above the flood levels that would be associated with both 3 feet and 5.5 feet of sea level rise.

Projected sea level rise over 3 feet and up to 5.5 feet would expose the existing Plan Area to significant flood risk. The City is required to develop an Adaptation Strategy under its General Plan (*Action EC6. G Adaptive Management Plan)* that would include preparing an Adaptive Management Plan that outlines an institutional framework, monitoring triggers, and a decision-making process, and creates an entity with taxing authority that would pay for infrastructure improvements necessary to adapt to higher than anticipated levels. Strategies could include, but would not be limited to:

1. Construction of a shoreline protection system that is initially built to accommodate a mid-term rise in sea level of 16 inches, with a design that is adaptable to meet higher than anticipated values in the mid-term, as well as for the long-term;
2. Construction of a storm drainage system that is initially built to accommodate a mid-term rise in sea levels of 16 inches, with a design that is adaptable to meet higher than anticipated sea level rise values (similar to 1.); and
3. Construction of buildings and vital transportation infrastructure at elevations that would not be exceeded by flood waters, even if the shoreline protection does not function, for existing conditions and over a longer term as compared to the two above.

Furthermore, the City is required to prepare a Sea Level Rise Action Plan for the South Shoreline under Action Item A1.8 of the Specific Plan. Design and implementation of the future City-wide adaption strategy and the Specific Plan adaptation strategy will be most effective if they are compatible, complementary, and well-coordinated, the development of such City-wide and project-specific strategies will need to involve and reflect cooperation at the City and project level.

Sea Level Rise Adaptation

Successful formulation and implementation for managing the risk posed by a 100-year storm event in combination with a rise in sea level of greater than 3 feet within the Specific Plan area will require (a) that the need for additional risk management strategies to address the flood-related impacts of sea level rise be regularly reassessed in order to determine the most effective adaptive measures for managing flood risks and to schedule implementation of such measures relative to need; and (b) that a financing plan be developed to assure that adequate resources will be available to fund the additional adaptive measures at the time they are scheduled for implementation.

> **Mitigation Measure HYD-7b.SP: Sea Level Rise Adaptation.** Prior to issuance of building permits, all projects proposed for development within areas of the Plan Area shown on Figure 4.8-3 of the EIR to be affected by up to 3 feet of sea level rise, including the 100-year flood event and wave overtopping, shall submit an Adaptive Flood Risk Management Plan to the City for approval. The City shall require implementation of such plan as a condition of approval for entitlement approvals and/or building permits as applicable. The Adaptive Flood Risk Management Plan shall be consistent with City efforts to plan for sea level rise under General Plan Action Item EC6.g and Specific Plan Action Item A1.8, and shall include an Adaptive Flood Risk Management Strategy to address 100-year flood impacts associated with a rise in sea level of greater than 3 feet including the 100-year flood event and wave overtopping. Adaptive flood risk management strategies may include development setbacks, regrading, construction of raised berms or a wall, or other measure to protect future development from a rise in sea level above 3 feet. Consistent with General Plan Action Item EC6.g, the Adaptive Flood Risk Management Plan shall include discussion of financing mechanisms for sea level rise adaptations.

With the implementation of this mitigation measure, the impact would be less than significant. Based on the current remedial action plan for the lagoons adjacent to Sub-Area 4, the Plan assumes that grading within the lagoons is permissible to integrate the lagoons with the Sub-Area 4 coastal flood adaptation measures. The anticipated integration is to facilitate the establishment and evolution of tidal wetland vegetation within the lagoons to provide habitat as well as wave attenuation and erosion protection for the coastal flood adaptation measures.

Significance: Less Than Significant with Mitigation.

Mitigation: Mitigation Measure HYD-7a.SP and HYD-7b.SP.

Impact HYD-8.SP: The Specific Plan could result in or cause inundation by tsunami, seiches, or mudflows. (Criterion j.) (*Less Than Significant, No Mitigation Required*)

A significant impact could occur if projects developed under the Specific Plan would be susceptible to the effects of tsunami, seiches, or mudflows. The California Geological Survey (CGS), ABAG, and the City of Richmond have each mapped tsunami inundation areas along the Richmond shoreline (CGS, 2009; ABAG, 2014; and City of Richmond, 2012). Both the CGS and

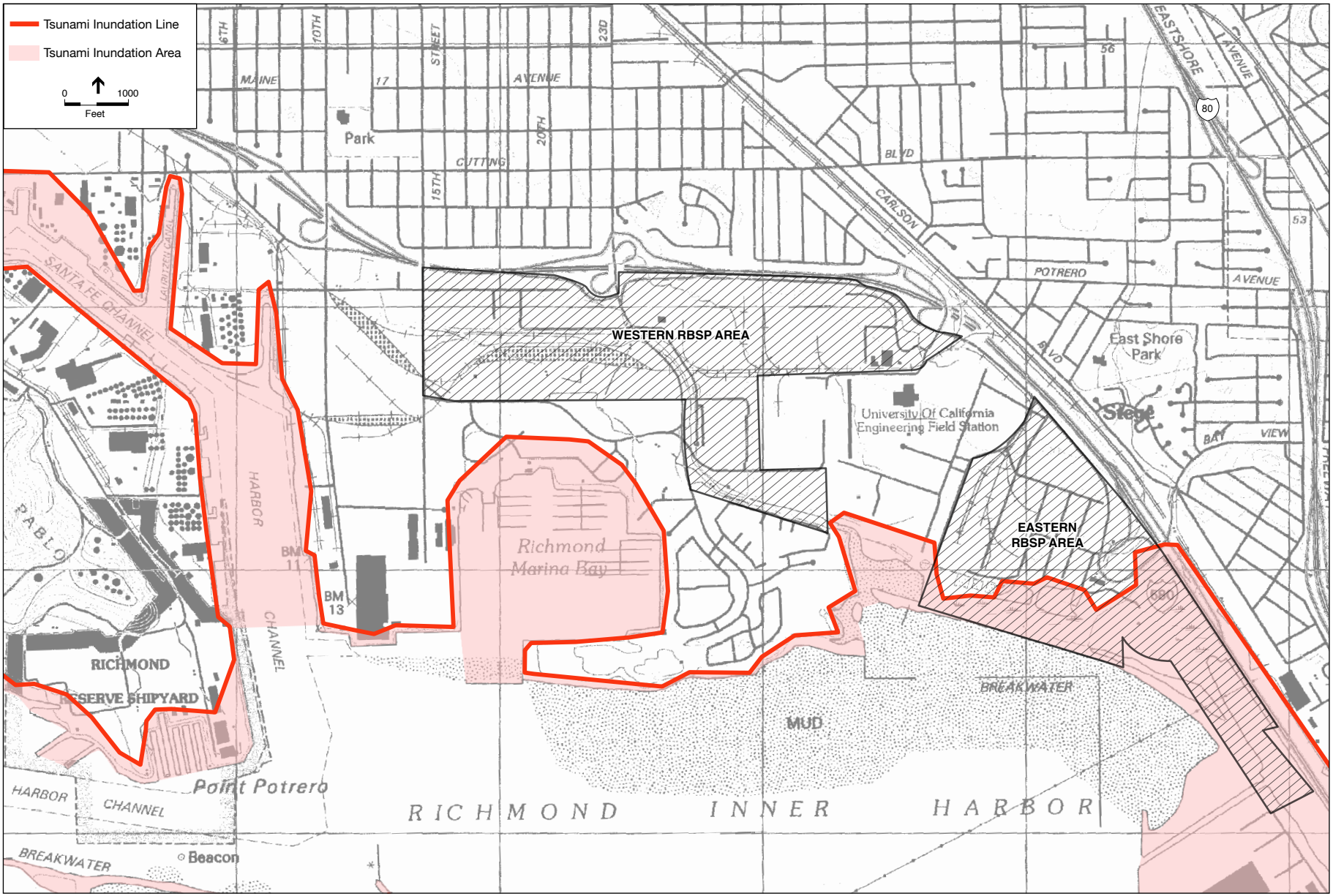
ABAG tsunami inundation maps were drafted by combining results from a suite of possible inundation scenarios, representing the worst-case scenario at any given location. For both of these maps only Meeker Slough, Stege Marsh, and Hoffman Marsh within Sub-Area 4 of the Specific Plan were identified as within the tsunami inundation zone, as shown on **Figure 4.8-4**. In the City of Richmond map (General Plan Public Safety and Noise Element), however, large portions of Sub-Area 1, Sub-Area 2, and Sub-Area 4 were identified as within the tsunami inundation zone. Using the most conservative of these maps (the map prepared by the City of Richmond), many new uses developed under the Specific Plan could be impacted by tsunami inundation.

Many areas of Richmond and other coastal cities are within tsunami inundation zones. Various precautions and warning systems would be activated by the City in the event of a tsunami. The City of Richmond is part of the Contra Costa County Community Awareness and Emergency Response (CAER) program which provides community alert, notification, and education services in the event of toxic spills, floods, fires, and other disasters. CAER also provides private-use emergency radios as well as outdoor alert systems through a web of broadcast services (City of Richmond, ND). In addition, the National Oceanic and Atmospheric Administration (NOAA) operates the National Tsunami Warning Center and the Pacific Tsunami Warning Center that alert local authorities to order the evacuation of low-lying areas, if necessary. Due to the infrequent nature of tsunami and relatively low predicted tsunami wave height in the area (City of Richmond, 2011), the Plan Area would not be exposed to a high risk of inundation by tsunami.

Therefore, although portions of the Plan Area are located within a tsunami inundation zone, the City and County's tsunami warning system coupled with the infrequent nature of tsunamis, low predicted wave heights for tsunami in the area, and increased grade required by the Specific Plan would result in a less-than-significant impact related to tsunami within the Plan Area. In addition, as discussed under *Existing Setting*, there are no large confined bodies of water such as reservoirs or lakes within Richmond or the Plan Area that would create an impact from seiches. The Plan Area, as a relatively flat region not surrounded by steep terrain, would also not be subject to mudflow. Therefore potential Plan Area impacts related to tsunami, seiches and mudflow would be less than significant.

Significance: Less Than Significant.

Mitigation: None required.



SOURCE: California Emergency Management Agency, California Geological Survey, 2009

Richmond Bay Specific Plan EIR . 120834

Figure 4.8-4

Plan Area and Tsunami Inundation Zone

4.8.6 Project-Level Impacts of the Sub-Area 4 Project

Impact HYD-1.SA4: The proposed Project could result in an increase of stormwater pollutants due to construction activities and/or the introduction of new impervious surfaces with development but would not violate any water quality standards or waste discharge requirements. (Criterion a.) (*Less Than Significant with Mitigation*)

As discussed above for the Plan Area, during both construction and operation of the Sub-Area 4 Project, stormwater could become polluted, and could include oils, fuels, heavy metals, pesticides, and other contaminants of concern that originate from new development. Pollutants could also include sedimentation caused by erosion from such activities as ground clearing for construction. New and increased levels of urban land uses within the Project site could increase the volume of potential sources of stormwater pollution that could ultimately discharge to San Francisco Bay.

Project Construction

Construction of the Project would be subject to the NPDES General Construction Permit requirements which include preparation of a SWPPP along with a Notice of Intent, to be submitted to the SFRWQCB prior to construction, as described above for the Plan Area in general. The Project applicant would implement a monitoring program as required under the General Construction Permit, and would ensure the completion of inspections of the construction site prior to anticipated storm events and after the actual storm events. During extended storm events, inspections would be conducted after every 24-hour period.

Equipment, materials and workers would be available for rapid response to spills and/or emergencies. All corrective maintenance or BMPs would be performed as soon as possible, depending upon worker safety. Upon project completion, the project applicant would submit a Notice of Termination to the SFRWQCB.

Even with the implementation of a project-specific SWPPP, construction activities could result in the release of chemical contaminants into receiving waters which could be toxic to sensitive wildlife or the benthic community in and within proximity to the adjacent Baxter Creek, Meeker Slough, Stege Marsh, Hoffman Marsh and the Bay. Implementation of **Mitigation Measure HYD-1.SP: Water Quality Best Management Practices for All Construction Activities** as described above, would require the inclusion of measures that would be protective of water quality, and would protect the Bay from turbidity and contaminant impacts during construction.

Project Operations

As mentioned above under *Approach to Analysis*, the proposed Project would result in new land use designations and develop up to approximately 1,270,000 square feet of R&D/Business/Service uses, 190,000 square foot of ground floor retail uses, up to 1,520 residential units (of mixed sizing), and 6.5 acres of open space. This development would result in an incremental increase in impervious surface area within the Project site as expressed by the

runoff weighted coefficient (C; NCE, 2015). As shown in **Table 4.8-3** and **Table 4.8-4**, below, the estimated value of C would increase, from 0.67 to 0.74.

TABLE 4.8-3
EXISTING WEIGHTED COEFFICIENT OF RUNOFF IN THE SUB-AREA 4 PROJECT SITE

Existing Land Use			Weighted C[b]
Industrial (%)	Light Industrial (%)	Undeveloped (%)	
C[a] = 0.75	C[a] = 0.77	C[a] = 0.40	
40	36	24	0.67

[a] C = Runoff coefficient.
[b] Weighted C = Weighted runoff coefficient.
SOURCE: NCE, 2015

TABLE 4.8-4
WEIGHTED COEFFICIENT OF RUNOFF UNDER SUB-AREA 4 PROJECT BUILDOUT

Industrial / Commercial (%)	Retail (%)	Residential (%)	Open Space (%)	Weighted C[b]
C = 0.80	C = 0.80	C = 0.75	C = 0.40	
56	6	27	11	0.74

[a] C = Runoff coefficient.
[b] Weighted C = Weighted runoff coefficient.
SOURCE: NCE, 2015

Changes in drainage patterns could provide new sources of stormwater pollutants that would adversely affect water quality of receiving waters. The management of landscaped areas would also present the potential for runoff and/or infiltration of herbicides and pesticides. Nonpoint source pollutants would still be washed by rainwater from rooftops and landscaped areas into onsite and local drainage networks.

Implementation of the stormwater quality standards described in the Specific Plan and summarized above would address stormwater runoff quality. As specified for these stormwater quality standards, new Project development (including new stormwater infrastructure) would follow the guidelines and standards in Contra Costa County's Stormwater C.3 Guidebook.

A number of recommended features and opportunities described in the Specific Plan and summarized above, including stormwater treatment features integrated along the Bay Trail, could be implemented as part of the Project.

In general, existing stormwater management plans and policies, and SFRWQCB requirements, which implement federal Clean Water Act requirements, would prevent these potential impacts from rising to a level of significance under CEQA through requirements that minimize the creation of pollution generating surfaces. Development within the Project site would be required to comply with existing federal, State, and local regulatory requirements for stormwater

management – in particular, Provision C.3 of the NPDES MS4 permit and the City's stormwater requirements – as detailed above under *Regulatory Setting*. Project development plans, including grading and drainage plans, would be reviewed by the City Public Works Department to confirm that the Project provides sufficient stormwater treatment features that meet the requirements of the Contra Costa Clean Water Program and the NPDES MS4 permit. With compliance with existing regulation and implementation of Mitigation Measure HYD-1.SP, construction and operation (buildout) of the Project would not result in increases in stormwater pollutants that could violate any water quality standards or waste discharge requirements, and therefore this impact would be less than significant.

Significance: Less Than Significant with Mitigation.

Mitigation: Mitigation Measure HYD-1.SP.

Impact HYD-2.SA4: The Sub-Area 4 Project could increase impervious surfaces which would reduce the amount of stormwater runoff available for recharge but not to the extent that it would substantially deplete groundwater supplies or interfere substantially with groundwater recharge. (Criterion b.) (*Less Than Significant, No Mitigation Required*)

The Project would not include groundwater extraction for the purposes of water supply. Fresh water used for future project uses would be provided by the public water supply, the source of which is imported surface waters. Dewatering may be necessary during construction on a temporary basis, and potentially longer term in locations with a high groundwater table and potential underground improvements. Final Project design measures would determine whether underground features would be fully waterproofed with the basement walls and building foundation designed for hydrostatic pressure or whether an under drainage system will be used to depress the groundwater level. Regardless, any dewatering would be permitted through either the City of Richmond Municipal Sewer District or the SFRWQCB. No groundwater extraction beyond minor dewatering activities would be required for Project development. Given that the groundwater beneath the Project site is not a source for municipal or agricultural uses, and the proximity and low elevation of the site relative to the San Francisco Bay, dewatering would not deplete groundwater supplies and Project development would not affect groundwater resources. The Project SWPPPs would include measures to prevent contamination of groundwater that could occur from chemicals associated with construction (e.g., fuels, solvents, etc.).

Buildout of the Specific Plan would result in changes to the total amount of impervious surfaces within the Plan Area, as discussed above under Impact HYD-1.SA4. As shown in the tables, the impact of Project buildout is anticipated to result in an increase in the total area of impervious surfaces which would prevent infiltration. The Sub-Area 4 Project site is not subject to the same requirements as upland sites with regards to ensuring the on-site treatment of stormwater flows, per the Municipal Region Stormwater Permit (MRP), Section C.3.gi. Because the site is located in a catchment that drains to enclosed pipes that extend continuously to the Bay and areas that are

tidally influenced, the Sub-Area 4 Project site is exempt from hydromodification requirements under the MRP. Regardless, stormwater treatment through the use of landscaping, planters, and other on-site facilities will be installed on the Sub-Area 4 Project site, per the Stormwater Quality Standards described in the Specific Plan.

Therefore, this impact would be less-than-significant.

Significance: Less Than Significant.

Mitigation: None required.

Impact HYD-3.SA4: The project would not alter the drainage pattern of the site such that it would result in substantial erosion or siltation on or off the site. (Criterion c.) (*Less Than Significant with Mitigation*)

As described above, development of the Project would result in the creation of additional impervious surfaces that could increase the amount of surface runoff within the Project site. Comparing existing and proposed conditions (Table 4.8-3 and Table 4.8-4, above) shows that there would be an increase in the weighted coefficient of runoff by an estimated 18 percent.

However, the site is located between 12 and 24 feet above sea level and all stormwater will drain via enclosed pipes to tidal slough channels connected directly to the San Francisco Bay. All downstream reaches are designated "Low Risk" of erosion (Option 4a) per Table 1-2 of the Contra Costa Stormwater C# Guidebook.

Construction activities and runoff from new uses could cause erosion of exposed soils, resulting in sedimentation and siltation of discharge flows on- or off-site. Implementation of **Mitigation Measure HYD-1.SP: Water Quality Best Management Practices for All Construction Activities** would reduce construction impacts related to erosion and siltation to a less than significant level.

The Project site requires compliance with Provision C.3 requirements and must demonstrate that it does not require adherence to the CCCWP's Hydrograph Modification Management Plan (HMP) which includes a flow-control standard.[8] The Project will also be required to develop a drainage plan that will comply with the City's drainage design standards, which include requirements for flow control. Once the design of the Project has been developed to a higher level of detail, and a specific site plan and physical project layout is determined, a specific hydrologic analysis will be performed to confirm peak flow calculations and provide drainage control improvements.

[8] CCWP included a flow-control standard in their HMP which encourages project proponents to design their storm water management, "such that post-project stormwater discharge rates and durations match pre-project discharge rates and durations from 10 percent of the pre-project 2-year peak flow up to the pre-project 10-year peak flow (CCCWP, 2012)."

Any measurable increase in stormflows could result in increased erosion on the Project site. This impact is considered potentially significant unless the Project maintains pre-project stormflow rates and there is no increase in the volume of stormwater leaving the site during the 24-hour, 10-year design storm or can demonstrate per the requirements of Provision C.3.g that any "increases are unlikely to cause downstream erosion or other impacts on beneficial uses" (CCCWP, 2012). Implementation of **Mitigation Measure HYD-3.SA4** would ensure that the Project maintains these pre-project levels:

As discussed further above, the Sub-Area 4 Project site is not subject to the same requirements as upland sites with regards to ensuring the on-site treatment of stormwater flows, per the Municipal Region Stormwater Permit (MRP), Section C.3.gi. Because the site is located in a catchment that drains to enclosed pipes that extend continuously to the Bay and areas that are tidally influenced, the Sub-Area 4 Project site is exempt from hydromodification requirements under the MRP. Regardless, stormwater treatment through the use of landscaping, planters, and other on-site facilities will be installed on the Sub-Area 4 Project site, per the Stormwater Quality Standards described in the Specific Plan. Implementation of **Mitigation Measure HYD-3.SA4** would address this impact.

> **Mitigation Measure HYD-3.SA4: Pre-project stormflow levels.** Prior to issuance of a grading permit, project applicants shall demonstrate, to the satisfaction of the City of Richmond Director of the Public Works Department, one the following:
>
> 1. Upon completion of construction activities, there will be sufficient detention capacity on the Project site to detain the incremental increase in stormflow volume that occurs during the 24-hour, 10-year design storm, which incremental increase is due to the increase in impervious surface above pre-project levels. This standard could be met with one or more detention vaults, tanks or other facilities, or through other means;
>
> 2. Upon completion of such construction, the total square footage of impervious surface area throughout the Project site will remain at or below pre-project levels; or
>
> 3. The proposed development has met the requirements of Provision C.3.g by demonstrating through compliance of CCCWP that any increases in stormwater flows are unlikely to cause downstream erosion or off-site siltation.

The City's Public Works Department would review the final Project plans to ensure they appropriately address pre-project stormflow levels and incorporate design standards consistent with applicable requirements. With compliance with existing rules and regulations and implementation of **Mitigation Measure HYD-3.SA4**, the Project would therefore result in a less-than-significant impact to erosion.

Significance: Less Than Significant.

Mitigation: Mitigation Measure HYD-1.SP, Mitigation Measure HYD-3.SA4.

Impact HYD-4.SA4: The Project would not alter the drainage pattern of the site such that it would result in a 100-year flood event on- or off- the site. (Criterion d.) (*Less Than Significant, No Mitigation Required*)

As noted above, the Project would include new development that would change existing drainage patterns largely through changes to impervious surfaces and stormwater management within the Project site.

As discussed above, the Project will be required to implement adequate stormwater features and requirements to direct and treat the anticipated stormwater flow that would occur after buildout. The Project applicant will develop a drainage plan that will comply with the City's drainage design standards, which include requirements for flow control. After Project design has been further developed to include a site plan and specific physical layout, a specific hydrologic analysis for proposed development would determine peak flow calculations and confirm drainage control improvements.

Project development would also be subject to Provision C.3 requirements. Stormwater management can include use of detention or retention facilities that allow for adequate control of stormwater to minimize the potential for any on- or off-site flooding. The Project plans would be reviewed by the City for compliance with applicable regulatory requirements and standards. Accordingly, buildout under the Project would not substantially increase surface water runoff during storm events and would not increase the potential for flooding, on- or off-site.

With the implementation of these existing stormwater management requirements for the Project, the impact would be less than significant.

Significance: Less Than Significant.

Mitigation: None required.

Impact HYD-5.SA4: The Project would not create or contribute runoff water which would exceed the capacity of existing drainage systems or provide additional sources of polluted runoff. (Criterion e.) (*Less than Significant with Mitigation)*

As discussed above for Impact HYD-1.SA4, the Sub-Area 4 Project may generate an incremental increase in runoff compared to that of the existing setting. The project would provide improvements to the existing storm drain system including the replacement of old lines and installation of new lines with a new outfall at Stege Marsh to address increases in stormwater flows. Therefore the Project would not cause flows to exceed the capacity of existing drainage systems.

During construction of the Project, pollutants that could be released into stormwater runoff and discharged into the San Francisco Bay would include oil, gasoline and diesel motor fuel,

industrial solvents, and other chemicals necessary for Project construction. With the implementation of **Mitigation Measure HYD-1.SP: Water Quality Best Management Practices for All Construction Activities** as discussed above, impacts of construction-related contaminated runoff would be reduced to less than significant. Additionally, the Project would be required to adhere to the requirements of the Contra Costa Clean Water Program and the NPDES MS4 permit. This would require implementation of construction and final operation measures such as pollutant source control features including landscaped areas for infiltration of stormwater, and treatment planters onsite to treat runoff from the impervious surfaces. Therefore, with implementation of Mitigation Measure HYD-1.SP, this impact would be less than significant.

Significance: Less Than Significant.

Mitigation: Mitigation Measure HYD-1.SP.

Impact HYD-6.SA4: The project could place housing or structures within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map; or place within a 100-year flood hazard area structures which would impede or redirect flood flows. (Criteria g., h.) (*Less than Significant, No Mitigation Required)*

According to the September 2015 FEMA FIRM, some areas within the Project site are located within Flood Hazard Zone AE that has a BFE of 10 feet. The AE flood zones are primarily located in proximity to the shoreline, extending inland from the San Francisco Bay Trail from near Channel Avenue and Bayview Avenue, including the existing pistol range, to the Berkeley Global Campus. Under the Project, the area south of the proposed Seaport Avenue near Channel Avenue and South 51st Street, which includes Flood Hazard Zone AE areas with a BFE of 10 feet, could be developed with housing and retail uses.

As discussed under Impact HYD-7.SP, the Specific Plan requires that the grade of all parts of the Plan Area be increased to 1 foot above the BFE at 3 feet of sea level rise (NAVD88) to address up to 3 feet of sea level rise. The Plan Area would also receive some protection from higher levels of sea level rise through the implementation of certain measures, such as the construction of the Shoreline Promenade to be elevated along with the shoreline road to serve as a barrier from anticipated sea level rise, as discussed below under Impact HYD-7.SA4.

In addition, per Municipal Code requirements, the Project is required to obtain a development permit that would be reviewed to ensure that the Project is safe from flooding and does not impede flood flows. Chapter 12.56 of the Richmond Municipal Code includes detailed standards of construction for building within designated flood zones. Per this chapter, a development permit is required for any construction or other development within any area designated on a FEMA FIRM map as subject to a 100-year flood hazard or a 500-year flood hazard. The City of Richmond Public Works Department reviews all development permits to confirm that proposed development is reasonably safe from flooding.

With compliance with existing City of Richmond Municipal Code requirements, and implementation of the requirements of the Specific Plan, including which would increase ground elevations above flood hazard levels, Project impacts related to development within flood hazard zones would be less than significant.

Significance: Less Than Significant.

Mitigation: None required.

Impact HYD-7.SA4: The Project could expose people or structures to a significant risk of loss, injury or death involving flooding related to sea level rise. (Criterion i.) (*Less than Significant with Mitigation)*

As discussed above under Impact HYD-7.SP, to assess potential impacts associated with sea level rise on Project features, two scenarios were studied, consistent with the City's General Plan as discussed below and BCDC's San Francisco Bay Plan. The first scenario projects an increase in sea level of 3 feet; the second considers a sea level increase of 5.5 feet.

3 feet of Sea Level Rise Plus 100-year Flood Event and Wave Overtopping

Figure 4.8-3 illustrates the potential flooding impacts on the Project site that would be associated with a rise in sea level of 3 feet, assuming a starting BFE of 10 feet. As this figure shows, with this increase in sea level, areas within and adjacent to Sub-Area 4, including the Special Planning Area and East Stege Marsh would be affected by inundation. With the addition of 100-year flood effects, more areas of Sub-Area 4, including the Lower Lagoon and the Harborfront Tract, would be affected. As shown in the figure, the additional increment of wave action ("overtopping") would further affect areas where water from waves could extend over existing topographical barriers.

In order to ensure the Project is consistent with General Plan Policy EC6.3, Adapting to Climate Change, which requires adequate design features to allow for future elevation increases of at least 3 feet from the existing elevation along the shoreline, the Specific Plan requires the Project to be developed at a grade of 1 foot above the BFE at 3 feet of sea level rise (NAVD88) to address up to 3 feet of sea level rise. This elevation addresses both the 100-year flood water level and wave action. In addition, the Specific Plan includes specific recommendations to increase the elevation of features of the Sub-Area 4 Project, including the Shoreline Promenade and shoreline road, to protect against sea level rise.

Even with the implementation of this requirement and possible implementation of design recommendations, the Project site is anticipated to experience intermittent flooding related to sea level rise. Streets within the Project site may experience infrequent flooding events resulting from backflow of drainage through storm drain inlets. This drainage system backup can be avoided through the installation of backflow prevention devices either as part of the storm drain

infrastructure as initially constructed or as a future adaptive solution on an as-needed basis. **Mitigation Measure HYD-7a.SP** would address this impact.

5.5 feet of Sea Level Rise Plus 100-year Flood Event and Wave Overtopping

Figure 4.8-4 illustrates the potential flooding impacts within the Project site associated with a rise in sea level of 5.5 feet, again, assuming a starting BFE of 10 feet. As this figure shows, with this increase in sea level, greater portions of Sub-Area 4 would be affected by inundation. With the addition of 100-year flood effects, more areas of Sub-Area 4, including the Upper Lagoon, Lower Lagoon and the Harborfront Tract would be affected. As shown in the figure, the additional increment of wave action ("overtopping") would further affect areas where water from waves could extend over existing topographical barriers, such as the Bay Trail. As shown in both figures, the Zeneca site is currently adequately graded above the flood levels that would be associated with both 3 feet and 5.5 feet of sea level rise.

Although, for the most part, the Project site would be protected from sea level rise of up to 5.5 feet, as shown in Figure 4.8-4, projected sea level rise up to 5.5 feet would expose parts of the Project site, including the parcel immediately east of the Zeneca site, to flood risk. The implementation of **Mitigation Measure HYD-7b.SP**, described above, would avoid this potential impact and improve resiliency. With the implementation of this mitigation measure, the impact would be less than significant.

Significance: Less Than Significant with Mitigation.

Mitigation: Mitigation Measure HYD-7a.SP and HYD-7b.SP.

Impact HYD-8.SA4: The Specific Plan could result in or cause inundation by tsunami, seiches, or mudflows. (Criterion j.) (*Less than Significant, No Mitigation Required*)

A significant impact could occur if the Project is susceptible to the effects of tsunami, seiches, or mudflows. The California Geological Survey (CGS), ABAG, and the City of Richmond have each mapped tsunami inundation areas along the Richmond shoreline (CGS, 2009; ABAG, 2014; and City of Richmond, 2012). Both the CGS and ABAG tsunami inundation maps were drafted by combining results from a suite of possible inundation scenarios, representing the worst-case scenario at any given location. For both of these maps only Meeker Slough, Stege Marsh, and Hoffman Marsh within Sub-Area 4 of the Specific Plan were identified as within the tsunami inundation zone, as shown on **Figure 4.8-6**. In the City of Richmond map (General Plan Public Safety and Noise Element), however, other large portions of Sub-Area 4 were identified as within the tsunami inundation zone. Using the most conservative of these maps (the map prepared by the City of Richmond), a small part of the Project site could be impacted by tsunami inundation.

Various precautions and warning systems would be activated by the City in the event of a tsunami. The City of Richmond is part of the CAER program which provides community alert,

notification, and education services in the event of toxic spills, floods, fires, and other disasters. CAER also provides private-use emergency radios as well as outdoor alert systems through a web of broadcast services (City of Richmond, ND). In addition, NOAA operates the National Tsunami Warning Center and the Pacific Tsunami Warning Center that alert local authorities to order the evacuation of low-lying areas, if necessary. Due to the infrequent nature of tsunami and relatively low predicted tsunami wave height in the area (City of Richmond, 2011), the Project site would not be exposed to a high risk of inundation by tsunami.

Therefore, although portions of the Project site are located within a tsunami inundation zone, the City and County's tsunami warning system coupled with the infrequent nature of tsunami, low predicted wave heights for tsunami in the area, and increased grade required by the Specific Plan for the Project site would result in a less-than-significant impact related to tsunami within the Project site. In addition, as discussed under *Existing Setting*, there are no large confined bodies of water such as reservoirs or lakes within Richmond or the Project site that would create an impact from seiches. The Project site, as a relatively flat region not surrounded by steep terrain, would also not be subject to mudflow. Therefore potential impacts related to tsunami, seiches and mudflow would be less than significant.

Significance: Less Than Significant.

Mitigation: None required.

4.8.7 Cumulative Impacts

The cumulative geographic context for hydrology and water quality for the Specific Plan and Sub-Area 4 Project consists of the Plan Area and Project site in addition to other areas within the watershed south of the border created by I-580, Baxter Creek, and the shipping canals to the west within the City's Southern Shoreline area, including all cumulative growth therein. The General Plan EIR did not identify any significant or cumulative impacts with respect to hydrology and water quality. Cumulative impacts on hydrology and water quality could result from incremental changes that degrade water quality or contribute to drainage and flooding problems within the watershed.

Impact C-HYD-1.SP: Development of the Specific Plan, in conjunction with past, present and reasonably foreseeable future projects, would not result in significant cumulative impacts with respect to hydrology, water quality, or sea level rise and flooding. (*Less Tthan Significant, No Mitigation Required*)

Although the amounts of increases, if any, in Specific Plan-related water quality loading are uncertain, the Specific Plan, in combination with other projects within the watershed, could combine to cumulatively affect receiving surface waters. However, the drainage control requirements set forth by the Contra Costa County Clean Water Program and the regional MS4 NPDES permit already take into account cumulative effects through adherence to requirements

set forth by the Clean Water Act, SFRWQCB Plan for the San Francisco Bay Basin, and City stormwater management requirements to ensure that individual contributions do not become cumulatively considerable. As such each project would be subject to City and SFRWQCB planning and permitting processes, which would reduce the potential for significant cumulative impacts on hydrology and water quality. Furthermore, implementation of **Mitigation Measure HYD-1.SP** would ensure that projects developed under the Specific Plan include water quality BMPs during construction.

Implementation of the Specific Plan together with past, present, and other reasonably foreseeable future projects in the vicinity, could also expose people and/or property to flooding from a 100-year event and sea level rise. The Specific Plan and other future projects in the vicinity would be required to comply with flood control requirements intended to provide flood protection. Additionally, new projects would be required to demonstrate that stormwater volumes could be managed by stormwater conveyance facilities designed to control onsite stormwater flows. New development projects in the City would also be required to comply with Municipal Code requirements, to ensure that each project is safe from flooding and does not impede flood flows. As discussed above, the Specific Plan itself includes measures designed to convey stormwater flows through improvements to existing infrastructure to ensure adequate capacity at high tides in a 100-year storm event combined with sea level rise. In addition, the Specific Plan requires grading of all parts of the Plan Area to 1 foot above the BFE at 3 feet of sea level rise (NAVD88) to address up to 3 feet of sea level rise. Therefore, the Specific Plan, in combination with other cumulative projects, would not result in a significant cumulative impact to people and/or property from a 100-year flood event in combination with sea level rise.

The Specific Plan would have a less than cumulatively considerable impact, and cumulative effects would therefore be less than significant.

Significance: Less than Significant.

Mitigation: None required.

Impact C-HYD-1.SA4: Development of the Project, in conjunction with past, present and reasonably foreseeable future projects, would not result in significant cumulative impacts with respect to hydrology, water quality, or sea level rise and flooding. (*Less than Significant, No Mitigation Required*)

Although the amounts of increases, if any, in Project-related water quality pollutant loading are uncertain, the Project, in combination with other projects within the watershed, could combine to cumulatively affect receiving surface waters. However, the drainage control requirements set forth by the Contra Costa County Clean Water Program and the regional MS4 NPDES permit already take into account cumulative effects through adherence to requirements set forth by the Clean Water Act, SFRWQCB Plan for the San Francisco Bay Basin, and City stormwater management requirements to ensure that individual contributions do not become cumulatively

considerable. As such each project is subject to City and SFRWQCB planning and permitting processes, which would reduce the potential for significant cumulative impacts on hydrology and water quality. Furthermore, implementation of **Mitigation Measure HYD-1.SP** would ensure that Project include water quality BMPs during construction.

Implementation of the Project together with past, present, and other reasonably foreseeable future projects in the vicinity, could also expose people and/or property to flooding from a 100-year event and sea level rise. The Project and other future projects in the vicinity would be required to comply with flood control requirements intended to provide flood protection. Additionally, new projects would be required to demonstrate that stormwater volumes could be managed by stormwater conveyance facilities designed to control onsite stormwater flows. New development projects in the City would also be required to comply with Municipal Code requirements, to ensure that each project is safe from flooding and does not impede flood flows. As discussed above, the Project itself includes measures designed to convey stormwater flows through improvements to existing infrastructure to ensure adequate capacity at high tides in a 100-year storm event combined with sea level rise. In addition, the Specific Plan requires grading of all parts of the Plan Area to 1 foot above the BFE at 3 feet of sea level rise (NAVD88) to address up to 3 feet of sea level rise. Therefore, the Project, in combination with other cumulative projects, would not result in a significant cumulative impact to people and/or property from a 100-year flood event in combination with sea level rise.

The Project would have a less than cumulatively considerable impact, and cumulative effects would therefore be less than significant.

Significance: Less than Significant.

Mitigation: None required.

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4.9 Land Use and Planning

4.9.1 Introduction

This section addresses the physical aspects of land use and the regulatory planning framework that guides future development under the Specific Plan and, at a project level, the Sub-Area 4 Project. The discussion focuses on the land use and planning implications of development under both the Specific Plan and the Sub-Area 4 Project. Presented is a summary of existing land uses in and around the Plan Area and Sub-Area 4 Project site, a list of applicable General Plan land use policies, and an assessment of whether the proposed Specific Plan and the Sub-Area 4 Project would conflict with the adopted General Plan and other applicable plans and policies pertaining to physical land use and planning considerations factors.

4.9.2 Environmental Setting

The following description of existing land use conditions of the Plan Area and the Sub-Area 4 Project site summarizes and, in some cases, elaborates on those presented in Chapter 3, *Project Description*, of this EIR.

Regional and Local Setting and Boundaries

The City of Richmond is located in western Contra Costa County, adjacent to the San Francisco Bay, as show in Figure 3-1 (in Chapter 3, *Project Description*). It is bordered by the cities of San Pablo, Albany, El Cerrito and Pinole; Interstate 80 (I-80) runs along the eastern side of the city.

Specific Plan Area

The Plan Area is located on the south side of Interstate 580 (I-580), which is the northern and eastern boundary of the Plan Area. The Plan Area is also bounded by the San Francisco Bay and the Point Isabel Regional Shoreline to the south, the Marina Bay residential community to the south and west, and industrial uses to the east. Regatta Boulevard, an east-west street, extends south of as well as through parts of the Plan Area. Marina Bay Parkway, a street that runs north-south, also extends through the Plan Area.

The 134-acre Global Campus site planned by UC Berkeley at the location of the former Richmond Field Station is located adjacent to but outside the developable areas of the Plan Area.

The Specific Plan Area is defined by two change areas in the General Plan and adjacent shoreline open space: The Regatta/Marina Bay Change Area (CA-15), and The Southern Gateway Change Area (CA-16). The General Plan identifies 16 Change Areas, or parts of the city that are targeted for more significant change in land uses and development character. As shown in **Figure 3-2, Specific Plan Area and Surroundings**, the CA-15 portion of the Plan Area is generally bounded by Regatta Boulevard to the south, I-580 to the north, Marina Way South to the west and I-580 and Regatta Boulevard to the east.

This area is characterized by large-scale office, light industrial and some commercial development, and is envisioned as part of a new, transit-oriented, mixed-use community node with access to I-580 to the north and proximity to the waterfront and proposed ferry terminal to the south (City of Richmond, 2012).

The CA-16 is located to the south and west of I-580 and east of 32nd Street. This area includes the Campus Bay Business Park and the Harbor Front Tract. The Campus Bay Business Park includes 87 acres of vacant brownfield sites, previously used by chemical manufacturing companies, most recently Zeneca, Inc. The Richmond Field Station is adjacent to the Campus Bay Business Park. This change area is envisioned as a revitalized area that would include high-intensity light industrial and commercial uses anchored by a large-scale research and development university campus, as well as ecologically-sensitive areas, Bay views, and connections to I-580, I-80, and the Bay Trail (City of Richmond, 2012). The General Plan identifies that redevelopment of the Southern Gateway Change Area should minimize the impacts of development on the shoreline and provide a mix of residential and recreation uses.

These change areas form the majority, but not all of the Plan Area. Change Area 15 encompasses all of Sub-Areas 1, 2, and 3, with the exception of a portion of Regatta Boulevard along the southern part of Sub-Area 3. Change Area 16 encompasses most of Sub-Area 4, but does not include the portion of Sub-Area southeast of Bayview Avenue.

Sub-Area 4 Project Site

The Sub-Area 4 Project site is located wholly within Sub-Area 4 of the Plan Area, west of I-580 and east of the Richmond Field Station. The Sub-Area 4 Project site is shown in Figure 3-8 (in Chapter 3, *Project Description)*.

Circulation

The Plan Area is located between the I-580 exits of Harbor Way (North, to Marina Way South) and Bayview Avenue, and vehicular access is from Marina Way South, Marina Bay Parkway, Regatta Boulevard, Meade Street, and South 51st Street. Pedestrian and bicycle facilities are intermittent throughout the Plan Area.

Existing Uses

Specific Plan Area

The Plan Area boundaries and existing land uses are shown in **Figure 3-2**. The Plan Area currently encompasses varying levels of industrial, office, open space and recreational uses. Moving from west to east through the Plan Area, notable uses include the Kaiser School of Allied Health, DiCon Fiberoptics Campus, Harbor Gate Shopping Center, the Crossing (office and warehouses), State Department of Health laboratories, PG&E Service Center offices, Safeway Distribution Center, Regatta Business Center, Campus Bay Business Park and brownfield sites, Seaport Industrial Area, and East Stege Marsh.Much of the Plan Area is made up of former tidal

wetlands that were converted to upland uses. Some of the Plan Area consists of open water and wetlands that receive tidal inundation, especially in Sub-Area 4.

Sub-Area 4 Project Site

The Sub-Area 4 Project site is shown in Figure 3-8 (in Chapter 3, *Project Description).* Existing land uses include industrial, commercial, and remediation uses, as well as shoreline open space.

Uses Surrounding the Plan Area

Figure 3-2 shows existing land uses surrounding the Plan Area. Overall, local land uses include a mix of light and heavy industrial, transportation (I-580), commercial, residential, and open space uses.

North of the four-lane I-580, the predominant land use is low/medium density residential neighborhoods with some institutional uses, including schools and churches.

West of the Plan Area, across Marina Way South, are industrial/office uses, including the Ford Assembly Plant and Port of Richmond facilities. Additionally, the Rosie the Riveter World War II Home Front National Historical Park is located west of Marina Way South.

Residential uses (both detached single family homes and townhomes) are located south of the Plan Area, near or on the southern shoreline. Point Isabel, which includes open space (Point Isabel Regional Shoreline) and a Costco Wholesale club retail use, is located south of Sub-Area 4. The Richmond Field Station site is located between Sub-Area 4, to the east, and Sub-Areas 2 and 3 to the west.

The approximately 134-acre Richmond Field Station site, located west of Sub-Areas 2 and 3 and east of Sub-Area 4, comprises two UC-owned parcels: 110 acres (comprising 97 acres of uplands and 13 acres of the Western Stege Marsh), and a 24-acre property along Regatta Boulevard. The Richmond Field Station includes existing research facilities and undeveloped land supporting natural resource conservation. Upland areas on the Richmond Field Station site are developed with buildings used for academic and research activities as well as by private and government entities. Less developed and undeveloped open space on the site includes a eucalyptus tree stand, coastal grasslands, and Western Stege Marsh (a tidal salt marsh). A transition zone of open space is located between upland areas and the marsh. The Bay Trail is located south of the site.

The City of Albany is located less than a mile south of the southern boundary of Sub-Area 4. The City of El Cerrito is located east of Sub-Area 4 and I-580.

Railway Corridors and Switching Yards

Long-term rail operations serving industrial uses have shaped the nature of development and activities within the Plan Area. An active, BNSF railway corridor runs through the Plan Area and parallel to the eastern boundary of Sub Area-4 and I-580. The rail corridor connects the Port of Richmond to areas west of the Plan Area. This corridor is also used by Amtrak and the Union

Pacific Railroad (UPRR), and a "Y" connection between the BNSF railway and the nearby UPRR railway is actively used. Two major rail switching yards, the 23rd Street Switching Yard (located within Sub-Area 1 as shown on **Figure 4.9-1**) and Safeway Switching Yard (located south of Sub-Area 3 as shown on Figure 4.9-1) are active within the Plan Area.

According to the General Plan, an average of 18 trains per week moved along the BNSF railway, and an average of 12 UPRR trains and 10 Amtrak trains moved per week along the UPRR railway, in 1990. A recently conducted study also indicates that approximately 5 trains are involved in line haul operations and approximately 14 trains are involved in switching operations per day along the BNSF line in Richmond (City of Richmond, 2014). Train speeds for both BNSF and UPRR range from 10 to 60 miles per hour. Freight trains may move along the railways at any time during the day or night, and passenger trains generally operate during daytime (7:00 AM to 10:00 PM) hours.

The Richmond Rail Connector project installed a new connector track between the BNSF railway and UPRR tracks in the northern portion of the City to facilitate the movement of trains between the two tracks and reduce train movements through downtown Richmond and the Plan Area.

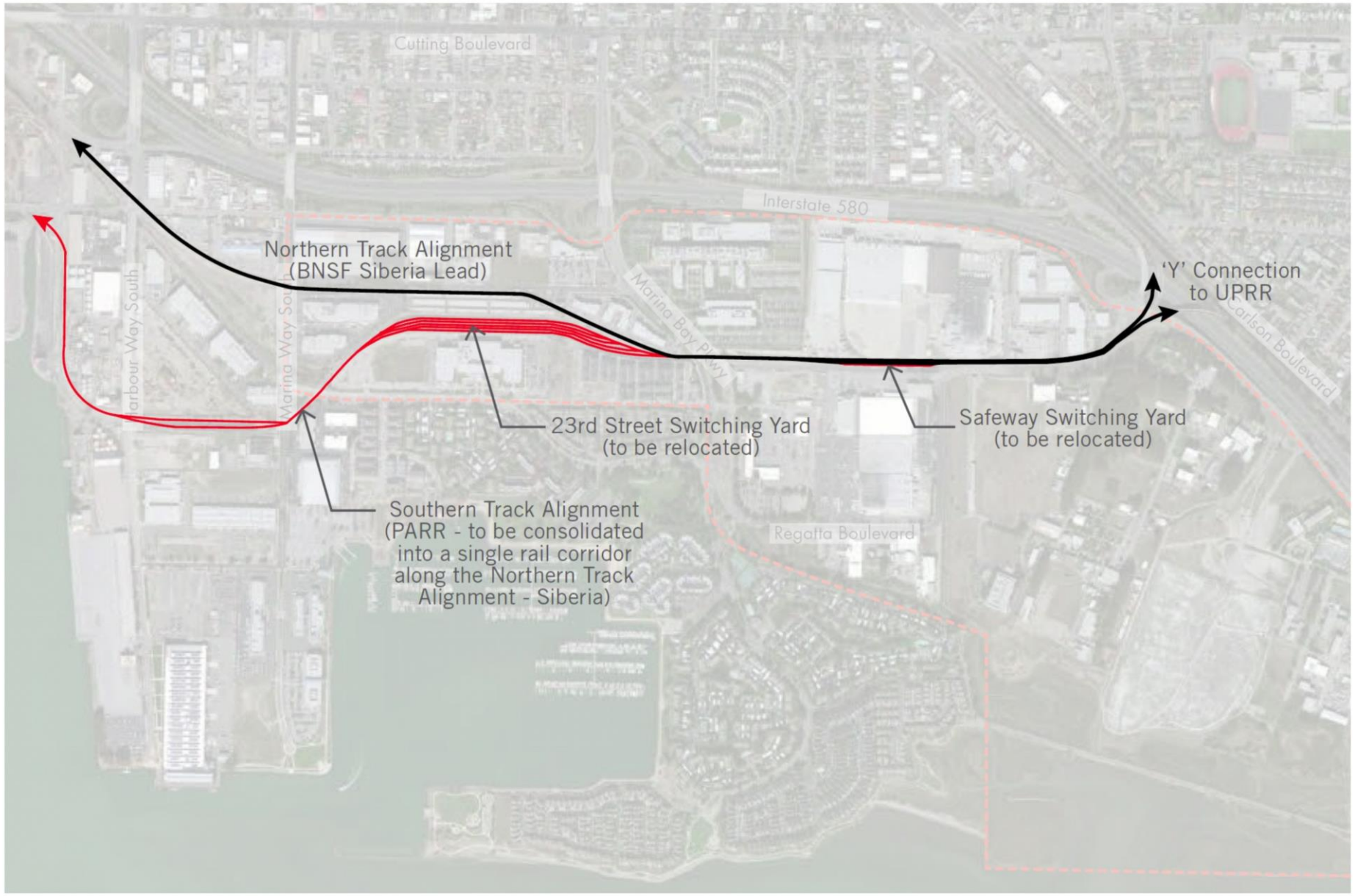
Railways and the Specific Plan Process

The Specific Plan community workshops resulted in the following conclusions regarding railways and switching yards in the Plan Area, which were built into the Plan:

- **A rail line needs to be maintained through the Plan Area.** Through the community workshop process, the City determined elimination of the rail line was not feasible. While the Richmond Rail Connector project will reduce through traffic in the Plan Area, the importance of the rail will still be such that its removal should not be considered.
- **The existing switching yards are already being used to their full capacity.** The City determined that the infrastructure costs required to make changes to the switching yards in the short term would not be worthwhile because any reduction of capacity would have to be offset by new facilities elsewhere.
- **Residential uses should not be located near switching yards.** While the Specific Plan anticipates the existing rail line will remain, the relocation of the switching yards should be studied further in order to increase the long-term development potential of the area around the switching yards for uses including residential.

Switching Yard Relocation

The Specific Plan assumes in the short term that the 23rd Street and Safeway switching yards will continue to operate within the Plan Area. The long-term vision for the Specific Plan also provides land use direction in the event that the switching yards are voluntarily relocated. The relocation of the 23rd Street Switching Yard would enable Sub-Area 1 to support a fully mixed-use environment. The relocation of the Safeway switching yard would facilitate direct connections between the Richmond Field Station and Sub-Area 2. Both of these relocations are part of the long-term Plan vision.



SOURCE: City of Richmond, 2015

Figure 4.9-1

Existing and Long-Term Rail Track Alignment

Rail Line Consolidation

The Specific Plan anticipates the voluntary consolidation of multiple rail operations running through the Plan Area, such that the rail corridor would only be used to move rail cars through the Plan Area to the "Y" Connection with the UPRR at the eastern edge of the Plan Area. The proposed single corridor would follow the northern track alignment of BNSF's Siberia Lead, as shown on Figure 4.9-1. This track alignment assumes that UPRR would be able to use this track segment and that a new connection between the existing rail facilities would be provided to this track west of the Plan Area.

As in the case of the relocation of the switching yards, rail line consolidation is a long-term goal that will require additional, site-specific studies prior to implementation. A Goods Movement Plan will be completed to investigate the feasibility of consolidation.

Rail Viaduct

Future development within the Plan Area may include an elevated railway viaduct. An elevated railway viaduct between Meade Street and Cutting Boulevard would allow streets and pedestrian paths to cross beneath the rail, elevating it above potential future flood levels, while improving the efficiency of a single rail corridor, eliminating conflicts with vehicles, and improving connectivity. The planning and construction of a rail viaduct is not anticipated to take place within the planning timeframe foreseeable for the Plan Area, and will require additional, site-specific studies prior to implementation.

Existing General Plan Land Use Designations

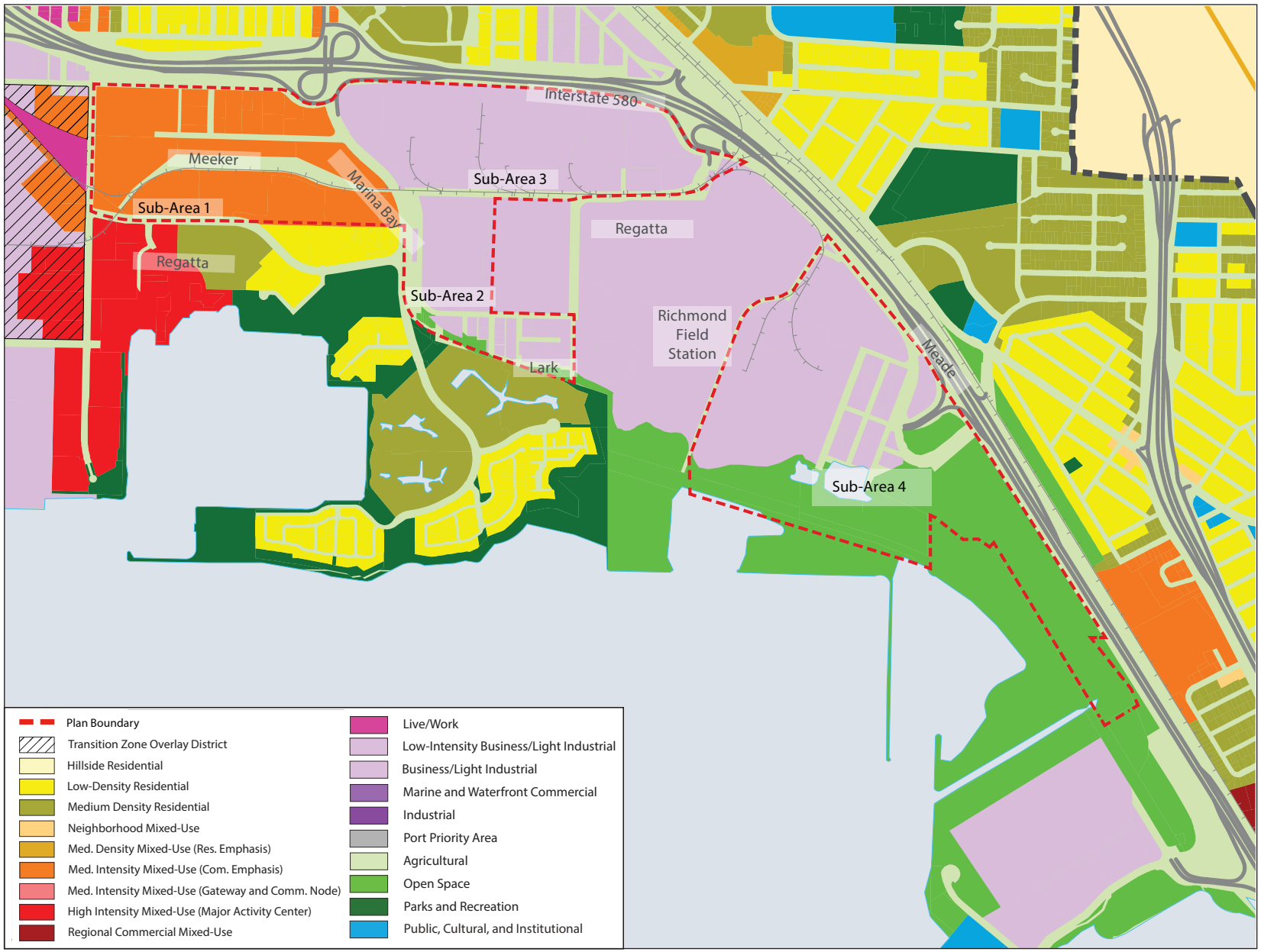
The existing General Plan land use designations for the Plan Area are described below. The General Plan is discussed in detail under 4.9.3 *Regulatory Setting*, further in this section. General Plan land uses designations within the Plan Area are presented as **Figure 4.9-2**.

Business/Light Industrial

Approximately 305 acres within the Plan Area have a land use designation of Business/Light Industrial. The areas designated as Business/Light Industrial include areas east of Marina Bay Parkway, designated with this land use to promote employment-generating uses, and the entire Richmond Field Station site. According to the General Plan, the Business/Light Industrial designation includes commercial and institutional uses such as a large-scale research and development campus, light industrial, industrially-related storage and distribution, and office uses.

Medium-Intensity-Mixed-Use (Commercial Emphasis)

Approximately 72 acres within the Plan Area have a land use designation of Medium-Intensity-Mixed-Use (Commercial Emphasis). According to the General Plan, this land use classification includes mixed-use development with commercial or office/light industrial uses encouraged at street-level along corridors. Residential uses may include condominiums, townhouses or apartments and commercial uses may include small to large-scale retail or office.



SOURCE: City of Richmond, 2015

Figure 4.9-2
General Plan Land Use for the Plan Area

New development must have a pedestrian-oriented building design with minimal setbacks and parking located to the sides or rear of buildings preferred.

The area west of Marina Bay Parkway is designated as Medium-Intensity Mixed-Use (Commercial Emphasis) to complement the transit-oriented development around the planned Ford Peninsula ferry terminal.

Open Space

Approximately 81 acres within the Plan Area are designated as Open Space. The Open Space land use classification includes wetlands, mudflats, creek corridors and other natural preservation areas, as well as private lands deed-restricted for open space preservation. Public access should be allowed where appropriate. Except in delineated wetlands and other resource preservation areas, uses permitted in the Parks and Recreation designation (small-scale recreation-supporting uses such as rental shops, bike repair facilities, small restaurants, interpretation centers and museums) are allowed.

Total areas of designated land uses within the Plan Area are presented below in **Table 4.9-1**.

TABLE 4.9-1
GENERAL PLAN LAND USE CLASSIFICATIONS WITHIN THE PLAN AREA

Development Parameters	General Plan Land Use Classifications		
	Medium Intensity Mixed Use (Commercial Emphasis)	***Business/Light Industrial***	***Open Space***
Plan Area	72 acres	305 acres	81 acres
Density (dwelling units per acre)	50 (max.)	N/A	N/A
Intensity (floor area ratio)	0.25 - 2.0	0.25 - 3.0	0.5 (max.)
Building Height	15 to 55 feet	55 feet (max.)	35 feet (max.)

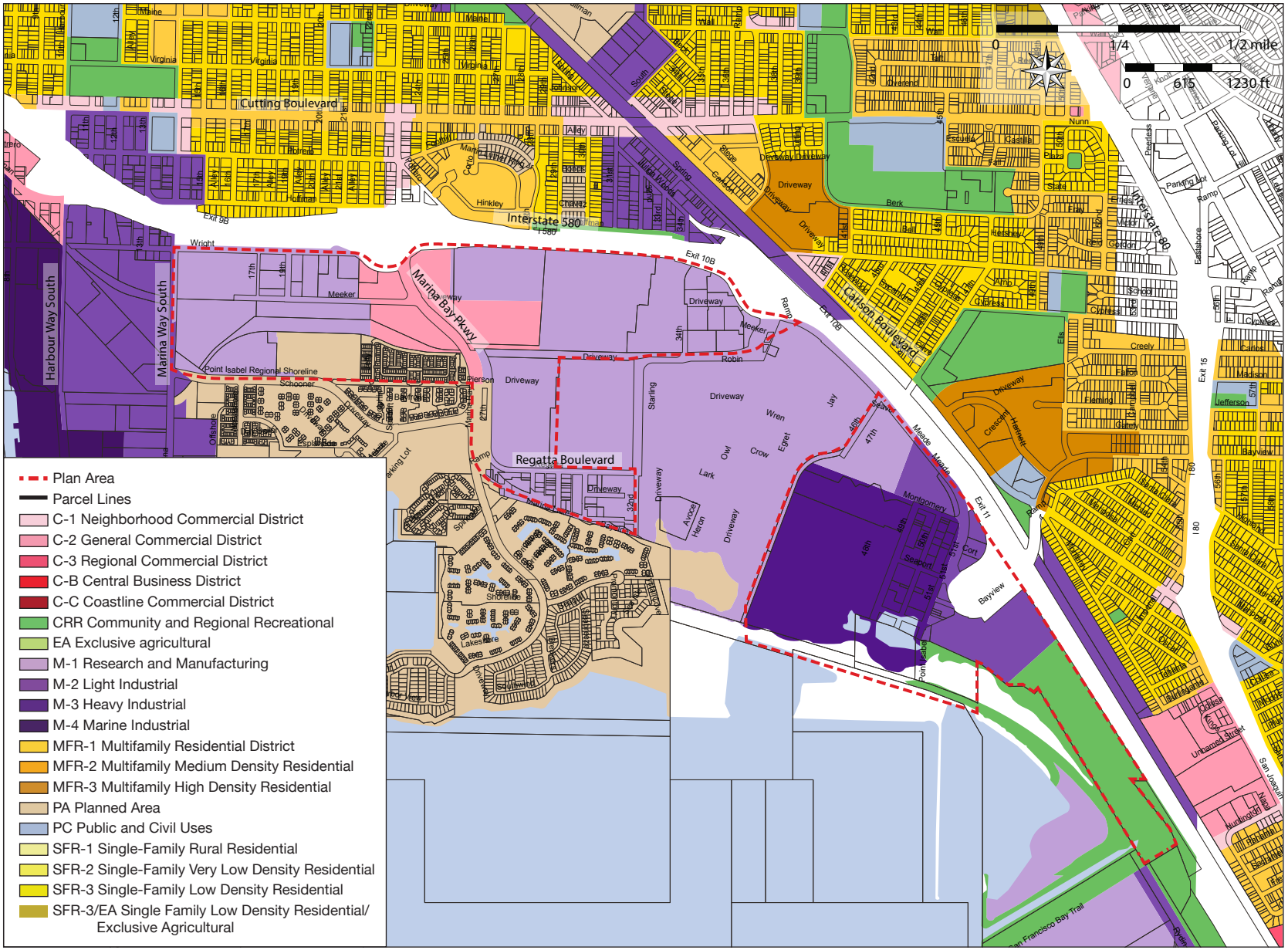
SOURCE: City of Richmond, 2015.

Existing Zoning Designations

The Plan Area includes the existing zoning designations described below. These zoning designations vary in their consistency with the General Plan designations within the Plan Area. The existing zoning map for the Plan Area is presented in **Figure 4.9-3**.

C-2: General Commercial

The intent of the C-2 General Commercial zoning designation is to create, preserve and enhance areas with a diverse variety of office, consumer and business service activities needing visually-prominent and attractive locations and abundant vehicular access. The C-2 zone also allows residential uses that are permitted in the MFR-2 district. Noise, odor and traffic are regulated so as to minimize impacts to adjacent residential uses. Parcels designated C-2 are generally 100 to 150 foot deep and are configured along major thoroughfares.



SOURCE: City of Richmond, 2015

Richmond Bay Specific Plan EIR . 120834

Figure 4.9-3

Existing Zoning for the Plan Area

M-1: Research and Manufacturing

The intent of the M-1 Research and Manufacturing zoning designation is to create, preserve and enhance areas containing establishments primarily engaged in research, product development, testing and administration, and controlled production of high technology electronic, industrial or scientific products or commodities. Manufacturing activities are limited to non-nuisance light manufacturing and assembly and pilot plant operations for construction and testing of prototype products. Commercial offices and limited retail uses providing support services or which are regional serving and sell in bulk warehouse quantities are permitted. Typically industrial/office flex uses are located in warehouse-like buildings with over 10 percent of floor space devoted to office uses and minimal trucking and distribution activities using small delivery trucks. The intent is to allow uses appropriate for the district to operate without the prospect of intrusion from incompatible activities and to provide the proper safeguards for industrial development consistent with the desires and needs of the City. Caretaker's residences and Live/Work are the only permitted residential uses in this district.

M-2: Light Industrial

The intent of the M-2 Light Industrial zoning designation is to create, preserve and enhance areas containing manufacturing, warehousing, trucking and distribution oriented uses, and related establishments with limited external impact on the surrounding areas within an open and attractive setting. On-site administrative offices or company headquarters and support retail services may be found in this district. Caretaker's residences are the only permitted residential use in this district. Live/Work may be permitted by conditional use permit.

M-3: Heavy Industrial

The intent of the M-3 Heavy Industrial zoning designation is to create, preserve and enhance areas containing a wide variety of industrial uses including but not limited to manufacturing and related establishments which are potentially incompatible with most other establishments. This zone is generally located in areas which are distant from residential areas and which provide a wide variety of sites with good rail and highway access. Caretaker's residences may be permitted by conditional use permit.

PA: Planned Area District

The purpose of the PA district is to promote development of large areas in substantial compliance with the principles and standards of the General Plan. This includes permitting appropriate variety and diversity in the composition and relationship of land uses, building types, structures, lot sizes and open spaces.

The Marina Bay Neighborhood was developed through the creation of a Planned Area (PA) District. A small portion of the PA falls within the Plan Area on the northwest corner of the intersection of Marina Way Parkway and Regatta Boulevard.

CRR: Community and Regional Recreational District

The intent of the CRR Community and Regional Recreational District zoning designation is to enhance local, neighborhood, community and regional areas of outstanding scenic, historic and cultural values including parks and related facilities such as swimming pools, playing fields, recreational buildings, trails, and associated parking. The CRR district consists of predominantly open land uses.

4.9.3 Regulatory Setting

State Regulations

California State Lands Commission

The California State Lands Commission (SLC) is a state agency that oversees open water areas, including San Francisco and San Pablo Bays. The SLC is charged with protecting its lands for public use, and it has the authority to issue permits for activities in its jurisdiction.

Pursuant to the Public Trust Doctrine, the SLC is mandated to protect sovereign lands of the State of California defined as tidal and submerged lands and navigable waterways. This includes the marine environment – essentially, wherever tidal influence occurs in the San Francisco Bay and along the California Coast up to three miles offshore. Tidally-influenced waterways, such as Baxter Creek and Meeker Creek, and the tidally inundated areas at the Plan Area fall within the jurisdiction of the State Lands Commission. Approved uses of Public Trust lands are water-related public needs, such as conducting water-related commerce, fishing, and use of waters for navigation. Private uses including residential uses are not consistent with Public Trust Doctrine as historically and currently interpreted.

Farmland Mapping and Monitoring Program

The California Department of Conservation, Division of Land Resource Protection, has established the Farmland Mapping and Monitoring Program (FMMP), which monitors the conversion of the State's farmland to and from agricultural use. The program also produces a biannual report on the amount of land converted from agricultural to non-agricultural use. The program maintains an inventory of state agricultural land and updates its "Important Farmland Series Maps" every two years. The FMMP is an informational service only and does not constitute State regulation of local land use decisions. Four categories of farmland—Prime Farmland, Farmland of Statewide Importance, Unique Farmland, and Farmland of Local Importance—are considered valuable. The Plan Area and Sub-Area 4 Project site are identified as Urban Land by the FMMP (DLRP, 2012).

California Land Conservation Act

The California Land Conservation Act of 1965, commonly referred to as the Williamson Act, enables local governments to designate agricultural preserves and enter into contracts with private landowners for restricting specific parcels of land to agricultural, or related open space use. Under the provisions of the Williamson Act, landowners contract with the County to maintain agricultural

or open space use of their lands in return for a reduced property tax assessment. The contract is self-renewing and the landowner may notify the County at any time of intent to withdraw the land from its preserve status. Withdrawal involves a 10-year period of tax adjustment to full market value before protected agricultural land or open space can be converted to urban uses. Consequently, land under the Williamson Act Contract can be in either a renewal status or a nonrenewable status. The Plan Area and Sub-Area 4 Project site are not within an area subject to an agricultural preserve or a Williamson Act Contract (DLRP, 2012).

Regional and Local Regulations

San Francisco Bay Conservation and Development Commission (BCDC)

The BCDC regulates development that falls within the open water, marshes and mudflats of greater San Francisco Bay, and its nine-county shoreline. The BCDC requires permits for the following activities:

- Place solid material, build or repair docks, pile-supported or cantilevered structures, dispose of material or moor a vessel for a long period in San Francisco Bay or in certain tributaries that flow into the Bay;
- Dredge or extract material from the Bay bottom;
- Substantially change the use of any structure in the area;
- Construct, remodel or repair a structure; or
- Subdivide property or grade land.

The BCDC uses the McAteer-Petris Act, the San Francisco Bay Plan, its own regulations and other plans specific to other areas of the Bay in order to inform its decisions. BCDC's South Richmond Shoreline Special Area Plan, last amended in 1987, encompasses the Plan Area. BCDC has indicated that this Special Area Plan will be updated in the near future. Development within the Plan Area and the Sub-Area 4 Project will require permits from BCDC, which are necessary prior to the commencement of work within BCDC's jurisdiction.

Association of Bay Area Governments and Metropolitan Transportation Commission

The Association of Bay Area Governments (ABAG) is the comprehensive regional planning agency and Council of Governments for the nine counties and 101 cities and towns within the San Francisco Bay Region. ABAG itself does not have formal regulatory authority, but aids land use planning through intergovernmental coordination. ABAG is the regional coordinator of the CEQA review process in the Bay Area; ABAG reviews proposed infrastructure and development projects so as to determine their impact on regional planning programs.

The Metropolitan Transportation Commission (MTC) is the transportation planning and financing agency for the nine-county San Francisco Bay Area.

Plan Bay Area

In July 2013, the MTC and ABAG jointly approved Plan Bay Area and certified the associated Final EIR, which includes the region's Sustainable Communities Strategy and the 2040 Regional Transportation Plan. Plan Bay Area presents a long-range road map to guide the Bay Area's transportation investments for a 25-year period.

Plan Bay Area includes eleven goals and targets, the first two of which address the requirements of Senate Bill 375, The California Sustainable Communities and Climate Protection Act of 2008 (SB 375). The goals and targets of Plan Bay Area include:

- Climate Protection
  - Reduce greenhouse gas emissions from cars and light-duty trucks by 15 percent per capita by 2035
- Adequate Housing
  - Plan for housing sufficient to house 100 percent of the Bay Area's future workers and residents from all income levels, without displacing current low-income residents
- Healthy and Safe Communities
  - Improve air quality and reduce exposure to fine and coarse particulates across the Bay Area
  - Reduce injuries and fatalities from all collisions (including bike and pedestrian) by 50 percent
  - Increase the average time Bay Area residents spend walking or biking for transportation each day to 15 minutes per person per day
- Open Space and Agricultural Preservation
  - Direct the region's growth to occur inside the established urban growth boundaries, protecting open space and agricultural land
- Equitable Access
  - Promote access to housing, jobs and transportation for all Bay Area residents, particularly low-income and lower-middle-income Bay Area residents
- Economic Vitality
  - Grow economic productivity in the Bay Area by 2 percent annually
- Transportation System Effectiveness
  - Maintain the Bay Area's transportation system in good repair
  - Boost the number of trips taken without a car across the Bay Area by 10 percent
  - Reduce vehicles miles traveled (VMT) per capita by 10 percent

South Richmond Priority Development Area

The Specific Plan Area is located entirely within the larger South Richmond Priority Development Area (SRPDA), a 1,099-acre portion of the south Richmond shoreline. Priority

Development Areas (PDAs) are locally-identified sites that include urban infill development and intensification opportunities within communities suited for pedestrian and bicycle traffic and transit. The identification of PDAs is part of ABAG's and MTC's implementation program for a strategy that would improve connections between jobs and housing, and guide development of new jobs and housing near transit.

The SRPDA includes the Plan Area, extends westward to the Port of Richmond and the future Richmond ferry terminal, and includes portions of the South Richmond neighborhood north of I-580 between Ohio Avenue, 23rd Street, and 8th Street. The primary focus of the SRPDA is on the shoreline at Marina Bay. The vision for this PDA includes revitalization of the former Kaiser Shipyard, development of uses to attract retail, commercial, and other uses, investments to include additional public transit and improvements to traffic and transportation infrastructure to improve connectivity. The City of Richmond has designated the SRPDA as a Transit Neighborhood, focusing on improvements that would promote mixed-use development and enhance multi-modal connectivity and mobility.

Regional Housing Need Plan for the San Francisco Bay Area: 2014-2022

In December 2013, ABAG adopted the *Regional Housing Need Plan for the San Francisco Bay Area: 2014-2022*, a Regional Housing Needs Allocations (RHNA) report. ABAG's primary focus of research and analysis has been its biennial long-term forecast of the region known as *Projections*. The most recent iteration of the publication was released in 2013. This publication is tied with the Regional Transportation Plan.

Bay Trail

The San Francisco Bay Trail (Bay Trail), an ongoing project to extend a continuous bicycle and pedestrian trail project around the shoreline of San Francisco Bay, is overseen by ABAG, and extends through parts of the Plan Area (Sub-Area 1, Sub-Area 2, and Sub-Area 4).

Metropolitan Transportation Commission

The MTC acts as a regional transportation planning agency and as the region's metropolitan planning organization (MPO). Because of its designation, the MTC is responsible for the Regional Transportation Plan, a compilation of plans for mass transit, highway, freight, bicycle, and pedestrian facilities. The MTC also reviews applications from local agencies for state and federal grants for transportation projects to determine their compatibility with the plan. As noted above, the most recent version of the Regional Transportation Plan—*Plan Bay Area*—was jointly adopted in July 2013 by MTC and ABAG. Plan Bay Area calls for greater density of development near transit nodes and major transportation corridors.

East Bay Regional Park District Master Plan 2013

The East Bay Regional Park District (EBRPD) administers and manages a network of regional parks for Alameda and Contra Costa counties. The 2013 EBRPD Master Plan's goals include upholding a balance between the need to protect and conserve resources and the need to provide opportunities for recreational use of the parklands, currently and in the future (EBRPD, 2013).

The Master Plan highlights opportunities afforded to the public such as participation in planning, development, operation, interpretation and stewardship of the District.

Eastshore State Park General Plan

The Eastshore State Park comprises approximately 2,262 acres of uplands and tidelands extending along waterfronts in Oakland, Emeryville, Berkeley, Albany, and Richmond, including part of the Southern Richmond shoreline (EBRPD, 2002). The EBRPD's General Plan for the park works to protect and enhance the natural resource base, while expanding opportunities for public enjoyment of the park's shoreline setting.

Policies in the Eastshore State Park General Plan that apply to the South Richmond shoreline portion of the state park are:

- **PI/SR-7.** Removal of invasive exotic plant species and re-vegetation with native plant species in Hoffman Marsh and along South Richmond shoreline.
- **PI/SR-8.** Coordinate with the owners of the adjacent tidal marsh, mudflat, subtidal, and upland habitat areas to ensure adequate protection of this valuable natural area.
- **PI/SR-9.** Explore the possibility of adding one or two new vista points seating areas along the Bay Trail north of Point Isabel.
- **PI/SR-10.** Incorporate interpretive panels into the vista points and other key points along the Bay Trail that explore the natural, cultural and social history of this portion of the park project.
- **PI/SR-11.** Provide fencing along the Bay Trail where necessary to protect tidal marshes, tidal mudflats, and water birds from disturbance.

City of Richmond General Plan 2030

All cities and counties in California are required by state law to prepare and adopt a General Plan. The Richmond General Plan 2030 includes plans, policies, programs, and descriptive contents that indicate the general framework and direction the City intends to pursue regarding future land use.

On April 25, 2012, the Richmond City Council adopted a new General Plan to guide the City's sustainable growth and development. The General Plan provides a comprehensive framework for developing a healthy city and healthy neighborhoods. While General Plans are required by the State of California to contain seven elements, the City of Richmond's General Plan contains 15 elements addressing land use, economic development, housing, transportation, climate change, public safety, arts and culture, and open space conservation strategies. Additionally, the City of Richmond is one of the first cities in the country to include a comprehensive element dedicated to community health and wellness.

The General Plan seeks to accommodate open space and increased access to public parks as well as growth in mixed-use, high-density infill development around the City's intermodal transit center and along its key commercial transit corridors. The General Plan also articulates a vision for

revitalizing Richmond's Southern Gateway area anchored by the Richmond Field Station site. The General Plan includes as a key finding and recommendation that "[n]atural beauty, historic assets and convenient access to Interstate 580 present incredible potential to develop the southern shoreline area into a higher-intensity, mixed-use center." The actions and policies identified in the General Plan (e.g., Policy LU4.1, Action LU3.E, as reproduced below) envision significant redevelopment of the Southern Gateway area to include mixed-use community uses including education, research and development, light industrial, residential and other sensitive uses.

The General Plan includes numerous land use policies relevant to the Specific Plan and Sub-Area 4 Project, and adopted for the purpose of avoiding or mitigating an environmental effect. Applicable land use policies are included in **Table 4.9-2, Consistency with Applicable General Plan Land Use Policies and Other Applicable Regulations or Plans**, which includes the comprehensive list of General Plan policies relevant to the proposed Specific Plan and Sub-Area 4 Project and intended to reduce environmental effects. The Sub-Area 4 Project is consistent with the Specific Plan; as such, determinations of consistency under the Specific Plan also applies to the Sub-Area 4 Project.

Key goals and policies within the General Plan that apply to the Specific Plan and Sub-Area 4 Project include:

Land Use Element

- **Goal LU1: An Improved Urban Environment.** Improve the urban fabric by crafting development strategies that emphasize high-density, mixed-use infill development and a safe, vibrant, economically-sustainable environment that takes advantage of existing infrastructure and public facilities. Provide improvements that strengthen connections between neighborhoods and amenities such as retail, community facilities, parks and open space areas.

  Policy LU 1.1: 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.

  Policy LU1.5: Connections and Linkages. Enhance connections and linkages between activity centers and major destinations in the City and the region. Work with local transit agencies to enhance transit service to the Southern Shoreline. Improved connections and linkages will be critical to attract new residential and commercial development proposed within Marina Bay and to support the proposed ferry terminal.

  Improve connections within the Downtown and Civic Center area and to adjacent neighborhoods. Support increased connectivity between the Richmond BART/Amtrak Station, Civic Center, Kaiser Hospital and the historic areas of Downtown, the

proposed ferry terminal, regional recreation areas, the shoreline, and other Bay Area communities.

- **Goal LU2: Healthy and Viable Neighborhoods.** Creating healthy and viable neighborhoods that provide safe places for people of all ages, ethnicities and abilities to live, work and play. Equitably distribute community facilities, urban parks and small public gathering areas to provide all residents with opportunities to enjoy the benefits of a rich social and physical environment. Further support residents' daily needs requiring small-scale local retail and other neighborhood-supporting uses within walking distance of homes. Encourage development of neighborhood nodes that increase convenient access to local services and amenities.

  Policy LU2.2: 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.

- **Goal LU3: Expanded Economic Opportunities.** Expand economic opportunities in existing commercial and industrial areas and develop new opportunities to diversify the local economy. Create an attractive and socially-responsible business environment that will support business recruitment, expansion and retention. Encourage innovative, high-growth and green business, and further support businesses and industries in providing a range of job and entrepreneurial opportunities while minimizing environmental and health impacts.

  In building a thriving local economy, develop a skilled and educated workforce that can strengthen existing businesses and emerging industries. Establish Richmond as a major employment center in Contra Costa County and along the Interstate 80 and 580 corridors by expanding and diversifying the local employment base.

  Capitalize on Richmond's amenities and convenient location in order to attract new businesses to the Southern Shoreline, Hilltop, Downtown, the Port and surrounding industrial areas. Transform the Hilltop Area, the Southern Shoreline and the Richmond Parkway as mixed-use regional destinations and employment centers. Leverage Richmond's rich cultural, historical and natural amenities to ignite a vibrant cultural-heritage and tourism industry.

  Policy LU3.2: Local Employment Base. Expand and diversify the local employment base to provide quality jobs for all Richmond residents, especially those that face barriers to employment such as youth, seniors, the formerly incarcerated, and residents with limited English proficiency. Richmond's economy should offer a broad range of quality employment opportunities for current and future residents with varying degrees of experience, education and training. By expanding and diversifying the local employment base, Richmond can establish itself as a major employment center in Contra Costa County and along the Interstate 80 and 580 corridors.

Encourage businesses and industries that provide a safe work environment, living wages and benefits, and opportunities for skill development and advancement. Allow a range of industries and business types including a variety of small and large firms, established and up-and-coming industries, national and local establishments and employers across a variety of economic sectors including publicly owned and private port facilities.

Support local businesses and entrepreneurs by providing a range of locations and flexible space opportunities including retail space along commercial corridors and office and light industrial space close to regional transportation infrastructure. Provide infrastructure improvements and incentives to support residents and businesses in establishing and expanding local enterprises in Richmond. Encourage local businesses to provide a range of quality jobs to residents, maximize and keep revenue in the City, and respond to community needs for key amenities and services.

Support local businesses and entrepreneurs by encouraging development of a range of locations and flexible space opportunities, including retail space along commercial corridors and office and light industrial space close to regional transportation. The City may also provide infrastructure improvements and incentives to support residents and businesses in establishing and expanding local enterprises.

Action LU3.E (also Action ED8.A): Southern Gateway Specific Plan. Develop a specific plan to guide improvements in the Southern Gateway Change 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.

- **Goal LU4: Enhanced Environmental Quality.** Protect and preserve natural resources to nurture environmental and human health. Work with local and regional regulating bodies to protect water quality in creeks and bays, and to reduce or mitigate air, water and soil pollution and contamination. Encourages the sensitive integration of built and natural environments to develop a high-quality urban experience.

  Policy LU4.1: Richmond Shoreline. Minimize the impacts of development on the shoreline with special attention to intensity, density, and proximity to the water. 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. 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, adopt, and implement plans that will to protect natural and built environments from adverse potential impacts of sea level rise due to climate change.

  Policy 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.

  Policy LU4.3: 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.

Policy LU4.4: 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.

Action LU4.A Waterfront Redevelopment Plans. Facilitate on-going 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.

Action LU4.D Site Remediation. Require property owners to comply with and pay for 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.

- **Goal LU5: Balanced and Compatible Uses.** Achieve a mix of land uses that is ecologically, economically and socially equitable and sustainable. Encourages a mix of uses in major activity centers, community nodes and gateways, in neighborhood nodes and along key corridors as well as in some industrial areas. Using this pattern and range of land uses, activate focal areas of the City throughout the day and evening, and provide convenient access to goods, services, and community amenities.

Policy LU5.1: A Balanced Mix of Land Uses. Promote a balanced 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.

Policy 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.

Policy LU5.3: Land Use Compatibility. Minimize conflicts between land uses to protect wetlands, marshlands, and creeks, 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 wetlands, marshlands, creeks, mudflats, public safety, human or environmental health or generate nuisances. All new development must avoid or mitigate to the greatest extent feasible potential negative impacts such as noise, odors, and pollution. 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 appropriate transitional habitat zones between wetlands, marshlands, creeks, and mudflats) 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. Require sufficient visual open space and/or landscaped screening between industrial operations and adjacent residential or recreational activities in order to create adequate buffers.

- **Goal LU6: High Quality and Sustainable Development.** Maintain a high standard of design, planning and construction of new and renovated public and private facilities, infrastructure and services. Continue committing to a comprehensive planning approach that supports a sustainable and healthy community and reduces impacts on the natural environment. Provide new development near transit and in areas with existing transportation infrastructure. Activate public areas and reduce the need for residents and employees to travel by automobile to access daily goods by promoting the location of housing, jobs and recreation uses close to transit lines, bicycle routes and pedestrian improvements. In support of a walkable and vibrant community, develop complete mixed-use streets that are safe for pedestrians, bicyclists and all modes of travel.

  Policy LU6.3: A Place-Based Land Use Approach. Utilize a place-based approach to land use. Richmond aims to create distinct places for people that promote community identity, pride and ownership. All parts of the City should respond to the social,

cultural and environmental context of the area and provide a safe and comfortable environment. This General Plan's place-based approach to land use works in tandem with Richmond's Zoning Ordinance to ensure context-appropriate activities and design character in both public and private realms. The place-based land use approach aligns with the General Plan's place-based system for streets and trails that tailors street types to priority modes of travel, surrounding land use, street function and desired character. In addition, the approach works with the system of parks concept and other General Plan elements to promote high-quality street and park design and influence the overall character and connectivity of public and private spaces throughout the City.

Policy LU6.4: Long-Term Environmental Sustainability. Promote development standards and land use patterns that encourage long-term sustainability. Support the restoration of natural features such as creeks and wetlands in urban areas and existing neighborhoods as a means of connecting residents with nature and reversing damage to natural systems. Promote landscaping that incorporates native, drought-tolerant plants and sustainable maintenance practices and standards. Provide trees on residential and mixed-use streets and green infrastructure to reduce stormwater runoff. Encourage compact development close to amenities and green buildings to reduce energy use.

Policy LU6.5: High-Quality Design, Planning and Construction. Promote high-quality design, planning, construction and maintenance of development and infrastructure projects. Require higher standards for affordable housing, streetscape improvements and development proximate to local and regional transit, the shoreline and industrial uses. Provide guidance regarding green building standards, seismic requirements, and pedestrian friendly design by implementing the Green Building Ordinance. Promote best practices for crime prevention.

Housing Element

Policy H.2.6: 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.

Program H-2.6.1: 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.

Policy H-1.2: Adequate Supply of Housing Sites. Ensure an adequate supply of housing sites to achieve the City's Regional Housing Needs Allocation (RHNA) numbers for the 2007-2014 planning.

Program H-1.2.4: Residential Sites Marketing. Develop a comprehensive marketing and branding strategy for mixed-use housing development in the City that promotes the City's unique qualities and amenities, and coordinates with other large scale planning efforts such as the Richmond Livable Corridors Form-Based Code, the Richmond Bay Specific Plan, and the Berkeley Global Campus. Develop collateral material, attend real estate conferences, and hold annual or bi-annual workshops to educate the private and non-profit development community

about development opportunities and incentives in Richmond, especially in its Form-Based Code and Priority Development Areas.

The Housing Element also recognizes the Richmond Bay Specific Plan Area as a site identified for the development of housing ("Planning Efforts Underway to Increase Housing Capacity in Richmond"):

> **Richmond Bay Specific Plan.** The City will also considerably increase land available for residential development within a 220 acre Priority Development Area (PDA) along its south shoreline of the San Francisco Bay. The Richmond Bay Specific Plan is nearly complete, and is intended to complement and capitalize on the proposed Berkeley Global Campus at Richmond Bay, which is anticipated to become a global, high tech research hub comprised of a mix of institutional, commercial, and residential uses. The Richmond Bay Specific Plan's guiding land use plan and development standards includes the conversion of a significant area of industrial land into a mix of uses, including a variety of housing types and intensities that will provide a balance of jobs and housing. Overall, the Plan provides for over 4,000 units of housing estimated at complete build out.

Richmond Zoning Ordinance

The City of Richmond Zoning Ordinance (Zoning Ordinance) consists of a zoning map that delineates the boundaries of zoning districts within the City and regulations that govern the use of land and placement of buildings and improvements within the various classes of districts. The purpose of the Zoning Ordinance is to promote public health, safety, comfort, convenience and general of the people of Richmond, and to serve as an instrument for the effectuation of the General Plan.

Knox Freeway/Cutting Boulevard Specific Plan

The Plan Area is included within the area of the Knox Freeway/Cutting Boulevard Specific Plan, which was adopted in 1991 to guide development across an 1,895- acre portion of South Richmond. The Knox-Cutting Specific Plan would be repealed with adoption of the proposed Richmond Bay Specific Plan.

University of California, Berkeley Global Campus at Richmond Bay Long Range Development Plan (LRDP)

The Berkeley Global Campus at Richmond Bay Long Range Development Plan (LRDP) was approved, and its associated Final EIR was certified, by the UC Regents in 2014. The plan was jointly prepared by UC Berkeley and Lawrence Berkeley National Laboratory (LBNL) for the Richmond Field Station and Regatta properties, to establish a second campus for UC Berkeley and LBNL. The LRDP initially provided guidance for the development of over 5.4 million square feet of research and development facilities. In late 2014, the plan was revised to establish a global college in partnership with foreign research institutions and private companies. On August 25, 2016, the UC Berkeley Chancellor released a statement of intent to suspend plans for the Berkeley Global Campus at Richmond Bay, indefinitely (UC Berkeley News, 2016). The University will continue to explore options for the site, which will reflect campus priorities around enrollment growth and housing in the near future.

South Richmond Transportation Connectivity Plan (SRTCP), Richmond Bicycle Master Plan, and Richmond Pedestrian Plan

The South Richmond Transportation Connectivity Plan (SRTCP), Richmond Bicycle Master Plan, and Richmond Pedestrian Plan guide multimodal connectivity to as well as within the Plan Area. The Richmond Bicycle Master Plan, adopted in 2011, establishes a proposed bicycle network through the Richmond Bay area and guidelines for implementation of bicycle facilities. The Richmond Pedestrian Plan (adopted in 2011) and the SRTCP (developed concurrently with this Specific Plan) provide guidance for enhancing connections for pedestrians, bicyclists, and transit traveling to and from the Plan Area, and establish detailed, short- and long-term strategies to implement public infrastructure projects within and surrounding the Plan Area. These three plans are further described and discussed in Section 4.13, Transportation and Traffic, of this EIR.

Parks Master Plan and Urban Greening Master Plan

The Richmond Parks Master Plan was adopted in 2010 and provides guidance to implement the General Plan Parks and Recreation Element and related policies found in the Community Health and Wellness Element through descriptions, performance standards, and design guidelines for park classifications.

Health in all Policies (Community Health and Wellness)

The City of Richmond adopted a Health in All Policies (HiAP) Strategy in 2014 that expands upon the Community Health and Wellness Element of the General Plan to work towards citywide health equity.

City of Richmond Resolution No. 40-14

In May 2014, the Richmond City Council passed a resolution calling for use of Lark Drive to be limited to non-motorized vehicles.

Other Regulatory Guidance

Other planning agencies have jurisdictional oversight pertaining to land use related considerations in all or portions of the Plan Area and are discussed in detail in other sections of this EIR, such as Section 4.3, *Biological Resources,* as they closely relate to policy or regulatory guidance for specific environmental factors. These agencies include:

- U.S. Army Corps of Engineers
- San Francisco Bay Regional Water Quality Control Board (RWQCB)
- Contra Costa County Congestion Management Program
- State Emergency Response Plan
- Regional Air Quality Plan (Bay Area 2005 Ozone Strategy) (i.e., 2005 Clean Air Plan)
- BAAQMD Air Toxics Program

TABLE 4.9-2
SPECIFIC PLAN CONSISTENCY WITH APPLICABLE GENERAL PLAN LAND USE POLICIES ADOPTED FOR THE PURPOSE OF AVOIDING OR MITIGATING AN ENVIRONMENTAL EFFECT

General Plan Goal, Policy, or Action	Applicability	Conflict / Consistent	Discussion[a]
Aesthetics			
• *Policy ED1.7: Richmond's Waterfront as a Community Amenity.*	SA4 Project Only	Consistent, with future development subject to City review.	The Specific Plan orients mixed use and residential uses towards the Bay, and preserves and enhances open space along the waterfront, including a shoreline promenade and connections to the San Francisco Bay Trail.
• *Policy ED8.4: Public Access to Shoreline.*	SA4 Project Only	Consistent, with future development subject to City review.	The Specific Plan preserves and enhances Open Space along the waterfront and increases shoreline access that will include a waterfront promenade and connections to the San Francisco Bay Trail.
• *Goal ED7: Visual Appearance*	SP and SA4 Project	*Specific Plan and Sub-Area 4 Project:* Consistent, with future projects and development subject to City review.	In addition to guiding and attracting investment in new (mixed-)use at Richmond Bay, Specific Plan development standards address building and frontage types, landscaping, lighting and other urban design elements that will improve overall visual appearance of the Area.
Air Quality			
• *Policy CN-4.1: Air Quality.*	SP and SA4 Project	*Specific Plan and Sub-Area 4 Project:* Consistent, with future projects and development subject to City review.	All projects must comply with the performance standards of the Specific Plan, including compliance with all BAAQMD requirements prior to issuance of a zoning permit. The land use and circulation plan supports walkable environments, reducing vehicular traffic, as well as the separation of polluting activities with sensitive uses.
Biological Resources			
• *Policy CN1.1: Habitat and Biological Resources Protection and Restoration.*	SP and SA4 Project	*Specific Plan and Sub-Area 4 Project:* Consistent, with future projects and development subject to City review.	The Specific Plan incentivizes developments that incorporate sustainable development practices and conservation measures to ensure a healthy natural environment. The Specific Plan also seeks to protect and restore creek corridors in the area.
• *Policy CN1.2: Local Native Plant Species.*	SA4 Project Only	Consistent, with future development subject to City review.	The Specific Plan stipulates native plantings in locations such as the Shoreline Promenade and other parts of the shoreline in Sub-Area 4.
• *Policy CN2.1: Open Space and Conservation Areas.*	SA4 Project Only	Consistent, with future development subject to City review.	The Specific Plan includes the establishment of open space and conservation areas along the shoreline in Sub-Area 4.
• *Policy CN2.2: Richmond Shoreline.*	SA4 Project Only	Consistent, with future development subject to City review.	The Specific Plan includes measures to minimize the impacts of development on the shoreline in Sub-Area 4, and provide buffer/transition zones between the developed area and shoreline open space. The Sub-Area 4 Project also includes a balance and mix of uses along the shoreline, including recreation, public access, and uses that support economic development as well as natural resource protection, and protect against climate change.
• *Policy CN2.5: Access to Large-Scale Natural Areas*.	SA4 Project Only	Consistent, with future development subject to City review.	The Plan includes measures to increase access to the shoreline in Sub-Area 4, and promote natural resource protection.
• *Policy CN6.2: Protection and Expansion of Tree Resources.*	SP and SA4 Project	*Specific Plan and Sub-Area 4 Project:* Consistent, with future projects and development subject to City review.	Development of the Plan Area and within the Project site will include new tree plantings in formerly industrial areas.

TABLE 4.9-2 (Continued)
SPECIFIC PLAN CONSISTENCY WITH APPLICABLE GENERAL PLAN LAND USE POLICIES ADOPTED FOR THE PURPOSE OF AVOIDING OR MITIGATING AN ENVIRONMENTAL EFFECT

General Plan Goal, Policy, or Action	Applicability	Conflict / Consistent	Discussion[a]
Cultural and Paleontological Resources			
• *Policy HR1.1: Preservation of Diverse Resources.*	SP and SA4 Project	*Specific Plan and Sub-Area 4 Project:* Consistent, with future projects and development subject to City review.	Section 4.4, *Cultural Resources*, of this EIR includes mitigation measures addressing the identification and protection of cultural resources.
• *Policy HR1.3: Compatibility of New Development.*	SP and SA4 Project	*Specific Plan and Sub-Area 4 Project:* Consistent, with future projects and development subject to City review.	Section 4.4, *Cultural Resources*, of this EIR includes mitigation measures addressing the identification and protection of historic resources.
Geology and Soils			
• *Policy SN1.1 Geologic and Seismic Safety.*	SP and SA4 Project	*Specific Plan and Sub-Area 4 Project:* Consistent, with future projects and development subject to City review.	See Section 4.5, *Geology, Soils, and Seismicity*, of this EIR.
• *Policy CN2.6 Protect Soil and Reduce Erosion.*	SP and SA4 Project	*Specific Plan and Sub-Area 4 Project:* Consistent, with future projects and development subject to City review.	See Section 4.5, *Geology, Soils, and Seismicity*, of this EIR.
Greenhouse Gases			
• *Policy EC2.6: Private Automobile Use.*	SP and SA4 Project	*Specific Plan and Sub-Area 4 Project:* Consistent, with future projects and development subject to City review.	The Specific Plan would reduce reliance on private automobile use through land use planning and by providing infrastructure for pedestrians, bicycles, and transit.
• *Action EC2.A: Climate-Friendly Fuel Using Vehicles.*	SP and SA4 Project	*Specific Plan and Sub-Area 4 Project:* Consistent, with future projects and development subject to City review.	See Section 4.6, *Climate Change and Greenhouse Gas Emissions*, of this EIR.
• *Action EC2.D: Transit Incentives Program.*	SP and SA4 Project	*Specific Plan and Sub-Area 4 Project:* Consistent, with future projects and development subject to City review.	See Section 4.6, *Climate Change and Greenhouse Gas Emissions*, and Section 4.13, *Transportation and Traffic*, of this EIR.
• *Action EC2.F: Promote Bicycle Use.*	SP and SA4 Project	*Specific Plan and Sub-Area 4 Project:* Consistent, with future projects and development subject to City review.	The Specific Plan promotes the establishment of bike lanes and other bicycle infrastructure.
• *Policy EC3.1: Renewable Energy.*	SP and SA4 Project	*Specific Plan and Sub-Area 4 Project:* Consistent, with future projects and development subject to City review.	See Section 4.6, *Climate Change and Greenhouse Gas Emissions*, of this EIR.
• *Policy EC3.2: Energy Efficiency and Conservation.*	SP and SA4 Project	*Specific Plan and Sub-Area 4 Project:* Consistent, with future projects and development subject to City review.	See Section 4.6, *Climate Change and Greenhouse Gas Emissions*, of this EIR.
• *Policy EC3.3: Solid Waste Reduction and Recycling.*	SP and SA4 Project	*Specific Plan and Sub-Area 4 Project:* Consistent, with future projects and development subject to City review.	See Section 4.6, *Climate Change and Greenhouse Gas Emissions*, of this EIR.

TABLE 4.9-2 (Continued)
SPECIFIC PLAN CONSISTENCY WITH APPLICABLE GENERAL PLAN LAND USE POLICIES ADOPTED FOR THE PURPOSE OF AVOIDING OR MITIGATING AN ENVIRONMENTAL EFFECT

General Plan Goal, Policy, or Action	Applicability	Conflict / Consistent	Discussion[a]
Greenhouse Gases (cont.)			
• *Policy EC3.4: Water Conservation and Reuse.*	SP and SA4 Project	*Specific Plan and Sub-Area 4 Project:* Consistent, with future projects and development subject to City review.	See Section 4.6, *Climate Change and Greenhouse Gas Emissions*, of this EIR.
• *Action EC3.F: Water Conservation.*	SP and SA4 Project	*Specific Plan and Sub-Area 4 Project:* Consistent, with future projects and development subject to City review.	See Section 4.6, *Climate Change and Greenhouse Gas Emissions*, of this EIR.
• *Policy EC4.1: Mixed Use and Infill Development.*	SP and SA4 Project	*Specific Plan and Sub-Area 4 Project:* Consistent, with future projects and development subject to City review.	The Specific Plan supports the establishment of a mix of uses, including local-serving commercial activities in residential areas to provide needed services and amenities close to where people live and work and proposing higher density, transit-oriented and pedestrian-friendly infill development.
• *Policy EC4.3: Green Buildings and Landscaping.*	SP and SA4 Project	*Specific Plan and Sub-Area 4 Project:* Consistent, with future projects and development subject to City review.	The Specific Plan requires ecologically-sensitive approaches in landscaping, stormwater drainage, groundwater recharge and flood control where appropriate.
• *Policy EC6.2: Low-Lying Areas in Richmond.*	SP and SA4 Project	*Specific Plan and Sub-Area 4 Project:* Consistent, with future projects and development subject to City review.	See Section 4.8, *Hydrology and Water Quality*, of this EIR.
• *Policy EC6.3: Adapting to Climate Change.*	SP and SA4 Project	*Specific Plan and Sub-Area 4 Project:* Consistent, with future projects and development subject to City review.	See Section 4.6, *Climate Change and Greenhouse Gas Emissions*, and Section 4.8, *Hydrology and Water Quality*, of this EIR.
Hazards and Hazardous Materials			
• *Policy SN1.3: Hazardous Materials Operations.*	SP and SA4 Project	*Specific Plan and Sub-Area 4 Project:* Consistent, with future projects and development subject to City review.	See Section 4.7, *Hazards and Hazardous Materials*, of this EIR.
• *Action SN1.I: Hazardous Waste Reduction.*	SP and SA4 Project	*Specific Plan and Sub-Area 4 Project:* Consistent, with future projects subject to City review.	See Section 4.7, *Hazards and Hazardous Materials*, of this EIR.
• *Policy CN6.1: Toxic and Contaminated Sites.*	SP and SA4 Project	*Specific Plan and Sub-Area 4 Project:* Consistent, with future projects and development subject to City review.	Sites known to have environmental contamination will be re-evaluated as new projects come forward and incorporate new land uses of the Specific Plan (mixed use, residential & open space). Increased value and development potential of these uses will incentivize clean up. Development of these sites must conform to all regulatory provisions, and the Specific Plan includes implementation policy guiding the City to continue working with DTSC and the RWQCB to execute cleanup actions/orders.

TABLE 4.9-2 (Continued)
SPECIFIC PLAN CONSISTENCY WITH APPLICABLE GENERAL PLAN LAND USE POLICIES ADOPTED FOR THE PURPOSE OF AVOIDING OR MITIGATING AN ENVIRONMENTAL EFFECT

General Plan Goal, Policy, or Action	Applicability	Conflict / Consistent	Discussion[a]
Hazards and Hazardous Materials (cont.)			
• *Action CN6.A: Site Remediation.*	SP and SA4 Project	*Specific Plan and Sub-Area 4 Project:* Consistent, with future projects and development subject to City review.	Sites known to have environmental contamination will be re-evaluated as new projects incorporate new land uses of the Specific Plan. Development of these sites must conform to all regulatory provisions, and the Specific Plan includes implementation policy guiding the City to continue working with DTSC and the RWQCB to execute cleanup actions/orders.
Hydrology			
• *Policy CR5.3 Green Streets.*	SP and SA4 Project	*Specific Plan and Sub-Area 4 Project:* Consistent, with future projects and development subject to City review.	The Specific Plan provides for the development of street design elements that incorporate natural stormwater drainage and landscaping in new and retrofitted streets.
• *Action CF1.D Storm Water Drainage.*	SP and SA4 Project	*Specific Plan and Sub-Area 4 Project:* Consistent, with future projects and development subject to City review.	See Section 4.8, *Hydrology and Water Quality*, of this EIR.
• *Policy CF3.2 Green Infrastructure and Landscape.*	SP and SA4 Project	*Specific Plan and Sub-Area 4 Project:* Consistent, with future projects and development subject to City review.	The Specific Plan requires ecologically-sensitive approaches in landscaping, stormwater drainage, groundwater recharge and flood control where appropriate.
• *Policy CN3.1 Stormwater Management.*	SP and SA4 Project	*Specific Plan and Sub-Area 4 Project:* Consistent, with future projects and development subject to City review.	See Section 4.8, *Hydrology and Water Quality*, of this EIR.
• *Policy CN3.2 Water Quality.*	SP and SA4 Project	*Specific Plan and Sub-Area 4 Project:* Consistent, with future projects and development subject to City review.	See Section 4.8, *Hydrology and Water Quality*, of this EIR.
• *Policy CN3.3 Flood Management.*	SP and SA4 Project	*Specific Plan and Sub-Area 4 Project:* Consistent, with future projects and development subject to City review.	See Section 4.8, *Hydrology and Water Quality*, of this EIR.
• *Action CN3.A NPDES Compliance and Permit.*	SP and SA4 Project	*Specific Plan and Sub-Area 4 Project:* Consistent, with future projects and development subject to City review.	See Section 4.8, *Hydrology and Water Quality*, of this EIR.
• *Action CN3.D Flood Control Requirements.*	SP and SA4 Project	*Specific Plan and Sub-Area 4 Project:* Consistent, with future projects and development subject to City review.	See Section 4.8, *Hydrology and Water Quality*, of this EIR.
Land Use and Planning			
• *Goal LU1: An Improved Urban Environment.*	SP and SA4 Project	*Specific Plan and Sub-Area 4 Project:* Consistent, with future projects and development subject to City review.	The Specific Plan will facilitate improvement of the Southern Shoreline area as a regional and recreational destination by promoting high-density, mixed-use infill development and the development of complete neighborhoods, and improving connections between the Southern Shoreline and other parts of the city.

TABLE 4.9-2 (Continued)
SPECIFIC PLAN CONSISTENCY WITH APPLICABLE GENERAL PLAN LAND USE POLICIES ADOPTED FOR THE PURPOSE OF AVOIDING OR MITIGATING AN ENVIRONMENTAL EFFECT

General Plan Goal, Policy, or Action	Applicability	Conflict / Consistent	Discussion[a]
Land Use and Planning (cont.)			
• *Policy LU 1.1: Higher-Density and Infill Mixed-Use Development.*	SP and SA4 Project	*Specific Plan and Sub-Area 4 Project:* Consistent, with future projects and development subject to City review.	The Specific Plan supports the establishment of local-serving commercial activities in residential areas to provide needed services and amenities close to where people live and work and proposing higher density, transit-oriented and pedestrian-friendly development at community nodes and gateways.
• *Policy LU1.3: A Range of High-Quality Community Facilities and Infrastructure.*	SP and SA4 Project	*Specific Plan and Sub-Area 4 Project:* Consistent, with future projects and development subject to City review.	The Specific Plan envisions the development of four sub-areas as complete neighborhoods providing a mix of land uses and new community facilities and infrastructure, including new streets and civic spaces.
• *Policy LU1.4: Active Streets and Safe Public Spaces.*	SP and SA4 Project	*Specific Plan and Sub-Area 4 Project:* Consistent, with future projects and development subject to City review.	The Specific Plan establishes standards to create neighborhoods of mixed-use buildings that provide active frontage along well-designed, pedestrian-friendly streets and civic spaces.
• *Policy LU1.5: Connections and Linkages.*	SP and SA4 Project	*Specific Plan and Sub-Area 4 Project:* Consistent, with future projects and development subject to City review.	Specific Plan circulation concepts increase access and connections within and through Richmond Bay. Specifically, the Plan improves east-west connections, provisions for public transit, and urban design and seeks to implement a Complete Streets approach to circulation.
• *Goal LU2: Healthy and Viable Neighborhoods.*	SP and SA4 Project	*Specific Plan and Sub-Area 4 Project:* Consistent, with future projects and development subject to City review.	The Specific Plan will develop mixed-income, integrated, compact, walkable neighborhoods with livable streets, neighborhood-serving retail, and equitable distribution and access.
• *Policy LU2.2: Compact Walkable Neighborhoods and Livable Streets.*	SP and SA4 Project	*Specific Plan and Sub-Area 4 Project:* Consistent, with future projects and development subject to City review.	The Specific Plan establishes standards for walkable thoroughfares.
• *Policy LU2.3: Neighborhood-Serving Retail.*	SP and SA4 Project	*Specific Plan and Sub-Area 4 Project:* Consistent, with future projects and development subject to City review.	Specific Plan Transect Zones provide standards promoting a mix of uses and the locating of retail and amenities in close proximity to homes and businesses.
• *Policy LU2.4: Equitable Distribution and Access.*	SP and SA4 Project	*Specific Plan and Sub-Area 4 Project:* Consistent, with future projects and development subject to City review.	The Specific Plan organizes four complete neighborhoods around the Berkeley Global Campus, each with a balanced, mixed-use program and public amenities including walkable thoroughfares and civic spaces. The Specific Plan provides for the development of new parks, circulation and safety improvements, infrastructure, and other new community facilities to serve the new residences proposed within the Plan Area.
• *Policy LU3.4 Efficient and Productive Use of Land.*	SP and SA4 Project	*Specific Plan and Sub-Area 4 Project:* Consistent, with future projects and development subject to City review.	The Specific Plan encourages the reuse of underutilized or blighted sites into a mixed-use district with job creation and open space and recreation benefits.
• *Action LU3.E Southern Gateway Specific Plan.*	SP and SA4 Project	*Specific Plan and Sub-Area 4 Project:* Consistent, with future projects and development subject to City review.	The Specific Plan directly implements this action through the creation of the Plan which guides improvements in the Southern Gateway Change Area, with mixed-use communities that will be compatible with uses on the Berkeley Global Campus, and improved access to the shoreline.

TABLE 4.9-2 (Continued)
SPECIFIC PLAN CONSISTENCY WITH APPLICABLE GENERAL PLAN LAND USE POLICIES ADOPTED FOR THE PURPOSE OF AVOIDING OR MITIGATING AN ENVIRONMENTAL EFFECT

General Plan Goal, Policy, or Action	Applicability	Conflict / Consistent	Discussion[a]
Land Use and Planning (cont.)			
• *Goal LU4: Enhanced Environmental Quality.*	SP and SA4 Project	*Specific Plan and Sub-Area 4 Project:* Consistent, with future projects and development subject to City review.	The Specific Plan supports the protection and preservation of natural resources, including creek and Bay resources, as well as other water, air, and soil resources. The Specific Plan also supports the establishment of buffers and transition zones between natural resources and the built environment.
• *Policy LU4.1: Richmond Shoreline.*	SA4 Project Only	Consistent, with future development subject to City review.	The Specific Plan promotes a balance of uses along the shoreline that supports multiple community needs such as economic development, recreation, and natural resource protection.
• *Policy LU4.2: Open Space and Conservation Areas.*	SP and SA4 Project	*Specific Plan and Sub-Area 4 Project:* Consistent, with future projects and development subject to City review.	The Specific Plan provides for the protection and enhancement of existing wetlands and the creation of new open space amenities.
• *Action LU4.A Waterfront Redevelopment Plans.*	SA4 Project Only	Consistent, with future development subject to City review.	The Specific Plan facilitates the development of the Southern Shoreline area, including cleanup of contaminated lands prior to reuse and a balance of uses along the shoreline.
• *Goal LU5: Balanced and Compatible Uses.*	SP and SA4 Project	*Specific Plan and Sub-Area 4 Project:* Consistent, with future projects and development subject to City review.	The Specific Plan provides for residential uses that are consistent with the City's Industrial Buffer Zone Ordinance. Neighborhood and urban design principals have been incorporated into the Plan Area Vision and Specific Plan development standards to create a walkable urban environment that is appropriately shielded from incompatible uses.
• *Policy LU5.1: A Balanced Mix of Land Uses.*	SP and SA4 Project	*Specific Plan and Sub-Area 4 Project:* Consistent, with future projects and development subject to City review.	The Specific Plan provides a balanced mix of uses and flexible development standards that allow for a mix of light industrial, office, retail, and research and development, among other uses. The Specific Plan also provides significant open space and amenities that aim to make Richmond Bay attractive for potential employees.
• *Policy LU5.2: A Mixed-Use Waterfront.*	SA4 Project Only	Consistent, with future development subject to City review.	The Specific Plan provides for the creation of a vibrant, mixed-use walkable neighborhood creating distinct districts within the area.
• *Policy LU5.3: Land Use Compatibility.*	SP and SA4 Project	*Specific Plan and Sub-Area 4 Project:* Consistent, with future projects and development subject to City review.	The Specific Plan provides for residential uses that are consistent with the City's Industrial Buffer Zone Ordinance. Neighborhood and urban design principals have been incorporated into the Plan Area Vision and Specific Plan development standards to create a walkable urban environment that is appropriately shielded from incompatible uses.
• *Goal LU6: High Quality and Sustainable Development.*	SP and SA4 Project	*Specific Plan and Sub-Area 4 Project:* Consistent, with future projects and development subject to City review.	The Specific Plan incentivizes sustainable practices and approaches in planning, design, construction, renovation and maintenance of public facilities, including LEED-certified building, stormwater management, compact, walkable urban environments, and transportation demand management programs.
• *Policy LU6.3: A Place-Based Land Use Approach.*	SP and SA4 Project	*Specific Plan and Sub-Area 4 Project:* Consistent, with future projects and development subject to City review.	The Specific Plan utilizes a place-based approach to land use by creating four subareas within the plan that individually are distinct places and complete neighborhoods.

TABLE 4.9-2 (Continued)
SPECIFIC PLAN CONSISTENCY WITH APPLICABLE GENERAL PLAN LAND USE POLICIES ADOPTED FOR THE PURPOSE OF AVOIDING OR MITIGATING AN ENVIRONMENTAL EFFECT

General Plan Goal, Policy, or Action	Applicability	Conflict / Consistent	Discussion[a]
Land Use and Planning (cont.)			
• *Policy LU6.4: Long-Term Environmental Sustainability.*	SP and SA4 Project	*Specific Plan and Sub-Area 4 Project:* Consistent, with future projects and development subject to City review.	The Specific Plan promotes development standards and land use patterns that encourage long-term sustainability by creating walkable streets, natural environment preservation and restoration, compact development close to amenities and green building to reduce energy.
• *Policy LU6.5: High-Quality Design, Planning and Construction.*	SP and SA4 Project	*Specific Plan and Sub-Area 4 Project:* Consistent, with future projects and development subject to City review.	The Specific Plan provides form-based development standards aimed at creating vibrant, mixed-use, walkable neighborhoods, incorporates existing City green building ordinances, and employs the expertise of the City's Design Review Board in the design of mixed-use buildings.
• *Policy CF 2.1: Joint-Use and Co-Location.*	SP and SA4 Project	*Specific Plan and Sub-Area 4 Project:* Consistent, with future projects and development subject to City review.	The Specific Plan encourages joint use or co-location of civic spaces that are both public and private facilities to maximize educational, cultural and recreational opportunities.
• *Policy CF 3.1: Green Facilities.*	SP and SA4 Project	*Specific Plan and Sub-Area 4 Project:* Consistent, with future projects and development subject to City review.	The Specific Plan incentivizes sustainable practices and approaches in planning, design, construction, renovation and maintenance of public facilities, including LEED-certified building, stormwater management, compact, walkable urban environments, and transportation demand management programs.
Economic Development			
• *Policy ED 1.1: Safe, Well Maintained Neighborhoods & Public Spaces.*	SP and SA4 Project	*Specific Plan and Sub-Area 4 Project:* Consistent, with future projects and development subject to City review.	The Specific Plan provides for neighborhood-oriented development, public spaces and amenities that aim to reduce vacancy, underutilized parcels and blight, bringing activity and "eyes on the street" to the public realm.
• *Policy ED 2.4: Existing Employers*	SP and SA4 Project	*Specific Plan and Sub-Area 4 Project:* Consistent, with future projects and development subject to City review.	Active industrial uses will remain in Richmond Bay, and will be encouraged to remain with the potential for complementary relationships with the Richmond Field Station.
• *Policy ED 2.7: High Job Density.*	SP and SA4 Project	*Specific Plan and Sub-Area 4 Project:* Consistent, with future projects and development subject to City review.	The Specific Plan aims to diversify and increase the job density in the area with development standards that promote increased density, a mix of uses, and the creation of walkable urban areas.
Noise			
• *Policy SN-4.1: Noise Levels.*	SP and SA4 Project	*Specific Plan and Sub-Area 4 Project:* Consistent, with future projects and development subject to City review.	See Section 4.10, *Noise*, in this EIR.
• *Policy SN-4.2: Land Use Compatibility.*	SP and SA4 Project	*Specific Plan and Sub-Area 4 Project:* Consistent, with future projects and development subject to City review.	The Specific Plan provides for residential uses that are consistent with the City's Industrial Buffer Zone Ordinance. Neighborhood and urban design principals have been incorporated into the Plan Area Vision and Specific Plan development standards to create a walkable urban environment that is appropriately shielded from incompatible uses.

TABLE 4.9-2 (Continued)
SPECIFIC PLAN CONSISTENCY WITH APPLICABLE GENERAL PLAN LAND USE POLICIES ADOPTED FOR THE PURPOSE OF AVOIDING OR MITIGATING AN ENVIRONMENTAL EFFECT

General Plan Goal, Policy, or Action	Applicability	Conflict / Consistent	Discussion[a]
Noise (cont.)			
• *Policy SN-4.3: Transportation-Related Noise.*	SP and SA4 Project	*Specific Plan and Sub-Area 4 Project:* Consistent, with future projects and development subject to City review.	See Section 4.10, *Noise*, in this EIR.
• *Action SN-4A: Noise Study Requirement.*	SP and SA4 Project	*Specific Plan and Sub-Area 4 Project:* Consistent, with future projects and development subject to City review.	See Section 4.10, *Noise*, in this EIR.
• *Action SN4.B Noise Study Guidelines.*	SP and SA4 Project	*Specific Plan and Sub-Area 4 Project:* Consistent, with future projects and development subject to City review.	See Section 4.10, *Noise*, in this EIR.
Transportation and Traffic			
• *Policy CR1.1: Balanced Modes of Travel and Equitable Access.*	SP and SA4 Project	*Specific Plan and Sub-Area 4 Project:* Consistent, with future projects and development subject to City review.	The Specific Plan provides for streets that support a variety of travel modes including transit, pedestrians, bicycles and goods movement as well as automobiles.
• *Policy CR1.2: An Interconnected Street System.*	SP and SA4 Project	*Specific Plan and Sub-Area 4 Project:* Consistent, with future projects and development subject to City review.	The Specific Plan provides for new street designs that will be compatible with surrounding land uses, street function and community character.
• *Policy CR1.3: Local and Regional Transportation Linkages.*	SP and SA4 Project	*Specific Plan and Sub-Area 4 Project:* Consistent, with future projects and development subject to City review.	The Specific Plan provides for enhanced circulation linkages to the planned Richmond Ferry Terminal, San Francisco Bay Trail, as well as improved access to the shoreline and commercial and mixed-use streets.
• *Policy CR1.4: Expanded and Affordable Public Transit.*	SP and SA4 Project	*Specific Plan and Sub-Area 4 Project:* Consistent, with future projects and development subject to City review.	The Specific Plan provides for transit-supportive development patterns to maximize the efficiency of the area's transit systems to help reduce air pollution and greenhouse gas emissions within Richmond. AC Transit has also provided input in regards to the development of the Plan. The Plan Area is also identified as a PDA with the planned Richmond Ferry terminal. In conjunction with the Specific Plan, the City has also been coordinating with the South Richmond Transportation Connectivity Plan to address connectivity from the area BART Stations (Richmond, El Cerrito Del Norte, and El Cerrito Plaza).
• *Policy CR1.5: Safe and Convenient Walking and Bicycling.*	SP and SA4 Project	*Specific Plan and Sub-Area 4 Project:* Consistent, with future projects and development subject to City review.	The Specific Plan provides for complete streets that would provide bicycle and walking infrastructure and amenities to serve the recreation and travel needs of residents and visitors.
• *Policy CR1.6: Comprehensive Network of Multi-Use Trails.*	SP and SA4 Project	*Specific Plan and Sub-Area 4 Project:* Consistent, with future projects and development subject to City review.	The Specific Plan provides for a network of multi-use trails.
• *Policy CR1.7: Regional Ferry Service.*	SP and SA4 Project	*Specific Plan and Sub-Area 4 Project:* Consistent, with future projects and development subject to City review.	The Specific Plan supports the planned ferry service to Richmond through the strengthening of public transit, bicycle and pedestrian linkages between the ferry terminal and the Plan Area, and planning for high-density, mixed-use development in the vicinity of the ferry terminal.

TABLE 4.9-2 (Continued)
SPECIFIC PLAN CONSISTENCY WITH APPLICABLE GENERAL PLAN LAND USE POLICIES ADOPTED FOR THE PURPOSE OF AVOIDING OR MITIGATING AN ENVIRONMENTAL EFFECT

General Plan Goal, Policy, or Action	Applicability	Conflict / Consistent	Discussion[a]
Transportation and Traffic (cont.)			
• *Policy CR1.8: Place-Based Circulation Approach.*	SP and SA4 Project	*Specific Plan and Sub-Area 4 Project:* Consistent, with future projects and development subject to City review.	The Specific Plan utilizes a place-based approach to land use by creating four subareas within the plan that individually are distinct places and complete neighborhoods.
• *Policy CR1.9: Place-Based Circulation Classification System and Multi-Modal Level of Service Standards.*	SP and SA4 Project	*Specific Plan and Sub-Area 4 Project:* Consistent, with future projects and development subject to City review.	The Specific Plan utilizes a place-based approach to land use by creating four subareas within the plan that individually are distinct places and complete neighborhoods.
• *Policy CR1.10: Vehicular Level of Service Standards for West County Routes of Regional Significance.*	SP and SA4 Project	*Specific Plan and Sub-Area 4 Project:* Consistent, with future projects and development subject to City review.	See Section 4.13, *Transportation and Traffic*, of this EIR.
• *Policy CR2.1: Neighborhood Connectivity.*	SP and SA4 Project	*Specific Plan and Sub-Area 4 Project:* Consistent, with future projects and development subject to City review.	The Specific Plan provides for improved connectivity and enhanced linkages to local and regional amenities such as neighborhood parks, retail, public transit, bicycle paths, historic resources, the shoreline, open space and jobs.
• *Policy CR2.2: Complete Streets.*	SP and SA4 Project	*Specific Plan and Sub-Area 4 Project:* Consistent, with future projects and development subject to City review.	The Specific Plan provides for mixed-use urban streets that balance public transit use, walking, and bicycling with other modes of travel.
• *Policy CR2.3: Integrated Bicycle and Pedestrian System.*	SP and SA4 Project	*Specific Plan and Sub-Area 4 Project:* Consistent, with future projects and development subject to City review.	The Specific Plan provides for a safe, comprehensive, and integrated bicycle and pedestrian system within the area to encourage walking and biking to school, work, and for recreation.
• *Policy CR3.1: Safety and Accessibility.*	SP and SA4 Project	*Specific Plan and Sub-Area 4 Project:* Consistent, with future projects and development subject to City review.	The Specific Plan provides for key transportation infrastructure improvements and the development of a safe, comprehensive, and integrated bicycle and pedestrian system within the area to encourage walking and biking to school, work, and for recreation.
• *Policy CR3.3: Concurrent Infrastructure Development.*	SP and SA4 Project	*Specific Plan and Sub-Area 4 Project:* Consistent, with future projects and development subject to City review.	The Specific Plan provides for mixed use urban streets that balance public transit use, walking, and bicycling with other modes of travel.
• *Policy CR5.1: Transportation Demand Management.*	SP and SA4 Project	*Specific Plan and Sub-Area 4 Project:* Consistent, with future projects and development subject to City review.	The Specific Plan identifies transportation demand management strategies for development in the Plan area to reduce VMTs, and adds parking maximums to ensure major employers/developments develop and implement transportation demand management (TDM) for employees/residents to address peak commute traffic, congestion and air quality. The Specific Plan also provides for development and transportation projects that emphasize design elements for bicycle and pedestrian access.
• *Policy CR5.2: Renewable Energy and Clean Technology.*	SP and SA4 Project	*Specific Plan and Sub-Area 4 Project:* Consistent, with future projects and development subject to City review.	The Specific Plan's required TDM programs will identify the use of renewable energy, including non-fossil fuels, and clean technology for transportation; in particular, providing designated parking for zero-emission vehicles, with EV charging capabilities and carpool/vanpool vehicles.

TABLE 4.9-2 (Continued)
SPECIFIC PLAN CONSISTENCY WITH APPLICABLE GENERAL PLAN LAND USE POLICIES ADOPTED FOR THE PURPOSE OF AVOIDING OR MITIGATING AN ENVIRONMENTAL EFFECT

General Plan Goal, Policy, or Action	Applicability	Conflict / Consistent	Discussion[a]
Transportation and Traffic (cont.)			
• *Policy CR5.3: Green Streets.*	SP and SA4 Project	*Specific Plan and Sub-Area 4 Project:* Consistent, with future projects and development subject to City review.	The Specific Plan provides for the development of street design elements that incorporate natural stormwater drainage and landscaping in new and retrofitted streets.
• *Policy LU 6.1: Pedestrian and Transit-Oriented Urban Environment.*	SP and SA4 Project	*Specific Plan and Sub-Area 4 Project:* Consistent, with future projects and development subject to City review.	The Specific Plan provides for mixed-use development close to community amenities that promote walkability and public transit use. The Specific Plan also provides for complete and balanced streets and an expanded multimodal circulation system.
Utilities			
• *Policy CF1.2: Concurrent Infrastructure Development.*	SP and SA4 Project	*Specific Plan and Sub-Area 4 Project:* Consistent, with future projects and development subject to City review.	The Specific Plan requires new development to provide their proportionate share of new and/or improved city facilities and infrastructure improvements including roads, parks, schools and utilities within the Plan Area.
• *Policy CF1.5: Universal Access.*	SP and SA4 Project	*Specific Plan and Sub-Area 4 Project:* Consistent, with future projects and development subject to City review.	The Specific Plan promotes universal access to facilities, amenities and infrastructure, including: fiber optic lines and wireless networks; physically accessible facilities for users of all ages and abilities; safe and well-lighted streets; seismically sound structures; and non-toxic materials that comply with green building codes and sustainable practices.
• *Action CN3.B: Water Recycling.*	SP and SA4 Project	*Specific Plan and Sub-Area 4 Project:* Consistent, with future projects and development subject to City review.	New construction within the Plan Area and project site will be evaluated to ensure recycled water infrastructure is developed wherever possible.
• *Action CF3.A. Green Building Ordinances.*	SP and SA4 Project	*Specific Plan and Sub-Area 4 Project:* Consistent, with future projects and development subject to City review.	New construction within the Plan Area and project site will comply with the City's adopted Green Building Ordinances.

NOTES:
[a] Includes information from Chapter 7.4 (Appendix) of the Specific Plan (City of Richmond, 2015)

4.9.4 Significance Criteria

Consistent with Appendix G of the State CEQA *Guidelines*, the Specific Plan or Sub-Area 4 Project would have significant adverse impacts to land use and planning, agricultural resources, or forestry resources, if they would:

a) Physically divide an established community;

b) Conflict with any applicable land use plan, policy, or the regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect;

c) Conflict with any applicable habitat conservation plan or natural community conservation plan;

d) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use;

e) Conflict with existing zoning for agricultural use, or a Williamson Act Contract;

f) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g);

g) Result in the loss of forest land or conversion of forest land to non-forest use; or

h) Involve other changes in the existing environment, which due to their location or nature, could result in conversion of Farmland to non-agricultural use or conversion of forest land to non-forest use.

Approach to Analysis

Specific Plan and Sub-Area 4 Project

This EIR analysis evaluates the general consistency of adoption of and development under the Specific Plan with applicable land use plans and policies. Consistent with Section 15125(d) of the CEQA *Guidelines,* inconsistency with an adopted plan, including the General Plan, does not necessarily indicate a significant impact by the Sub-Area 4 Project. A general plan contains many policies which may in some cases address different goals, policies and objectives. In fact, some policies may compete with each other. The information presented in this EIR is intended to allow decision-makers of the Sub-Area 4 Project to decide whether, on balance, the Sub-Area 4 Project is consistent (i.e., in general harmony) with the general plan.

Further, this analysis focuses on the effects of physical change. As stated in Section 15358(b) of the CEQA *Guidelines,* "[e]ffects analyzed under CEQA must be related to a physical change." Further, Appendix G of the CEQA Guidelines (Environmental Checklist Form) makes explicit the focus on *environmental* policies and plans, asking if the project would "conflict with any

applicable land use plan, policy, or regulation . . . *adopted for the purpose of avoiding or mitigating an environmental effect*" (emphasis added). Even a response in the affirmative, however, does not necessarily indicate the project would have a significant effect, unless an adverse physical change would occur. To the extent that physical impacts may result from such conflicts, such physical impacts are analyzed elsewhere in this EIR, in the applicable topic section of Chapter 4. The compatibility of the Specific Plan with General Plan policies that do not relate to physical environmental issues will be considered by decision-makers as part of their decision whether to approve or disapprove the Specific Plan. Moreover, a conflict with a policy that exists today but that is amended to accommodate a proposed project does not normally constitute a significant effect on the environment under CEQA. That is, should the decision-makers (e.g., the City Planning Commission and City Council) determine that the City's policy framework—the General Plan, Zoning Ordinance, Specific Plan (if adopted)—should be amended to accommodate the Specific Plan and/or the Sub-Area 4 Project, neither the Plan nor the Sub-Area 4 Project would conflict with applicable City land use plans, policies, or regulations adopted for the purpose of avoiding or mitigating an environmental effect, and in such instance, the Plan and/or the Sub-Area 4 Project would have a less-than-significant effect under Criterion b, above, with respect to City policy.

This EIR analysis also evaluates the adoption of and development under the Specific Plan in terms of its potential to physically divide an existing community and its compatibility with nearby existing land uses.

To avoid repetition in this section, the project-level analysis of the Sub-Area 4 Project relies on and references some of the overarching General Plan discussion. Where appropriate, the analysis examines potential project-level impacts within the smaller geographical area relevant to the Sub-Area 4 Project site.

Topics with No Impact or Otherwise Not Addressed in this EIR

Review and comparison of the setting circumstances and Specific Plan and the Sub-Area 4 Project with each of the eight significance criteria stated above clearly show that no impacts associated with land use and planning would result for Significance Criteria c), d), e), f), g), and h), listed above; therefore, these topics will not be further evaluated in this EIR. The following discusses the reasoning supporting this conclusion.

Neither the Specific Plan nor the Sub-Area 4 Project would conflict with an adopted habitat conservation plan or natural community conservation plan (Criterion c).

The Habitat Conservation Plan nearest to the Plan Area is the East Contra Costa County Habitat Conservation Plan/Natural Community Conservation Plan (HCP/NCCP; ECCCHC, 2014), whose closest boundary is located approximately 26 miles east of the Plan Area across several urbanized areas (San Pablo, El Sobrante, Martinez, etc.). The Plan Area is not located within an area identified in a habitat conservation plan or natural community conservation plan. In addition, there are no habitat conservation plans or natural community conservation plans proposed for adoption that would include the Plan Area. Thus, neither the Specific Plan nor the Sub-Area 4 Project would have an impact on a habitat conservation plan or a natural community conservation

plan. A discussion of special-status species that the Specific Plan and/or Sub-Area 4 Project could potentially impact can be found in Section 4.3, *Biological Resources*.

Neither the Specific Plan nor the Sub-Area 4 Project would convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance to non-agricultural use (Criterion d).

The Plan Area is located entirely within a developed area and is designated for urban and open space uses. Former uses within the Plan Area include industrial activities. No lands within the Plan Area are identified as Prime Farmland, Unique Farmland, or Farmland of Statewide or Local Importance by the FMMP; the Plan Area is designated as Urban Land. Thus, neither the Specific Plan nor the Sub-Area 4 Project would have an impact on important farmland.

Neither the Specific Plan nor the Sub-Area 4 Project would conflict with existing agricultural zoning, or a Williamson Act contract (Criterion e).

The Plan Area is zoned for urban uses. Furthermore, the Plan Area is not covered by a Williamson Act contract. Thus, implementation of neither the Specific Plan nor the Sub-Area 4 Project would interact or conflict with existing agricultural zoning or a Williamson Act contract, and there would be no impact.

Neither the Specific Plan nor the Sub-Area 4 Project would conflict with existing zoning for, or cause rezoning of, forest land, timberland, or timberland zoned Timberland Production (Criterion f).

The Plan Area is not zoned as forest land or timberland, and there are no forests within the Plan Area. No impact on forest land or timberland would occur with implementation of the Specific Plan or the Sub-Area 4 Project.

Neither the Specific Plan nor the Sub-Area 4 Project would result in the loss of forest land or conversion of forest land to non-forest use (Criterion g).

As stated above, the Plan Area is not zoned as forest land and there are no forests within the Plan Area. Thus, implementation of neither the Specific Plan nor the Sub-Area 4 Project would result in the loss of forest land or conversion of forest land to non-forest uses, and there would be no impact.

Neither the Specific Plan nor the Sub-Area 4 Project would involve other changes in the existing environment, which due to their location or nature, could result in conversion of farmland to non-agricultural use or conversion of forest land to non-forest use (Criterion h).

Development under the Specific Plan and the Sub-Area 4 Project would be located entirely within a previously developed area designated as Urban Land by the FMMP. The Plan Area does not contain farmland and there are no aspects of the Specific Plan or Sub-Area 4 Project that would affect any agricultural land off-site. Moreover, the Plan Area does not contain forest land and there are no aspects of the Specific Plan or Sub-Area 4 Project that would affect any forest land off-site. Thus, implementation of the Specific Plan or Sub-Area 4 Project would not result in conversion of farmland, on-site or off-site, to a non-agricultural use, nor result in conversion of forest land to non-forest use. There would be no impact.

4.9.5 Program-Level Impacts of the Richmond Bay Specific Plan

Physical Division of an Established Community

Impact LU-1.SP: Adoption of and development under the Specific Plan would not result in the physical division of an established community. (Criterion a.) (*Less Than Significant, No Mitigation Required*)

Land uses surrounding the Plan Area include a mix of light and heavy industrial, transportation (I-580), commercial, residential, and open space uses. In general, I-580 creates a barrier to the north and east of the Plan Area, and a separation between the Plan Area and established communities north and east of the Plan Area. Large-scale port industrial uses are located to the west of the Plan Area. Open space maintained by the EBRPD (the Point Isabel Regional Shoreline) are located to the south of the Plan Area. The Plan Area currently includes varied industrial, office, open space and recreational uses.

Adoption of and development under the Specific Plan would not physically divide an established community. The Plan Area is separated from existing communities by the boundaries created by I-580, existing large-scale industrial uses, and open space uses. The Plan Area currently exists as a distinct and somewhat self-contained waterfront area; the backbone roadway system is established and will be maintained, improved, and expanded to enhance access and internal circulation for bicycles, pedestrians, and automobiles. Proposed land use districts are configured in a logical manner that creates a cohesive pattern of developed areas and various types of undeveloped open space and is consistent with existing communities within the Plan Area.

Consistent with the direction in the General Plan, the vision of the Specific Plan promotes the transformation of the Plan Area to higher-density, pedestrian-friendly, mixed-use development with improved access to the shoreline. Numerous aspects of the Specific Plan create interconnection within the Plan Area, as well as multimodal connections to other areas. Along with the South Richmond Transportation Connectivity Plan, the Specific Plan would enhance existing connections between the Southern Gateway/South Shoreline area and the rest of the city, through the establishment of new residential, commercial, R&D, and other development and associated infrastructure. In addition, one of the Specific Plan's primary goals is to complement, capitalize on, and connect to development that will be part of the adjacent Berkeley Global Campus/Richmond Field Station.

As discussed in Section 4.1, *Aesthetics*, of this EIR, all new development in the Plan Area would be sensitive to views across the site and toward the water in particular. Although the Specific Plan would allow for substantially greater (taller, denser and more intensive) development within certain areas of the Plan Area, allowable maximum building heights would not significantly adversely impact existing view corridors to any scenic views or vistas. Thus, the Plan would not create substantial visual barriers or division.

Development under the Specific Plan is intentionally designed to improve multi-modal connections between adjacent and nearby areas; it would not physically divide an established community. To the contrary, given the overarching vision, guiding principles, and development standards proposed in the Specific Plan to realize that vision, the impact of the Specific Plan would represent a *beneficial* effect in relation to improving community connections. The impact would be less than significant.

Significance: Less Than Significant.

Mitigation: None required.

Conflict with Applicable Policies and Plans

Impact LU-2.SP: Adoption of and development under the Specific Plan would not conflict with any applicable land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect. (Criterion b.) (*Less Than Significant, No Mitigation Required*)

Richmond General Plan 2030

Overall General Plan Conformity

California Government Code Section 65454 requires that a Specific Plan be substantively consistent with the General Plan. The Specific Plan includes a series of goals that form the foundation for the plan's policies, standards, and design guidelines. The Specific Plan goals were crafted by the Specific Plan team, which includes City staff, a 28-member Community Advisory Group (CAG) and 12-member Economic Advisory Panel, that worked collaboratively with the community during numerous citywide workshops that were open to community members and interested stakeholders.

As introduced in the *Regulatory Setting* in this section, the General Plan calls for the creation of a Specific Plan for the Southern Gateway/Southern Shoreline area in order to redevelop this area as part of a vibrant, mixed-use, transit-oriented development. Recognizing the changing nature of this area, the General Plan called for the development of a specific plan to merge existing and proposed development into a mixed-use community including education, research and development, light industrial, residential, and other sensitive uses. The General Plan also identifies that the specific plan should maintain and improve public access to the shoreline including a mix of uses along the shoreline to activate the area throughout the day.

Overall, the goals of the Specific Plan align with the goals in the General Plan for the Plan Area (Policy LU4.1 and Action LU3.E), including the following (City of Richmond, 2012):

- Minimize the impacts of development on the shoreline with special attention to intensity, density, and proximity to the water.

- 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 Gateway change 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, adopt, and implement plans that will to protect natural and built environments from adverse potential impacts of sea level rise due to climate change.
- Develop a specific plan to guide improvements in the Southern Gateway Change 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.

As detailed in Table 4.9-2, a review of General Plan land use policies and actions applicable and relevant to the proposed Specific Plan intended to reduce environmental effects indicates the Specific Plan would not conflict with these specific policies and actions.

Proposed General Plan Amendment: Richmond Bay Specific Plan (RBSP) Designation

The Specific Plan articulates a vision for the Plan Area at a level of detail beyond that envisioned at the time of the General Plan's adoption in 2012, in keeping with the General Plan's place-based approach to land use that considers the context of existing uses as well as addressing anticipated future activities.

The Specific Plan involves a proposed amendment to the General Plan to designate a new General Plan land use category to the entire Plan Area, to describe the intent and vision of the Plan Area and adopt development standards that accommodate the Plan's vision. The proposed new land use category is "Richmond Bay Specific Plan" (or RBSP):

> ***Richmond Bay Specific Plan (RBSP).*** *Includes a series of pedestrian-oriented, mixed-use neighborhoods that integrate a mixture of research and development and commercial activities with medium to high density residential uses consistent with the RBSP.*

Through the adoption of the Specific Plan Transect Zone Regulating Plan, the RBSP land use designation furthers the General Plan policies that promote the establishment of complete, pedestrian-oriented, mixed-use neighborhoods; access to open space; improved and efficient multi-modal connectivity; increased economic development opportunities; and increased housing opportunities. The transect zones define building intensities, heights, and use mix across the Plan Area, with the goal of balancing the needs of existing industrial land uses and activities with a

new mix of uses, and in order to ensure development is consistent with the Richmond Field Station.

Land Use Regulating Plans and Regulations

San Francisco Bay Conservation and Development Commission (BCDC)

Development within the Plan Area will require permits from BCDC, which are necessary prior to the commencement of work within BCDC's jurisdiction. The development program for the Specific Plan takes into account BCDC's jurisdiction, as well as considerations that will be addressed during the BCDC permitting process, such as Bay fill and design for adaptation to sea level rise, as described in Section 4.8, *Hydrology and Water Quality*, of this EIR. Overall, the Specific Plan is consistent with and/or anticipates BCDC plans, policies, and permitting.

Plan Bay Area

The Specific Plan has been designed to address the two primary goals of Plan Bay Area: development of housing, as described in Section 4.11, *Population and Housing*, and development that addresses climate change and greenhouse gases, as described in Section 4.6, *Climate Change and Greenhouse Gas Emissions*, of this EIR. The Specific Plan's consistency with Plan Bay Area's goals for transit and transportation are also discussed in Section 4.13, *Transportation and Traffic*, of this EIR.

South Richmond Priority Development Area. As discussed in Section 4.11, *Population and Housing*, and Section 4.6, *Climate Change and Greenhouse Gas Emissions*, of this EIR, the Specific Plan is generally consistent with the development program established by Plan Bay Area for the SRPDA. The Specific Plan has been designed to be consistent with and implement the transit-oriented SRPDA, which was adopted by MTC and ABAG to help achieve region-wide greenhouse gas reduction targets by locating new population centers near jobs and mass transit. Uses anticipated in the SRPDA include retail, commercial, and other uses, as well as public transit and improvements to traffic and transportation infrastructure to improve connectivity, and improvements that would promote mixed-use development; these uses and improvements are consistent with the uses proposed for the Specific Plan. Further, the Specific Plan is designed to provide the land use plan and development standards for a mix of uses, including a variety of housing types and intensities that will provide a balance of jobs and housing. The Specific Plan exceeds the densities called for in the SRPDA; however, the Specific Plan is consistent with the overall goals of Plan Bay Area, which call for locating more intense and dense development near transit; and, in exceeding the land use intensities originally envisioned for the SRPDA, supports and furthers the policy of Plan Bay Area to reduce GHG emissions.

Parks Master Plan and Urban Greening Master Plan

Chapter 4 of the Specific Plan establishes a Civic Space Regulating Plan that identifies new opportunities for an interconnected network of approximately 154 acres of new parks and open space within the Plan Area and defines seven distinct park and civic space types to guide its implementation. As development of new projects is proposed for sites within the Plan Area and new parks and recreational facilities are designed and developed, the Parks and Urban Greening

Master Plan will be consulted by the City and developers. Should any conflict exist between the Specific Plan and the Parks and Urban Greening Master Plan, the Specific Plan shall govern.

Health in all Policies (Community Health and Wellness)

The Specific Plan is generally consistent with the goals of the HiAP strategy, including the following four areas where the Richmond community can work to positively impact public health:

> ***Economic Development and Education:*** The development of the Specific Plan would increase jobs and job training opportunities for Richmond residents and youth.
>
> ***Full Service and Safe Communities:*** The four Sub-Areas described in the Specific Plan can develop as complete neighborhoods with access to affordable and quality services, transportation choices, and public space.
>
> ***Residential and Built Environment:*** The Specific Plan envisions over 4,000 new units of housing which can contribute to the City's supply of quality and affordable housing.
>
> ***Environmental Health and Justice:*** The Specific Plan envisions increased public access to Richmond's South Shoreline and supports the ongoing cleanup efforts of hazardous sites within the Plan area.

Richmond Zoning Ordinance

Adoption of the Specific Plan would put in place new zoning, development standards, streetscape design standards, and other tools to implement the vision for the Plan Area. The Specific Plan defines use regulations and development standards for each of the proposed transect zones, as described in Chapter 3, *Project Description*, of this EIR. The Specific Plan also includes a set of development standards that would guide uses and development in all districts; these are detailed standards that address key areas pertinent to the Plan.

The Specific Plan land use regulations and development standards will be incorporated into the City of Richmond Zoning Ordinance. Chapter 5 of the Specific Plan provides development standards for the Plan Area intended to supersede the zoning designations described in Chapter 15.04 of the Richmond Municipal Code, unless specifically referenced in Chapter 5. Should any conflict exist between standards found in the Specific Plan and those found in the Richmond Zoning Ordinance, the Specific Plan shall govern. Accordingly, the Plan would be consistent with the Richmond Zoning Ordinance, as amended.

South Richmond Transportation Connectivity Plan (SRTCP), Richmond Bicycle Master Plan, and Richmond Pedestrian Plan

The SRTCP was developed concurrently with the Specific Plan. The Specific Plan would implement measures and facilities of the Bicycle and Pedestrian master plans. Consistency with the SRTCP, Richmond Bicycle Master Plan, and Richmond Pedestrian Plan are evaluated and confirmed in Section 4.13, *Transportation and Traffic*, of this EIR.

Non-Land Use Regulating Plans and Regulations

East Bay Regional Park District Master Plan 2013

The Specific Plan includes both goals and a specific development program that would provide for the conservation of natural resources as well as enhance opportunities for recreational use of EBRD parklands, including the Eastshore State Park (EBRPD, 2013). Specific projects, as they are proposed under the Specific Plan, will be evaluated for potential impacts to EBRPD parklands, and any necessary measures to reduce impacts will be identified. Although the addition of new residents and workers (11,490 new residents and 12,800 new employees) within the Plan Area would increase the public use of EBRPD parklands, the increase in users is anticipated to be minor in relation to the volume of existing users of Eastshore State Park (approximately 1.5 million users annually, as of 2002 [EBRPD, 2002]). In addition, at the same time new users within the Plan Area would incrementally increase park use, development under the Specific Plan also would create new city parkland and related public amenities (including the Shoreline Promenade and Community Park in Sub-Area 4) and would provide expanded public access to the South Richmond shoreline and views of the Bay. Overall, the Specific Plan is consistent with EBRPD policy and the East Bay Regional Park District Master Plan 2013.

Bay Trail

Development under the Specific Plan would maintain, enhance, and capitalize on the segments of the Bay Trail located south of the Plan Area, and would improve public access to the shoreline and the Bay Trail; therefore, the Specific Plan is generally consistent with ABAG's goals for the Bay Trail project.

University of California, Berkeley Global Campus at Richmond Bay Long Range Development Plan (LRDP)

The Specific Plan has been developed specifically to capitalize on the Berkeley Global Campus at Richmond Bay Long Range Development Plan (LRDP). As entities of the State of California, UC Berkeley and LBNL are not subject to local land use and zoning controls; regardless, the Specific Plan provides guidance with regards to the physical interface between the Berkeley Global Campus and adjacent development and includes ways in which the University and the City can collaborate to achieve the goals of both plans. On August 25, 2016, the UC Berkeley Chancellor released a statement of intent to suspend plans for the Berkeley Global Campus at Richmond Bay, indefinitely. The University will continue to explore options for the site, which will reflect campus priorities around enrollment growth and housing in the near future. Overall, the Specific Plan is consistent with the UC Berkeley LRDP.

Knox Freeway/Cutting Boulevard Specific Plan

As discussed in Chapter 3, *Project Description*, of this EIR, the City will repeal the 1995 Knox-Cutting Specific Plan, which includes the current area of the Richmond Bay Specific Plan, as part of required approvals. Upon adoption of the Specific Plan, the policies and standards for parcels included in the Specific Plan will supersede those found in the Knox Freeway/Cutting Boulevard Specific Plan.

Lark Drive Variant

The Lark Drive Variant would result in the widening and extension of Lark Drive through the Richmond Field Station, for use by motorized vehicles as well as pedestrians, bicycles, and transit. The Circulation Element of the General Plan includes the connection of Lark Drive to Regatta Boulevard, and the Lark Drive Variant, should it be exercised, would be consistent with the General Plan.

Summary

Based on the analysis above, including the assessment presented in Table 4.9-2 regarding potential conflicts with applicable General Plan policies and actions, impacts related to development under the Specific Plan would be less than significant.

Significance: Less Than Significant.

Mitigation: None required.

4.9.6 Project-Level Impacts of the Sub-Area 4 Project

Impact LUP-1.SA4: Adoption and development of the Sub-Area 4 Project would not result in the physical division of an established community or conflict with adjacent or nearby land uses. (Criterion a.) (*Less Than Significant, No Mitigation Required*)

As discussed for the Specific Plan, and for the reasons cited above, development of the Sub-Area 4 Project would not physically divide existing communities. The Sub-Area 4 Project site is separated from existing communities by the boundaries created by I-580, existing large-scale industrial uses, and open space uses. The Sub-Area 4 Project site currently exists as a distinct and self-contained waterfront area; the backbone roadway system is established and will be maintained, improved, and expanded to enhance access and internal circulation for bicycles, pedestrians, and automobiles.

Numerous aspects of the Sub-Area 4 Project create interconnection within the Project site, as well as multimodal connections to other areas. The Sub-Area 4 Project would enhance existing connections between the Southern Gateway/South Shoreline area and the rest of the city, through the establishment of new residential, commercial, R&D, and other development and associated infrastructure. In addition, one of the Sub-Area 4 Project' primary goals is to complement, capitalize on, and connect to development that will be part of the adjacent Berkeley Global Campus.

As discussed in Section 4.1, *Aesthetics*, of this EIR, although development under the Sub-Area 4 Project would allow for substantially greater (taller, denser and more intensive) development within certain parts of the Sub-Area 4 Project site, allowable maximum building heights would not substantially adversely impact existing view corridors to any scenic views or vistas. Thus, the Sub-Area 4 Project would not create substantial visual barriers or division.

The impact would be less than significant.

Significance: Less Than Significant.

Mitigation: None required.

Impact LUP-2.SA4: Development under the Sub-Area 4 Project would not conflict with applicable land use plans and policies adopted for the purpose of avoiding or mitigating an environmental effect. (Criterion b.). (*Less Than Significant, No Mitigation Required*)

The General Plan (City of Richmond, 2012) contemplates redevelopment of the Southern Gateway/Southern Shoreline area in which the Sub-Area 4 Project site is located as part of a vibrant, mixed-use (including residential), transit-oriented development. The General Plan notes that the designated Southern Gateway Change Area, in which the Sub-Area 4 Project site is located, has "the most diverse mix of uses in the City." While residential land use designations are not presently in place in the Southern Gateway Area, the General Plan contemplates residential uses for this area: for example, Action LU3.E, which addresses the Southern Gateway Area, calls for the development of a specific plan "to merge existing and proposed development into a mixed-use community including education, research and development, light industrial, residential and other sensitive uses." Similarly, Policy LU4.1 identifies that the area should "[p]rovide a mix of residential and recreation uses."

As discussed above for the Specific Plan, the Sub-Area 4 Project would be generally consistent overall with the vision in the General Plan for the site – i.e., of a vibrant, mixed use development with a strong connection to the Berkeley Global Campus – and, as presented in Table 4.9-2, the Sub-Area 4 Project would also be generally consistent with individual policies and actions of the General Plan. In addition, the Sub-Area 4 Project would be similarly consistent with other plans and policies, as discussed above for the General Plan: in general, the Sub-Area 4 Project is consistent with the Specific Plan; as such, determinations of consistency under the Specific Plan also applies to the Sub-Area 4 Project. Taken as a whole, the Sub-Area 4 Project would not conflict with applicable land use plans, policies, nor regulations adopted for the purpose of avoiding or mitigation an environmental effect.

Significance: Less Than Significant.

Mitigation: None required.

4.9.7 Cumulative Impacts

Impact C-LUP-1.SP: Adoption of and development under the Specific Plan, in combination with past, present, existing, approved, pending and reasonably foreseeable future projects

within and in the vicinity of the Plan Area, would not result in significant cumulative impacts to land use and planning. (*Less Than Significant, No Mitigation Required*)

The cumulative geographic context for land use, plan and policy considerations for development under the Specific Plan and/or the Sub-Area 4 Project consists of the Plan Area in addition to the surrounding neighborhoods abutting the Plan Area.

As analyzed throughout this section, development under the Specific Plan and, separately, the Sub-Area 4 Project, would not result in a significant land use impact by physically dividing an established community; and would not conflict with applicable land use plans, policies or regulations adopted for the purpose of avoiding or mitigating an environmental effect. The area surrounding the Specific Plan Area and the Sub-Area 4 Project site is largely developed with a mix of residential, industrial, commercial, and open space uses. Development under both the Specific Plan and the Sub-Area 4 Project would increase the intensity of development within the Plan Area and the Sub-Area 4 Project site; however, other current and reasonably foreseeable development projects are dispersed geographically throughout the City such that they would not combine with the Specific Plan or the Sub-Area 4 Project to result in cumulative impacts related to physical division of an established community.

In addition, all other cumulative development has been, or will be, subject to development guidance contained within the General Plan, prescribed by zoning, and other applicable land use plans to avoid conflicting with plans adopted to avoid or mitigate environmental effects. Based on the information in this land use section and for the reasons summarized above, development under the Specific Plan and/or Sub-Area 4 Project would not contribute to any significant adverse cumulative land use impacts when considered together with other cumulative development.

Significance: Less Than Significant.

Mitigation: None required.

Impact C-LUP-1.SA4: Adoption of and development under the Sub-Area 4 Project, in combination with past, present, existing, approved, pending and reasonably foreseeable future projects within and in the vicinity of the Sub-Area 4 Project site, would not result in significant cumulative impacts to land use and planning. (*Less Than Significant, No Mitigation Required*)

The cumulative geographic context for land use, plan and policy considerations for development under the Specific Plan and/or the Sub-Area 4 Project consists of the Plan Area in addition to the surrounding neighborhoods abutting the Plan Area.

As analyzed throughout this section, development under the Specific Plan and, separately, the Sub-Area 4 Project, would not result in a significant land use impact by physically dividing an established community; and would not conflict with applicable land use plans, policies or regulations adopted for the purpose of avoiding or mitigating an environmental effect. The area

surrounding the Specific Plan Area and the Sub-Area 4 Project site is largely developed with a mix of residential, industrial, commercial, and open space uses. Development under both the Specific Plan and the Sub-Area 4 Project would increase the intensity of development within the Plan Area and the Sub-Area 4 Project site; however, other current and reasonably foreseeable development projects are dispersed geographically throughout the City such that they would not combine with the Specific Plan or the Sub-Area 4 Project to result in cumulative impacts related to physical division of an established community.

In addition, all other cumulative development has been, or will be, subject to development guidance contained within the General Plan, prescribed by zoning, and other applicable land use plans to avoid conflicting with plans adopted to avoid or mitigate environmental effects. Based on the information in this land use section and for the reasons summarized above, development under the Specific Plan and/or Sub-Area 4 Project would not contribute to any significant adverse cumulative land use impacts when considered together with other cumulative development.

Significance: Less Than Significant.

Mitigation: None required.

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4.10 Noise

4.10.1 Introduction

This section identifies the existing setting and evaluates potential impacts related to noise that could result from development under the Richmond Bay Specific Plan (Specific Plan) and the Sub-Area 4 Project (Project). This section analyzes potential impacts on the ambient noise environment caused by construction and operation of development under the Specific Plan and the Project, and also analyzes the compatibility of noise-sensitive uses developed, such as residences and public open spaces with the existing noise environment. This analysis focuses on noise and vibration impacts on humans and structures; noise and vibration effects on wildlife are addressed in Sections 4.3, *Biological Resources*.

4.10.2 Environmental Setting

Technical Background

Sound is mechanical energy transmitted by pressure waves through a medium such as air. Noise is defined as unwanted sound. The sound pressure level has become the most common descriptor used to characterize the loudness of an ambient sound level. Sound pressure level is measured in decibels (dB), with zero dB corresponding roughly to the threshold of human hearing, and 120 to 140 dB corresponding to the threshold of pain. Because sound pressure can vary greatly within the range of human hearing, a logarithmic loudness scale is used to keep sound intensity numbers at a convenient and manageable level.

Sound pressure fluctuations can be measured in units of hertz (Hz), which correspond to the frequency of a particular sound. Typically, sound does not consist of a single frequency, but rather a broad band of frequencies varying in levels of magnitude (sound power). When all the audible frequencies of a sound are measured, a sound spectrum is plotted consisting of a range of frequency spanning 20 to 20,000 Hz.

The typical human ear is not equally sensitive to all frequencies of the audible sound spectrum. When assessing potential noise impacts, sound is measured using an electronic filter that de-emphasizes the frequencies below 1,000 Hz and above 5,000 Hz in a manner corresponding to the human ear's decreased sensitivity to low and extremely high frequencies. This method of frequency weighting is referred to as A-weighting and is expressed in units of A-weighted decibels (dBA).[1] Frequency A-weighting is typically applied to community noise measurements. **Table 4.10-1** shows some representative noise sources and their corresponding noise levels in dBA.

[1] All noise levels reported herein reflect A-weighted decibels unless otherwise stated.

TABLE 4.10-1
TYPICAL SOUND LEVELS MEASURED IN THE ENVIRONMENT

Examples of Common, Easily Recognized Sounds	Decibels (dBA) at 50 feet	Subjective Evaluations
Near Jet Engine	140	Deafening
Threshold of Pain (Discomfort)	130	
Threshold of Feeling – Hard Rock Band	120	
Accelerating Motorcycle (at a few feet away)	110	
Loud Horn (at 10 feet away)	100	Very Loud
Noisy Urban Street	90	
Noisy Factory	85	
School Cafeteria with Untreated Surfaces	80	Loud
Near Freeway Auto Traffic	60	Moderate
Average Office	50	
Soft Radio Music in Apartment	40	Faint
Average Residence Without Stereo Playing	30	
Average Whisper	20	Very Faint
Rustle of Leaves in Wind	10	
Human Breathing	5	
Threshold of Audibility	0	

NOTE: Continuous exposure above 85 dBA is likely to degrade the hearing of most people. Range of speech is 50 to 70 dBA.

SOURCE: HUD, 1985.

Noise Exposure and Community Noise

Noise exposure is a measure of the noise experienced by the individual over a period of time. A noise level is a measure of noise at a given instant in time. However, noise levels rarely persist consistently over a long period of time. Rather, community noise varies continuously with time with respect to the contributing sound sources in the environment. Community noise is primarily the product of many distinct noise sources that constitute a relatively stable background noise exposure, with the individual contributors unidentifiable.

The background noise level changes throughout a typical day, but does so gradually, corresponding with the addition and subtraction of distant noise sources such as traffic and changes in atmospheric conditions. What makes community noise constantly variable throughout a day, besides the slowly changing background noise, is the addition of short duration single event noise sources (e.g., aircraft flyovers, motor vehicles, sirens), which are readily identifiable to the individual. Community noise is commonly described in terms of the “ambient” noise level, which is defined as the all-encompassing noise level associated with a given noise environment.

These successive additions of sound to the community noise environment make the community noise level variable from instant to instant, requiring the measurement of noise exposure over a period of time to legitimately characterize a community noise environment and evaluate cumulative noise impacts. This time-varying characteristic of environmental noise is described

using statistical noise descriptors. The most frequently used noise descriptors are summarized below:

L_{eq}: The equivalent sound level is used to describe noise over a specified period of time, typically one hour, in terms of a single numerical value. The L_{eq} is the constant sound level, which would contain the same acoustic energy as the varying sound level, during the same time period (i.e., the average noise exposure level for the given time period).

L_{max}: The instantaneous maximum noise level measured during the measurement period of interest.

L_x: The sound level that is equaled or exceeded x percent of a specified time period. The L_{50} represents the median sound level.

DNL: The day-night average noise level (DNL; also referred to as L_{dn}) or energy average of the A-weighted sound levels occurring during a 24-hour period, and which accounts for the greater sensitivity of most people to nighttime noise by weighting noise levels at night ("penalizing" nighttime noises). Noise between 10:00 PM and 7:00 AM is weighted (penalized) by adding 10 dBA to take into account the greater annoyance of nighttime noises.

CNEL: Similar to the DNL, the Community Noise Equivalent Level (CNEL) adds a 5-dBA "penalty" for the evening hours between 7:00 PM and 10:00 PM in addition to a 10-dBA penalty between the hours of 10:00 PM and 7:00 AM.

Effects of Noise on People

The effects of noise on people can be placed into three categories:

- Subjective effects of annoyance, nuisance, dissatisfaction;
- Interference with activities such as speech, sleep, learning; and
- Physiological effects such as hearing loss or sudden startling.

Environmental noise typically produces effects in the first two categories. Workers in industrial plants generally experience noise in the last category. There is no completely satisfactory way to measure the subjective effects of noise, or the corresponding reactions of annoyance and dissatisfaction. A wide variation exists in the individual thresholds of annoyance, and different tolerances to noise tend to develop based on an individual's past experiences with noise.

Thus, an important way of predicting a human reaction to a new noise environment is the way it compares to the existing environment to which one has adapted: the so called "ambient noise" level. In general, the more a new noise exceeds the previously existing ambient noise level, the less acceptable the new noise will be judged by those hearing it. With regard to increases in A-weighted noise level, the following relationships occur:

- Except in carefully controlled laboratory experiments, a change of 1 dBA cannot be perceived;

- Outside of the laboratory, a 3-dBA change is considered a just-perceivable difference;
- A change in level of at least 5 dBA is required before any noticeable change in human response would be expected; and
- A 10-dBA change is subjectively heard as approximately a doubling in loudness and can cause adverse response.

These relationships occur in part because of the logarithmic nature of sound and the decibel system. The human ear perceives sound in a non-linear fashion; hence the decibel scale was developed. Because the decibel scale is based on logarithms, two noise sources do not combine in a simple additive fashion, but instead combine logarithmically. For example, if two identical noise sources produce noise levels of 50 dBA, the combined sound level would be 53 dBA, not 100 dBA. When combining sound levels, the relationships presented in **Table 4.10-2** may be used as an approximation.

TABLE 4.10-2
DECIBEL ADDITION RELATIONSHIPS

When Two Decibel Values Differ by:	Add This Amount to the Higher Value:	Example:
0 or 1 dB	3 dB	70 + 69 = 73 dB
2 or 3 dB	2 dB	74 + 71 = 76 dB
4 to 9 dB	1 dB	66 + 60 = 67 dB
10 dB or more	0 dB	65 + 55 = 65 dB

SOURCE: Caltrans, 2013

Noise Attenuation

Stationary point sources of noise, including stationary mobile sources such as idling vehicles, attenuate, or lessen, at a rate of 6 to 7.5 dBA per doubling of distance from the source, depending on the topography of the area and environmental conditions (i.e., atmospheric conditions and noise barriers, either vegetative or manufactured, etc.). Widely distributed noise, such as a large industrial facility spread over many acres or a street with moving vehicles, would typically attenuate at a lower rate, approximately 3 to 4.5 dBA per doubling of distance from the source.

Health Effects of Environmental Noise

The World Health Organization (WHO) is perhaps the best source of current knowledge regarding the health effects of noise impacts. According to the WHO, sleep disturbance can occur when continuous indoor noise levels exceed 30 dBA or when intermittent interior noise levels reach 45 dBA, particularly if background noise is low. With a bedroom window slightly open (a reduction from outside to inside of 15 dB), the WHO criteria suggest that exterior continuous (ambient) nighttime noise levels should be 45 dBA or below, and short-term events should not generate noise in excess of 60 dBA. The WHO also notes that maintaining noise levels within the recommended levels during the first part of the night is believed to be effective for the ability of people to initially fall asleep (WHO, 1999).

Other potential health effects of noise identified by the WHO include decreased performance for complex cognitive tasks, such as reading, attention span, problem solving, and memorization; physiological effects such as hypertension and heart disease (after many years of constant exposure, often by workers, to high noise levels); and hearing impairment (again, generally after long-term occupational exposure, although shorter-term exposure to very high noise levels, for example, exposure several times a year to concert noise at 100 dBA, can also damage hearing). Finally, noise can cause annoyance and can trigger emotional reactions like anger, depression, and anxiety. The WHO reports that, during daytime hours, few people are seriously annoyed by activities with noise levels below 55 dBA or moderately annoyed with noise levels below 50 dBA.

Vehicle traffic and continuous sources of machinery and mechanical noise contribute to ambient noise levels. Short-term noise sources, such as truck backup beepers, the crashing of material being loaded or unloaded, car doors slamming, and engines revving outside a nightclub, contribute very little to 24-hour noise levels but are capable of causing sleep disturbance and severe annoyance. The importance of noise to receptors depends on both time and context. For example, long-term high noise levels from large traffic volumes can make conversation at a normal voice level difficult or impossible, while short-term peak noise levels, if they occur at night, can disturb sleep.

Vibration

Vibration is an oscillatory motion through a solid medium in which the motion's amplitude can be described in terms of displacement, velocity, or acceleration. Several different methods can be used to quantify vibration including the peak particle velocity (PPV), and the root mean square (RMS). The PPV is defined as the maximum instantaneous peak of the vibration signal and is discussed in terms of inches per second. The PPV is most frequently used to describe vibration impacts to buildings. The root mean square (RMS) amplitude is most frequently used to describe the effect of vibration on the human body. The RMS amplitude is the average of the squared amplitude of the signal. Typically, ground-borne vibration generated by man-made activities attenuates rapidly with distance from the source of the vibration (FTA, 2006).

Existing Noise Environment

Transportation sources, such as automobiles, trucks, trains, and aircraft, are the principal sources of noise in most urban environments. Along major transportation corridors, noise levels can reach 80 DNL, while along arterial streets noise levels typically range from 65 to 70 DNL. However, noise levels on roadways, like all areas, can be affected by intervening development and topography. Industrial and commercial equipment and operations also contribute to the ambient noise environment in their vicinities.

Roadway traffic generates noise throughout the city of Richmond. Operations of railroad lines and BART intermittently generate noise levels that are significant along railroad tracks. General aviation aircraft and jet aircraft contribute to intermittent noise levels in the City. Noise is also generated on individual parcels whether industrial, commercial or residential.

The major noise sources surrounding the Plan Area are high-volume vehicular traffic on I-580 and the Richmond Pacific Railroad line. There are no active airports within 10 miles of the Plan Area.

To quantify the current existing ambient noise levels in the vicinity, a noise survey was conducted in and around the Plan Area. The noise measurement survey was conducted from December 15 to December 17, 2015, and consisted of two, 48-hour long-term noise measurements. These locations are illustrated in **Figure 4.10-1**.

The area surrounding the Plan Area and Project site during the noise survey was found to be dominated by localized vehicle traffic noise, as well as rail activity noise. Results of the long-term noise measurements are presented in **Tables 4.10-3**. The two long-term noise measurements were conducted using Metrosonics Model db-308 sound level meters (SLMs). All SLMs were calibrated before and after the noise measurement survey.

TABLE 4.10-3
MONITORED NOISE ENVIRONMENTS WITHIN THE PLAN AREA AND PROJECT SITE

	Day One				Day Two			
Monitor	**Start Date & Time**	**24-hour L_{eq} (dBA)**	**L_{dn} (dBA)**	**L_{max} (dBA)**	**Start Date & Time**	**24-Hour L_{eq} (dBA)**	**L_{dn} (dBA)**	**L_{max} (dBA)**
LT-1[1]	12/15/15 0:00 AM	68	73	85	12/16/15 0:00 AM	68	74	90
LT-2[2]	12/15/15 0:00 AM	55	61	76	12/16/15 0:00 AM	54	60	82

NOTES:
1 The primary noise sources at LT-1 consisted of vehicular traffic along I-580.
2 Noise sources near LT-2 consisted of vehicular traffic along I-580 and South 23rd Street, and rail noise.

Sensitive Receptors

Some land uses are considered more sensitive to ambient noise levels than others because of the amount of noise exposure (in terms of both exposure duration and insulation from noise) and the types of activities typically involved for those uses. Residences, schools, rest homes, hospitals, and churches are generally more sensitive to noise than commercial and industrial land uses.

The Plan Area consists of a mixture of industrial, office, and commercial space as well as open space uses. Sensitive uses within the Plan Area, and within approximately 0.5 miles of the Plan Area, include residential areas, day care facilities, senior community facilities, and churches. The locations of sensitive receptors are presented in **Table 4.10-4**.



SOURCE: Google Earth Pro, basemap, 2016; ESA, 2016

Richmond Bay Specific Plan EIR . 120834

Figure 4.10-1
Noise Measurement Locations

TABLE 4.10-4
SCHOOLS, DAYCARE CENTERS, NURSING HOMES, CHURCHES, RESIDENTIAL NEIGHBORHOODS, AND RECREATIONAL AREAS IN THE VICINITY[a] OF THE PLAN AREA

Receptor / Address	Type / Public or Private	Distance from Plan Area (at closest point)	
		Sub-Area/Project Site	Distance (miles)
Schools and Daycare Centers:			
Talking Hands Day Care/ 1325 Carlson Blvd	Private	Sub-Area 4	0.1
Richmond Children's Academy/ 2900 Cutting Blvd	Private	Sub-Area 3	0.3
George Miller III/Head Start/ 300 S 27th St	Public	Sub-Area 3	0.4
Stege Elementary School/1108 Bissel Ave	Public	Sub-Area 4	0.5
Caliber: Beta Academy/ 4301 Berk Ave	Public	Sub-Area 4	0.4
John F. Kennedy High School/ 4300 Cutting Blvd	Public	Sub-Area 4	0.5
Coronado Elementary School/ 2100 Maine Ave	Public	Sub-Area 1	0.4
Benito Juarez Elementary School/ 1450 Marina Way S	Public	Sub-Area 1	0.1
Nursing Homes and Care Centers:			
Confidence Home Care Inc./ 865 Marina Bay Pkwy #43	Private	Sub-Area 2	0.1
Shields Richmond Nursing Center/ 1919 Cutting Blvd	Private	Sub-Area 1	0.3
Churches:			
Providence Baptist Church/ 314 S 12th St	Private	Sub-Area 1	0.5
Bethel Temple Pentecostal Church/ 3429 Cutting Blvd	Private	Sub-Area 3	0.3
Pilgrim Rest Baptist Church/ 831 S 43rd St	Private	Sub-Area 3	0.4
Easter Hill United Methodist Church/ 3911 Cutting Blvd	Private	Sub-Area 3	0.4
Bethlehem Missionary Baptist Church/ 684 Juliga Woods St	Private	Sub-Area 3	0.1
Beacon Light SDA Church/ 607 S 19th St	Private	Sub-Area 1	0.2
Independent Holiness Church/ 1516 Potrero Ave	Private	Sub-Area 1	0.2
Ennis Chapel Church of God in Christ/ 530 S. 15th St	Private	Sub-Area 1	0.2
Mount Carmel Missionary Baptist Church/ 539 S 15th St	Private	Sub-Area 1	0.2
Antioch Baptist Church/ 380 S 17th St	Private	Sub-Area 1	0.4
Kingdom Land Baptist Church/ 2404 Cutting Blvd	Private	Sub-Area 3	0.3
Mount Olive Church of God in Christ/ 445 South 25th St	Private	Sub-Area 3	0.3
Ephesians Church-God in Christ/ 2887 Foothill Ave	Private	Sub-Area 3	0.1
Zion Hill Missionary Baptist Church/ 5150 Bayview Ave	Private	Sub-Area 3	0.1
Masjid-Al-Noor/ 1330 Cutting Blvd	Private	Sub-Area 1	0.3
Residential Areas:			
Breaker Homes	Private	South of Sub-Area 2	0.2
Sunset Pointe	Private	Southwest of Sub-Area 2	0.4
Marina Bay	Private	South of Sub-Area 2	<0.1
The Shores	Private	Southwest of Sub-Area 2	0.1
The Cove	Private	South of Sub-Area 1	<0.1
Bayfront	Private	Between Sub-Area 1 and Sub-Area 2, West/East	<0.1

TABLE 4.10-4 (Continued)
SCHOOLS, DAYCARE CENTERS, NURSING HOMES, CHURCHES, RESIDENTIAL NEIGHBORHOODS, AND RECREATIONAL AREAS IN THE VICINITY[a] OF THE PLAN AREA

Receptor / Address	Type / Public or Private	Distance from Plan Area (at closest point)	
		Sub-Area/Project Site	Distance (miles)
Residential Areas (cont.):			
The Beach	Private	West of Sub-Area 2	<0.1
Anchorage at Marina Bay	Private	Between Sub-Area 1 and Sub-Area 2, West/East	
Homes on north side of I-580, Hoffman Blvd (Cortez Stege)	Private	North of Sub-Area 1	0.1
Homes east of I-580, Carlson Blvd (Eastshore)	Private	East of Sub-Area 4	0.2
Crescent Park Apartments	Private	East of Sub-Area 4	0.2
Homes east of I-580, Monterey St	Private	East of Sub-Area 4	0.2

[a] Within 0.5 miles

4.10.3 Regulatory Setting

Federal, state, and local agencies regulate different aspects of environmental noise. Noise issues are addressed in Title 24 of the *California Code of Regulations* (for new multifamily residential developments), local general plan policies, and local noise ordinance standards and municipal codes related to noise.

Federal

Truck Operations

Federal regulations establish noise limits for medium and heavy trucks (more than 4.5 tons, gross vehicle weight rating) under 40 Code of Federal Regulations (CFR), Part 205, Subpart B. The federal truck pass-by noise standard is 80 dBA at 15 meters (approximately 50 feet) from the vehicle pathway centerline. These controls are implemented through regulatory controls on truck manufacturers.

Vibration Impacts (Federal Transit Administration)

The Federal Transit Administration (FTA) has published a 200-foot screening distance for residential uses, for assessment of vibration impacts (FTA, 2006).

State of California

Vehicle Operations

The State of California establishes noise limits for vehicles licensed to operate on public roads. The pass-by standard for heavy trucks is consistent with the federal limit of 80 dB. The pass-by standard for light trucks and passenger cars (less than 4.5 tons, gross vehicle rating) is also 80 dB

at 15 meters from the centerline. These standards are implemented through controls on vehicle manufacturers and by legal sanctions on vehicle operators by state and local law enforcement officials.

Noise Insulation Standard

The California Noise Insulation Standards found in CCR, Title 24 establish requirements for new multi-family residential units, hotels, and motels that may be subject to relatively high levels of transportation noise. In this case, the noise insulation criterion is 45 dB L_{dn}/CNEL inside noise-sensitive spaces. For developments with exterior transportation noise exposure exceeding 60 dB L_{dn}/CNEL, an acoustical analysis and mitigation (if required) must be provided showing compliance with the 45 dB L_{dn}/CNEL interior noise exposure limit.

City of Richmond General Plan

The Public Safety and Noise Element of the City of Richmond General Plan, adopted in 2012, identifies noise and land use compatibility standards for various land uses based on State of California Acceptable Noise Levels shown in **Table 4.10-5**. This table indicates that multifamily/townhome residential land uses are normally acceptable in noise environments of less than 65 dBA L_{dn} (California Office of Planning and Research, 2003).

The City of Richmond General Plan also identifies goals, policies and actions that the City shall implement during the environmental review of projects in order to minimize noise throughout the community. Goals and Policies presented in the Public Safety and Noise Element applicable to the Specific Plan and Project are as follows, and include **Table 4.10-5**.

- **Goal SN-4: Acceptable Noise Levels.** Achieve noise levels consistent with acceptable standards and reduce or eliminate objectionable noise sources. Prevent where possible, or mitigate noise impacts from industries, roadways, railroads and businesses in residential areas and sensitive uses in the community. In addition, apply new technology, buffers and other solutions to reduce excessive noise.

  Policy SN-4.1: 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.

  Policy SN-4.2: Land Use Compatibility. Consistent with the City's Industrial Buffer Zone Ordinance, prohibit the location of residential uses in the area between Harbour Way South and Marina Way South and between Interstate 580 and Hall Avenue. 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 appropriate transitional habitat

TABLE 4.10-5
ACCEPTABLE NOISE LEVELS

LAND USE CATEGORY	COMMUNITY NOISE EXPOSURE - L_{dn} or CNEL (db)							
	50	55	60	65	70	75	80	
Residential - Low Density Single Family, Duplex, Mobile Home								
Residential – Multiple Family								
Transient Lodging – Motels, Hotels								
Schools, Libraries, Churches, Hospitals, Nursing Homes								
Auditoriums, Concert Halls, Amphitheaters								
Sports Arena, Outdoor Spectator Sports								
Playgrounds, Neighborhood Parks								
Golf Courses, Riding Stables, Water Recreation, Cemeteries								
Office Buildings, Business, Commercial, Professional								
Industrial, Manufacturing, Utilities, Agriculture								

	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 are included in the design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning will normally suffice.
	Normally Unacceptable	New construction or development should be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirement must be made and needed noise insulation features included in the design.
	Clearly Unacceptable	New construction or development generally should not be undertaken.

SOURCE: California Office of Planning and Research, 2003. General Plan Guidelines.

zones between wetlands, marshlands, creeks, and mudflats) 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. Require sufficient visual open space and/or landscaped screening between industrial operations and adjacent residential or recreational activities in order to create adequate buffers.

Policy 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 freeway improvements that will reduce noise impacts of vehicles. Alternatives to sound walls should be considered where possible.

Action SN4A: Noise Study Requirement. 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.

Action SN4.B Noise Study Guidelines. Regularly review and update guidelines for the analysis of noise impacts and conflicts in the community. Ensure that the effect of brief loud noises such as locomotive horns are analyzed and that noise limitations include a maximum acceptable noise level for noises of short duration for interior sleeping areas of residential and other uses. 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.

City of Richmond Municipal Code

Section 9.52 of the City of Richmond Municipal Code restricts noise from construction activities "where technically and economically feasible" to separate mobile and stationary source noise standards established in the ordinance. Specifically, for single family and multifamily residential land uses, the ordinance cites weekday (7:00 AM to 7:00 PM) noise standards for mobile construction equipment of 75 dbA and 80 dBA, respectively. The weekend and holiday (9:00 AM to 8:00 PM) standards are 60 dBA and 65 dBA, respectively.

For stationary source construction noise, the ordinance cites weekday (7:00 AM to 7:00 PM) noise standards of 60 dbA and 65 dBA for single family and multifamily residential land uses,

respectively. The weekend and holiday (9:00 AM to 8:00 PM) standards are 55 dBA and 60 dBA, respectively.

Section 15.04.840 establishes performance standards for a variety of environmental issues. Section 15.04.840.020 establishes performance standards intended to ensure that uses and activities shall occur in a manner to protect the public health and safety and not produce adverse impacts on surrounding properties nor the community at large. These standards are presented in **Table 4.10-6**. The noise standards in the table are to be modified as follows to account for the effects of time and duration on noise levels:

- In residential zones, the noise standard shall be 10 dBA lower between 10:00 PM and 7:00 AM.
- Noise that is produced for no more than a cumulative period of 5 minutes in any hour may exceed the standards above by 5 dBA.
- Noise that is produced for no more than a cumulative period of 1 minute in any hour may exceed the standard above by 10 dBA.

TABLE 4.10-6
STATIONARY SOURCE NOISE PERFORMANCE STANDARDS OF THE CITY OF RICHMOND MUNICIPAL CODE

Land Use Type	Maximum Hourly L50 Noise Level in dBA (levels not to be exceeded more than 30 minutes in any hour)		Maximum Hourly L12 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 pm and 7 am, Measured at Any Boundary of a Residential Zone
Single-family residential	60		
Multifamily residential	65		
Commercial	70	60	50 or ambient noise level
Light industrial and office flex [a]	70	60	50 or ambient noise level
Heavy and marine industrial [b]	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:
[a] Standards for these uses apply at the property line.
[b] Standards for these uses apply at the boundary of the M-3 or M-4 zoning district.

4.10.4 Significance Criteria

Consistent with Appendix G of the State CEQA *Guidelines*, a project would cause significant adverse impacts with respect to noise and/or ground-borne vibration if it would result in:

a) Exposure of persons to, or generation of, noise levels in excess of standards established in the local general plan, noise ordinance, or applicable standards of other agencies;

b) Exposure of persons to or generation of excessive ground-borne vibration or ground-borne noise levels;

c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project;

d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project;

e) Exposure of people residing or working in the area around the project site to excessive noise levels (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); or

f) Exposure of people residing or working in the area around the project site to excessive noise levels (for a project within the vicinity of a private airstrip).

Approach to Analysis

Specific Plan and Project

For impacts of both development under the Specific Plan and the project, a significant noise impact would result if noise levels increase substantially at existing noise-sensitive land uses (e.g., residences). For the assessment of traffic-related noise, based on Caltrans' definition of a readily perceptible increase in noise levels, a permanent increase of 5 dBA or more in ambient noise levels in and around the Plan Area or Sub-Area 4 Project site over levels existing without the Specific Plan or Project would constitute a significant impact, if sensitive receptors are located along these roadways. Caltrans considers a noise increase of less than 3 dBA to be barely perceptible to people, while a 5-dBA increase is readily noticeable (Caltrans, 2009). Noise from stationary sources would be considered to have a significant impact, if their operation would exceed the noise performance standards of the City of Richmond Municipal Code.

Construction noise levels are treated differently because they are temporary and intermittent. Significant noise impacts would result from construction if noise levels were sufficiently high to interfere with speech, sleep, or normal residential activities. Construction-related hourly average noise levels received at noise-sensitive land uses above 60 dBA during the daytime and 55 dBA at night and at least 5 dBA higher than ambient noise levels would be considered significant.

Caltrans uses a vibration limit of 12.7 millimeters per second (0.5 inches per second), or mm/sec, PPV for structurally sound buildings designed to modern engineering standards. A conservative vibration limit of 5 mm/sec (0.25 inches/sec) PPV has been used for buildings that are found to be structurally sound but for which structural damage is a major concern. The City of Richmond has not adopted significance thresholds specific to groundborne vibration.

The California Supreme Court's *CBIA v. BAAQMD* decision[2] has indicated that the impact of existing environmental conditions on a project's future users or residents are generally not

[2] *California Building Industry Association v. Bay Area Air Quality Management District*, S213478. (A135335, A136212; 218 Cal.App.4th 1171; Alameda County Superior Court; RG10548693. Filed December 17, 2015.)

required to be considered in a CEQA evaluation, except when the project may exacerbate existing hazards or existing conditions. Notwithstanding this judicial finding, an assessment is included in this section, for informational purposes, to determine if land uses that would be developed under the Specific Plan or within the Sub-Area 4 Project site would be exposed to noise levels exceeding the City's established guidelines for noise and land use compatibility. The City of Richmond land use/noise compatibility guidelines are shown in **Table 4.10-5**.

Cumulative

Cumulative traffic noise level significance is determined by a two-step process. First, a comparison is made of the increase in noise levels between cumulative conditions with the Specific Plan or Sub-Area 4 Project and existing conditions. If roadside noise levels would increase by 5 dBA, a cumulative noise impact would occur. However, buildout under the Specific Plan or Project would only be considered to result in a significant cumulative roadside noise impact if its contribution to an increase of 5 dBA or more were to be cumulatively considerable. Consequently, the second step of the cumulative noise analysis (if a cumulative noise impact is predicted) is to evaluate if the contribution of the Specific Plan or Project to roadside noise levels is cumulatively considerable. This second procedure (if necessary) involves assessing whether the Specific Plan or Project contribution to roadside noise levels (i.e., the difference between cumulative conditions and cumulative plus project conditions) would result in an increase of 3 dBA or more which Caltrans recognizes as a barely perceptible increase (Caltrans, 2013).

Topics with No Impact or Otherwise Not Addressed in this EIR

Review and comparison of the setting circumstances and Specific Plan and the Sub-Area 4 project with each of the six significance criteria stated above clearly show that no impacts associated with noise would result for Significance Criteria d) and e). The following discusses the reasoning supporting these conclusions.

Specific Plan and Sub-Area 4 Project

The Specific Plan area and Sub-Area 4 Project site would not result in exposure of people residing or working in the area to excessive noise levels due to location within an airport land use plan or within two miles of a public airport or public use airport (Criterion d); or exposure of people residing or working in the area to excessive noise levels due to location within the vicinity of a private airstrip (Criterion e).

The Specific Plan and Project would not result in impacts related to exposure of people to excessive noise levels based on proximity to public airports or private airstrips. The Plan Area and Project site are not located within the airport influence area of either Oakland International Airport or San Francisco International Airport (ACCDA, 2012 and C/CAG, 2012) or in the vicinity of a private airstrip. Therefore, Significance Criteria d) and e) do not apply, and will not be discussed further.

4.10.5 Program-Level Impacts of the Richmond Bay Specific Plan

Impact NOI-1.SP: Construction of development under the Specific Plan could result in substantial temporary or periodic increases in ambient noise levels in the Plan Area. (Criteria a. and d.) (*Less Than Significant with Mitigation*)

As indicated in Table 3-1 in Chapter 3, *Project Description*, development under the Specific Plan would allow for demolition and construction resulting in a net increase of up to 5,700 residential units, 5.69 million square feet of R&D/Business/Service uses, 720,000 square feet of retail space and 34.2 acres of open space, over an approximately 23-year period. Development under the Specific Plan is anticipated to take place over several phases. The first phase of construction is anticipated to start in 2017, and initial construction activities and sequence will involve demolition, site preparation, grading and excavation, trenching, building exteriors, interior architecture, and paving.

Construction, although typically short-term, can be a significant source of noise. Construction is most significant when it takes place near sensitive land uses, occurs at night, or occurs in early morning hours. Local governments typically regulate noise associated with construction equipment and activities through enforcement of noise ordinance standards, implementation of General Plan policies and imposition of conditions of approval for building or grading permits. **Table 4.10-7** shows typical exterior noise levels at various phases of commercial construction and **Table 4.10-8** shows typical noise levels associated with various types of construction equipment.

Construction-related activities would temporarily increase ambient noise levels within the Plan Area. Construction activities would be temporary and intermittent, occurring at different locations within the Plan Area based on when and where individual projects under the Specific Plan are proposed for development. Construction-related noise levels would fluctuate depending on the particular type, number, and duration of use of various pieces of construction equipment. The effect of construction noise would depend upon the phase of construction, level of construction activity on a given day, related noise generated by that activity, distance between construction activities and the nearest noise-sensitive uses, presence or absence of barriers between the noise and the receptor, and the existing noise levels at the receptors.

TABLE 4.10-7
TYPICAL CONSTRUCTION NOISE LEVELS

Phase	Noise Level (L_{eq})[a]
Ground Clearing	84
Excavation	89
Foundations	78
Erection	85
Exterior Finishing	89
Pile Driving	90-105

[a] Estimates correspond to a distance of 50 feet from the noisiest piece of equipment associated with a given phase and 200 feet from the other equipment associated with that phase.

SOURCE: USEPA, 1971.

TABLE 4.10-8
TYPICAL MAXIMUM NOISE LEVELS FROM CONSTRUCTION EQUIPMENT

Construction Equipment	Noise Level (dBA, L_{max} at 50 feet)
Backhoe	80
Rock Drill	98
Air Compressor	81
Dozer	85
Air Compressor	85
Mobile Crane	83
Grader	85
Front End Loader	85
Trucks	88
Cranes	83
Pile Driver (Sonic)	96
Pile Driver (Impact)	101

SOURCE: FTA, 2006.

The dominant construction equipment noise sources are typically diesel engines of mobile off-road construction equipment. Stationary equipment consists of equipment that generates noise from one general area and includes items such as pumps, generators, compressors, etc. These types of equipment operate at a constant noise level under normal operation and are classified as non-impact equipment. Other types of stationary equipment such as pile drivers, jackhammers, and pavement breakers, etc. are classified as impact equipment, and produce variable and sporadic noise levels. Impact equipment is equipment that generates impulsive noise, where impulsive noise is defined as noise of short duration (generally less than one second), high intensity, abrupt onset, rapid decay, and often rapidly changing spectral composition. For impact equipment, the noise is produced by the impact of a mass on a surface, typically repeating over time. Mobile equipment such as bulldozers, scrapers, graders, etc., may operate with power applied in a cyclic fashion in which a period of full power is followed by a period of reduced power. Other equipment, such as compressors, although generally considered to be stationary when operating, can be readily relocated to another location for the next operation.

As noted above in the Setting section, the days and hours that construction activity noise can occur are restricted by Section 9.52.110 of the Richmond Municipal Code. Construction is permitted to occur on weekdays between 7:00 AM and 7:00 PM or between 9:00 AM and 8:00 PM on weekends and holidays. Construction of development under the Specific Plan would only occur during these permitted hours. This section of the Municipal Code also states that a substantial temporary noise level increase from mobile equipment would occur on weekdays between 7:00 AM and 7:00 PM where noise from construction activities exceeds 80 dBA, L_{max} at multi-family residences in the vicinity of a project site; and where noise exceeds 75 dBA, L_{max} at single-family residences in the vicinity of a project site.

As shown in Table 4.10-3, operation of common construction equipment can generate noise levels as high as 89 dBA at 50 feet using typical construction methods, and noise levels of up to

105 dBA at 50 feet if pile driving is required. The exact phasing of development under the Specific Plan is not known as of the date of this document. However, in general, when construction takes place in the vicinity of existing sensitive receptors, these receptors could temporarily and intermittently experience maximum noise levels of up to 105 dBA with pile driving, typically the loudest source of construction noise.

Residential uses are considered most sensitive to noise. Existing residential development within the larger Plan Area (i.e., not within the developable sub areas) are located south and east of Sub-Area 1 (Cove at Marina Bay and Anchorage at Marina Bay residential developments) and south of Sub-Area 2 (Marina Bay Community). The remaining Plan Area contains varying levels of primarily industrial uses, as well as commercial and office uses. The nearest residential sensitive receptors outside of the Plan Area that would be affected by development under the Specific Plan, including development of the Lark Drive Variant, are located adjacent to or within 800 feet of Sub-Area 1 and Sub-Area 2. Beyond this distance, even the loudest construction noise from pile driving would attenuate to levels below those specified in the City of Richmond Noise Ordinance. Given the absence of sensitive receptors within the rest of the Plan Area, construction activities could result in an impact only when they take place near the Cove at Marina Bay, Anchorage at Marina Bay, and Marina Bay community that are adjacent to Sub-Area 1 and Sub-Area 2. Implementation of **Mitigation Measure NOI-1a.SP**, below, would reduce this construction noise impact.

Users of the Bay Trail would also be subject to increased noise levels when construction takes place in the vicinity; however, these users would be considered transient receptors, and would not be exposed to these elevated noise levels for extended periods of time, and therefore any impact of construction noise on Bay Trail users would be considered less than significant. Implementation of **Mitigation Measure NOI-1a.SP** would further reduce this impact.

> **Mitigation Measure NOI-1a.SP: Construction Noise Control Measures and Noise Control Plan.** For any project proposed for development within the area of the Specific Plan, the applicant shall employ site-specific noise attenuation measures during project construction to reduce the generation of construction noise, including pile-driving noise. These measures shall be included in a Noise Control Plan that shall be submitted for review and approval by the City of Richmond Planning and Building Services Department to ensure that construction noise is consistent with the standards set forth in the City's Noise ordinance and other standards as appropriate. Measures specified in the Noise Control Plan and implemented during project construction shall include, at a minimum, the following noise control strategies:
>
> - Equipment and trucks used for construction shall use the best available noise control techniques (e.g., improved mufflers, equipment redesign, use of intake silencers, ducts, engine enclosures, and acoustically attenuating shields or shrouds);
> - Impact tools (e.g., jack hammers, pavement breakers, and rock drills) used for construction shall be hydraulically or electrically powered wherever possible to avoid noise associated with compressed air exhaust from pneumatically powered tools. Where use of pneumatic tools is unavoidable, an exhaust muffler on the compressed air exhaust shall be used; this muffler can lower noise levels from the exhaust by up to approximately 10 dBA. External jackets on the tools themselves

shall be used where feasible; this could achieve a reduction of 5 dBA. Quieter procedures, such as use of drills rather than impact tools, shall be used;

- Stationary noise sources shall be located as far from adjacent receptors as possible, and they shall be muffled and enclosed within temporary sheds, incorporate insulation barriers, or include other measures; and
- Noise-reducing pile-driving techniques shall be performed as specified in Mitigation Measure NOI-1b.

As stated in Section 4.5, *Geology Soils and Seismicity* of this EIR, structural loads are generally too great for Bay Mud to support with conventional foundations and support systems composed of driven piles are commonly recommended. Consequently, for multi-story structures it is reasonable to assume some degree of pile driving could be required. If piles are required, pile driving could result in a significant temporary increase in ambient noise levels.

The following mitigation measure would reduce noise impacts from pile installation.

Mitigation Measure NOI-1b.SP: Pile Driving Noise-Reducing Techniques and Muffling Devices. For any project proposed for development within the area of the Specific Plan that would require pile-driving during construction, noise-reducing pile-driving techniques shall be employed. These techniques shall include:

- Limiting pile driving or other impact-related noise-generating activity to 9:00 AM to 5:00 PM, Monday through Friday. No pile driving or other extreme noise-generating activity is permitted on Saturdays, Sundays, and holidays;
- Installing intake and exhaust mufflers on pile-driving equipment;
- Vibrating piles into place when feasible;
- Installing shrouds around the pile-driving hammer where possible;
- Implementing "quiet" pile-driving technology (such as drill and cast-in-place methods), where possible, in consideration of geotechnical and structural requirements and conditions;
- Implementing the use of more than one pile driver to shorten the total pile driving duration, where possible;
- Using cushion blocks to dampen impact noise, if feasible based on soil conditions. Cushion blocks are blocks of material that are used with impact hammer pile drivers, and placed atop a piling during installation to minimize noise generated when driving the pile. Materials typically used for cushion blocks include wood, nylon and micarta (a composite material); and
- At least 48 hours prior to pile-driving activities, the applicant shall notify building owners and occupants within a minimum of 600 feet of the project site of the dates, hours, and expected duration of such activities.

With the implementation of **Mitigation Measures NOI-1a.SP** and **NOI-1b.SP**, noise generated by construction and pile driving activities would be reduced to levels such that the impact would be less than significant.

Significance after Mitigation: Less Than Significant.

Mitigation: Mitigation Measure NOI-1a.SP, and Mitigation Measure NOI-1b.SP.

Impact NOI-2.SP: Construction of development under the Specific Plan could result in temporary exposure of persons to or generation of, excessive groundborne vibration or groundborne noise levels in the Plan Area above existing levels without the Specific Plan. (Criterion b.) (*Less Than Significant with Mitigation*)

Construction

The types of construction activities associated with propagation of ground-borne vibration include pile driving, use of hoe-rams for demolishing large concrete structures, and caisson drilling. It is possible that all of this equipment could be used during demolition and construction activities for projects located within the Plan Area. As stated in Section 4.5, *Geology, Soils, and Seismicity* of this EIR, structural loads are generally too great for Bay Mud to support with conventional foundations, and support systems composed of driven piles are commonly recommended. Consequently, for multi-story structures within the Plan Area located over Bay Mud, it is reasonable to assume some degree of pile driving could be required.

According to Caltrans' *Transportation and Construction Vibration Guidance Manual*, the building damage threshold for historic and some older buildings is 0.25 PPV (in/sec) and the vibration threshold where vibration level increases are considered distinctly perceptible is 0.04 PPV (in/sec) for continuous/frequent intermittent sources (Caltrans, 2013). As stated in *Section 4.4, Cultural Resources*, of this EIR, no historic structures have been identified within the Plan Area. Although there are no identified historic structures within or adjacent to the Plan Area, there are seventeen structures within sub areas 1, 2 and 3 that could potentially be old enough to be considered historic. Therefore, for this impact analysis, it is conservatively assumed that historic structures could be located within and adjacent to the Plan Area.

Groundborne vibration from grading, excavation, building construction, and impact pile driving activities in the Plan Area could produce temporary substantial vibration at nearby sensitive receptors, including structures themselves. The extent to which these receptors would be affected depends largely on soil conditions, building design and materials, construction techniques employed, distance from the construction site to the structure, the age and condition of the structure, and the receptor's location in the building.

Typical reference vibration levels for various pieces of equipment are listed below in **Table 4.10-10**. During grading and building construction, vibration levels would be generated by large bulldozers where building damage could occur within 13 feet of historic and some older buildings. Existing modern and historic structures outside of the Plan Area boundary as well as within the Plan Area may be located within 13 feet of grading and building construction that may take place in the future with development under the Specific Plan, which could result in building damage.

TABLE 4.10-10
VIBRATION VELOCITIES FOR CONSTRUCTION EQUIPMENT

Equipment/Activity	PPV at 25 ft (inches/second)[a]
Large Bulldozer	0.089
Hoe Ram	0.089
Loaded Trucks	0.076
Pile Driver (Impact)	0.644
Pile Driver (Sonic)	0.170
Caisson Drilling (represents Auger Drilling Pile Installation)[d]	0.089

SOURCE: FTA, 2006 (Table 12-2, p. 12-12).

During foundation pile installation, the highest vibration levels would be generated by impact pile drivers where building damage to historic and some older buildings could occur within 47 feet. On-site grading and building construction activities could result in damage to existing modern and historic structures within the Plan Area located within 47 feet of construction activities.

Sensitive receptors located within 40 feet of grading or 148 feet of impact pile driving activities would be exposed to temporary construction vibration levels that could result in a human annoyance. There are no existing off-site sensitive uses within 40 feet of the Plan Area boundary or the area of the Lark Drive Variant. However, there are existing off-site sensitive uses located within 148 feet of the Plan Area boundary, which could be exposed to construction vibration that could result in temporary annoyance during on-site impact pile driving. Implementation of **Mitigation Measure NOI-1a.SP**, presented above, would reduce temporary nuisance impacts from both construction noise and vibration by prohibiting noise-producing activity during sensitive time periods. Measures listed under Mitigation Measure NOI-1.SP include restriction of the hours and days of construction activity, and requiring contractors to implement a construction noise reduction program. Implementation of **Mitigation Measure NOI-1b.SP** would also reduce vibration from pile driving, through the use of noise-reducing techniques and muffling devices.

While construction-related vibration would be limited to the duration of the construction schedule, due to the close proximity of potentially historic structures within the Plan Area and existing off-site buildings to construction activities, vibration levels could exceed building damage and human annoyance thresholds, resulting in a short-term, significant impact. Implementation of **Mitigation Measure NOI-2a.SP** would address this impact, and reduce it to a less-than-significant level.

> **Mitigation Measure NOI-2a.SP: Construction Vibration.** For any project proposed for development within the area of the Specific Plan, and prior to the issuance of any building permit for each phase of project development, the project applicant shall conduct a historic survey of the project site, and a 200-foot buffer extending around the project site, to determine the locations of historic structures. If historic structures are identified, the project applicant shall develop a Vibration Reduction Plan (Plan) in coordination with an acoustical consultant, geotechnical engineer, and construction contractor, and submit the

Plan to the City Chief Building Official for approval. The Plan shall include measures and/or controls to ensure that buildings within 200 feet of the project site will be exposed to less than 80 VdB and 83 VdB where people sleep and work, respectively, and less than 0.25 PPV for historic buildings to prevent building damage. Measures and controls shall be identified based on project-specific final design plans, and may include, but are not limited to, either or both of the following:

1. Implementation of buffers and the use of specific types of equipment to minimize vibration impacts during construction at nearby receptors in order to meet the specified standards.

2. Implementation of a vibration, crack, and line and grade monitoring program for identified historic buildings located within 50 feet of construction activities, in coordination with a geotechnical engineer and qualified architectural historian. The following elements shall be included in this program:

    a) Prior to construction, a qualified architectural historian shall conduct a thorough survey of identified historic resources to identify, measure the dimensions of, and document (photographs and text) any existing cracks in the historic buildings.

    b) During construction activities:

        i. The construction contractor shall identify, and regularly inspect and photograph, crack gauges and include records of these inspections in construction reporting. Gauges shall be inspected every two weeks, or more frequently during periods of construction activity in close proximity to identified crack gauges.

        ii. The construction contractor shall collect vibration data from receptors and report vibration levels to the City Chief Building Official on a monthly basis. The reports shall include annotations regarding project activities as necessary to explain changes in vibration levels, along with proposed corrective actions to avoid vibration levels approaching or exceeding the established threshold.

        iii. With regards to historic buildings, if vibration levels exceed the threshold and monitoring or inspection indicates that the project may damage or is damaging the building, the building shall be provided additional protection or stabilization. If necessary and with approval by the City Chief Building Official, the construction contractor shall install temporary shoring or stabilization to help avoid permanent impacts. Stabilization may involve structural reinforcement or corrections for deterioration that would minimize or avoid potential structural failures or avoid accelerating damage to the historic structure. Stabilization shall be conducted following the Secretary of Interior Standards Treatment of Preservation. This treatment shall ensure retention of the historic building's character-defining features. Stabilization may temporarily impair the historic integrity of the building's design, material, or setting, and as such, the stabilization must be conducted in a manner that will not permanently impair a building's ability to convey its significance.

Measures to shore or stabilize the building shall be installed in a manner that when they are removed, the historic integrity of the building remains, including integrity of material.

c) Post-construction:

i. The applicant (and its construction contractor) shall provide a report to the City Chief Building Official regarding crack and vibration monitoring conducted during demolition and construction. In addition to a narrative summary of the monitoring activities and their findings, this report shall include photographs illustrating the post-construction state of cracks and material conditions that were presented in the pre-construction assessment report, along with images of other relevant conditions showing the impact, or lack of impact, of project activities. The photographs shall sufficiently illustrate damage, if any, caused by the project and/or show how the project did not cause physical damage to the historic and non-historic buildings. The report shall include annotated analysis of vibration data related to project activities, as well as summarize efforts undertaken to avoid vibration impacts. Finally, a post-construction line and grade survey shall also be included in this report.

ii. The project applicant (and its construction contractor) shall be responsible for repairs from damage to historic and non-historic buildings if damage is caused by vibration or movement during demolition and/or construction activities. Repairs may be necessary to address, for example, cracks that expanded as a result of the project, physical damage visible in post-construction assessment, or holes or connection points that were needed for shoring or stabilization. Repairs shall be directly related to project impacts and will not apply to general rehabilitation or restoration activities of the buildings. If necessary for historic structures, repairs shall be conducted in compliance with the Secretary of Interior Standards Treatment of Preservation. The project applicant shall provide the City Chief Building Official and City Preservation Officer for review and comment both a work plan for the repairs and a completion report to ensure compliance with the Secretary of Interior Standards.

Operation

While development under the Plan Area would not introduce any permanent new sources of significant groundborne vibration, development of residential and other sensitive uses in close proximity to active rail lines could expose receptors to perceptible vibration which could be an annoyance to future occupants. Implementation of **Mitigation Measure NOI-2b.SP** would reduce potential vibration levels at future residences adjacent to activities rail lines within the Plan Area to an acceptable level, per FTA guidance.

Mitigation Measure NOI-2b.SP: Exposure to Rail Vibration. For any project proposed for development within the area of the Specific Plan that involves new residential buildings

or new dwelling units located adjacent to or within 200 feet of an active rail line, and prior to the approval of a construction-related permit, the project applicant shall submit a Vibration Reduction Plan (Plan) prepared by a qualified acoustical consultant for City review and approval that contains vibration reduction measures to reduce groundborne vibration to acceptable levels per Federal Transit Administration guidance (Federal Transit Administration, 2006, Transit Noise and Vibration Impact Assessment, May 2006). The applicant shall implement the approved Plan during construction. Potential vibration reduction measures include isolation of foundation and footings using resilient elements such as rubber bearing pads or springs, such as a "spring isolation" system that consists of resilient spring supports that can support the podium or residential foundations. The specific system shall be selected so that it can properly support the structural loads, and provide adequate filtering of groundborne vibration to the residences above.

Significance After Mitigation: Less Than Significant.

Mitigation: Mitigation Measures NOI-1a.SP, NOI-1b.SP, NOI-2a.SP, NOI-2b.SP.

Impact NOI-3.SP: Operational activities associated with the Specific Plan would not increase long-term noise levels in the Plan Area to levels in excess of standards established in the Richmond General Plan. (Criteria a., c.) (*Less than Significant with Mitigation*)

Operational activities associated with build out of the Specific Plan would generate some noise from heating, ventilating, and air conditioning mechanical equipment. Since mechanical equipment would be standardized, the equipment's noise generation would not be expected to exceed the City's established standards presented in **Table 4.10-6**. Existing residential receptors are located within 100 feet of the Plan Area (such as south of Sub-Area 1 and Sub-Area 2, in the Marina Bay community). Emergency backup generators, if required for buildings exceeding 70 feet in height, would be tested regularly, and operated occasionally. Typically, the Bay Area Air Quality Management District (BAAQMD) permits emergency backup generators to operate for up to 50 hours per year, or on average about one hour per week. The noise generated by generator testing would be akin to that of a diesel-powered truck engine and this occasional testing would not result in a substantial permanent increase in noise levels over ambient conditions. Therefore, operational noise impacts from adoption and development under the Specific Plan related to stationary sources would be less than significant.

As discussed above, although a recent California Supreme Court decision (*CBIA v. BAAQMD*) held that impacts of the environment upon a project are not, generally, within the purview of CEQA, the Richmond General Plan contains land use compatibility guidelines to determine compatibility of proposed development with the existing noise environment (see **Table 4.10-5** above). The Land Use Compatibility standards of the City's General Plan are exterior noise standards which allow for an assessment of exterior noise levels to determine whether standard construction techniques would be sufficient to achieve appropriate noise levels for each land use. New, single-family residential development, and multifamily residential development, are considered "normally acceptable" in noise environments up to 60 and 65 $L_{dn,}$ respectively. This assumes that standard construction

techniques would achieve 15 dBA of attenuation and provide for an interior environment of 45 dBA. For single family residential uses, noise environments between 55 to 60 L_{dn} represent "conditionally acceptable" exposure, while for multifamily residential development, noise levels between 55 to 70 L_{dn} are considered "conditionally acceptable."

Residential uses may be constructed in any of the developable parts of the Plan Area. As shown in Table 4.10-3 and illustrated in Figure 4.10-1, day-night noise levels in the eastern portion of the Plan Area (LT-1) were found to range between 73 to 74 dBA L_{dn} and the western portion of the Plan Area (LT-2) were found to range between 60 and 61 dBA L_{dn}. The noise levels measured at these locations were highly dependent on vehicular traffic along I-580 and industrial noise within the Plan Area. Based on these measured noise levels, the noise environment within the Plan Area would be in the "normally unacceptable" category for residential uses. "Normally unacceptable" means that new construction in such areas is generally discouraged and development should be undertaken only after a detailed acoustical study has been conducted and any required noise insulation features are included in the project design. Therefore, development of residential uses in these areas, as proposed within the Plan Area, could expose receptors to noise levels greater than those allowed by the City's General Plan land use/noise compatibility standards. Commercial and retail uses proposed in these areas may also require site specific assessment in order to comply with the General Plan's land use compatibility standards.

Specific Plan Section 4.7.1, *Performance Standards for Industry, Manufacturing, and Processing Uses*, specifies restrictions for locating residential uses within the Specific Plan Area. Standards that effectively reduce or avoid adverse noise effects on sensitive uses include ensuring that maximum allowed noise levels for the General Industrial District in the Specific Plan Area do not exceed 60 dBA for more than 30 minutes in any hour where measured at any boundary with a residential zone. These restrictions also specify that, at any boundary with a residential zone, between the hours of 10:00 PM and 7:00 AM, maximum noise levels shall not exceed 50 dBA or ambient noise levels for more than 5 minutes in any hour. In addition, as described in the Specific Plan Chapter 3, *Plan Area Vision*, land within the Plan Area that is adjacent to I-580 is reserved for R&D uses in order to help buffer adjacent residential uses from highway noise pollution.

As discussed above, many portions of the Plan Area exhibit noise levels considered "normally unacceptable" for residential uses. If such uses are proposed in these areas, Title 24 interior noise standards would not be met by using conventional materials and construction. This effect constitutes an impact of the existing environment on the project and is not an impact caused or exacerbated by the project. Therefore, as discussed above under Impact NOI-2.SP, the Specific Plan would result in a less-than-significant impact under CEQA.

Implementation of **Mitigation Measure NOI-3.SP**, provided below, would eliminate any noise exposure that would be inconsistent with the General Plan and would reduce this impact to less than significant.

> **Mitigation Measure NOI-3.SP: Project-Specific Noise Study.** For any project proposed for development within the Plan Area, applicants shall conduct a project-specific noise study to determine compatibility of the proposed use with the existing noise environment

based on land use/noise compatibility guidelines in the City's General Plan. If the noise environment is found to be "conditionally acceptable" or "normally unacceptable" for the proposed use, a detailed acoustical analysis shall be conducted to specify the noise insulation measures needed to reduce noise exposure to "normally acceptable" levels, and these measures will be implemented. Measures may include, but are not limited to, appropriate site design to achieve maximum sound attenuation, use of enhanced noise insulation features in the form of appropriate sound-rated assemblies and/or other features/measures to reduce interior noise levels to meet Title 24 requirements.

Significance: Less Than Significant.

Mitigation: Improvement Measure NOI-3.SP.

Impact NOI-4.SP: Traffic generated by development under the Specific Plan could substantially increase traffic noise levels in the Plan Area. (Criterion c.) (*Significant and Unavoidable*)

Additional vehicles traveling throughout the Plan Area as a result of development under the Specific Plan would increase noise levels adjacent to nearby roads. As discussed under Significance Thresholds, a traffic-related ambient noise increase of 5 dBA or more would be considered a significant impact, especially if sensitive receptors are located along the affected roadway segments. Traffic noise levels for this analysis were determined using the Federal Highway Administration (FHWA) Traffic Noise Prediction Model and the turning movements in the traffic section for Existing (2015) and Existing plus Project conditions (see Section 4.13, *Transportation and Traffic* in this EIR).

Trips associated with new development under the Specific Plan would be distributed over the local street network within and surrounding the Plan Area and would affect roadside noise levels. Noise level projections were made using the FHWA Noise Prediction Model for those road segments that would experience the greatest increase in traffic volumes and that are in proximity to sensitive receptors (FHWA, 2006). The model is based on Calveno reference noise factors for automobiles, medium trucks, and heavy trucks, with consideration given to vehicle volume and speed, and uses information provided in the analysis presented in Section 4.13, *Transportation and Traffic*, of this EIR. The segments analyzed and results of the modeling are shown in **Table 4.10-11**.

As shown in Table 4.10-11, the increase in traffic noise under the Existing plus Plan scenario compared to the Existing scenario would increase traffic noise less than 5 dBA for all roadway segments except for Marina Way. The addition of Plan traffic would increase roadside noise levels above 5 dBA along Marina Way, from just north of Cutting Boulevard to Regatta Boulevard. Sensitive receptors located adjacent to Marina Way, from just north of Cutting Boulevard to Regatta Boulevard, would be exposed to this significant increase in traffic noise. Therefore, this impact would result in a significant operational traffic noise impact.

TABLE 4.10-11
TRAFFIC NOISE LEVELS IN AND AROUND THE PLAN AREA

Roadway Segment	Existing	Existing Plus Plan	Difference between Existing Plus Plan and Existing[a]	Cumulative No Plan (2040)	Cumulative Plus Plan (2040)	Difference between Cumulative Plus Plan and Existing[b]	Difference between Cumulative Plus Plan and Cumulative No Plan[c]
	(A)	(B)	(B-A)	(C)	(D)	(D-A)	(D-C)
Cutting Blvd.							
between Canal Blvd. and Hoffman Blvd.	63.5	64.7	1.2	65.5	66.3	2.8	0.8
between Hoffman Blvd. and Harbour Way	64.7	66.4	1.7	67.9	68.8	4.1	0.9
between Harbour Way and Marina Way	65.0	66.7	1.7	67.8	68.8	3.8	1.0
between Marina Way and 23rd St.	65.6	67.4	1.8	68.1	69.2	3.6	1.1
between 23rd St. and Carlson Blvd.	68.9	70.0	1.1	70.5	71.3	2.4	0.8
between Carlson Blvd. and 37th St.	68.0	69.1	1.1	69.7	70.5	2.5	0.8
between 37th Street and I-80	68.0	69.3	1.3	69.6	70.5	2.5	0.9
MacDonald Ave.							
between Harbour Way and 22nd St.	66.4	66.8	0.4	67.5	67.8	1.4	0.3
Central Ave.							
between I-80 and Carlson Blvd.	68.4	69.1	0.7	69.4	69.9	1.5	0.5
Harbour Way							
between MacDonald Ave. and Cutting Blvd.	66.6	67.8	1.2	68.2	69.0	2.4	0.8
Marina Way							
North of Cutting Way	61.9	66.5	4.6	64.6	67.7	**5.8**	**3.1**
between Cutting Way and Wright Ave.	60.6	67.5	**6.9**	64.3	68.6	**8.0**	**4.3**
between Wright Ave. and Regatta Blvd.	60.9	67.7	**6.8**	64.6	68.7	**7.8**	**4.1**
22nd St.							
between Barrett and MacDonald Ave.	65.8	66.7	0.9	66.9	67.6	1.8	0.7
23rd St.							
between Barrett and MacDonald Ave.	66.9	67.6	0.7	68.0	68.6	1.7	0.6
North of Cutting Way	66.9	68.5	1.6	69.0	70.1	3.2	1.1
between Cutting Way and I-580	67.7	69.4	1.7	69.2	70.5	2.8	1.3
Marina Bay Pkwy.							
between Meeker Ave. and Regatta Blvd.	65.5	69.5	4.0	67.1	70.3	4.8	3.2
Carlson Blvd.							
between Cutting Blvd. and Bayview Ave.	67.1	68.4	1.3	69.5	70.3	3.2	0.8
between Bayview Ave. and I-80	67.9	68.6	0.7	69.4	69.9	2.0	0.5
between I-80 to Central Ave.	67.7	68.6	0.9	69.4	69.9	2.2	0.5

NOTES:

Road center to receptor distance is 15 meters (approximately 50 feet) for all roadway segments. Noise levels were determined using the Federal Highway Administration (FHWA) Traffic Noise Prediction Model.

[a] Considered significant if the incremental increase in noise from traffic is greater than the existing ambient noise level by 5 dBA Leq,. Violations are in **bolded** text.

[b] Considered significant cumulative if the incremental increase in noise is greater than 5 dBA over existing conditions.

[c] Considered a cumulatively considerable contribution to a significant noise increase if the incremental increase in noise is greater than 3 dBA when the cumulative increase in the preceding column is greater than 5 dBA.

Due to the location of the existing residences on Marina Way north of Cutting Boulevard (e.g., driveway count outs and distance to roadway), there are no feasible mitigation measures that could be implemented that would reduce the traffic noise exposure at these residences. The residences adjacent to Marina Way have driveways connecting to Marina Way. To achieve a 10 dB reduction in traffic noise along Marina Way using a noise barrier, the barrier would have to be constructed for the entire stretch of the block, effectively blocking the residence access to their homes. Rubberized concrete can be used to reduce traffic noise levels; however, if this were to be implemented along Marina Way, over time the effectiveness of the rubberized concrete would degrade due to vehicular traffic, reducing the net decrease in traffic noise and rendering this measure economically infeasible in the long term.

Implementation of TDM is required under the Specific Plan; however, to reduce the increase in future traffic noise levels along Marina Way to below the threshold of 5 dB future traffic volumes would have to be reduced by at least 37 percent. According to the California Air Pollution Control Officers Association's Quantifying Greenhouse Gas Mitigation Measures document, TDM plans typically result in a 20 percent reduction in vehicular trips (CAPCOA, 2010). Even with the most ambitious TDM plans, it is unlikely that development under the Specific Plan could achieve a 37 percent reduction in traffic volumes along Marina Way; therefore, this impact would be significant and unavoidable.

Significance after Mitigation: Significant and Unavoidable.

Mitigation: None feasible.

4.10.6 Project-Level Impacts of the Sub-Area 4 Project

Impact NOI-1.SA4: Construction activities associated with the Sub-Area 4 Project would result in substantial temporary or periodic increases in ambient noise levels in the Project site vicinity. (Criteria a., d.) *(Less Than Significant with Mitigation*)

Construction activities that would take place within the Project site would have similar construction noise effects as those discussed for the Specific Plan, above. As indicated in Table 3-1 and Table 3-3 in Chapter 3, *Project Description*, development under the Project would allow for demolition and construction for a net increase of up to 1,520 residential units, 1.27 million square feet of R&D/Business/Service uses, 190,000 square feet of retail space and 6.5 acres of open space over the planning period. The construction of the Project would utilize very similar construction equipment, phasing, and durations as those discussed for the Plan Area.

The closest sensitive receptors to the site include existing residents approximately 460 feet east (across I-580) and 580 feet east of the site. The Marina Bay residential neighborhood is approximately 1,170 feet southwest of the Project site boundary. Due to the distance between these sensitive receptors and the Project site boundary, it is unlikely that these receptors would be exposed to construction noise levels from standard (non-pile driving) activities that would result

in substantial noise increase. Noise from pile-driving activities could be audible to these receptors, though at these distances this noise would not likely result in a significant impact. Implementation of **Mitigation Measure NOI-1a.SP** and **Mitigation Measure NOI-1b.SP**, presented and discussed above, would reduce the impact of both standard construction noise as well as noise generated by pile-driving activities.

Construction of new uses within the Sub-Area 4 Project site could expose existing users of the Bay Trail to increased noise levels during Project construction. These users, however, are considered transient receptors and would not be exposed to increased noise levels for extended periods of time. Therefore, the impact of construction noise on users of the Bay Trail would be temporary and less than significant.

Significance After Mitigation: Less Than Significant.

Mitigation: Mitigation Measures NOI-1a.SP and NOI-1b.SP.

Impact NOI-2.SA4: Construction activities associated with the Sub-Area 4 Project would not result in exposure of persons to or generation of, excessive groundborne vibration or groundborne noise levels in the Project vicinity above levels existing without the project. (Criterion b.) ***(Less Than Significant with Mitigation)***

Construction

Groundborne vibrations can be perceptible within 30 to approximately 150 feet of a source. The Project site is located more than 460 feet from the nearest existing residential receptors. However, as the Project is developed in phases, temporary nuisance vibration impacts could occur if and when pile driving or impact compaction equipment is operated in close proximity to future proposed buildings.

Implementation of **Mitigation Measure NOI-1a.SP**, presented above, would reduce temporary nuisance impacts from both construction noise and vibration by prohibiting noise-producing activity during sensitive time periods. Measures listed under Mitigation Measure NOI-1.SP include restriction of the hours and days of construction activity, and requiring contractors to implement a construction noise reduction program. Implementation of **Mitigation Measure NOI-1b.SP** would also reduce vibration from pile driving, through the use of noise-reducing techniques and muffling devices.

During foundation pile installation, vibration levels from pile driving could result in damage to historic or older buildings within approximately 50 feet of the Project site (such as buildings on the Richmond Field Station site immediately adjacent to the Project site to the west that have not been surveyed for their historic significance). While temporary construction-related vibration would be limited to the duration of the construction schedule, due to the close proximity of existing off-site buildings that could be historic resources, vibration levels could temporarily exceed building damage and human annoyance thresholds, resulting in a short-term, significant

impact. Implementation of **Mitigation Measure NOI-2a.SP** and **Mitigation Measure NOI-2b.SP** would address this impact.

In summary, implementation of **Mitigation Measure NOI-1a.SP, Mitigation Measure NOI-1b.SP**, **Mitigation Measure NOI-2a.SP**, and **Mitigation Measure NOI-2b.SP** would reduce temporary construction impacts associated with vibration to less-than-significant levels.

Operation

Like the Specific Plan, development of the Project would not introduce any permanent new sources of significant temporary groundborne vibration, nor would it place sensitive uses adjacent to existing sources of vibration, such as rail corridors. The Sub-Area 4 Project site is approximately 1,300 feet from the Richmond Pacific Railroad line and 400 feet (and across I-580) from the Union Pacific Rail corridor. These distances are well beyond the 200-foot screening distance for residential uses published by the FTA for assessment of vibration impacts. Consequently, operation of uses developed on the Project site would not result in exposure of people or structures to substantial vibration levels.

Significance after Mitigation: Less than Significant.

Mitigation: Mitigation Measures NOI-1a.SP, NOI-1b-SP, NOI-2a.SP, and NOI-2b.SP.

Impact NOI-3.SA4: Operational activities associated with the Sub-Area 4 Project would not increase long term noise levels in the Project vicinity to levels in excess of standards established in the Richmond Noise Ordinance and General Plan (Criteria a., c.). ***(Less Than Significant, with Mitigation)***

Like the Specific Plan, operational activities associated with build-out of Sub-Area 4 would generate some noise from heating, ventilating, and air conditioning mechanical equipment. Since mechanical equipment is standardized, the equipment's noise generation would not be expected to exceed the City's established standards presented in Table 4.10-6. Existing residential receptors are located within 460 feet of the Project site's eastern boundary, across I-580. Emergency backup generators, if required, would be tested regularly, and operated occasionally. Typically, the BAAQMD permits emergency backup generators to operate for up to 50 hours per year, or on average about one hour per week. The noise generated by generator testing would be akin to that of a diesel-powered truck engine and this occasional testing would not result in a substantial permanent increase in noise levels over ambient conditions. Also, residential development proposed and developed as part of the Project would include adequate noise insulation to ensure compliance with Title 24 interior noise standard of 45 dBA. Therefore, operational noise impacts from adoption and development under the Project related to stationary sources would be less than significant.

As discussed above, although a recent California Supreme Court decision (*CBIA v. BAAQMD*) held that impacts of the environment upon a project are not, generally, within the purview of

CEQA, the Richmond General Plan contains land use compatibility guidelines to determine compatibility of the proposed development with the existing noise environment (see Table 4.10-5 above).

As shown in Table 4.10-3 and illustrated in Figure 4.10-1, day-night noise levels within the Project site (noise monitoring location LT-1) were found to range between 73 to 74 dBA L_{dn}. The noise levels measured within the Project site were highly dependent on vehicular traffic along I-580 and industrial noise within the Plan Area. Based on these measured noise levels, the noise environment within the Project site would be in the "normally unacceptable" category for residential uses. "Normally unacceptable" means that new construction in such areas is generally discouraged and development should be undertaken only after a detailed acoustical study has been conducted and the needed noise insulation features are included in the design. Therefore development of residential uses in these areas, as proposed within the Project site, would expose receptors to noise levels greater than those allowed by the City's General Plan land use/noise compatibility standards. Commercial and retail uses proposed within the Project site may also require site specific assessment in order to comply with the General Plan's land use compatibility standards.

Section 4.7.1, *Performance Standards for Industry, Manufacturing, and Processing Uses*, of the Specific Plan specifies restrictions for locating residential uses in the Specific Plan Area. Standards that effectively reduce or avoid adverse noise effects on sensitive uses include ensuring that maximum allowed noise levels for the General Industrial District in the Specific Plan Area do not exceed 60 dBA for more than 30 minutes in any hour where measured at any boundary with a residential zone. These restrictions also specify that, at any boundary with a residential zone, between the hours of 10:00 PM and 7:00 AM, maximum noise levels shall not exceed 50 dBA or ambient noise levels for more than 5 minutes in any hour. In addition, as described in the Specific Plan within Chapter 3, *Plan Area Vision*, land within the Plan Area that is adjacent to I-580 is reserved for R&D uses in order to help buffer adjacent residential uses from noise pollution from the highway. These restrictions apply to the Project as well as the Specific Plan as a whole.

As discussed above, many portions of the Project site exhibit noise levels considered "normally unacceptable" for residential uses. If such uses are proposed in these areas, Title 24 interior noise standards would not be met by using conventional materials and construction. As discussed above for the Specific Plan, the implementation of **Mitigation Measure NOI-3.SP** would address this potential noise exposure inconsistency with the General Plan and reduce this impact to a less-than-significant level.

Significance: Less Than Significant.

Mitigation: Mitigation Measure NOI-3.SP.

Impact NOI-4.SA4: Traffic generated by the Sub-Area 4 Project would not substantially increase traffic noise levels in the Project vicinity (Criterion c.). ***(Less Than Significant, No Mitigation Required)***

Under the Project, the potential for adverse intersection impacts under the Project would be less than similar impacts discussed above under Impact NOI-4.SP for the Specific Plan, because the Project would only generate a portion of the AM and PM peak hour traffic generated by the Specific Plan. However, the noise impacts from increased Project-generated traffic on localized roadways surrounding Sub-Area 4 would be similar to those of the Specific Plan, with the exception of noise impacts along Marina Way.

As shown in Table 4.10-11, the increase in traffic noise from Existing plus Plan scenario compared to the Existing scenario would increase traffic noise above 5 dBA along Marina Way, from just north of Cutting Boulevard to Regatta Boulevard. However, Marina Way is located over one mile east of the Sub-Area 4 Project site boundary and would not be a point of access for land uses developed within the Sub-Area 4 Project site. Consequently this Plan-level impact would not be associated with Project-level development. As shown in Table 4.10-11 above, the increase in traffic noise under the Existing plus Plan scenario compared to the Existing scenario would increase traffic noise less than 5 dBA for all other roadway segments. Therefore, traffic noise impacts generated by the Sub-Area 4 Project would be less than significant.

Significance: Less Than Significant.

Mitigation: None required.

4.10.7 Cumulative Noise Impacts

The geographic area considered for cumulative noise analysis includes areas within and surrounding the Plan Area and Project site and roadways examined in the transportation analysis in Section 4.13, *Transportation and Traffic*. Cumulative development contributing to the existing and future noise environment includes those projects in the development forecasts conducted for this EIR based on the countywide transportation model. Larger projects in the immediate vicinity of the Plan Area include the Berkeley Global Campus/Richmond Field Station and the Baywalk Mixed Use Project (also see Section 4.0.3, *Cumulative Analysis* in Section 4.0 of this EIR).

Impact C-NOI-1.SP: Construction noise levels generated by development under the Specific Plan, in combination with past, present, existing, approved, pending and reasonably foreseeable future developments could contribute considerably to cumulative noise impacts. (Criteria a. and d.) (*Significant and Unavoidable*)

Development under the Specific Plan may be constructed during the same time and duration as cumulative projects in the area, and could result in a contribution to construction noise levels. The closest and largest cumulative projects to the Plan Area anticipated to be under construction at the same time as the proposed Specific Plan are the Berkeley Global Campus/Richmond Field Station Project (located adjacent to the boundary of Sub-Area 2, Sub-Area 3, and Sub-Area 4) and the Baywalk Mixed Use Project (located within the northwestern quadrant of Sub-Area 1). No other identified cumulative projects are located with 1,200 feet of the Plan Area.

The closest existing residences to the Plan Area that could be impacted by project-related construction noise are located south and east of Sub-Area 1 (Cove at Marina Bay and Anchorage at Marina Bay residential developments) and south of Sub-Area 2 (Marina Bay Community). These residences would be located approximately 500 feet east and 1,000 feet south of the Berkeley Global Campus/Richmond Field Station and Baywalk Mixed Use Project sites. Assuming the simultaneous operation of the two loudest non-impact pieces of construction equipment listed in Table 4.10-8, these residences would be exposed to temporary noise levels of approximately 73 and 66 dBA L_{max} from a distance of 500 and 1,000 feet, respectively. Although these two cumulative projects alone would not expose the residences located south of Sub-Area 1 and Sub-Area 2 to temporary noise levels that would exceed the City's construction noise standards, the combined effect of these cumulative projects and projects that would be developed under the Specific Plan would result in the exposure of these sensitive receptors to higher noise levels than predicted under only the Specific Plan. Therefore, there is a possibility that buildout under the Specific Plan, in conjunction with buildout under the Berkeley Global Campus/Richmond Field Station project and the Baywalk Mixed Use Project developments, could result in a significant cumulative impact associated with temporary construction noise.

Implementation of **Mitigation Measure NOI-1a.SP** and **Mitigation Measure NOI-1b.SP** would reduce the contribution of the Specific Plan to cumulative construction noise levels at the existing noise-sensitive receptors located near the Plan Area. This would be achieved by requiring noise barriers or shielding to be erected for construction work involving heavy duty construction equipment (i.e., moveable sound barrier curtains), locating stationary noise sources away from sensitive receptors, and requiring all construction equipment to have manufacturer-installed mufflers. Implementation of these mitigation measures would reduce construction noise levels that would occur under buildout of the Specific Plan to below the City's construction noise standard of 75 dBA L_{max}. Although implementation of **Mitigation Measure NOI-1a.SP** and **Mitigation Measure NOI-1b.SP** would reduce construction noise levels under buildout of the Specific Plan to below the City's construction noise standard, mitigated onsite construction activities combined with those proposed within the Berkeley Global Campus/Richmond Field Station and the Baywalk Mixed Use Project sites could expose residences residing within the Cove at Marina Bay, Anchorage at Marina Bay and Marina Bay Community developments to temporary cumulative noise levels exceeding the City's construction noise standards. The Specific Plan's contributions to this temporary cumulative noise impact are therefore conservatively determined to be cumulatively considerable, and this cumulative impact would be significant and unavoidable.

Significance After Mitigation: Significant and Unavoidable.

Mitigation: Mitigation Measures NOI-1a.SP and NOI-1b.SP.

Impact C-NOI-2.SP: Construction vibration levels generated by the Specific Plan, in combination with past, present, existing, approved, pending and reasonably foreseeable future developments could contribute to cumulative vibration impacts. (Criterion c.) (*Less than Significant with Mitigation*)

As previously discussed under Impact NOI-2.SP, construction activities within the Plan Area could expose offsite residences to temporary construction vibration that would result in an annoyance. As noted above, the nearest cumulative projects that could be under construction at the same time as the proposed Specific Plan include the Berkeley Global Campus/Richmond Field Station and the Baywalk Mixed Use Project.

Development of the Berkeley Global Campus/Richmond Field Station and Baywalk Mixed Use projects would include multi-story structures. As stated in Section 4.5, *Geology, Soils, and Seismicity*, of this EIR, structural loads are generally too great for Bay Mud to support with conventional foundations and support systems composed of driven piles are commonly recommended. Consequently, for this analysis it is assumed that these two cumulative projects would require some degree of impact pile driving.

The closest existing residences to the Plan Area that would be impacted by project-related construction noise are located south and east of Sub-Area 1 (Cove at Marina Bay and Anchorage at Marina Bay residential developments) and south of Sub-Area 2 (Marina Bay Community). These residences would be located approximately 500 feet east and 1,000 feet south of the Berkeley Global Campus/Richmond Field Station and Baywalk Mixed Use Project sites. As previously discussed under Impact NOI-2.SP, only sensitive receptors located within 40 and 148 feet of vibration-inducing construction activities such as pile driving would be exposed to temporary vibration levels that would result in building damage and human annoyance, respectively. Because the two cumulative project sites described above are located more than 500 feet from the residential communities closest to the Plan Area, the combined vibration levels from construction that would take place under the Specific Plan and the cumulative projects would be no worse than what was already assessed under Impact NOI-2.SP. Implementation of **Mitigation Measure NOI-2a.SP** would address possible damage from pile-driving activities to historic structures, and would ensure cumulative vibration impacts are less than significant. Moreover, implementation of **Mitigation Measure NOI-1a.SP**, presented above, would reduce temporary nuisance impacts from both construction noise and vibration by prohibiting noise-producing activity during sensitive time periods. Measures listed under Mitigation Measure NOI-1a.SP include restriction of the hours and days of construction activity, and requiring contractors to implement a construction noise reduction program. Likewise, implementation of **Mitigation Measure NOI-1b.SP** would also reduce vibration from pile driving, through the use of noise-reducing techniques and muffling devices. Together, implementation of Mitigation Measures NOI-1a.SP, NOI-1b.SP, and NOI-2.SP would ensure cumulative vibration impacts are less than significant

Significance After Mitigation: Less Than Significant.

Mitigation: Mitigation Measures NOI-1a.SP, NOI-1b.SP, NOI-2.SP.

Impact C-NOI-3.SP: Traffic generated by development under the Specific Plan in combination with traffic from cumulative development could contribute considerably to cumulative noise impacts. (Criterion c.) (*Significant and Unavoidable*)

Long-term noise from cumulative development would primarily occur from motor vehicle traffic. When considered alone, development under the Specific Plan would generate noise mainly by adding more traffic to the area. Other anticipated projects would also contribute to noise in the area due to increased traffic volumes. Any project that would individually have a significant project level noise impact would also be considered to have a significant cumulative noise impact.

As indicated above under *Approach to Analysis*, a permanent noise increase of 5 dBA or more in ambient noise levels in the vicinity above levels existing without the Specific Plan would be considered to generate a significant impact. Traffic noise levels at intersections most impacted by traffic from buildout of the Specific Plan were modeled using the FHWA Traffic Noise Prediction Model and the turning movements for Cumulative No Project and Cumulative plus Project (2040) conditions. The segments analyzed and the results of the noise modeling are shown in Table 4.10-11 for Cumulative No Project and Cumulative plus Project traffic, which includes Specific Plan traffic combined with traffic from other approved or pending projects for the year 2040 (assumed buildout year).

For the Specific Plan, as shown in Table 4.10-11, the increase in traffic noise between the Existing (2012) and Cumulative Plus Project (2040) scenario would be less than 5 dBA at most roadway segments and therefore this impact would be less than significant for these locations. However, the traffic noise increase would be greater than 5 dBA along Marina Way, from just north of Cutting Way to Regatta Boulevard, and would constitute a significant cumulative impact. Therefore, it must then be determined whether development under the Specific Plan would result in a cumulatively considerable contribution to this projected significant cumulative roadway noise impact along Marina Way.

To assess the Specific Plan's contribution to cumulative noise impacts along Marina Way, a comparison of the Cumulative plus Plan noise levels to Cumulative No Plan levels is made. Table 4.10-11 also shows the increase in Cumulative plus Plan noise over Cumulative No Plan noise levels (the Plan increment in 2040). As shown in Table 4.10-11, the Specific Plan would result in a noise increase of between 3.1 to 4.3 dBA. Caltrans identifies a 3 dBA increase as a barely perceptible increase by the human ear. Therefore, for this Marina Way location and this impact, the contribution of traffic noise from development under the Specific Plan to the 2040 cumulative roadway noise levels in and around the Plan Area would be significant. This impact would not occur for the Project alone, as described in the above discussion of Impact NOI-4.SA4.

As discussed above under **Impact NOI-4.SP**, potential mitigation measures that could reduce traffic noise along Marina Way that would require noise barriers and "quiet" pavement to reduce future traffic noise levels would not be feasible: construction of a noise barrier would block the residence access to their homes and the use of rubberized concrete would not be economically feasible. Although TDMs are required under the Specific Plan, to reduce future traffic noise levels along Marina Way to below the applied 3 dB cumulative increase threshold, future traffic volumes would have to be reduced by at least 50 percent. According to the California Air

Pollution Control Officers Association's Quantifying Greenhouse Gas Mitigation Measures document, TDM Plans typically result in a 20 percent reduction in vehicular trips (CAPCOA, 2010). Even with implementation of the most ambitious TDM plans, it is unlikely that the Project could achieve a 50 percent reduction along Marina Way. Therefore, this cumulative impact would be significant and unavoidable.

Significance after Mitigation: Significant and Unavoidable.

Mitigation: None feasible.

Impact C-NOI-1.SA4: Construction noise levels generated by development under the Sub-Area 4 Project, in combination with past, present, existing, approved, pending and reasonably foreseeable future developments could contribute considerably to cumulative noise impacts (Criteria a. and d.). (*Less than Significant with Mitigation*)

Development of the Sub-Area 4 Project may be constructed during the same time and duration as cumulative projects in the area, and could result in a contribution to construction noise levels. The closest and largest cumulative project to the Project site anticipated to be under construction at the same time as the Project is the Berkeley Global Campus/Richmond Field Station (located adjacent to the boundary of the Project site). No other identified cumulative projects are located with 1,200 feet of the Project site.

The closest existing residences to the Project site that could be impacted by project-related construction noise are located more than 1,000 feet to the west (Marina Bay Community). These residences would be located approximately 500 feet west of the Berkeley Global Campus/Richmond Field Station. Assuming the simultaneous operation of the two loudest non-impact pieces of construction equipment listed in Table 4.10-8, these residences would be exposed to temporary noise levels of approximately 73 and 66 dBA L_{max} from a distance of 500 and 1,000 feet, respectively.

Although noise from construction activities at the Berkeley Global Campus/Richmond Field Station could combine with construction noise from the Project, resulting in a cumulative impact, because these residences are located more than 1,000 feet from the Project site, buildout under the Project would not contribute to a significant cumulative impact. Implementation of **Mitigation Measure NOI-1a.SP** and **Mitigation Measure NOI-1b.SP**, as discussed above, would reduce the contribution of the Sub-Area 4 Project to cumulative construction noise levels at existing noise-sensitive receptors. This would be achieved by requiring noise barriers or shielding to be erected for construction work involving heavy duty construction equipment (i.e., moveable sound barrier curtains), locating stationary noise sources away from sensitive receptors, and requiring all construction equipment to have manufacturer-installed mufflers. Implementation of these mitigation measures would reduce construction noise levels that would occur under buildout of the Project to below the City's construction noise standard of 75 dBA L_{max}. Therefore, this impact would be less than significant.

Significance After Mitigation: Less Than Significant.

Mitigation: Mitigation Measures NOI-1a.SP and NOI-1b.SP.

Impact C-NOI-2.SA4: Construction vibration levels generated by the Sub-Area 4 Project, in combination with past, present, existing, approved, pending and reasonably foreseeable future developments could contribute to cumulative vibration impacts. (Criterion c.) (*Less than Significant with Mitigation*)

As previously discussed under Impact NOI-2.SP, construction activities within the Plan Area could expose offsite residences to temporary construction vibration that would result in an annoyance. As noted above, the nearest cumulative projects that could be under construction at the same time as the proposed Specific Plan include the Berkeley Global Campus/Richmond Field Station and the Baywalk Mixed Use Project.

Development of the Berkeley Global Campus/Richmond Field Station and Baywalk Mixed Use projects would include multi-story structures. As stated in Section 4.5, *Geology, Soils, and Seismicity*, of this EIR, structural loads are generally too great for Bay Mud to support with conventional foundations and support systems composed of driven piles are commonly recommended. Consequently, for this analysis it is assumed that these two cumulative projects would require some degree of impact pile driving.

The closest existing residences to the Plan Area that would be impacted by project-related construction noise are located south and east of Sub-Area 1 (Cove at Marina Bay and Anchorage at Marina Bay residential developments) and south of Sub-Area 2 (Marina Bay Community). These residences would be located approximately 500 feet east and 1,000 feet south of the Berkeley Global Campus/Richmond Field Station and Baywalk Mixed Use Project sites. As previously discussed under Impact NOI-2.SP, only sensitive receptors located within 40 and 148 feet of vibration-inducing construction activities such as pile driving would be exposed to temporary vibration levels that would result in building damage and human annoyance, respectively. Because the two cumulative project sites described above are located more than 500 feet from the residential communities closest to the Plan Area, the combined vibration levels from construction that would take place under the Specific Plan and the cumulative projects would be no worse than what was already assessed under Impact NOI-2.SP. Implementation of **Mitigation Measure NOI-2a.SP** would address possible damage from pile-driving activities to historic structures, and would ensure cumulative vibration impacts are less than significant. Moreover, implementation of **Mitigation Measure NOI-1a.SP**, presented above, would reduce temporary nuisance impacts from both construction noise and vibration by prohibiting noise-producing activity during sensitive time periods. Measures listed under Mitigation Measure NOI-1a.SP include restriction of the hours and days of construction activity, and requiring contractors to implement a construction noise reduction program. Likewise, implementation of **Mitigation Measure NOI-1b.SP** would also reduce vibration from pile driving, through the use of noise-reducing techniques and muffling devices. Together, implementation of Mitigation Measures

NOI-1a.SP, NOI-1b.SP, and NOI-2.SP would ensure cumulative vibration impacts are less than significant

Significance After Mitigation: Less Than Significant.

Mitigation: Mitigation Measures NOI-1a.SP, NOI-1b.SP, NOI-2.SP.

Impact C-NOI-3.SA4: Operational noise including traffic generated by development under the Sub-Area 4 Project, in combination with cumulative development could contribute considerably to cumulative noise impacts. (Criterion c.) (*Less than Significant with Mitigation*)

Long-term noise from cumulative development would primarily result from motor vehicle traffic. Uses developed under the Sub-Area 4 Project, along with other cumulative projects such as development of the Berkeley Global Campus/Richmond Field Station, would contribute to noise in the area due to increased traffic volumes. In addition, as for the Specific Plan, operational activities associated with build-out of Sub-Area 4 would generate additional noise from heating, ventilating, and air conditioning mechanical equipment. As discussed under Impact NOI-3.SP, since mechanical equipment is standardized, the equipment's noise generation would not be expected to exceed the City's established standards presented in Table 4.10-6, and would therefore not contribute to cumulative ambient noise impacts.

As indicated above under *Approach to Analysis*, a permanent noise increase of 5 dBA or more in ambient noise levels in the vicinity above levels existing without the Project would be considered a significant impact. Traffic noise levels at intersections most impacted by the Project traffic were modeled using the FHWA Traffic Noise Prediction Model and the turning movements for Cumulative No Project and Cumulative plus Project (2040) conditions. The segments analyzed and the results of the noise modeling are shown in Table 4.10-11 for Cumulative No Project and Cumulative plus Project traffic, which includes Project traffic combined with traffic from other approved or pending projects for the year 2040 (assumed buildout year).

Adverse intersection impacts under the Project would be less than similar impacts discussed above under Impact NOI-4.SP for the Specific Plan, because the Project would only generate a fraction of the amount of the AM and PM peak hour traffic generated by the Specific Plan. However, the noise impacts from increased Project-generated traffic on localized roadways surrounding the Sub-Area 4 Project site would generally be similar to those of the Specific Plan, with the exception of impacts along Marina Way. For the Project, as shown in Table 4.10-11, and discussed under Impact NOI-4.SA4, the increase in traffic noise between the Existing (2012) and Cumulative Plus Project (2040) scenario would range from 3.1 to 4.3 dBA. The increase in dBA in excess of 5 along Marina Way as discussed under Impact C-NOI-3.SP for the Specific Plan is for a location over one mile east of the Sub-Area 4 Project site boundary. It is unlikely that Marina Way would be a point of access for land uses developed within the Sub-Area 4 Project site. Consequently this Plan-level impact would not be associated with Project-level development. Similarly, this impact would not occur for the Project alone in the cumulative setting. Therefore,

cumulative traffic noise impacts generated by the Sub-Area 4 Project would be less than significant.

Significance: Less Than Significant.

Mitigation: None required.

References – Noise

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4.11 Population, Housing and Employment

4.11.1 Introduction

This section identifies and evaluates the impacts related to population, housing, and employment that could result from development under the Specific Plan and the Sub-Area 4 Project.[1] This section describes and quantifies past and existing trends, as well as projected conditions at the citywide, countywide, and regional level, in addition to projections for the Plan Area. This section also presents demographic information specific to the Sub-Area 4 Project, located within the Plan Area. The demographic information presented in this section provides the basis for determining population and employment-related inputs and/or impacts in other sections of this EIR.

4.11.2 Environmental Setting

Regional and Local Setting

The population of the Bay Area, which consists of Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Solano, and Sonoma Counties, was approximately 7.2 million in 2010. Population in the nine-county Bay Area region is growing rapidly, with approximately 25 percent growth expected to occur from 2010 to 2040 (ABAG, 2013a). In 2010, the population of Richmond was approximately 103,700 (ABAG, 2013a). It is projected that by 2040, Richmond's population will increase to approximately 140,100, an increase of 35 percent from 2010.

The unemployment rate for California peaked at 12.4 percent in 2010, then declined to 5.7 percent in November 2015 (EDD, 2015a; EDD, 2015b). Contra Costa County's unemployment rate was 4.6 percent in November 2015 (EDD, 2015a) and had previously reached 11.3 percent in January 2010 (EDD, 2015b). There were approximately 25,300 unemployed persons in Contra Costa County in November 2015 (EDD, 2015a). The City of Richmond's unemployment rate was 5.3 percent in November 2015 (EDD, 2015c) and had previously reached 17.8 percent in January 2010 (Ibid). The City of Richmond's total labor force in November 2015 was approximately 53,700 workers. Between January 2010 and November 2015, the City's labor force increased by approximately 2,000 workers. There were approximately 2,900 unemployed persons in Richmond in November 2015.

Over the past few years, the Bay Area's economy has produced more jobs than housing units, particularly in job-rich communities. Consequently, the cost of buying or renting a place to live in the region has escalated. Given the amount, location, and type of housing being planned, the region's housing costs are expected to remain among the highest in the nation.

[1] CEQA *Guidelines* Appendix G (environmental factor *XIII. Population and Housing*, item "A") refers to population growth resulting from *new businesses, as well as homes*. Therefore, the topics of employment and its relation to population growth are addressed in this EIR chapter.

Long-term projections for the City of Richmond by the Association of Bay Area Governments (ABAG) indicate substantial growth of housing, households, and population, as shown in **Table 4.11-1**, at rates exceeding those of the forecasted growth for Contra Costa County and the Bay Area overall. The ABAG projections reflect market factors as well as regional and local policies that direct an increase in the share of regional development that occurs in the Bay Area's major cities and in higher-density, urban locations.

Population and Housing

As shown in **Table 4.11-1**, approximately 103,700 people were living in Richmond in 2010, about 1.5 percent of the total Bay Area population. A household includes all the people who occupy a housing unit.[2] There were approximately 36,100 households in Richmond in 2010, with an average household size of 2.83 persons per household.

Population in the City and for the Bay Area region as a whole is anticipated to grow substantially – by approximately 28 and 25 percent, respectively – between 2015 and 2040 (see **Table 4.11-1**). The development of new housing in the City and for the region is anticipated to also grow substantially during this period, as shown in the table.

Plan Area Population and Housing

The General Plan change areas that define the Plan Area are the Regatta/Marina Bay Change Area (CA-15), and the Southern Gateway Change Area (CA-16). The Regatta/Marina Bay Change Area comprises many land uses including large-scale office, light industrial and some commercial development, and, as discussed in Chapter 3, *Project Description*, of this EIR, is envisioned as part of a new, transit-oriented, mixed-use community node with access to I-580 to the north and proximity to the waterfront and proposed ferry terminal to the south (City of Richmond, 2012).

The Southern Gateway Change Area includes several large parcels that contain industrial and office uses including the Campus Bay Business Park and the Harbor Front Tract. The planned Berkeley Global Campus is adjacent to the Plan Area, west of Sub-Area 4. CA-16 is, as discussed in Chapter 3, *Project Description*, is envisioned as a revitalized area that would include high-intensity light industrial and commercial uses anchored by a large-scale research and development university campus, as well as ecologically-sensitive areas, Bay views, and connections to I-580, I-80, and the Bay Trail (City of Richmond, 2012). For this change area, the General Plan calls for the development of a mixed-use community including education, research and development, light industrial, residential, and other sensitive uses. The General Plan also identifies that development within this change area should maintain and improve public access to the shoreline including a mix of uses along the shoreline to activate the area throughout the day.

[2] People not living in households are classified as living in group quarters.

TABLE 4.11-1
ESTIMATED DEMOGRAPHIC DATA FOR CITY OF RICHMOND, CONTRA COSTA COUNTY AND BAY AREA – 2010 TO 2040

	2010	2015	2020	2030	2040	Percent Change, 2015-2040
City of Richmond						
Total population (residents)	103,701	109,100	114,600	126,500	140,100	**28.4%**
Total household population	102,118	107,400	112,800	124,400	137,600	**28.1%**
Total households	36,093	37,890	39,730	43,390	47,090	**24.3%**
Persons per household (pph)	2.83	2.83	2.84	2.87	2.92	**3.2%**
Total jobs	30,790	33,490	36,540	38,960	42,320	**26.4%**
Total employed residents	42,490	46,440	50,680	53,830	58,280	**25.4%**
Contra Costa County						
Total population (residents)	**1,049,025**	**1,085,700**	**1,123,500**	**1,224,400**	**1,338,400**	**23.3%**
Total household population	**1,038,711**	**1,074,900**	**1,112,000**	**1,211,300**	**1,323,200**	**23.1%**
Total households	**375,364**	**387,870**	**400,800**	**432,430**	**464,150**	**19.7%**
Persons per household (pph)	**2.77**	**2.77**	**2.77**	**2.80**	**2.85**	**2.9%**
Total jobs	**344,920**	**374,610**	**407,810**	**432,730**	**467,390**	**24.8%**
Total employed residents	**455,540**	**489,750**	**526,530**	**552,720**	**592,060**	**20.9%**
Bay Area[1]						
Total population (residents)	7,150,740	7,461,400	7,786,800	8,496,800	9,299,100	**24.6%**
Total household population	7,003,060	7,307,400	7,623,700	8,313,900	9,084,800	**24.3%**
Total households	2,608,020	2,720,410	2,837,680	3,072,920	3,308,090	**21.6%**
Persons per household (pph)	2.69	2.69	2.69	2.71	2.75	**2.2%**
Total jobs	3,268,680	3,547,310	3,849,790	4,052,020	4,350,070	**22.6%**
Total employed residents						

[1] Includes Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Solano, and Sonoma counties.

SOURCE: ABAG, 2013a. 2010 figures are consistent with the U.S. Census.

Both Change Areas are included as part of the greater South Richmond Priority Development Area (SRPDA), a 1,350-acre portion of the south Richmond shoreline extending westward to the Port of Richmond and the future Richmond Ferry Terminal at the southern end of the Ford Building, and extending north of I-580. The SRPDA is a site identified within the San Francisco Bay Area as a target for infill development and intensification of land uses by the Metropolitan Transportation Commission (MTC) and ABAG, within which growth of jobs and housing production supported by existing or planned amenities and infrastructure is encouraged.

As discussed in the Specific Plan, as of 2010, the SRPDA included approximately 12,000 residents (approximately 11 percent of the City's 2010 population). The SRPDA includes the Plan Area, extends westward to the Port of Richmond and the future Richmond ferry terminal, and includes portions of the South Richmond neighborhood north of I-580 between Ohio Avenue, 23rd Street, and 8th Street. The primary focus of the SRPDA is on the shoreline at Marina Bay.

The vision for this PDA includes revitalization of the former Kaiser Shipyard, development of uses to attract retail, commercial, and other uses, investments to include additional public transit and improvements to traffic and transportation infrastructure to improve connectivity. The City of Richmond has designated the SRPDA as a Transit Neighborhood, focusing on improvements that would promote mixed-use development and enhance multi-modal connectivity and mobility.

The Plan Area is also located entirely within U.S. Census Tract 3800.[3] As of 2010, this Census tract had a population of approximately 5,900 living in approximately 2,600 households (none of which were located within the developable areas of the Specific Plan).

In addition, the Plan Area is also located entirely within three Traffic Analysis Zones, as designated by the Contra Costa Transportation Authority (CCTA, 2013). Information related to these zones is presented below in **Table 4.11-2**.

TABLE 4.11-2
PLAN AREA CCTA TRAFFIC ANALYSIS ZONES

Traffic Analysis Zones	Approximate Acreage	Approximate Population	Households	Jobs
2010				
10050	441.3	322	165	1,240
10052	167.1	644	377	1,271
10053	270.5	145	75	794
Totals:	**879**	**1,111**	**617**	**3,305**
2040				
10050	441.3	1,047	481	1,804
10052	167.1	984	525	1,518
10053	270.5	660	296	1,181
Totals:	**879**	**2,691**	**1,302**	**4,503**

SOURCE: CCTA, 2013

Adjacent to the Plan Area, the planned Berkeley Global Campus is anticipated to include accommodations for the employment of 10,000 people within 5.4 million square feet of research and development facilities.

Housing Units and Vacancy Rates

A housing unit is a house, apartment, mobile home, group of rooms or a single room occupied as separate living quarters. As summarized in **Table 4.11-3**, as of 2015, the City has approximately 39,400 occupied housing units, which are the result of a steady increase of approximately 0.2 percent (or approximately 70 units) over the past five years, and an increase of about 9.3 percent (or approximately 3,350 units) since 2000. This growth mirrors housing trends occurring in the County. The overall housing vacancy rate declined for both the County and the

[3] Census Tract 3800 is somewhat larger than the Plan Area, as shown in Figure 1-1 of the *South Shoreline Specific Plan: Existing Conditions* report (City of Richmond, 2013).

City of Richmond between 2010 and 2015, from 6.2 and 8.2 percent in 2010, to an estimated 6.1 and 8.0 percent in 2015 (U.S. Census Bureau, 2015; and CDOF, 2015). Notable increases in vacancy rates occurred in the preceding decade (2000 to 2010).

TABLE 4.11-3
CHANGES IN HOUSING UNITS AND VACANCY RATE –
RICHMOND AND CONTRA COSTA COUNTY 2000, 2010 AND 2015

	2000	2010	Change 2000-2010	2015	Change 2010-2015	Change 2000-2015
City of Richmond						
Total Housing Units	36,044	39,328	9.1%	39,396	0.2%	**9.3%**
Occupied Housing Units	34,625	36,093	4.2%	36,236	0.4%	**4.7%**
Vacancy Rate	4.3%	8.2%	3.9 pts	8.0%	-0.2 pts	**3.7 pts**
Contra Costa County						
Total Housing Units	354,577	400,263	12.9%	407,661	1.8%	**15.0%**
Occupied Housing Units	344,129	375,364	9.1%	382,883	2.0%	**11.3%**
Vacancy Rate	3.0%	6.2%	3.2 pts	6.1%	-0.1 pts	**3.1 pts**

SOURCE: CDOF, 2012 (2000), 2015a (2010), 2015b (2015)

Employment

In Richmond and Contra Costa County, business activity and employment have been growing, and unemployment has decreased substantially, as the region rebounds from the national recession, as shown in **Table 4.11-4**. Business activity and employment are projected to continue to grow in the future. Projections for Richmond show growth of about 8,830 jobs from 2015 to 2040 – an increase of approximately 26 percent, greater than the increases projected for the County and the region during the same 25-year period (see Table 4.11-1).

TABLE 4.11-4
RECENT EMPLOYMENT TRENDS, OAKLAND AND ALAMEDA COUNTY – 2010 TO 2040

	Total Employed			Unemployment Rate		
	2010[1]	2014[1]	2015 (October Only)[2]	2010[1]	2014[1]	2015 (October Only)[2]
City of Richmond	44,200	49,500	50,800	**17.8%**	**7.1%**	**5.4%**
Contra Costa County	465,500	511,400	524,500	**11.1%**	**6.1%**	**4.7%**

NA = Not Available

SOURCE: EDD, 2015b(1); EDD, 2015a(2)

Overall Relationship of Jobs and Housing

Jobs/housing balance evolves over time and reflects the role and location of particular areas within a larger regional context. ABAG's estimates of current and projected total numbers of jobs

and employed residents in the City of Richmond indicate that the jobs/housing ratio for the city is, and may remain, imbalanced, at about 0.72 in 2015 and 0.73 projected in 2040. These ratios indicate that the growth of jobs in the City is not occurring, or expected to occur, at a rate that matches existing and projected housing stock in the city. This imbalance is similar to but larger than an existing and projected imbalance between jobs and housing for Contra Costa County (0.77 in 2015 and 0.79 in 2040) (ABAG, 2013a).

Although the City has not adopted a specific goal related to jobs/housing balance, the General Plan does include goals, policies and programs to promote mixed use and development of complete neighborhoods, such as Goal ED8 of the Economic Development Element ("A Thriving Mixed-Use Neighborhood along the Southern Shoreline") and Goal HW7 of the Health and Community Wellness Element ("Complete Neighborhoods"), which are both presented below under *Regulatory Setting* (City of Richmond, 2012).

Plan Area Employment

No employment data specific to the Plan Area were available at the time of this report. In 2011, the South Richmond PDA included 6,082 jobs, with manufacturing, construction, retail trade, and wholesale trade representing over half of the jobs in the PDA; one out of every four jobs was in manufacturing. Some of the largest employers in Richmond are located within the Plan Area, including the State of California Department of Public Health Services, Bio-Rad Laboratories, and DiCon Fiberoptics, Inc.

The PDA also included 3,419 employed residents in 2011. The PDA has a jobs-housing ratio of nearly 2.0; however, only 119 PDA residents also work in the PDA).

As of 2010, the labor force within Census Tract 3800 comprised approximately 3,660 workers (U.S. Census, 2015).

General Plan Growth Assumptions and ABAG Projections

The information presented above describes the trend of growth occurring and projected for the City of Richmond, based largely on regional projections data published by ABAG in its *Projections 2013*. ABAG's methodology considered existing and planned land use data provided by local jurisdictions (typically assumptions underlying the jurisdictions general plan) in formulating local and regional projections. Therefore, the growth envisioned in Richmond's General Plan 2030 is generally reflected in the projections in Table 4.11-1.

The plans, policies, and descriptive contents of Richmond's General Plan 2030 indicate the general framework and direction the City is pursuing regarding its future growth between 2010 and 2030. **Table 4.11-5** shows the theoretical amount of development (anticipated housing, population, and employment) that was assumed could occur within the City in that 20-year planning horizon, based on land use policy and associated densities and intensities the City assigned to properties it considered viable for development or redevelopment in the General Plan area.

TABLE 4.11-5
CITY OF RICHMOND ANTICIPATED 2008-2030 GROWTH UNDER GENERAL PLAN 2030 AND 2015-2040 ABAG "PROJECTIONS 2013" REGIONAL PROJECTIONS

	2010	2015	2030	2040	Growth: Percent Change 2010-2030	ABAG Projections: Percent Change 2015-2040
General Plan Growth						
Population	104,700	-	134,847	-	**28.8%**	-
Households	36,850	-	52,398	-	**42.2%**	-
Jobs	43,730	-	66,218	-	**51.4%**	-
ABAG *Projections 2013*						
Population	103,701	109,100	126,500	140,100	22.0%	**28.4%**
Households	36,093	37,890	43,390	47,090	20.2%	**24.3%**
Jobs	30,790	33,490	38,960	42,320	26.5%	**26.4%**

SOURCE: City of Richmond, 2011 (ABAG *Projections 2007*, and City-generated estimates); ABAG, *Projections 2013*

As shown in Table 4.11-5, the General Plan anticipates population will increase by about 29 percent over 2010 levels; households will increase by about 42 percent, and the number of jobs will increase by approximately 51 percent, by 2030. Table 4.11-5 compares predicted rates of change as presented in the General Plan EIR versus rates of change presented in ABAG's most recent projections, to present a qualitative comparative assessment against which the effects of the Specific Plan growth and the Sub-Area 4 Project growth may be compared. Overall, the General Plan anticipates greater growth in jobs and households than compared to the current ABAG projections (*Projections 2013*).

Contributions to Citywide Growth from the Specific Plan and Sub-Area 4 Project

This section describes and quantifies the potential growth in employment, households, and population that could occur from development of the Specific Plan and Sub-Area 4 Project. Population and employment changes, in and of themselves, are not normally considered to be significant environmental effects under CEQA. However, these changes and effects can be indicators of other impacts, and they can have influence on the significance of those impacts. Thus, the description of population and employment changes that follows is included to provide context for considering and understanding potential physical environmental impacts associated with changes in employment, housing, and population that are analyzed later in this section and in other sections of this EIR (e.g., traffic, public services, and air quality).

Employment, Housing, and Population Growth

Buildout of the proposed Specific Plan and the Sub-Area 4 Project within the Plan Area would introduce residential and employment population growth in the South Shoreline area. Based on the foreseeable maximum theoretical buildout under the Specific Plan as described in Chapter 3, *Project Description*, development of the Specific Plan would include construction of up to 5,700

new housing units. The new units would accommodate approximately 11,490 residents. Estimates of potential housing and population growth for the Plan Area as a whole as well as for the Sub-Area 4 Project are presented in **Table 4.11-6**. In the table, estimates of population are based on a factor of 2.1 persons per household, consistent with current housing market trends and population as allocated to Traffic Analysis Zones in the Contra Costa Countywide Travel Demand Model. This factor of 2.1 persons per household is based on a reasonable expectation for the residential housing products that would be developed within the Plan Area and Project site, and differs from the persons per household estimates of 2.83 and 2.3, for the city as a whole and Census Tract 3800, respectively, because the types of housing that would be developed under the Specific Plan are anticipated to follow market trends for transit-oriented, primarily multi-family housing and to differ from the larger, single-family housing types in much of the City.

TABLE 4.11-6
PROJECT HOUSING DEVELOPMENT AND ESTIMATED DIRECT POPULATION GROWTH UNDER THE SPECIFIC PLAN AND SUB-AREA 4 PROJECT

Potential Development	Housing Units[a]	Households[b]	Population[c]
Specific Plan	5,700	5,472	11,490
Sub-Area 4 Project	1,520	1,460	3,070

[a] Based on the foreseeable maximum theoretical buildout under the Specific Plan as described in Chapter 3, *Project Description*.
[b] Assumes an average 4 percent vacancy factor.
[c] Assumes an average of 2.1 persons per household, consistent with current housing market trends, and population as allocated to Traffic Analysis Zones in the Contra Costa Countywide Travel Demand Model.

Buildout of the Specific Plan (based on the foreseeable maximum theoretical buildout) would also include the development of approximately 5.69 million square feet of R&D/Business/Service uses, and approximately 720,000 square feet of retail space. Within Sub-Area 4, approximately 2.1 million square feet of R&D/Business/Service uses, and approximately 720,000 square feet of retail space, would be developed at full buildout. Businesses and community activities within the Plan Area and Sub-Area 4 Project site would support employment of approximately 12,800 jobs and 2,900 jobs, respectively, at full occupancy, as summarized in **Table 4.11-7**.

TABLE 4.11-7
NON-RESIDENTIAL SPACE AND PROJECTED EMPLOYMENT GROWTH UNDER THE SPECIFIC PLAN AND SUB-AREA 4 PROJECT

	Use (square feet)	Employees[a]
Potential Development Under the Specific Plan		
R&D/Business/Service	5,690,000	11,400
Retail	720,000	1,400
Total	**6,410,000**	**12,800**
Potential Development Under the Sub-Area 4 Project		
R&D/Business/Service	1,270,000	2,500
Retail	190,000	400
Total	**1,460,000**	**2,900**

[a] Employment estimated by ESA, based on common density factors by use for the types of development proposed, consistent with the Contra Costa Countywide Travel Demand Model (average 500 square feet per employee).

4.11.3 Regulatory Setting

Regional Housing Needs Allocation

On July 18, 2013, ABAG adopted the Final Regional Housing Need Plan (RHNP) for the period of 2014 to 2022. The RHNP outlines the Regional Housing Needs Allocation (RHNA), which allocates housing needs for communities within the nine-county Bay Area for an eight-year period. Cities and counties are required by State law to account for the RHNA in the housing elements of their General Plans.

The City's Housing Element discusses the City's "fair share allocation" of regional housing, as projected by ABAG and presented in the RHNA. For the 2014-2022 period, per the RHNA, the City of Richmond is responsible for 2,435 new housing units, out of a total of 187,990 units identified as needed for the entire Bay Area for this period (ABAG, 2013b).

The City's current Housing Element does not specifically identify the Plan Area as part of the City's vacant land inventory, within which housing units could be constructed.

Richmond General Plan 2030

Key goals and policies within the General Plan that apply to the Specific Plan and Sub-Area 4 project include:

Land Use Element

The Land Use and Urban Design Element of the General Plan includes an action to develop a specific plan for the Southern Gateway area (i.e., Change Area CA-16):

> *Action LU3.E Southern Gateway Specific Plan*. Develop a specific plan to guide improvements in the Southern Gateway Change 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.

Economic Development Element

- **Goal ED1: An Appealing Place to Live and Work.** Foster neighborhoods, commercial and industrial areas and public spaces that are safe and welcoming environments to live, work and visit. Effective public safety services, neighborhood revitalization efforts, opportunities for cultural and recreational activities, affordable housing, socially and environmentally responsible businesses and a diverse and expanded tax base will contribute to this environment.

- **Goal ED2: Quality Jobs and Revenue.** Create an attractive business environment that will support business recruitment, expansion and retention. Attract a variety of small and large firms, national and local establishments, and up-and-coming industries and employers across

a variety of economic sectors. Offer a broad range of quality employment opportunities for current and future residents with varying degrees of experience, education, and training.

- **Goal ED3: An Educated and Skilled Workforce.** Develop a skilled an educated workforce to support existing businesses and emerging industries. Equip residents with the skills and education necessary to participate in local and regional economies across a variety of sectors, and be fully engaged in the workforce. Encourage existing employers to expand and new employers to move their operations into the City by providing a strong local labor pool.

- **Goal ED8: A Thriving Mixed-Use Neighborhood along the Southern Shoreline.** Transform the Southern Shoreline into a model mixed-use neighborhood characterized by green development, parks and open space, a fully developed university research and development campus, new employment centers, attractive residential communities, a connection to regional ferry services, an accessible shoreline and a modern port. Incorporate a range of commercial uses including industrial activities, high-technology and professional firms and a local-serving retail, as well as medium to higher-density housing outside of the Harbour Way-Marina Way South Industrial Buffer Zone (referred to in the Land Use and Urban Design Element as the Transitional Zone Overlay District) and other designated buffers. Expand public improvements along the Southern Shoreline to offer access to the Richmond waterfront for recreational activities which take advantage of impressive Bay views.

Housing Element

- **Goal H-1: A Balanced Supply of Housing.** Promote a balanced supply of housing types, densities, and prices to meet the needs of all income groups.

- **Goal H-2: Better Neighborhoods and Quality of Life.** Improve the quality of life for all residents and preserve and enhance Richmond's residential neighborhood; specifically promote high quality living environments, address substandard conditions, preserve and modernize public housing, and conserve affordable housing at risk of converting to market rates.

Community Health and Wellness Element

- **Goal HW7 Complete Neighborhoods.** Promote complete neighborhoods that provide access to a range of daily goods and services, and recreational resources within comfortable walking distance of homes. Neighborhood-serving retail, parks, pedestrian connections and other amenities can contribute to neighborhood stability, greater social cohesion and improved safety.

  Policy HW7.1 Higher-Density and Mixed-Use Infill 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.

Policy HW7.2: Neighborhood-Serving Retail. 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 and increase opportunities for social interaction and reduce crime by increasing street use and natural surveillance.

4.11.4 Significance Criteria

Based on CEQA *Guidelines* Appendix G, the Project would cause significant adverse impacts to population and housing if it would:

a) Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure);

b) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere; or

c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere.

Approach to Analysis

To establish historic and baseline conditions relevant to the potential effects of development under the Specific Plan and development of the Sub-Area 4 Project, this analysis uses published sources of demographic data and projections including but not limited to ABAG *Projections* 2013, the U.S. Census, State Department of Finance, and California Employment Development Department.

The analysis takes into account the population, housing, and employment changes resulting from the Specific Plan (foreseeable maximum theoretical buildout scenario) and the Sub-Area 4 Project. Further, this assessment compares how the increased growth affects growth projected in the General Plan and in ABAG *Projections* which will demonstrate the extent to which growth from the Specific Plan and the Project was anticipated and/or would accommodate already forecasted growth. The analysis also evaluates if new and extended infrastructure proposed for the Plan Area or the Sub-Area 4 Project site was already anticipated or would facilitate unplanned growth.

Topics with No Impact or Otherwise Not Addressed in this EIR

Review and comparison of the existing setting for the Plan Area and the Sub-Area 4 Project site indicate that no impacts would be associated with Significance Criteria b) or c).

Neither development under the Specific Plan nor development of the Sub-Area 4 Project would involve the displacement of existing housing units or people. As discussed in the *Environmental*

Setting above, no housing is currently located within the developable area of the Plan Area, including the Sub-Area 4 Project site. Development of Specific Plan uses that would be located adjacent to existing residential uses would be orderly, and compatible with existing uses, as described in the Specific Plan and Section 4.9, *Land Use and Planning*, in this document. No impact would result.

4.11.5 Program-Level Impacts of the Richmond Bay Specific Plan

Induce Population Growth

Impact POP-1.SP: Adoption of and development under the Specific Plan could induce substantial population growth, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure). (Criterion a.) (*Less Than Significant, No Mitigation Required*)

Specific Plan Growth Assumptions

Development under the Specific Plan would result in up to 24,300 new persons (residents and employees) in the Plan Area directly associated with the new housing units and approximately 6.4 million square feet of new non-residential space (businesses), as specified in the foreseeable maximum theoretical buildout scenario (see Chapter 3, *Project Description*).

Direct Inducement of Growth

As shown in Table 4.11-6, housing development anticipated with implementation of the Specific Plan would add up to 5,700 housing units in the Plan Area, and accommodate growth of up to approximately 5,472 households and 11,490 residents. The growth of households and population due to the adoption of and development under the Specific Plan would contribute to population growth expected in Richmond in the future.

In comparison with ABAG projections, the amount of population growth anticipated from development under the Specific Plan would account for about 37 percent of total population growth projected for Richmond by ABAG, and presented in the General Plan EIR, for Richmond between 2015 and 2040, as shown in **Table 4.11-8**. When compared to *total* population anticipated in Richmond in 2040 per ABAG projections, development under the Specific Plan would contribute approximately 8.2 percent.

TABLE 4.11-8
POPULATION AND JOB GROWTH ANTICIPATED UNDER THE SPECIFIC PLAN COMPARED TO FUTURE PROJECTIONS FOR RICHMOND

	Population	% Under Specific Plan	Jobs	% Under Specific Plan
Growth under the Specific Plan (to 2040)	11,490[a]	--	12,800[b]	--
Growth in Richmond, 2010-2030 (General Plan 2030 EIR)	30,147[c]	38%	22,488[c]	57%
Growth in Richmond, 2015-2040 (ABAG *Projections 2013*)	31,000[c]	37%	8,830[c]	145%
Total for City of Richmond, 2040 (ABAG *Projections 2013*)	140,100[c]	8.2%	42,320[c]	30%

[a] See Table 4.11-6.
[b] See Table 4.11-7.
[c] See Table 4.11-5.

Regarding comparison to the General Plan projections, as indicated in the discussion above, implementation of the Specific Plan would result in growth in the city, representing the 38 percent of the total population growth, and 81 percent of the total job growth in the city in 2030, as projected under the General Plan and evaluated in the General Plan EIR. The City has prepared the Specific Plan as part of its implementation of the General Plan, which stipulates that the City prepare a specific plan for the Southern Gateway/Southern Shoreline area. Some level of growth in the Plan Area was anticipated in the General Plan's maximum growth assumptions given its directive that a specific plan be prepared for the area that was also designated for change and growth, and is supported and encouraged by numerous General Plan policies. The General Plan provided the impetus for initiating the Specific Plan.

As discussed above, implementation of the Specific Plan would result in increased growth relative to that anticipated by the General Plan and 2040 ABAG projections. Development under the Specific Plan would also increase intensity of development within a Priority Development Area designated under Plan Bay Area, consistent with the goals of that plan. While the Specific Plan proposes a more intense level of development for the Plan Area than envisioned for the designated South Richmond PDA by the Plan Bay Area process, development of the higher-density and intensity mixed uses defined in the Specific Plan close to transit supports the overall goals of Plan Bay Area, by going farther in promoting Plan Bay Area policies intended to locate housing close to jobs and reduce GHG emissions than anticipated for this PDA. In addition, Plan Bay Area has a shorter planning horizon than Richmond's General Plan and calls for less density than the General Plan; increasing density over the longer term in this part of the city can support a broader range of transportation services, which would reduce reliance on vehicles and therefore further reduce corresponding per capita GHG emissions. As discussed in Section 4.6, *Climate Change and Greenhouse Gases*, of this EIR, the density of uses proposed under the Specific Plan would result in GHG emissions that would not exceed the service population screening threshold of the BAAQMD, by a substantial margin, indicating the efficiency inherent in the Specific Plan and its success in reducing GHG emissions.

Overall, adoption of and development under the Specific Plan would result in direct population growth resulting from new homes and businesses, but in a manner that would be consistent with the goals of the General Plan and Plan Bay Area, especially given the longer time frame for buildout of the Specific Plan. The effects of this direct population growth are analyzed throughout this EIR.

Indirect Inducement of Growth

The Plan Area is well-served by regional transportation (I-580 and I-80) and close to employment centers in Richmond, El Cerrito, Albany, and Berkeley. Much of the Plan Area is also considered an infill site in an existing urban waterfront area largely served by existing infrastructure. Previously planned infrastructure improvements are currently under way in the vicinity of the Plan Area, and additional improvements to existing infrastructure will directly support development under the Specific Plan.

As described in Chapter 3, *Project Description*, and in Section 4.14, *Utilities and Service Systems*, development under the Specific Plan would include installation of new water pipelines, new stormwater infrastructure, new sanitary sewer mains, and new gas and electrical installations. Also, future cumulative conditions include numerous potential future traffic improvements that would occur in and around the Plan Area and are part of the South Richmond Transportation Connectivity Plan (SRTCP) as described in Section 4.13, *Transportation and Traffic*. Together, these utility and transportation improvements would be required to support the types, densities, and intensities of redevelopment anticipated under the Specific Plan and as envisioned by the General Plan. However, these improvements to support development under the Specific Plan would not induce substantial population growth indirectly

Further, the Plan Area is geographically defined by the Bay and tributaries, I-580, and defined roadways (e.g., Marina Bay South, Regatta Way) that distinguish the Plan Area from adjacent, established areas and land uses, such as residential neighborhoods. There are numerous connections between the Plan Area to adjacent areas and I-580; therefore, there are no obstacles to future development that implementation of the Specific Plan would affect.

Overall, implementation of the Specific Plan would result in substantial growth relative to that anticipated by the General Plan 2030 and Plan Bay Area. Although, as described in this EIR, this growth would not exceed existing physical or system capacities within the Plan Area, indirect effect could occur: more jobs would be developed than housing in the Plan Area, potentially causing an increased demand in housing in areas of Richmond outside of the Plan Area, or in other parts of the Bay Area. In addition, new residents in the Plan Area, while likely to seek services and amenities that would be developed within the complete neighborhoods within the Plan Area, could also increase demand for these services outside of the Plan Area, in other parts of Richmond and the East Bay. These indirect forces – increased demand for housing, services, and amenities – could induce growth in other parts of the city and the Bay Area. Some of this indirect growth may be dispersed throughout the Bay Area. Growth within the City of Richmond is also likely to be dispersed within existing developed areas, and take place as urban infill; however, some less developed areas and areas adjacent to open space could be subject to development pressure. Development in such areas will be subject to further CEQA review and is likely to be limited, based

on the City's existing policies and practices for protection of open space. Regardless, development under the Specific Plan would facilitate the growth planned in the General Plan, which would cause environmental effects, as discussed in the 2030 General Plan EIR. A summary of the significant impacts identified for full buildout of the General Plan is presented in the 2030 General Plan EIR, and is hereby incorporated by reference.

Secondary and Temporary Effects of Growth

The Specific Plan would result in a substantial addition to the City's workforce: approximately 18,250 jobs are anticipated to be directly created with implementation of the Specific Plan. The amount of job growth anticipated from development under the Specific Plan would account for a very substantial part – about 81 percent – of total job growth projected for Richmond between 2010 and 2040 under the General Plan, as shown in Table 4.11-8. When compared to *total* jobs anticipated by ABAG in Richmond in 2040, development under the Specific Plan would contribute approximately 43 percent; again, a substantial contribution.

Most new employees are anticipated to be hired from the Bay Area's existing labor force. The majority (90 percent) of existing employees at UC Berkeley's Richmond Field Station, adjacent to the Specific Plan Area, live primarily in Contra and Alameda counties (Tetra Tech, 2014). Conservatively assuming that at least 80 percent of all 18,250 new employees that could be generated by development under the Specific Plan are new to the Bay Area, the total population growth from full Specific Plan development could add up to 34,500 new residents (employees plus families, assuming an average household size of 2.1, per the assumptions discussed above). Under a further conservative assumption that at least 80 percent of new employees at Plan Area sites choose to live in Contra Costa County, approximately 27,600 employees of Plan Area sites would live in Contra Costa County by the year 2040. This population would represent 2 percent of the total number of people projected to be living in Contra Costa County in 2040. For other Bay Area counties likely to house the remaining employees, employees and their associated household population would account for a very small percent of the total projected population in 2040.

Demand for new housing would also be offset by the addition of 5,700 new housing units within the Plan Area. Moreover, as discussed above, the existing jobs-housing ratio in the City of Richmond is low (approximately 0.72); with the addition of a substantial amount of new employment in the Plan Area, this ratio would increase, and more opportunities for residents of Richmond to be employed in the City and near their homes would be created. Although to try to estimate of the effect of the Specific Plan on the City's overall jobs/housing ratio would be speculative due to the long timeframe for buildout of the Specific Plan, and therefore is not attempted for this analysis, it is informative to consider that the Specific Plan buildout in and of itself would yield a jobs/housing ratio of approximately 1.68 (assuming a 5.4 percent unemployment rate consistent with 2015 unemployment rates in the city), as compared to the City's current jobs/housing ratio of 0.72. A jobs/housing ratio of 1.68 indicates that buildout under the Specific Plan would provide more employment than housing. Therefore, the indirect, Specific Plan-related increase in local population due to the addition of new jobs is anticipated to be absorbed by the City and the region, and would not be substantial.

Development under the Specific Plan could also spur new nearby development outside of the Specific Plan Area, as new residents, employees, and visitors in the Plan Area create demand for services and goods in close proximity. Such effects would occur over time with development under the Specific Plan, which could develop over several years or decades. Regardless, the potential secondary growth is already anticipated, particularly in terms of ensuring adequate infrastructure, since transition of the Plan Area has been anticipated for several years, and is assumed under the existing General Plan. Moreover, the area surrounding the Plan Area is largely developed and served by existing services and utilities, so any secondary effects from development of the Specific Plan are not anticipated to be substantial. In particular, the Plan Area is well-served by regional transportation (I-580 and I-80) and close to employment centers in Richmond, El Cerrito, Albany, and Berkeley. Further, the Plan Area is an infill site largely bounded by stable land uses including the Bay and protected open space, I-580, the Berkeley Global Campus site, existing residential development, major roads, and large-scale industrial development. Therefore, the addition of new residential development within the Plan Area is not expected to induce additional substantial residential growth outside of the Plan Area.

Construction related to development under the Specific Plan would result in temporary employment for construction workers. The employment growth associated with that work would be limited to the intermittent periods of construction of individual projects or infrastructure improvements. In addition, the Specific Plan's goals for community benefits for "public-private projects"[4] developed under the Specific Plan include the City's intent that projects subject to a development agreement would comply with hiring practices required of an "Employer" under the City's Local Employment Program (Municipal Code, Chapter 2.56) (Section 6.6.2). If this goal/intention is met, at least 25 percent of total construction work hours for most "public-private" projects would be performed by Richmond residents, further ensuring that construction activities would not induce large numbers of workers to relocate from outside the region. Overall, no long-term population growth is expected from this effect.

Summary

Overall, development under the Specific Plan would result in a relatively small contribution to the City's population, and a relatively large contribution to the City's employment. Although neither of these contributions would be insubstantial, related population growth would be addressed by existing processes and absorbed by existing resources within the region. Other effects related to the development of infrastructure would not induce growth. The impact would be less than significant.

Significance: Less Than Significant.

Mitigation: None required.

[4] "Public-private projects" are defined in the Specific Plan as: 1) Projects receiving financial aid, assistance, or funding from the City, including any public financing or contribution, such as loans, loan guarantees, tax credits, or infrastructure construction, valued at more than $100,000; 2) Projects for which the City is transferring ownership of or leasing right to occupy any real property, including rights-of-way or street vacation, whether at or below market rate; and 3) Projects for which the City is entering into a development agreement (Section 6.6.2).

4.11.6 Project-Level Impacts of the Sub-Area 4 Project

Induce Population Growth

Impact POP-1.SA4: Development of the Sub-Area 4 Project would not induce substantial population growth in the area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure. (Criterion a.) (*Less Than Significant, No Mitigation Required*)

The Sub-Area 4 Project would result in 5,970 new residents and workers directly associated with the new housing units and approximately 1.46 million square feet of new non-residential space (businesses), as specified in the foreseeable maximum theoretical buildout scenario (see Chapter 3, *Project Description*).

The Sub-Area 4 Project site comprises a prominent area (in location and size) of the Plan Area. The developable area of the Sub-Area 4 Project site is included within Southern Gateway Change Area (CA-16); as discussed in Section 4.9, *Land Use and Planning*, this change area is envisioned in the General Plan as a revitalized area that would include high-intensity light industrial and commercial uses anchored by a large-scale research and development university campus (City of Richmond, 2012).

The current General Plan land use designation for the Sub-Area 4 Project site is Business/Light Industrial, which supports commercial and institutional uses such as large-scale research and development campuses, light industrial, industrially-related storage and distribution, and office uses. Development could occur up to a 3.0 floor-area ratio (FAR),[5] and 55 feet in height (approximately 5 stories).

The General Plan does not allot a maximum capacity of uses to either the Plan Area or the Sub-Area 4 Project site. Based on the existing, underlying General Plan designation for the Sub-Area 4 Project site,[6] and under a theoretical, conservative assumption that 30 acres of the total developable area within Sub-Area 4 Project site would be developed with uses as allowed under the General Plan, the Sub-Area 4 Project site could be built out with up to 2.0 million square feet of research and development, institutional, light industrial, office, and commercial uses. As summarized in Table 4.11-6, buildout of the Sub-Area 4 Project site under the development program presented in the Specific Plan could result in up to 1.46 million square feet of non-residential (R&D/Business/Service and Retail) uses.

No residential development is allowed under the General Plan's Business/Light Industrial designation. As such, the Sub-Area 4 Project would result in more population growth, of 3,070 people in 1,460 new households (as summarized in Table 4.11-5), than envisioned by the land

5 Floor area ratio (FAR) refers to the ratio of a building's total floor area to the size of the piece of land on which it is built.

6 Assuming a mid-range FAR of 1.5, and mid-range, average building height of approximately 2.5 stories.

uses permitted under the General Plan. When compared to *total* population anticipated in Richmond in 2040 (and as summarized in **Table 4.11-9**), however, development of the Sub-Area 4 Project site would contribute approximately 2.2 percent, a relatively minor contribution.

TABLE 4.11-9
POPULATION AND JOB GROWTH ANTICIPATED UNDER THE SUB-AREA 4 PROJECT COMPARED TO FUTURE PROJECTIONS FOR RICHMOND

	Population	Specific Plan %	Jobs	Specific Plan %
Sub-Area 4 Project Growth under the Specific Plan (to 2040)	3,070[a]	--	2,900[b]	--
Growth in Richmond, 2010-2030 (General Plan 2030 EIR)	30,147[c]	10%	22,488[c]	13%
Growth in Richmond, 2015-2040 (ABAG *Projections 2013*)	31,000[c]	9%	8,830[c]	33%
Total for City of Richmond, 2040 (ABAG *Projections 2013*)	140,100[c]	2.2%	42,320[c]	7%

[a] See Table 4.11-6.
[b] See Table 4.11-7.
[c] See Table 4.11-5.

The Sub-Area 4 Project would also result in a substantial addition to the City's workforce: approximately 2,900 jobs are anticipated to be directly created by the Project. The amount of job growth anticipated from development of the Sub-Area 4 Project would account for a substantial part – about 13 percent – of total job growth projected for Richmond between 2010 and 2030 under the General Plan, as shown in Table 4.11-8. When compared to *total* jobs anticipated in Richmond in 2030, development under the Specific Plan would contribute approximately 7 percent.

As discussed above for the Specific Plan, most new employees are anticipated to be hired from the Bay Area's existing labor force, and most workers are anticipated to already reside in Contra Costa County or Alameda County, or relocate to these counties. Project site employees and their associated household population would account for a very small percent of the total projected population in 2040 for both of these counties. These employees' potential demand for new housing would also be offset by the addition of 1,520 new housing units within the Sub-Area 4 Project site. Moreover, with the addition of a substantial amount of new employment within the Sub-Area 4 Project site, the City's jobs-housing ratio would increase, and more opportunities for residents of Richmond to be employed in the City and near their homes would be created. Therefore, indirect, project-related increases in local population due to the addition of new jobs is anticipated to be absorbed by the City and the region, and would not be substantial.

As discussed above for the Specific Plan, implementation of the Sub-Area 4 Project would result in increased growth relative to that anticipated by the General Plan and 2040 ABAG projections. Development under the Sub-Area 4 Project would also increase intensity of development within a Priority Development Area designated under Plan Bay Area, consistent with the goals of that plan. Development of the higher-density and intensity mixed uses defined in the Specific Plan close to transit supports the overall goals of Plan Bay Area, by going farther in promoting Plan Bay Area policies intended to locate housing close to jobs and reduce GHG emissions than

anticipated for this PDA. As discussed in Section 4.6, *Climate Change and Greenhouse Gases*, of this EIR, the density of uses proposed under the Sub-Area 4 Project would result in GHG emissions that would not exceed the service population screening threshold of the BAAQMD, indicating the efficiency inherent in the Sub-Area 4 Project and its success in reducing GHG emissions.

As described in in the Chapter 3, *Project Description,* and in Section 4.13, *Utilities and Service Systems,* the Sub-Area 4 Project would require installation of new utility infrastructure, such as new sanitary sewage conveyance facilities. These types of improvements would be required for any substantive redevelopment of the Sub-Area 4 Project, including that assumed for the General Plan and that envisioned by the Specific Plan. Development of the Sub-Area 4 Project would not induce population growth beyond the growth contemplated in the General Plan such that new or existing infrastructure would need to be extended into areas not previously anticipated by the City.

In summary, development of the Sub-Area 4 Project would result in a relatively small contribution to the City's population overall, and a relatively large contribution to local employment. Although neither of these contributions would be insubstantial, related population growth would be absorbed by existing resources within the region. Other effects related to the development of infrastructure would not induce growth, as discussed above for the Specific Plan. The impact would be less than significant.

Significance: Less Than Significant.

Mitigation: None required.

4.11.7 Cumulative Impacts

Impact C-POP-1.SP: Adoption of and development under the Specific Plan, in combination with past, present, existing, approved, pending and reasonably foreseeable future projects within and in the vicinity of the Plan Area, would not result in a significant effect to population, housing, and employment. (*Less Than Significant, No Mitigation Required*)

Geographic Context

The geographic context for the cumulative consideration of population, housing, and employment effects includes the Plan Area and its surroundings, the City of Richmond, and Contra Costa County (encompassing Richmond's sphere of influence) to include the citywide and regional context. Certain regional information is considered in order to provide a broader regional context.

Plan Impacts

Significance Criterion a) (whether the Specific Plan would induce substantial population growth, directly or indirectly, such that additional infrastructure is required) is inherently a cumulative consideration, as it considers the proposed Specific Plan growth relative to past, present and future data trends and plans. Much of the cumulative context is embedded in the development

forecasts conducted for this EIR, and in the cumulative projects list (projects that are past, approved, pending, and under construction) included in Table 4.0-1 in Section 4.0, *Environmental Setting, Impacts, and Mitigation Measures,*of this chapter. The analysis above is based on these projections, which take into account cumulative growth through 2040 for the geographic context described above.

As discussed above under Impact POP-1.SP, some of the population growth (residents and employees) that would result from development under the Specific Plan was anticipated in the maximum growth assumptions in the General Plan. The General Plan clearly envisioned increased growth through a mix of land uses in the Plan Area. Tables 4.11-8 and 4.11-9 compare various growth factors under the General Plan and Specific Plan scenarios.

Cumulative Effects

In all cases, the growth envisioned by the City – including cumulative growth in the General Plan and beyond the Plan Area – drives and/or is imbedded in local planning forecasts, regional development forecasts and travel demand models, as well as the City's ongoing capital improvement program for the renewal of aging infrastructure. While infrastructure improvements and extensions are required to support the proposed development under the Specific Plan, they would be required for any substantive redevelopment of the Plan Area, including the maximum growth envisioned for the Plan Area in the General Plan. The Plan Area is currently serviced by all main utility infrastructure, and the improvements would be specific to the development sites within the Plan Area.

When considered in combination with other cumulative development, growth from development under the Specific Plan would not induce substantial additional population growth, nor displace substantial numbers of people or housing units.

Significance: Less Than Significant.

Mitigation: None required.

Impact C-POP-1.SA4: Development under the Sub-Area 4 Project, in combination with past, present, existing, approved, pending and reasonably foreseeable future projects within and in the vicinity of the Sub-Area 4 Project site, would not result in a significant effect to population, housing, and employment. (*Less Than Significant, No Mitigation Required*)

Geographic Context

The geographic context for the cumulative consideration of population, housing, and employment effects includes the Sub-Area 4 Project site and its surroundings, the City of Richmond, and Contra Costa County (encompassing Richmond's sphere of influence) to include the citywide and regional context. Certain regional information is considered in order to provide a broader regional context.

Project Impacts

Significance Criterion a. (whether the Sub-Area 4 Project would induce substantial population growth, directly or indirectly, such that additional infrastructure is required) is inherently a cumulative consideration, as it considers the Sub-Area 4 Project growth relative to past, present and future data trends and plans. Much of the cumulative context is embedded in the development forecasts conducted for this EIR and in the cumulative projects list (projects that are past, approved, pending, under construction) included in Table 4.0-1 in Section 4.0, *Environmental Setting, Impacts, and Mitigation Measures*, of this chapter. The analysis above is based on these projections, which take into account cumulative growth through 2040 for the geographic context described above.

As discussed above under Impact POP-1.SA4, some of the population growth (residents and employees) that would result from development under the Sub-Area 4 Project was anticipated in the maximum growth assumptions of the General Plan. The General Plan clearly envisioned increased growth through a mix of land uses in the Plan Area. Tables 4.11-7 and 4.11-8 compare various growth factors under the General Plan and Specific Plan scenarios. Much of the Sub-Area 4 Project is already considered in the Specific Plan.

Cumulative Effects

In all cases, the growth envisioned by the City – including cumulative growth in the General Plan and beyond the Sub-Area 4 Project site – drives and/or is imbedded in local planning forecasts, regional development forecasts and travel demand models, as well as the City's ongoing capital improvement program for the renewal of aging infrastructure. While infrastructure improvements and extensions are required to support the proposed development under the Sub-Area 4 Project, they would be required for any substantive redevelopment of the Sub-Area 4 Project site. The Sub-Area 4 Project site is currently serviced by all main utility infrastructure, and the improvements would be specific to the development of the Sub-Area 4 Project.

When considered in combination with other cumulative development, growth from development under the Sub-Area 4 Project would not induce substantial additional population growth, nor displace substantial numbers of people or housing units.

Significance: Less Than Significant.

Mitigation: None required.

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4.12 Public Services and Recreation

4.12.1 Introduction

This section identifies the existing setting and evaluates potential impacts related to public services and recreation, including police protection services, fire protection and emergency services, parks and recreation facilities, and public schools that could result from development under the Specific Plan, and the Sub-Area 4 Project. The regulatory framework section discusses state and local policies and regulations that pertain to public services and recreation. The impact analysis determines impacts based on the significance criteria as outlined by CEQA *Guidelines* Appendix G.

4.12.2 Environmental Setting

Fire Protection and Emergency Medical Services

The City of Richmond Fire Department (RFD) provides fire protection and suppression (including annual inspection of waterfront facilities for compliance with fire safety regulations), mitigation of disasters, and emergency medical service for the City. The RFD is currently staffed by 93 personnel including a fire chief, captains and battalion chiefs, firefighter-paramedics, firefighters, fire prevention staff, training staff, and administrative staff located at seven stations (City of Richmond, 2014). All staff are trained as Emergency Medical Technicians to the level of EMT-D and in OSHA First Responder Operations (FRO; 8-hour training). The RFD has two Rescue Units at Stations 67 and 68; one Hazardous Materials Response Team at Station 64; and one Breathing Support Unit at Station 61. On average, the fire department responds to 11,000 alarms per year (City of Richmond, 2011).

The RFD is the official fire service provider in the city; however, mutual aid is also provided by the Contra Costa County Fire Protection District, the City of El Cerrito Fire Department, City of Pinole Fire Department, and City of Rodeo-Hercules Fire Department (City of Richmond, 2011), which respond to calls outside of their jurisdiction as needed in order to supplement available firefighting services or reduce response times.

The Office of Emergency Services (OES), a subsidiary of the RFD, maintains a comprehensive emergency response plan which includes the planning and preparedness for, response and recovery from, and mitigation of natural, manmade, and accidental occurrences (City of Richmond, 2015). OES coordinates with other local agencies, including cross-county and national agencies, to share plans, develop best practices, and establish relationships to ensure the most effective and efficient response and recovery efforts. It is also responsible for establishing and maintaining the City's Emergency Operations Center (EOC), and serving as an on-call EOC first responder.

The Contra Costa County Operational Area (OA) Emergency Operations Plan further directs the response to emergency incidents affecting the county as a whole. The OA comprises cities/towns, special districts, reclamation districts, municipal improvement districts, and the unincorporated

areas of the county. The Emergency Operations Plan establishes emergency management organization within the county in the event of a significant emergency or disaster, and establishes the overall operational concepts associated with the County's EOC activities and response process (City of Richmond, 2011).

The Plan Area is served by Fire Station 64, located at 4801 Bayview Avenue, which is within 1,000 feet of Sub Area 4 (City of Richmond, 2016). This fire station includes facilities and staff to address hazardous materials incidents. Fire Station 67, located at 1131 Cutting Boulevard, also serves the Plan Area, and is approximately 0.7 miles from Sub Area 1 (City of Richmond, 2016).

The Fire Department's minimum daily staffing requirements allow it to reach the goal of responding to calls for service within six minutes or less at least 85 percent of the time (City of Richmond, 2011).

Police Protection

The Richmond Police Department (RPD) provides police service within the city limits. The RPD provides service to the Plan Area from a central station in the Marina Bay area located at 1701 Regatta Boulevard (City of Richmond, 2011).

The RPD consists of 221 full-time employees: 187 sworn members and 34 non-sworn support staff, as well as part time and volunteer staff (City of Richmond, 2011). Of the sworn members, 170 are sworn officers (City of Richmond, 2012). The officer-to-population ratio in Richmond is approximately 1.6 officers per 1,000 residents, however, the City does not use an officer-to-population ratio as a specific goal for police service (City of Richmond, 2011).

The RPD consists of three geographic districts, which are further divided into three smaller, permanently staffed police patrol areas (beats); the Plan Area is located in the southern district, in Beat 1. Beat 1 has officer coverage 24 hours per day, 7 days per week. Emergency units are routinely on patrol within their assigned beat, making emergency dispatch and response almost immediate.

The RPD Communications Center receives both 911 emergency and non-emergency phone calls, and also operates as the coordination center for dispatching public safety agencies on the west side of Contra Costa County, including police, fire, and medical services for the City of El Cerrito and the unincorporated community of Kensington as well as Richmond. The RPD Communications Center also coordinates police services for the City of San Pablo and Contra Costa College (RPD, 2015). Incoming calls to the Police Department are divided into three categories: Priority 1 involves life-threatening situations, Priority 2 are not life-threatening, but necessitate immediate response, and Priority 3 includes all other calls. Response times in the vicinity of the Plan Area are typically 6 minutes and 43 seconds for Priority 1 calls, and approximately 15 minutes for Priority 2 calls (City of Richmond, 2011).

Schools

The Plan Area is located within the boundaries of the West Contra Costa Unified School District (WCCUSD). The WCCUSD accounts for residents in the five cities of El Cerrito, Hercules, Pinole, Richmond, and San Pablo, and the unincorporated areas of Bayview-Montalvin Manor, El Sobrante, North Richmond, East Richmond Heights, Kensington and Tara Hills. The district encompasses 65 square miles, and includes K-6, middle school, high school, alternative school, and adult education. The WCCUSD served more than 30,000 students in the 2014-2015 school year (CDE, 2016a). **Table 4-12-1** summarizes student enrollment per grade cohort, for the 2014-2015 school year.

TABLE 4.12-1
WEST CONTRA COSTA UNIFIED SCHOOL DISTRICT
ENROLLMENT, 2014-2015

Grade Cohort	Enrollment 2014-2015
Kindergarten – 6th Grade	17,595
7th – 8th Grade	4,332
7th – 12th Grade	8,519
Ungraded	150
Total	**30,596**

SOURCE: California Department of Education, 2016a

Students in the district may apply to attend a neighborhood school outside of their residence area. Coronado Elementary School is the nearest elementary school to the Plan Area and is located approximately 0.4 miles north, at 2100 Maine Ave. During the 2014-2015 school year, 430 students attended this school (CDE, 2016b). Benito Juarez Elementary School is located about 0.4 miles southwest of the Plan Area, at 1450 Marina Way South, with enrollment of 158 students during the 2014-2015 school year. Stege Elementary School is located at 4949 Cypress Avenue, approximately 0.6 miles east of the Plan Area. Stege Elementary School enrolled 335 students during the 2014-2015 school year. Lovonya DeJean Middle School is the nearest middle school to the site, located 1.1 miles northeast of the Plan Area, at 3400 Macdonald Avenue. Lovonya DeJean Middle School served 625 students during the 2014-2015 school year (CDE, 2015c). Caliber: Beta Academy, about 0.4 miles northeast of Sub-Area 4, is a K-8 charter school, with enrollment of 294 students in the 2014-2015 school year. The nearest high school, John F. Kennedy, is 0.5 miles northeast of the Plan Area at 4300 Cutting Boulevard. The high school had enrollment of 865 students in the 2014-2015 school year (CDE, 2016d). A summary of local schools is presented in **Table 4.12-2**. **Table 4.12-3** presents a summary of the estimated number of schoolchildren that would live in the homes that would be built as part of implementation of the Specific Plan and the Sub-Area 4 Project, based on student generation rates presented by the City in 2013 (WCCUSD, 2013).

TABLE 4.12-2
LOCAL SCHOOL SUMMARY

School	Enrollment 2014-2015
Coronado Elementary School	430
Benito Juarez Elementary School	158
Stege Elementary School	335
Caliber: Beta Academy	294
Lovonya DeJean Middle School	625
John F. Kennedy High School	865

SOURCE: California Department of Education, 2016a, 2016b, 2016c, 2016d, 2016e, 2016f, 2016g

TABLE 4.12-3
SCHOOL-AGE CHILDREN ESTIMATED FOR THE PLAN AREA AND SUB-AREA 4 PROJECT (2013 STUDENT GENERATION RATES)

	City of Richmond, 2010[a]	Students per Residential Housing Unit[b]	Specific Plan (Estimated)	Sub-Area 4 Project (Estimated)
Specific Plan and Sub-Area 4 Project Information:				
Population	103,701	NA	11,490	3,070
Occupied Housing Units	36,093	NA	5,470[c]	1,460[d]
Student Generation:				
Kindergarten - 6th Grade	NA	0.058	317	85
7th - 8th Grade	NA	0.004	22	6
9th - 12th Grade	NA	0.017	93	25
	TOTAL:	**0.08**	**432**	**116**

NA = Not Available or Not Applicable

[a] From U.S. Census 2015
[b] Estimated, based on student generation rate for multi-family units (WCCUSD, 2013).
[c] Based on 5,472 housing units directly created by the specific plan (5,700 housing units with a 4 percent vacancy factor).
[d] Based on 1,460 housing units directly created by the specific plan (1,520 housing units with a 4 percent vacancy factor).

SOURCE: U.S. Census 2015; WCCUSD, 2013.

In 2016, the WCCUSD submitted revised student generation rates to the City, as presented in table 4.12-4. Per these rates, up to 2,019 students would be generated within the Plan Area as a whole, and up to 539 students would be generated from development of the Sub-Area 4 Project. The WCCUSD anticipates that full buildout of the Specific Plan would require the development of two new elementary schools as well as the expansion of existing middle and high school facilities (Jack Schreder & Associates, 2016).

TABLE 4.12-4
SCHOOL-AGE CHILDREN ESTIMATED FOR THE PLAN AREA AND SUB-AREA 4 PROJECT (2016 STUDENT GENERATION RATES)

	City of Richmond, 2010[a]	Students per Residential Housing Unit[b]	Specific Plan (Estimated)	Sub-Area 4 Project (Estimated)
Specific Plan and Sub-Area 4 Project Information:				
Population	103,701	NA	11,490	3,070
Occupied Housing Units	36,093	NA	5,472[c]	1,460[d]
Student Generation:				
Kindergarten - 6th Grade	NA	0.56	1,138	304
7th - 8th Grade	NA	0.13	257	69
9th - 12th Grade	NA	0.31	624	167
	TOTAL:	**0.369**	**2,019**	**539**

NA = Not Available or Not Applicable

[a] From U.S. Census 2015
[b] Estimated, based on student generation rate for multi-family units (Jack Schreder and Associates, 2016).
[c] Based on 5,472 housing units directly created by the specific plan (5,700 housing units with a 4 percent vacancy factor).
[d] Based on 1,460 housing units directly created by the specific plan (1,520 housing units with a 4 percent vacancy factor).

SOURCE: U.S. Census 2015; Jack Schreder & Associates, 2016.

Parks and Open Space

Consistent with the CEQA *Guidelines* and the City's practice, the terms "parks" and "parkland" are used in this EIR to refer to parks and other recreational facilities available to the general public – including publicly-owned land provided and maintained for active recreational purposes – to distinguish them from public spaces and plazas, which can provide public gathering space, but do not provide distinctly recreational facilities for either children or adult active play. The General Plan defines "open space" as including "wetlands, mudflats, creek corridors and other natural preservation areas, as well as private lands deed-restricted for open space preservation," in which "public access should be allowed where appropriate" (City of Richmond, 2012).

The city has approximately 4,312 acres of parkland and open space, which comprises 22 percent of the land area in the city (City of Richmond, 2011).[1] The City operates or jointly uses 283 acres, and the other 4,029 acres are owned and operated by regional entities, such as the East Bay Regional Parks District (EBRPD). The Rosie the Riveter World War II National Historical Park is also located within the city, and it has a visitor center operated by the National Parks Service (City of Richmond, 2011). These facilities are described in more detail below.

[1] Public park and recreational facilities include community centers, trails, and swimming pools, which may be within City parks. Open space areas provide passive recreational opportunities, but have other primary purposes, such as habitat protection, that preclude the areas from being considered as active developed parkland.

City Parks and Facilities

The city has 74 parks, which include pocket parks, neighborhood parks, playing fields, play lots, and joint-use parks (City of Richmond, 2011). The City coordinates with the WCCUSD in order to enable the public to use parks and recreation facilities on school property. The City has a formal joint-use agreement with WCCUSD for the use of fields at Olinda and Valley View schools, as well as the use of the Kennedy Swim Center at John F. Kennedy High School. Additionally, the City owns and operates eight community centers, a swim center, a municipal natatorium, and an indoor recreation complex (City of Richmond, 2011).

City parks closest to the Plan Area include:

- Booker T. Anderson Jr. park, a 22-acre park located northeast of the Plan Area and I-580;
- Crescent Park, an approximately 3.1-acre neighborhood park, located east of the Plan Area;
- Marina Park, an 11-acre neighborhood park, located south of the Plan Area;
- Shimada Friendship Park, an approximately 3-acre neighborhood park, located south of the Plan Area;
- Barbara and Jay Vincent Park, a 6.0-acre park located southwest of the Plan Area;
- State Court Park, a 2.1-acre park featuring a playground, located east of the Plan Area;
- John F. Kennedy Park, an 8.8-acre park located east of the Plan Area; and
- Boorman Park, a 4.0-acre park located east of the Plan Area.

Regional, State and National Parks

Richmond has approximately 4,029 acres of regional and state parks, which are managed by the EBRPD. These lands vary from shoreline trails to expansive hillside natural areas, including trail systems and day use areas.

The Point Isabel Regional Shoreline park (Point Isabel) is the nearest regional park to the Plan Area. It consists of 23 acres along the Richmond Bay shoreline, and includes segments of the San Francisco Bay Trail (Bay Trail) (EBRPD, 2016a). The next closest regional park is Miller/Knox Regional Shoreline park (Miller/Knox park), which includes 307 acres of open space and recreational areas. The park has both shoreline and upland areas, which feature panoramic views of the Bay Area, particularly of the San Francisco Bay and the San Francisco and Oakland skylines. Keller Beach, Ferry Point Beach, and a model railroad museum are all located within the park boundaries. Miller/Knox park also features a salt water lagoon surrounded by trails, group and individual picnic/barbeque areas, and children's play areas. At the south end of the park, Ferry Point marks the former location on the shoreline of an historic ferry terminal, and includes part of the historic pier, currently used as a fishing pier (EBRPD, 2016b).

The EBRPD is currently preparing a Land Use Plan Amendment (LUPA) for Miller/Knox park. The LUPA process began in May 2013, and will result in a long-range planning document (and EIR) that will serve as an update for the current Land Use Plan. The LUPA will describe

programs for managing and conserving park resources and offers proposals for future recreational use. Critical elements of the LUPA process include whether to breach the lagoon's levee, which would allow a tidal flow regime and result in a new beach on the San Francisco Bay, or to leave the lagoon as is and continue to schedule routine dredging; and whether to refurbish one or both buildings at Ferry Point for commercial or passive interpretive use (EBPRD, 2016b).

The city is also home to the Rosie the Riveter/World War II Home Front National Historical Park, the flagship national park for preserving and interpreting the legacy of World War II home front efforts across the United States. The Rosie the Riveter Park/World War II Home Front National Historical Park includes the Rosie the Riveter Memorial, in Marina Park and Green; the Kaiser Shipyard No.3/SS Red Oak Victory Ship; and the Ford Assembly Plant, in Sheridan Point Park. The City of Richmond (with the Port of Richmond) owns and manages the majority of the park sites, buildings, and structures.

San Francisco Bay Trail

The Bay Trail is a partially completed, 400-mile trail that would connect communities to each other and the Bay through nine counties and 47 cities. The Association of Bay Area Governments (ABAG) oversees planning and construction of the Bay Trail, in cooperation with local jurisdictions.

4.12.3 Regulatory Setting

Senate Bill 50

The Leroy F. Greene School Facilities Act of 1998, or Senate Bill 50 (SB 50), restricts the ability of local agencies to deny project approvals on the basis that public school facilities (classrooms, auditoriums, etc.) are inadequate. School impact fees are collected at the time when building permits are issued. Payment of school fees is required by SB 50 for all new residential development projects and is considered full and complete mitigation of any school impacts. School impact fees are payments to offset capital cost impacts associated with new developments, which result primarily from costs of additional school facilities, related furnishings and equipment, and projected capital maintenance requirements. Accordingly, agencies cannot require additional mitigation for any school impacts.

Emergency Services Plan

The City's Emergency Services Plan outlines the organizational structure and chain of command for emergency operation procedures, and the functional responsibilities of City departments during an emergency. The Police Department, Fire Department, and Public Works Services Department are responsible for direct intervention in the event of a large-scale emergency. During a disaster, these City agencies are also on the "front lines" to maintain public safety and provide infrastructure repair. Other City departments also provide support functions based on their areas of expertise.

General Plan

The Community Facilities and Infrastructure, Parks and Recreation, and Public Safety and Noise elements of the General Plan contain goals and policies related to public services and recreation. Applicable goals and policies include:

- **Goal CF1: Facilities that Serve a Diverse Range of Community Needs.** Richmond seeks to provide a broad range of high-quality facilities and infrastructure to serve a diverse range of community needs. Facilities should be universally accessible and appropriately programmed to meet community needs. Infrastructure should be maintained and expanded to meet current and future needs and to provide effective, equitable and consistent levels of service to all neighborhoods.

- **Goal PR1: An Integrated System of Parks, Green Streets and Trails.** Develop strategies that will expand the system of large and small open spaces and community facilities linked together along natural creek channels, pedestrian-friendly green streets and multimodal corridors from the hills to the bay. Coordinate park development and upgrades with pedestrian and bicycle improvements to safely and comfortably connect residents to valuable recreational destinations. Create a system of parks that equitably serves diverse community needs, offers a range of park types, facilities and activities and highlights natural features wherever possible. Provide more transit opportunities to improve access to parks and recreation facilities.

- **Goal PR3: Sustainable Design and Maintenance Practices.** Use efficient and sustainable design and maintenance practices to conserve natural resources and support environmental stewardship. Where possible, highlight natural features, retrofit streets as green streets, expand urban greenery, daylight creeks, utilize natural systems to manage stormwater, and improve pedestrian and bicycle connections to encourage non-vehicular modes of transit. Reliable, long-term maintenance practices are critical to maintaining area parks as community assets. Promote maintenance practices that are efficient, sustainable and equitable.

- **Goal PR4: Stewardship of the Natural Environment.** Improve access to natural environments as appropriate to varying levels of habitat sensitivity. Doing this will: contribute to Richmond's overall system of parks; enhance public enjoyment; provide public health benefits; offer convenient opportunities for hands-on experiences in nature; and potentially strengthen stewardship and ongoing support for open space preservation. Increase opportunities for contact with nature on a smaller scale by designing urban parks and play areas to incorporate natural features such as unstructured natural settings or creeks. Contribute to raising public awareness of natural and cultural resources and the value of connecting people to nature by encouraging interpretive features in the landscape and public education.

- ***Action 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.

4.12.4 Significance Criteria

Based on California Environmental Quality Act (CEQA) *Guidelines* Appendix G, the Specific Plan or Sub-Area 4 Project would cause adverse impacts if they would:

Public Services

a) Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:

1. Fire Protection
2. Police Protection
3. Schools
4. Parks
5. Other public facilities

Recreation

a) 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.

b) Include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment.

4.12.5 Program-Level Impacts of the Richmond Bay Specific Plan

Impact PUB-1.SP: The Specific Plan would not result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services. (Criteria a., b., c.) (*Less than Significant with Mitigation [Fire Protection]*)

Parks, Open Space and Trails in the Specific Plan

The Specific Plan discusses a fourfold vision for open space within the Plan Area:

- Create new park spaces that address the recreational needs of future residents, employees and visitors;
- Design centrally-located parks that give structure and identity to new mixed use neighborhoods;
- Protect and enhance natural open space resources to improve habitat health and ecological function, and promote public appreciation and stewardship; and
- Create an interconnected network of parks and open space that facilitates use and promotes community health and wellness.

As discussed in Chapter 3, *Project Description*, of this EIR, the Specific Plan also includes Civic Space and Open Space regulations for the Plan Area, including a Regulating Plan that designates civic space types within each sub-area, as shown on Figure 3-7. Standards for civic space include general character, typical size, and typical uses. The Civic Space Regulating Plan is intended to establish binding requirements (standards), while the location and disposition of civic spaces are subject to interpretation at the discretion of the City. Civic space types and standards for their development described in the Specific Plan are summarized in Chapter 3, *Project Description*.

The Specific Plan's open space vision was designed to be compatible and synergistic with the open space program for the University of California Berkeley Global Campus at Richmond Bay (Global Campus), in alignment with the shared goals of both plans to provide continuous open space corridors and connections between upland neighborhoods and the shoreline, facilitate pedestrian and bicycle circulation, and maintain important view corridors.

The Specific Plan designates approximately 145 acres of parks and open space within the Plan Area (approximately 32.7 acres of which would be newly created parks and open space), not including any planned parks and open space within the Global Campus. Community parks are planned in Sub-Areas 1 and 4, as community-wide destinations providing open space for active and passive recreation. Neighborhood squares that would serve as open space for civic purposes, commercial activity, unstructured recreation, and passive uses are planned for Sub-Areas 1 and 4. Linear parks that would serve as spaces for community gathering and strolling for nearby residents and employees are planned for Sub-Areas 3 and 4.

Sub Area 4 would also feature a Shoreline Promenade, which would provide open space between the new neighborhoods of Sub Area 4 and the Bay. The Shoreline Promenade is planned to be elevated along the shoreline to avoid inundation and serve as a barrier from anticipated sea level rise. The Shoreline Promenade may also provide an alternative route for the Bay Trail in the future.

The Bay Trail runs through and adjacent to the Plan Area, and will likely serve as a key commuter route for employees biking to the Global Campus and adjacent development in the Bay Area. Under the Specific Plan, existing sections of the Bay Trail will maintain their current character, while new extensions, such as the Creekside Greenway, will be developed to Bay Trail standards. Sub Areas 1 and 2 will have a Creekside greenway, serving as an open space connection between the shoreline and inland neighborhoods and open spaces. Construction of a

pedestrian/bike bridge will be required at the confluence of the Meeker and Regatta Sloughs to connect the existing Bay Trail along the south side of Meeker Slough to the Global Campus pedestrian and bike system. The greenway, north of Lark Drive, will be bounded by Marina Bay Parkway to the west and a new parallel street to the east. The greenway will include a new linear corridor park with pedestrian/bicycle paths, seating, and other spaces for passive recreation between Lark Drive and the railroad tracks. The existing Bay Trail along the south/west side of Meeker Slough will extend north of Lark Drive along the west side of the corridor; gathering and recreation areas will be on the east side. A new pedestrian/bicycle bridge built either parallel or cantilevered from the railroad bridge will connect the Greenway to the community park in Sub-Area 1.

The shoreline area south of Sub-Area 4 will maintain its natural open space character as marshland. The Bay Trail would remain the primary access through the area and any adjacent parks, trails or development would include landscape buffers consisting of native plants that enhance the natural qualities of the site.

Impacts

The Specific Plan would generate an increase of up to 5,700 residential units and 6.4 million square feet of new, non-residential uses. As discussed in Section 4.11, *Population, Housing, and Employment*, the Specific Plan could induce population growth of up to 24,300 people (11,490 residents and 12,800 workers) on the site as new homes and businesses are created.

Fire Protection (RFD)

The Specific Plan's accompanying increase in population represents approximately 11 percent of the RFD's service population. The increased population attributable to the Specific Plan would be expected to result in an incremental increase in the number of emergency fire and medical calls within the Plan Area. Much of the growth represented in the Specific Plan was described in the General Plan (as discussed in Section 4.11, *Population, Housing, and Employment*), which accounts for future growth; however, growth that occurs within the Plan Area could occur at a higher density or faster rate than anticipated by the General Plan or analyzed in the General Plan EIR, and new facilities – a new fire station, or expansion of existing fire stations or other facilities – may be required over the period of buildout for the Specific Plan. The development of new facilities would be allowed within the transect zone program for the Specific Plan, which includes a "public safety facilities" category of use.

Existing City processes and regulations would address the construction of new fire protection facilities: the RFD would review plans for new development projects at the time of building permit issuance to ensure compliance with all applicable state and County fire safety requirements including adequate fire and life safety measures. In addition, 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 collection of fees for public improvements and facilities needed to serve the developing areas of the City of Richmond.

The potential environmental effects associated with constructing on-site fire protection facilities as part of Specific Plan buildout are evaluated throughout this EIR, because facilities of this nature fall under and are included in the foreseeable maximum theoretical buildout for the Specific Plan evaluated in this document. Fire stations and related facilities are relatively small in terms of building space (0.5 to 1 acres), and any fire station or other facility that would be developed within the Plan Area or expanded outside of the Plan Area would be located in an existing urbanized area.

Regardless, new fire facilities may be required prior to the development of uses within the Plan Area and without the development of these facilities, fire hazards and risks, and other risks associated with delays in medical and other emergency services could be increased for residents within the Plan Area. **Mitigation Measure PUB-1.SP** would address this impact and ensure the orderly development of new and expanded fire facilities.

> **Mitigation Measure PUB-1.SP: Fire Protection Services and Facilities.** Not later than achieving 20 percent implementation of the foreseeable maximum theoretical buildout of the Specific Plan, the City of Richmond shall document the scope of additional fire protection services and facilities necessary to maintain a six minute response time required at the complete buildout of the Specific Plan. The City shall issue no building permits for new or expanded projects after 20 percent implementation of the foreseeable maximum theoretical buildout has been achieved unless an analysis with conclusions regarding the scope of these additional fire protection services and facilities has been prepared and approved by the City of Richmond Fire Department. The City shall also identify a fair share funding mechanism to support the cost of completing the identified improvements, and shall establish a program to collect funds and guarantee they are used for these improvements.
>
> Not later than achieving 50 percent implementation of the foreseeable maximum theoretical buildout of the Specific Plan, the City shall document the implementation of fire protection services and facilities necessary to maintain a six minute response time. The City shall issue no building permits for new or expanded projects after 50 percent implementation of the foreseeable maximum theoretical buildout has been achieved unless such implementation has been certified by the City of Richmond Fire Department.

With the implementation of Mitigation Measure PUB-1a.SP, this impact would be less than significant.

Police Protection (RPD)

The increase in population from the Specific Plan represents approximately 11 percent of the RPD's service population, and could result in an increase in service calls made to the department. Conversely, development under the Specific Plan would introduce new occupied buildings and active uses on sites currently vacant and underused, and this development and revitalization of the Plan Area with population and foot-traffic could thereby reduce demand for police services related to issues associated with isolated, underutilized areas (e.g., vagrancy, dumping, vandalism, loitering). In addition, development under the Specific Plan would include the establishment of a new police substation within the Plan Area. This unmanned, small substation

would be negotiated as part of one or more development agreements and may be shared with the Berkeley Global Campus, potentially subject to a Memorandum of Agreement.

The Specific Plan could incrementally increase the demand for police service, but this increase would not be substantial, and has been recently accounted for in the City's updated General Plan, as discussed above under *Fire Protection (RFD)*. The Specific Plan is not expected to affect service ratios or response times or increase the use of existing police facilities such that substantial physical deterioration, alteration, or expansion of these facilities would be required. The impact would be less than significant.

Schools

The Specific Plan's increase of 5,700 residential units would result in new elementary school, middle school, and high school students. The increase in the number of students that will be going to school in the WCCUSD will take place over the long-term buildout of the Specific Plan (20 years or more). Ongoing trends, including increased numbers of students attending charter schools, may result in fewer students attending schools within the district than currently predicted. In addition, student generation rates used in this section that apply to the district as a whole are not likely to be directly applicable to the Plan Area, which has a lower projected persons per household rate (2.1) than, for example, the City as a whole (2.83, as of 2010). In addition, as discussed above, students in the district may apply to attend a neighborhood school outside of their residence area, allowing for the redistribution of enrollment within the district, as needed.

Regardless, as of the date of this document, it is anticipated that up to two new schools could be constructed within the Plan Area over the period of buildout, and that expansion of Korematsu Middle School and Kennedy High School could be required. The development of new school facilities would be allowed within the transect zone program for the Specific Plan. Existing City processes and regulations would address the construction of new school facilities: 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 collection of fees for public improvements and facilities needed to serve the developing areas of the City of Richmond. The potential environmental effects associated with constructing new schools as part of Specific Plan buildout are evaluated throughout this EIR, because facilities of this nature fall under and are included in the foreseeable maximum theoretical buildout for the Specific Plan evaluated in this document. Any schools that would be developed within the Plan Area or expanded outside of the Plan Area would be located in an existing urbanized area.

In addition, as indicated in the *Regulatory Setting*, projects developed under the Specific Plan would comply with Senate Bill (SB) 50, which fully mitigates the potential effect of new student population that may be generated by projects on public school facilities. The impact would be less than significant.

Parks

The Specific Plan would result in an increase in open space and recreational facilities, which would accommodate some of the potential increase in demand for recreational opportunities that would be generated by the new residents. Figure 3-7 illustrates the Specific Plan's Civic Space Regulating Plan, and the park, trail and open space concepts for the Specific Plan. Additional public parks and extensive open space facilities are located within 0.5 miles of the Plan Area.

As indicated in the *Regulatory Setting* discussion in this section, the City's goal is to provide 3.0 acres of parkland per 1,000 residents. The inclusion of approximately 32.7 acres of new open space proposed by the Specific Plan would nearly offset the acreage required for the increase in residential population: applying the ratio of 3.0 acres per 1,000 residents, at least 34.5 acres of parkland would be warranted for the projected 11,490 Plan Area residents in order to meet the City goal. Residents within the Plan Area would also have the opportunity to access existing parks and open space, including the Bay Trail and extensive open space south of Sub-Area 4. Future, project-specific development in the Plan Area would be required to comply with Specific Plan requirements, as well as applicable parkland dedication or in-lieu fee requirements.

The additional resident population that would be generated by development of the Specific Plan would incrementally increase the use of area parks and recreational facilities, but, because adequate new parks and open space are proposed for each Specific Plan sub-area, this increase in use is not likely to do so to an extent that new facilities would be required, the construction of which could result in adverse environmental impacts. Construction of public space amenities as described in the Specific Plan development program would result in physical effects that are addressed in the analysis within this EIR. The impact would be less than significant.

Other Public Facilities

The increase in population represented by the Specific Plan could incrementally increase the demand for other public services and facilities such as hospitals or libraries; however, these increases in demand compared to existing conditions would not be substantial and would not be likely to result in the construction of additional public facilities, and the impact would be less than significant.

Significance: Less Than Significant with Mitigation.

Mitigation: Mitigation Measure PUB-1.SP.

4.12.6 Project-Level Impacts of the Sub-Area 4 Project

Impact PUB-1.SA4: Development of the Sub-Area 4 Project would not result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services. (Criteria a., b., c.) (*Less Than Significant with Mitigation [Fire Protection]*)

The Sub-Area 4 Project would generate an increase of up to 1,460 residential units and approximately 1.46 million square feet of new, non-residential uses. As discussed in Section 4.11, *Population, Housing, and Employment*, the Project could induce population growth of up to 5,970 people (3,070 residents and 2,900 workers) on the site as new homes and businesses are created.

Fire Protection (RFD)

The Sub-Area 4 Project's accompanying increase in population represents approximately 3 percent of the RFD's service population. As described above for the Specific Plan as a whole, the increased population attributable to the Sub-Area 4 Project would be expected to result in an incremental increase in the number of emergency medical calls within the Sub-Area 4 Project site. However, this increase would be minor given the inclusion of much of the growth represented in the Specific Plan into the General Plan (as discussed in Section 4.11, *Population, Housing, and Employment*), which accounts for future growth. The RFD would review project plans at the time of building permit issuance to ensure compliance with all applicable state and County fire safety requirements including adequate fire and life safety measures. In addition, the implementation of **Mitigation Measure PUB-1.SP** would address impacts related to the orderly development of new or expanded fire facilities, as described above. The impact would be less than significant.

Police Protection (RPD)

The increase in population from the Sub-Area 4 Project represents approximately 3 percent of the RPD's service population, and could result in an increase in service calls made to the department. Conversely, development of the Sub-Area 4 Project would introduce new occupied buildings and active uses on sites currently vacant and underused, and this development and revitalization of the Sub-Area 4 Project site with population and foot-traffic could thereby reduce demand for police services related to issues associated with isolated, underutilized areas (e.g., vagrancy, dumping, vandalism, loitering).

Development of the Sub-Area 4 Project could incrementally increase the demand for police service, but this increase would not be substantial, and has been recently accounted for in the City's updated General Plan, as discussed above under *Fire Protection (RFD)*. The Sub-Area 4 Project is not expected to affect service ratios or response times or increase the use of existing police facilities such that substantial physical deterioration, alteration, or expansion of these facilities would be required. The impact would be less than significant.

Schools

The Sub-Area 4 Project's increase of 1,460 residential units would result in new students living in the Plan Area. As discussed above for the Specific Plan, these incremental increases could result in the development of new schools within the Plan Area and the Project site, which would be an allowed use under the Specific Plan transect zoning program. In addition, as discussed above, students in the district may apply to attend a neighborhood school outside of their residence area, allowing for the redistribution of enrollment within the district, as needed. Further, as indicated in the discussion above under *Regulatory Setting*, the Sub-Area 4 Project would comply with Senate Bill (SB) 50, which fully mitigates the potential effect of new student population that may be generated by the Sub-Area Project on public school facilities. The impact would be less than significant.

Parks

The Sub-Area 4 Project would result in an increase in open space and recreational facilities, which would accommodate some of the potential increase in demand for recreational opportunities that would be generated by the new residents. In addition, as described above under the Specific Plan, the Sub-Area 4 Project would be subject to the Civic Space and Open Space regulations of the Specific Plan, including a Regulating Plan that designates civic space types, as shown on Figure 3-7. The Civic Space Regulating Plan is intended to establish binding requirements (standards), while the location and disposition of civic spaces within the Sub-Area 4 Project site are subject to interpretation at the discretion of the City. Civic spaces planned for the Sub-Area 4 Project site are shown on Figure 3-7, and include the following:

- A large community park at the south end of the site and south of the shoreline drive;
- The Shoreline Promenade;
- Neighborhood squares; and
- A linear park.

Civic space types and standards for their development described in the Specific Plan that would apply to the Sub-Area 4 Project are detailed in Chapter 3, *Project Description*, of this EIR.

Figure 3-8 provides an illustrative example of park, trail, and open space concepts for the Sub-Area 4 Project site. Additional public parks and extensive open space facilities, including the existing Bay Trail and open space adjacent to the Sub-Area 4 Project site to the south, are located within 0.5 miles of the Sub-Area 4 Project site.

As indicated in the *Regulatory Setting* discussion in this section, the City's goal is to provide 3.0 acres of parkland per 1,000 residents. The inclusion of approximately 6.5 acres of new open space as described for the Sub-Area 4 Project concept would offset approximately 70 percent of the acreage required for the increase in residential population: applying the ratio of 3.0 acres per 1,000 residents, at least 9.2 acres of parkland would be warranted for the projected 3,070 Sub-Area 4 Project site residents in order to meet the City goal. Specific development proposals for the Sub-Area 4 Project site would be required to comply with Specific Plan requirements, as well as applicable parkland dedication or in-lieu fee requirements.

The additional resident population that would be generated by the Sub-Area 4 Project would incrementally increase the use of area parks and recreational facilities, but, because a substantial amount of new parks and open space are proposed for Sub-Area 4, this increase in use is not likely to do so to an extent that new facilities would be required, the construction of which could result in adverse environmental impacts. Construction of public space amenities as described in the development program for the Sub-Area 4 Project would result in physical effects that are addressed in the analysis within this EIR. The impact would be less than significant.

Other Public Facilities

The increase in population represented by the Sub-Area 4 Project could incrementally increase the demand for other public services and facilities such as hospitals or libraries; however, these increases in demand compared to existing conditions would not be substantial and would not be likely to result in the construction of additional public facilities, and the impact would be less than significant.

Significance: Less Than Significant with Mitigation (Fire Protection).

Mitigation: Mitigation Measure PUB-1.SP.

4.12.7 Cumulative Public Services Impacts

Impact C-PUB.SP: Construction activity and operations for development under the Specific Plan, in combination with past, present, existing, approved, pending, and reasonably foreseeable future projects with the vicinity of the Plan Area, would not contribute considerably to a cumulative impact to public services and recreation. (*Less Than Significant*)

The cumulative geographic context for public services and recreation considerations for development under the Specific Plan consists of the Plan Area in addition to all areas of the City, as public services and recreation facilities are provided citywide.

Cumulative projects considered are those in the Plan Area vicinity that would also involve construction activity, including development within the Berkeley Global Campus and development of the Baywalk Mixed Use Project and other approved, pending, and reasonably foreseeable future projects citywide (see Section 4.0.1, in this chapter for detail). These cumulative development projects would increase demand for police and fire protection services. These developments, however, would provide additional tax revenue and other development fees that would contribute to funding of increased public services. Cumulative development, in combination with development under the Specific Plan, would result in a less-than-significant cumulative impact on police and fire services.

Regarding schools, as stated above pursuant to Senate Bill 50 (SB 50), individual project applicants would be required to pay school impact fees established to offset potential impacts from new development on school facilities. Considering the existing educational facilities citywide and in the vicinity of the Plan Area, the Specific Plan, in combination with past, present

and reasonably foreseeable future projects, would not result in the need for new or physically altered school facilities and the impact would be less than significant.

The Specific Plan includes the provision of 32.7 acres of open space that would provide both active and passive recreational opportunities. Given the proposed new facilities, the resident and employee population generated with development under the Specific Plan, in combination with with past, present, and reasonably foreseeable future projects, would not result in the substantial or accelerated physical deterioration of existing parks and recreational facilities due to increased use or demand and cause a significant cumulative impact.

The effect of development under the Specific Plan, in combination with other cumulative development, would not be cumulatively significant. The impact is less than significant.

Significance: Less Than Significant.

Mitigation: None required.

Impact C-PUB.SA4: Construction activity and operations for development under the Sub-Area 4 Project, in combination with past, present, existing, approved, pending, and reasonably foreseeable future projects with the vicinity of the Sub-Area 4 Project site, would not contribute considerably to a cumulative impact to public services and recreation. (*Less Than Significant*)

The cumulative geographic context for public services and recreation considerations for development under the Sub-Area 4 Project consists of the Sub-Area 4 Project site in addition to all areas of the City, as public services and recreation facilities are provided citywide.

Cumulative projects considered are those in the Sub-Area 4 Project site vicinity that would also involve construction activity, including development within the Berkeley Global Campus and other approved, pending, and reasonably foreseeable future projects citywide (see Section 4.0.1 in this chapter for detail). These cumulative development projects would increase demand for police and fire protection services. These developments, however, would provide additional tax revenue and other development fees that would contribute to funding of increased public services. Cumulative development, in combination with development under the Sub-Area 4 Project, would result in a less-than-significant cumulative impact on police and fire services.

Regarding schools, as stated above pursuant to Senate Bill 50 (SB 50), individual project applicants would be required to pay school impact fees established to offset potential impacts from new development on school facilities. Considering the existing educational facilities citywide and in the vicinity of the Sub-Area 4 Project site, the Sub-Area 4 Project, in combination with past, present and reasonably foreseeable future projects, would not result in the need for new or physically altered school facilities and the impact would be less than significant.

The Sub-Area 4 Project includes the provision of 6.5 acres of open space that would provide both active and passive recreational opportunities. Given the proposed new facilities, the resident and employee population generated with development under the Sub-Area 4 Project, in combination with past, present and reasonably foreseeable future projects, would not result in the substantial or accelerated physical deterioration of existing parks and recreational facilities due to increased use or demand and cause a significant cumulative impact.

The effect of development under the Specific Plan, in combination with other cumulative development, would not be cumulatively significant. The impact is less than significant.

Significance: Less Than Significant.

Mitigation: None required.

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4.13 Transportation and Traffic

4.13.1 Introduction

This section describes the transportation and circulation conditions, including transit services, and pedestrian and bicycle facilities in the Plan Area and vicinity. This section also describes the regulatory setting relevant to transportation and circulation issues in the Plan Area. Potential impacts of the development under both the Specific Plan and Sub-Area 4 Project are discussed and evaluated, and appropriate mitigation measures are identified, as necessary, followed by identification of the residual impact significance after mitigation measures are implemented.

The analysis evaluates the traffic-related impacts of the potential buildout of the development facilitated by both the proposed Specific Plan and the Sub-Area 4 Project during the weekday morning (AM) and evening (PM) peak hours. The analysis was conducted in compliance with City of Richmond and Contra Costa County Transportation Authority (CCTA) guidelines. Traffic conditions were assessed for the following scenarios to evaluate the impacts of the potential buildout of the development facilitated by the Specific Plan:

- **Existing** – Represents existing conditions with volumes obtained from recent traffic counts and the existing roadway system.
- **Existing Plus Specific Plan** – Existing conditions plus Specific Plan-related traffic resulting from the buildout of the Specific Plan. This scenario assumes that the transportation network serving the Specific Plan area would be the same as Existing Conditions, except for those improvements proposed by the Specific Plan.
- **2040 No Specific Plan (with Future External Transportation Network Conditions)** – Future 2040 conditions with planned population and employment growth, and funded and approved transportation system improvements, for the year 2040. This scenario assumes no growth in the Plan Area. Traffic projections were developed using the most recent version of the Contra Costa Transportation Authority (CCTA) Countywide Travel Demand Model.
- **2040 Plus Specific Plan (with Future External Transportation Network Conditions) –** 2040 No Specific Plan conditions plus project-related traffic resulting from the buildout of the Specific Plan including all Sub-Areas.
- **2040 Plus Specific Plan and SRTCP (i.e., with Modified External Transportation Network) Conditions –** This scenario is the same as the above scenario and includes various transportation network improvements as proposed in the *South Richmond Transportation Connectivity Plan* (SRTCP, July 2015). Although identified in the SRTCP, these improvements are not yet approved or funded by the City. Therefore, certain SRTCP improvements are included in this EIR as mitigation measures where such improvements would mitigate certain impacts associated with buildout of the Specific Plan. These improvements would improve multi-modal connections between the Plan Area and the region, and are included as mitigation measures because they would reduce the automobile trips generated by the project.

In addition, traffic conditions were assessed for the following scenarios to evaluate the impacts of the Sub-Area 4 Project:

- **Existing Plus Sub-Area 4 Project** – Existing conditions plus traffic generated by the completion of the Sub-Area 4 Project only. This scenario assumes no development in the other three Sub-Areas.
- **2040 No Sub-Area 4 Project** – This scenario is the 2040 Plus Specific Plan Conditions minus the traffic generated by the Sub-Area 4 Project. Thus, it accounts for the buildout of the entire Specific Plan, except for the Sub-Area 4 Project.
- **2040 Plus Sub-Area 4 Project –** This scenario is identical to the 2040 Plus Specific Plan conditions and accounts for buildout of the entire Specific Plan, including the Sub-Area 4 Project.

4.13.2 Existing Conditions

The existing transportation-related context in which the Specific Plan would be implemented is described below, beginning with a description of the study area (the area including the Plan Area and vicinity that could be affected by the proposed Specific Plan) and the street network that serves the Plan Area. Existing transit service, and bicycle and pedestrian facilities, are also described. Intersection and freeway levels of service are then defined and current conditions for intersections and freeways in the project vicinity are summarized. This subsection also discusses planned transportation improvements in the project vicinity as well as the applicable planning policies.

Existing Street and Highway System

Regional vehicular access to the Plan Area is provided by Interstate 580 (I-580) and Interstate 80 (I-80), while direct local access is provided via Regatta Boulevard, Meade Street, Marina Way Parkway, and Marina Way South. These and other roadways in the study area are described below.

Interstate 580 (I-580) is a generally east-west six-lane freeway in the Plan Area. It connects I-80 and points east to US 101 in Marin County, via the Richmond-San Rafael Bridge. Access between I-580 and the Plan Area is provided via interchanges at Bayview Avenue/51st Street, Regatta Boulevard/Juliga Woods Street, Marina Bay Parkway/South 23rd Street, and Harbour Way South. I-580 has an average annual daily traffic volume (AADT) of 97,000 vehicles (Caltrans, 2014) between the Regatta Boulevard/Juliga Woods Street and Marina Bay Parkway/South 23rd Street interchanges.

Interstate 80 (I-80) is a freeway that connects the San Francisco Bay Area with the Sacramento region and continues to the east. Near the Plan Area, I-80 is oriented in a north-south direction about one mile east, and provides four lanes of travel in each direction. Access between I-80 and the Plan Area is provided via I-580 and Central Avenue to and from the south and via the Central Avenue, Carlson Boulevard, and Cutting Boulevard interchanges to and from the north. I-80 has an AADT of 176,000 vehicles (Caltrans, 2014) north of I-580.

San Pablo Avenue (designated as State Route (SR) 123) is a four-lane arterial extending between downtown Oakland in the south and Rodeo in the north. Near the project vicinity, San Pablo

Avenue provides sidewalks on both sides of the street and has a posted speed limit of 25 miles per hour (mph). San Pablo Avenue has an AADT of 29,500 vehicles (Caltrans, 2014) south of Cutting Boulevard.

Regatta Boulevard is an east-west arterial that connects Marina Way South in the west to Meade Street in the east, forming the primary east-west connection in the Plan Area. Regatta Boulevard provides two travel lanes in each direction with a median, turn lanes at intersections, and a continuous sidewalk/path along the north and an intermittent sidewalk/path along the south side of the roadway between Marina Way South and Marina Bay Parkway. East of Marina Bay Parkway, the roadway narrows to three lanes with one travel lane in each direction, a center two-way left-turn lane and a continuous sidewalk along the north side and intermittent sidewalk along the south side of the roadway; further east, the roadway narrows further to a two-lane cross section with shoulders on both sides of the roadway, terminating at Meade Street. The posted speed limit on Regatta Boulevard is 25 miles per hour (mph).

Cutting Boulevard is an east-west arterial that connects San Pablo Avenue and I-580 in the east with South Garrard Boulevard in the west. Within the study area, Cutting Boulevard includes two travel lanes in each direction with left-turn pockets at signalized intersections and a median or two-way left-turn lanes at mid-block driveways. The General Plan (City of Richmond, 2012) identifies Cutting Boulevard as an existing truck route west of Harbour Way. West of I-580, Cutting Boulevard includes sidewalks on both sides of the roadway. The posted speed limit is 35 mph.

Carlson Boulevard is a generally four-lane northwest-southeast arterial through the study area, connecting 23rd Street to I-80 via an interchange, and terminating at San Pablo Avenue in El Cerrito. The roadway generally provides two travel lanes in each direction with turn lanes at major intersections and sidewalks on both sides of the street south of Bayview Avenue. Carlson Boulevard does not provide a continuous sidewalk on the west side of the street north of Bayview Avenue. The posted speed limit is 35 mph.

Meade Street is a two-lane roadway that runs northwest from the I-580/Bayview Avenue interchange to the I-580/Regatta Boulevard interchange. Meade Street provides a continuous sidewalk along the north side and intermittent sidewalk along the south side of the roadway. The posted speed limit is 30 mph.

Harbour Way South is a north/south arterial in the vicinity of the Plan Area that extends between the Ford Peninsula in the south, and about a mile northwest of Downtown Richmond in the north. The roadway provides access to I-580. The roadway provides one auto lane and one Class II bicycle lane in each direction south of I-580 and two auto lanes in each direction north of I-580. Harbour Way South provides continuous sidewalks along both sides of the roadway. The posted speed limit is 25 mph.

Marina Way South is a north/south arterial extending between the tip of the Ford Peninsula in the south and Barrett Avenue near the Richmond BART Station in the north. Marina Way South provides two lanes in each direction with a center median south of Cutting Boulevard, and one lane in each direction north of Cutting Boulevard. The posted speed limit on Marina Way South is 35 mph.

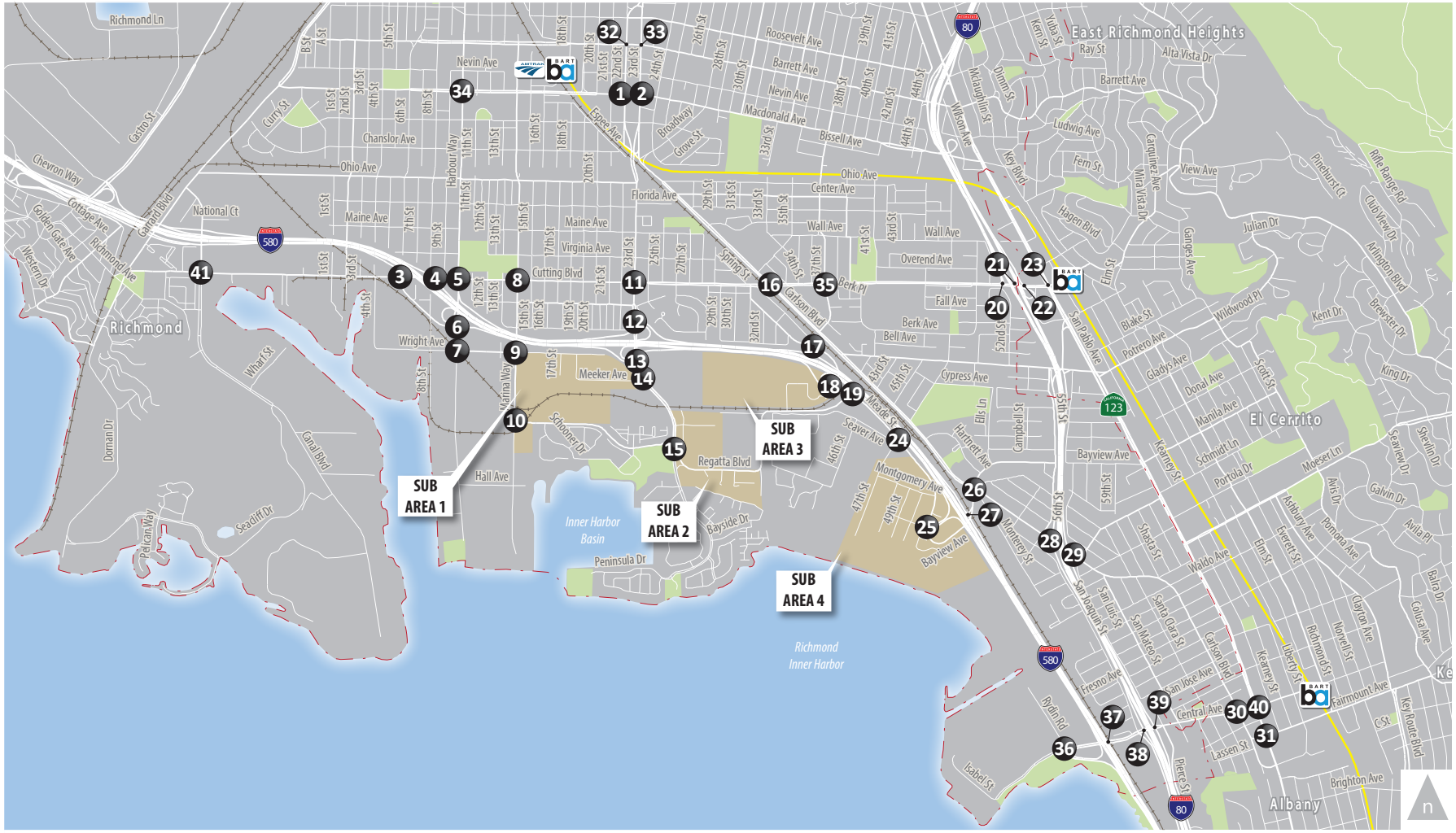
Hoffman Boulevard is generally a four-lane northwest/southeast collector that serves primarily as a frontage road connecting Cutting Boulevard and Harbour Way South and providing access to the I-580 eastbound on-ramp at Harbour Way. Hoffman Boulevard provides a continuous sidewalk along the north side and intermittent sidewalk along the south side of the roadway. The speed limit on Hoffman Boulevard is 25 mph.

Central Avenue is a generally four-lane east-west arterial extending between Point Isabel in the west and just east of the El Cerrito BART Station in the east. Central Avenue has interchanges with both I-580 and I-80 freeways. Central Avenue provides a center median west of I-80 and has sidewalks on both sides of the roadway. The posted speed limit on Central Avenue is 30 mph.

Study Intersections

The analysis of impacts to traffic in the study area evaluated operations at 40 intersections in the vicinity of the project during the weekday morning (AM) and afternoon (PM) peak hours under Existing and 2040 conditions. These time periods were selected because traffic generated by the project, in combination with background traffic, is expected to represent typical worst traffic conditions. The study intersections are listed below and shown on **Figure 4.13-1**. The study intersections were selected in coordination with City of Richmond staff and represent locations where the proposed project would substantially increase the traffic volumes at the intersection, either the project or the proposed mitigation measures would reconfigure the intersection, and/or recent planning and environmental documents have identified as operating at or near capacity.

1. Macdonald Avenue/22nd Street
2. Macdonald Avenue/23rd Street
3. Cutting Boulevard/Hoffman Boulevard/ I-580 Eastbound Off-Ramp
4. Cutting Boulevard/I-580 Westbound Ramps
5. Cutting Boulevard/Harbour Way South
6. Hoffman Boulevard/Harbour Way South/ I-580 Eastbound On-Ramp
7. Wright Avenue/Harbour Way South
8. Cutting Boulevard/Marina Way
9. Wright Avenue/Marina Way South
10. Regatta Boulevard/Marina Way South
11. Cutting Boulevard/23rd Street
12. I-580 Westbound Ramps/23rd Street
13. I-580 Eastbound Ramps/23rd Street
14. Meeker Avenue/23rd Street/Marina Bay Parkway
15. Regatta Boulevard/Marina Bay Parkway
16. Cutting Boulevard/Carlson Boulevard
17. I-580 Westbound Ramps/Juliga Woods Street
18. I-580 Eastbound Ramps/Regatta Boulevard/Meade Street
19. Meade Street/Regatta Boulevard
20. Cutting Boulevard/I-80 Eastbound Ramps
21. Cutting Boulevard/I-80 HOV Ramps
22. Cutting Boulevard/I-80 Westbound Ramps
23. Cutting Boulevard/San Pablo Avenue
24. Meade Street/Seaver Avenue



LEGEND

Study Intersection Railroad

SOURCE: Fehr & Peers, 2016

Richmond Bay Specific Plan EIR . 120834

Figure 4.13-1

Site Vicinity and Study Intersection Locations

25. Seaport Avenue/I-580 Eastbound Ramps/ South 51st Street/Bayview Avenue
26. Carlson Boulevard/Bayview Avenue
27. I-580 Westbound Ramps/Bayview Avenue
28. Carlson Boulevard/I-80 Eastbound Ramps
29. Carlson Boulevard/I-80 Westbound Ramps
30. Carlson Boulevard/Central Avenue
31. Fairmont Avenue/San Pablo Avenue
32. Barrett Avenue/22nd Street
33. Barrett Avenue/23rd Street
34. Macdonald Avenue/Harbour Way
35. Cutting Boulevard/37th Street
36. Central Avenue/I-580 Eastbound Ramps
37. Central Avenue/I-580 Westbound Ramps
38. Central Avenue I-80 Westbound Ramps/ Jacuzzi Street/San Joaquin Street
39. Central Avenue I-80 Eastbound Ramps
40. Central Avenue/San Pablo Avenue

In addition to intersection analysis, an analysis of freeway segments was conducted at the following locations, which were selected in coordination with City of Richmond staff and represent locations where the proposed project would substantially increase the traffic volumes:

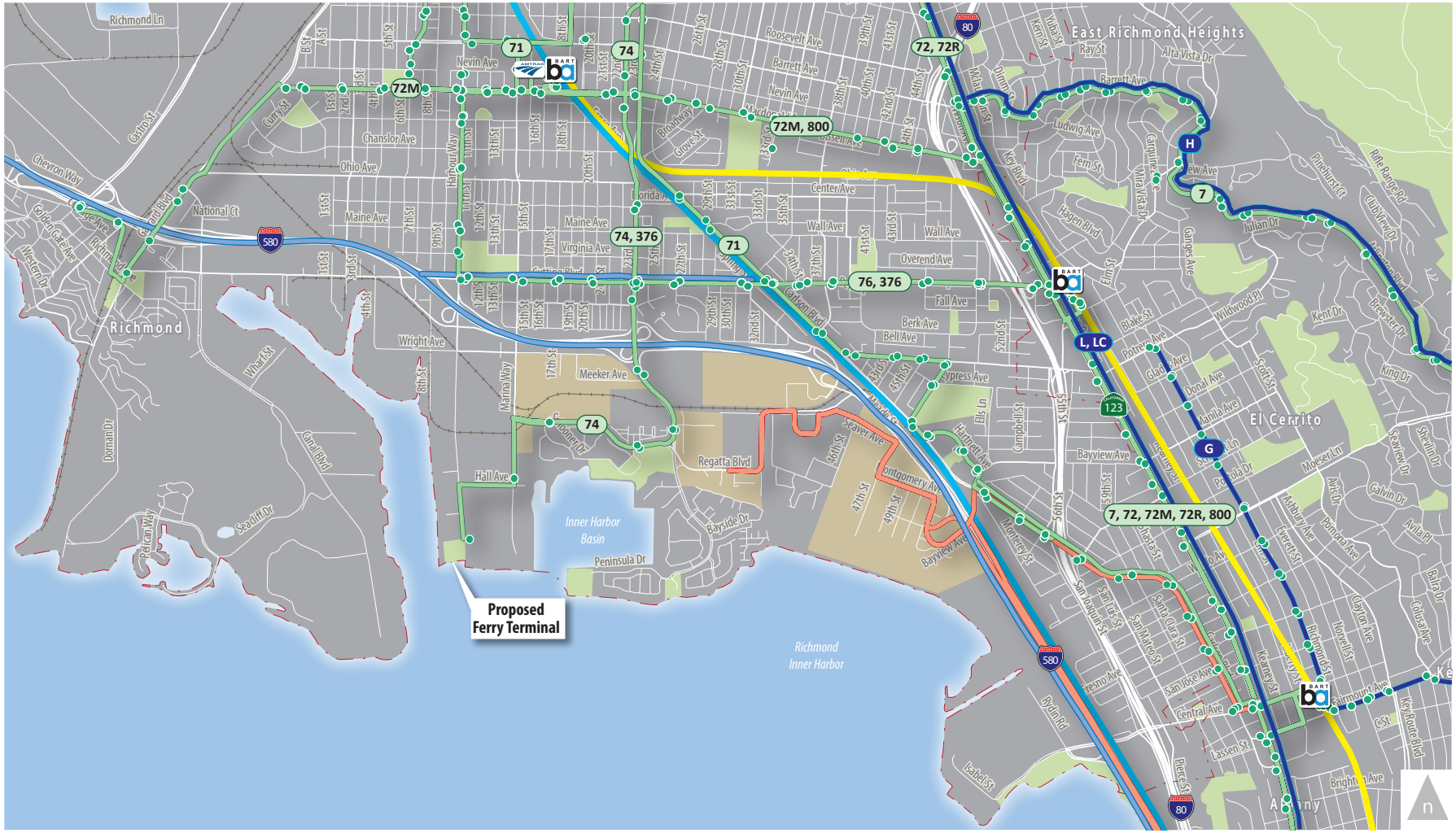
1. I-580 between Richmond Parkway and Harbour Way
2. I-580 between Harbour Way and Marina Bay Parkway
3. I-580 between Marina Bay Parkway and Regatta Boulevard
4. I-580 between Regatta Boulevard and Bayview Avenue
5. I-580 between Bayview Avenue and Central Avenue
6. I-580 between Central Avenue and I-80
7. I-80 between McDonald Avenue and Cutting Boulevard
8. I-80 between Cutting Boulevard and Potrero Avenue
9. I-80 between Potrero Avenue and Carlson Boulevard
10. I-80 at the Gilman Street Overpass

Transit Service

The Plan Area is served indirectly by Bay Area Rapid Transit (BART) and Amtrak, and directly by Alameda-Contra Costa Transit (AC Transit), and shuttle. The existing transit services in the Plan Area are shown on **Figure 4.13-2** and described below.

Bay Area Rapid Transit (BART)

BART provides regional commuter rail transit in Alameda, Contra Costa, San Francisco, and San Mateo counties. Currently, BART trains operate on weekdays from 4:00 AM to 12:30 AM, on Saturdays from 6:00 AM to 12:30 AM, and on Sundays from 8:00 AM to midnight. The nearest BART stations to the Plan Area are the Richmond Station (about 1.5 miles north of the Plan Area and at the end of the Richmond-Fremont line), the El Cerrito del Norte Station (about two miles northeast of the Plan Area), and the El Cerrito Plaza Station (about three miles east of the Plan Area). These three stations are served by the Richmond-Fremont and Richmond-Daly City/



LEGEND

- AC Transit Local
- AC Transit Transbay
- Richmond Field Station Shuttle
- Golden Gate Transit
- Bus Stop
- AMTRAK
- BART
- Railroad

SOURCE: Fehr & Peers, 2016

Richmond Bay Specific Plan EIR . 120834

Figure 4.13-2
Existing Transit Service

Millbrae lines. Other destinations in the BART system can be reached by transferring at stations in Oakland. Typically, these three stations are served by a train every seven (peak weekday commute periods) to 20 minutes (Sundays). The average weekday daily ridership for the Richmond, El Cerrito del Norte, and El Cerrito Plaza Stations were about 8,800, 18,000 and 10,300 riders in March 2016, respectively (BART, 2016).

Amtrak

Amtrak provides inter-city rail service throughout California and the country. The Richmond Amtrak Station, located adjacent to the Richmond BART station, provides Amtrak service on three routes – the Capital Corridor (15 trains per day in each direction between San Jose and Sacramento); the San Joaquin Intercity (four trains per day in each direction to Bakersfield via Modesto and Fresno) and the California Zephyr (one train per day in each direction between Chicago and Emeryville).

AC Transit

AC Transit is the primary bus service provider in 13 cities and adjacent unincorporated areas in Alameda and Contra Costa Counties, with Transbay service to destinations in San Francisco, San Mateo and Santa Clara Counties. **Table 4.13-1** describes the four local AC Transit Routes in the Plan Area.

Golden Gate Transit

Golden Gate Transit is primary transit service provider in Marin County and operates Route 40 between Marin County and Richmond and El Cerrito. Near the Plan Area, Route 40 operates on Cutting Boulevard with stops at Harbour Way and 23rd Street on weekdays from 5:30 AM to 11:30 PM, with no weekend service. Peak headways are 20-30 minutes, and midday headways are 30-60 minutes.

Richmond Field Station (RFS) Shuttle

UC Berkeley currently operates a shuttle connecting the main University campus with El Cerrito Plaza BART Station and the Richmond Field Station (RFS) with other stops on Buchanan Street at Jackson Street, Martin Luther King Jr. Way at Hopkins Street, and the Downtown Berkeley BART Station. The shuttle operates approximately hourly between 7:00 AM and 6:00 PM on weekdays.

Pedestrian and Bicycle Facilities

Pedestrian facilities in the study area include sidewalks, crosswalks, and multi-use trails. Most roadways in the study area provide sidewalks on both sides of the street; except Regatta Boulevard east of Marina Bay Parkway, where sidewalks are generally only provided where there are fronting uses; Meade Street, which has sidewalks only on the north side of the street; and Marina Bay Parkway south of Meeker Avenue, which has sidewalks only on the west side of the street. The Bay Trail is located along the bay shoreline on the south side of the Plan Area.

TABLE 4.13-1
BUS SERVICE SUMMARY

Route	Route	Nearest Stop	Weekday		Weekend		Daily Boardings[a]
			Hours	Frequency	Hours	Frequency	
AC Transit Local Routes							
71	Richmond Parkway Transit Center – El Cerrito BART	Carlson Blvd. at Bayview Ave. and Cutting Blvd.	5:00 AM – 8:00 PM	30 minutes	6:30 AM – 9:30 PM	60 minutes	1,400
74	Castro Ranch – Richmond BART – Harbor Way South/Ford Point	Marina Bay Pkwy/Regatta Blvd. and Marina Way South/Regatta Blvd.	5:30 AM – 10:30 PM	30 minutes	7:00 AM – 8:30 PM	30-40 minutes	1,100
76	El Cerrito Del Norte BART – Hilltop Mall	Cutting Blvd. at Carlson Blvd. and South 23rd St.	5:00 AM – 9:30 PM	15-30 minutes	6:30 AM – 8:20 PM	30 minutes	1,900
376	Del Norte BART – Pinole Vista Center	Cutting Blvd. at Carlson Blvd. and South 23rd St.	8:00 PM – 4:00 AM	30 minutes	8:00 PM – 4:00 AM	30 minutes	N/A
Golden Gate Transit							
40	San Rafael Transit Center – Del Norte BART	Cutting Blvd. at South 23rd St and Harbour Way	5:30 AM – 11:30 PM	15-60 minutes	6:00 AM – 10:30 PM	60 minutes	220

[a] Total boardings for the entire route in 2014 for AC Transit routes and 2012/2013 for the Golden Gate Transit route.

SOURCE: AC Transit, Golden Gate Transit, 2016

The City of Richmond Bicycle Master Plan (City of Richmond, 2011a) identifies the following bicycle facility types:

- ***Bicycle Paths (Class I)*** – These facilities are located off-street and can serve both bicyclists and pedestrians.
- ***Bicycle Lanes (Class II)*** – These facilities provide a dedicated area for bicyclists within the paved street width through the use of striping and appropriate signage.
- ***Bicycle Routes (Class III)*** – These facilities are found along streets that do not provide sufficient width for dedicated bicycle lanes. The street is designated as a bicycle route through the use of signage informing drivers to expect bicyclists.

Figure 4.13-3 shows the existing and proposed bicycle facilities in the study area. Existing bicycle facilities near the project site include the Class 1 Bay Trail along the bay shoreline, Class II bicycle lanes along Harbour Way, and Class 3 routes on Marina Bay Parkway and on Regatta Boulevard west of Marina Bay Parkway.

In general, bicycle and pedestrian activity is minimal south of the I-580 freeway and higher north of the I-580.

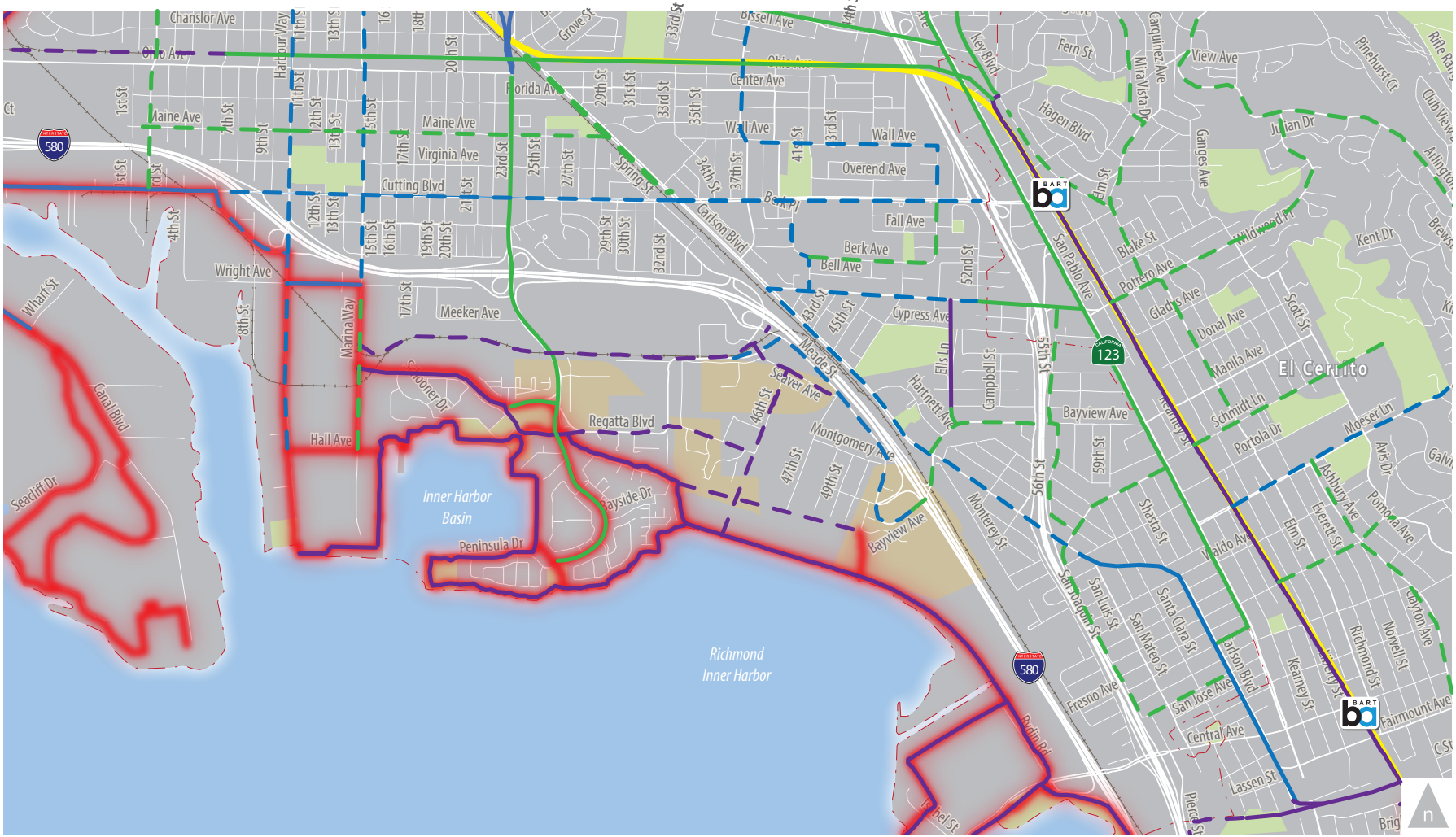
Existing Traffic Operating Conditions

Analysis Methods

Intersection operations are described using the term "Level of Service" (LOS). LOS is a qualitative description of traffic operations from the vehicle driver perspective and consists of the delay experienced by the driver at the intersection. It ranges from LOS A, with no congestion and little delay, to LOS F, with excessive congestion and delays. Different methods are used to assess signalized and unsignalized (stop-controlled) intersections.

Signalized Intersections

At the signalized study intersections, traffic conditions were evaluated using the 2010 *Highway Capacity Manual* (HCM; TRB, 2010) operations methodology and the Synchro 8 traffic analysis software program. This methodology uses various intersection characteristics, such as traffic volumes, lane geometries, and signal timing parameters, to estimate average control delays and assign an LOS. Control delay is defined as the delay associated with deceleration, stopping, moving up in the queue, and acceleration experienced by drivers at an intersection. **Table 4.13-2** summarizes the relationship between control delay and LOS.



LEGEND

Railroad

Bay Trail

Bikeway Type	*Existing*	*Proposed*
Class I Bike Path		
Class II Bike Lane		
Class III Bike Route		

SOURCE: Fehr & Peers, 2016

Richmond Bay Specific Plan EIR . 120834

Figure 4.13-3

Existing and Planned Bicycle Facilites

TABLE 4.13-2
DEFINITIONS FOR INTERSECTION LEVEL OF SERVICE

Unsignalized Intersections		Level of Service Grade	Signalized Intersections	
Description	Average Total Vehicle Delay (Seconds)		Average Control Vehicle Delay (Seconds)	Description
No delay for stop-controlled approaches.	≤10.0	A	≤10.0	Free Flow or Insignificant Delays: Operations with very low delay, when signal progression is extremely favorable and most vehicles arrive during the green light phase. Most vehicles do not stop at all.
Operations with minor delay.	>10.0 and ≤15.0	B	>10.0 and ≤20.0	Stable Operation or Minimal Delays: Generally occurs with good signal progression and/or short cycle lengths. More vehicles stop than with LOS A, causing higher levels of average delay. An occasional approach phase is fully utilized.
Operations with moderate delays.	>15.0 and ≤25.0	C	>20.0 and ≤35.0	Stable Operation or Acceptable Delays: Higher delays resulting from fair signal progression and/or longer cycle lengths. Drivers begin having to wait through more than one red light. Most drivers feel somewhat restricted.
Operations with increasingly unacceptable delays.	>25.0 and ≤35.0	D	>35.0 and ≤55.0	Approaching Unstable or Tolerable Delays: Influence of congestion becomes more noticeable. Longer delays result from unfavorable signal progression, long cycle lengths, or high volume to capacity ratios. Many vehicles stop. Drivers may have to wait through more than one red light. Queues may develop, but dissipate rapidly, without excessive delays.
Operations with high delays, and long queues.	>35.0 and ≤50.0	E	>55.0 and ≤80.0	Unstable Operation or Significant Delays: Considered the limit of acceptable delay. High delays indicate poor signal progression, long cycle lengths and high volume to capacity ratios. Individual cycle failures are frequent occurrences. Vehicles may wait through several signal cycles. Long queues form upstream from intersection.
Operations with extreme congestion, and with very high delays and long queues unacceptable to most drivers.	>50.0	F	>80.0	Forced Flow or Excessive Delays: Occurs with oversaturation when flows exceed the intersection capacity. Represents jammed conditions. Many cycle failures. Queues may block upstream intersections.

SOURCE: Transportation Research Board, *Highway Capacity Manual*, 2010.

Unsignalized Intersections

At unsignalized intersections, LOS was also analyzed using the 2010 HCM and Synchro 8 software. Delay was calculated for movements that are controlled by a stop sign or that must yield the right-of-way. With this methodology, the LOS was related to the total delay per vehicle for the intersection as a whole (for all-way stop-controlled intersections), and for each stop-controlled movement or approach only (for side-street stop-controlled intersections). For the latter type, the movement or approach with the highest delay is reported. Total delay is defined as the total elapsed time from when a vehicle stops at the end of the queue until the vehicle departs from the stop line. Table 4.13-2 summarizes the relationship between delay and LOS.

Freeway Mainline

Similar to intersection operations, freeway mainline LOS ranges from LOS A (free-flow conditions) to LOS F (over capacity conditions). LOS E represents "at-capacity" operations. When the volume exceeds capacity, stop-and-go conditions result, and operations are designated as LOS F. The HCM method calculates density for freeway sections using input data such as the traffic volume, the number of lanes, the percentage of trucks and the free-flow speed. Based on the calculated density, each freeway segment is assigned a LOS, based on the vehicle density (passenger cars/mile/lane). **Table 4.13-3** summarizes the relationship between density and LOS for freeway sections.

TABLE 4.13-3
DEFINITIONS FOR FREEWAY SECTION LEVEL OF SERVICE

LOS	Basic Mainline Segment Density Criteria (PCPMPL) [a]
A	≤11.0
B	>11.0 and ≤18.0
C	>18.0 and ≤26.0
D	>26.0 and ≤35.0
E	>35.0
F	Demand exceeds capacity

NOTES:
[a] PCPMPL = Passenger Cars Per Mile Per Lane

SOURCE: Transportation Research Board, Highway Capacity Manual, 2010.

Traffic Volumes

Weekday AM and PM peak period (7:00 to 9:00 AM and 4:00 to 6:00 PM) traffic counts, including counts of heavy vehicles, pedestrians and bicycles, were collected within the last four years at the study intersections. These time periods were selected because trips generated by the proposed project, in combination with background traffic, are expected to represent typical worst traffic conditions. **Table 4.13-4** shows the count date for each study intersection. Within the peak periods, the peak hours (i.e., the hour with the highest traffic volumes) were selected for analysis.

In addition, during traffic study data collection, intersection lane configurations were documented and signal operations data were collected. Operations were also observed at the study intersections. The City of Richmond also provided signal timing data for the signalized study intersections. The signal timing data was then verified against the actual observed conditions at each study intersection.

Figure A-1 in Appendix E-1 shows the existing AM and PM peak hour traffic volumes, intersection lane configurations, and traffic control devices at the study intersections. **Appendix E-2** presents the new raw traffic data collected at the study intersections.

TABLE 4.13-4
EXISTING CONDITIONS INTERSECTION LOS SUMMARY

	Intersection	LOS Standard[g]	Traffic Control[a]	Peak Hour	Count Date [b]	Delay [c,d]	LOS[c,d]
1	Macdonald Avenue/ 22nd Street	D	Signal	AM	November 2014	13.5	B
				PM		14.6	B
2	Macdonald Avenue/ 23rd Street	D	Signal	AM	November 2014	6.8	A
				PM		9.6	A
3	Cutting Boulevard/ Hoffman Boulevard	D	Signal	AM	November 2014	8.0	A
				PM		8.8	A
4	Cutting Boulevard/ I-580 Westbound Ramps	D	Signal	AM	November 2014	6.4	A
				PM		24.2	C
5	Cutting Boulevard/ Harbour Way South	D	Signal	AM	March 2013	38.9	D
				PM		41.6	D
6	Hoffman Boulevard/ Harbour Way South	D	Signal	AM	March 2013	7.1	A
				PM		3.9	A
7	Wright Avenue/ Harbour Way South [f]	D	SSSC	AM	March 2013	3.0 (12.0)	A (B)
				PM		3.2 (13.3)	A (B)
8	Cutting Boulevard/ Marina Way South	D	Signal	AM	March 2013	10.0	A
				PM		8.8	A
9	Wright Avenue/ Marina Way South	D	Signal	AM	March 2013	3.6	A
				PM		3.2	A
10	Regatta Boulevard/ Marina Way South [e, f]	D	SSSC	AM	March 2013	4.6 (8.8)	A (A)
				PM		2.3 (9.4)	A (A)
11	Cutting Boulevard/ 23rd Street	D	Signal	AM	December 2012	19.0	B
				PM		19.8	B
12	Westbound I-580 Ramps/ 23rd Street	D	Signal	AM	December 2012	5.5	A
				PM		6.9	A
13	Eastbound I-580 Off-Ramp/ 23rd Street	D	Signal	AM	December 2012	3.6	A
				PM		5.9	A
14	Meeker Avenue/ Marina Bay Parkway	D	Signal	AM	December 2012	18.8	B
				PM		12.0	B
15	Regatta Boulevard/ Marina Bay Parkway	D	Signal	AM	December 2012	33.7	C
				PM		14.9	B
16	Cutting Boulevard/ Carlson Boulevard [f]	D	Signal	AM	November 2014	24.0	C
				PM		23.5	C
17	Westbound I-580 Ramps/ Juliga Woods Street	D	SSSC	AM	December 2012	2.5 (10.0)	A (A)
				PM		4.4 (10.9)	A (B)
18	Meade Street/Regatta Boulevard/ Eastbound I-580 Ramps [f]	D	Signal	AM	December 2012	9.7	A
				PM		9.1	A
19	Regatta Boulevard/ Meade Street [f]	D	SSSC	AM	December 2012	6.0 (9.8)	A (A)
				PM		5.5 (9.7)	A (A)
20	Cutting Boulevard/ I-80 Westbound Off Ramp	D	Signal	AM	November 2014	16.3	B
				PM		11.2	B
21	Cutting Boulevard/ I-80 HOV Ramps	D	Signal	AM	November 2014	10.7	B
				PM		0.9	A
22	Cutting Boulevard/ I-80 Eastbound On-Ramp	D	UNC	AM	November 2014	<1.0	A
				PM		<1.0	A
23	Cutting Boulevard/ San Pablo Avenue	E	Signal	AM	November 2014	41.2	D
				PM		38.2	D
24	Meade Street/ Seaver Avenue	D	SSSC	AM	December 2012	1.3 (9.7)	A (A)
				PM		3.0 (9.0)	A (A)
25	Bayview Avenue/51st Street/ Seaport Avenue/Eastbound I-580 Ramps	D	AWSC	AM	December 2012	27.6	D
				PM		20.0	C

TABLE 4.13-4 (Continued)
EXISTING CONDITIONS INTERSECTION LOS SUMMARY

	Intersection	LOS Standard[g]	Traffic Control[a]	Peak Hour	Count Date [b]	Delay [c,d]	LOS[c,d]
26	Bayview Avenue/ Carlson Boulevard	D	Signal	AM	December 2012	18.7	B
				PM		17.3	B
27	Bayview Avenue/ Westbound I-580 Ramps	D	Signal	AM	December 2012	4.4	A
				PM		8.2	A
28	Carlson Boulevard/ Westbound I-80 Ramps	D	Signal	AM	December 2012	19.3	B
				PM		15.1	B
29	Carlson Boulevard/ Eastbound I-80 Ramps	D	Signal	AM	December 2012	5.0	A
				PM		7.1	A
30	Central Avenue/ Carlson Boulevard	D	Signal	AM	November 2014	34.4	C
				PM		29.7	C
31	Fairmont Avenue/ San Pablo Avenue	D	Signal	AM	November 2014	33.6	C
				PM		24.1	C
32	Barrett Avenue/ 22nd Street	D	Signal	AM	February 2016	10.9	B
				PM		9.1	A
33	Barrett Avenue/ 23rd Street/	D	Signal	AM	February 2016	9.8	A
				PM		13.5	B
34	MacDonald Avenue/ Harbour Way	D	Signal	AM	February 2016	27.1	C
				PM		24.2	C
35	Cutting Boulevard/ South 37th Street	D	Signal	AM	February 2016	18.9	B
				PM		25.7	C
36	Central Avenue/ Eastbound I-580 Ramps	D	AWSC	AM	February 2016	12.6	B
				PM		24.9	C
37	Central Avenue/ Westbound I-580 Ramps	D	AWSC	AM	February 2016	14.4	B
				PM		25.8	D
38	Central Avenue/Jacuzzi Street/San Joaquin Street/Eastbound I-80 Ramps [e]	D	Signal	AM	December 2012	20.4	C
				PM		25.2	C
39	Central Avenue/ Westbound I-80 Ramps [e]	D	Signal	AM	December 2012	12.2	B
				PM		25.5	C
40	Central Avenue/ San Pablo Avenue	E	Signal	AM	February 2016	33.2	C
				PM		48.7	D
41	Cutting Boulevard/ Canal Boulevard [e]	D	Signal	AM	October 2014	25.1	C
				PM		22.3	C

[a] Signal = intersection is controlled by a traffic signal; AWSC = All-way stop-controlled intersection; SSSC = Intersection is controlled by a stop-sign on the side-street approach; UNC = Intersection is uncontrolled.

[b] Sources for count data:
- December 2012 (Intersections 11-15, 17-19, 24-29), *Richmond Bay Campus Long Range Development Plan Draft EIR* (published November 2013).
- April 2013 (Intersections 38 and 39), *Central Avenue Residential Development Transportation Impact Assessment* (December 2013).
- March 2013 (Intersections 5-10), *Costa de Oro Residential Development Transportation Impact Assessment* (October 2013).
- October 2014 (Intersection 41), *Terminal One Draft EIR* (February 2016)
- November 2014 (Intersections 1-4, 16, 20-23, 30, and 31), data collected for this Drat EIR and provided in Appendix E-2.
- February 2016 (Intersections 32-37, and 40), data collected for this Draft EIR and provided in Appendix E-2.

[c] For signalized intersections, average intersection delay and LOS is shown. For side-street stop-controlled intersections, delays for worst movement and average intersection delay are shown: intersection average (worst movement). Delay and LOS calculated using HCM2010, unless noted.

[d] Intersections operating at unacceptable levels are shown in **bold**.

[e] Delay and LOS calculated using HCM 2000, due to limitations in HCM 2010.

[f] Operations may be worse than shown during rail crossing activity.

[g] The LOS standard for study intersection on Routes of Regional Significance, as established by the West Contra Costa Transportation Advisory Committee regardless of the jurisdiction, is LOS E for intersections along San Pablo Avenue and LOS D for intersections along other Routes of Regional Significance. The LOS standard for all other study intersections, which are within the City of Richmond, is LOS D (See pages 4.13-18 and 4.13-21 for more detail).

SOURCE: Fehr & Peers, 2016.

Existing Intersection Operations

Existing operations were evaluated for the weekday AM and PM peak hours using the existing vehicle, heavy vehicle, bicycle, and pedestrian volumes and the existing lane configurations and signal timing parameters as inputs into the LOS calculations. Table 4.13-4 presents the existing AM and PM peak-hour intersection LOS and delays. **Appendix E-3** presents the detailed intersection LOS calculations.

Table 4.13-4 also presents the LOS standard for each intersection per City of Richmond and West Contra Costa Transportation Advisory Committee requirements. The LOS standard for all study intersections except the ones on San Pablo Avenue is LOS D, and the LOS standard for study intersections along San Pablo Avenue is LOS E (See pages 4.13-18 and 4.13-21 for more detail).

During the AM peak hour, all but three of the study intersections currently operate at LOS C or better. The exceptions are the signalized Cutting Boulevard/Harbour Way South (#5) and Cutting Boulevard/San Pablo Avenue (#23) intersections, and the all-way stop-controlled Bayview Avenue/51st Street/Seaport Avenue/ Eastbound I-580 Ramps (#25) intersection, which operate at LOS D during the AM peak hour. During the PM peak hour, all but four of the study intersections currently operate at LOS C or better. The exceptions are the signalized Cutting Boulevard/Harbour Way South (#5), Cutting Boulevard/San Pablo Avenue (#23), and Central Avenue/San Pablo Avenue (#40) intersections, and the all-way stop-controlled Central Avenue/ Westbound I-580 Ramps (#37) intersection, which operate at LOS D during the PM peak hour.

The intersection LOS summarized in Table 4.13-4 does not account for train-crossings at the at-grade rail crossings near the intersections. Several study intersections are located at or near at-grade railroad crossings and train crossings block some or all movements at the intersection. For example, when trains cross the at-grade crossing on Canal Boulevard, the signalized West Cutting Boulevard/Canal Boulevard intersection (#41) enters flashing red mode operations, effectively functioning as an all-way stop-controlled intersection while trains cross. Some intersection movements, such as the westbound right-turn or the eastbound left-turn, continue to operate during the rail crossing. At other movements, such as the southbound through movement, additional delay and queuing occurs while trains cross.

Signal Warrants

To assess the need for signalization of stop-controlled intersections, the Manual on Uniform Traffic Control Devices (MUTCD) provides eight signal warrants[1] (Caltrans, 2012). The Peak Hour Volume and Delay warrant is used to assess the need for signalization at unsignalized intersections. The only unsignalized study intersection that currently meets the peak-hour signal warrant is the all-way stop-controlled Central Avenue/Westbound I-580 Ramps (#37) intersection, which operates at LOS D during the PM peak hour. **Appendix E-4** presents the signal warrant calculations.

[1] Signal warrant analysis is used to determine whether conditions warrant the installation of a new traffic signal, or the continued operation of an existing traffic signal. Meeting one or more signal warrants does not mean that the intersection must be signalized.

Existing Freeway Operations

Table 4.13-5 summarizes the mainline traffic volumes and LOS for weekday AM and PM peak hours under Existing conditions. The existing freeway volumes are based on Caltrans Performance Measurement System (PeMS) data collected in Fall 2015. **Appendix E-5** presents the detailed freeway LOS calculations.

As shown in the table, all freeway segments currently operate at LOS D or better during both AM and PM peak hour. The reported volumes are the volumes served, and not the actual demand. Thus, during the peak hour, the freeway analysis methodology, which analyzes freeway segments in isolation, does not adequately evaluate queuing impacts from downstream bottlenecks. Thus, the actual peak hour demand volumes and corresponding LOS for segments that operate under congested conditions may be underestimated. Based on current observations and as documented in the *Congestion Management Program 2015 Monitoring Report* (CCTA, August 2015), study segments along westbound I-80 during the AM peak hour and eastbound I-80 during the PM peak hour currently operate at congested conditions, which generally corresponds to LOS F.

TABLE 4.13-5
EXISTING CONDITIONS – FREEWAY LOS SUMMARY

Freeway Segment	Peak Hour	Eastbound		Westbound	
		Volume	LOS	Volume	LOS
1. I-580: between Richmond Parkway & Harbour Way	AM	2,200	B	3,520	C
	PM	2,480	B	2,730	B
2. I-580: between Harbour Way and Marina Bay Parkway	AM	2,330	B	3,280	B
	PM	2,810	B	2,930	B
3. I-580: between Marina Bay Parkway and Regatta Boulevard	AM	2,960	B	3,390	B
	PM	3,050	B	3,630	C
4. I-580: between Regatta Boulevard and Bayview Avenue	AM	3,000	B	3,360	B
	PM	3,000	B	3,740	C
5. I-580: between Bayview Avenue and Central Avenue	AM	2,810	B	3,100	B
	PM	2,710	B	3,900	C
6. I-580: between Central Avenue and I-80	AM	2,900	C	2,800	C
	PM	2,600	C	3,400	D
7. I-80: between MacDonald Avenue and Cutting Boulevard	AM	4,420	B	7,100	C[a]
	PM	6,730	C[a]	4,850	B
8. I-80: between Cutting Boulevard and Potrero Avenue	AM	3,600	A	5,400	B[a]
	PM	5,500	B[a]	3,900	B
9. I-80: between Potrero Avenue and Carlson Boulevard	AM	3,900	B	6,200	C[a]
	PM	6,000	C[a]	4,400	B
10. I-80: at the Gilman Street Overpass	AM	6,200	B	7,700	C[a]
	PM	7,500	C[a]	5,600	B

[a] Peak hour served volumes based on Caltrans Performance Measurement System (PeMS) data collected in Fall 2015. Volumes do not account for upstream bottlenecks. Segment operates at worse condition than calculated.

SOURCE: Fehr & Peers, 2016.

Planned Transportation Network Changes

A review of available information indicates that a number of major changes in the transportation network are planned in the Plan Area and vicinity.

The *South Richmond Transportation Connectivity Plan* (SRTCP, July 2015) recommends various multi-modal improvements in the study area both within and outside the Plan Area. Since these improvements are generally not approved or fully funded, they are not assumed in the 2040 No Project conditions. Within the Plan Area, the SRTCP improvements are consistent with the proposed Specific Plan. However, SRTCP improvements are not currently planned for construction or funded. Therefore, this Draft EIR identifies SRTCP improvements as mitigation measures, as appropriate. This Draft EIR proposes the SRTCP improvements outside of the Plan Area to mitigate the project impacts (See page 4.13-69 for more detail).

The 2040 conditions analyses account for the following funded and approved improvements:

- The Richmond Ferry Terminal would be located at the south end of Harbour Way South on the Ford Peninsula. It would provide regular ferry service between Richmond and San Francisco in the near future. According to the Water Emergency Transportation Authority (WETA), construction of the Richmond Ferry Terminal is expected to begin in 2017; a date for commencement of operations has yet to be announced.[2]

- The currently all-way stop-controlled Central Avenue/Eastbound I-580 Ramps and Central Avenue/Westbound I-580 Ramps (#36 and #37) intersections would be signalized. The improvements are expected to be completed by 2017.[3]

No other major changes are planned for the various transportation modes in the study area. Therefore, this analysis assumes the current conditions, including intersection lane configurations and controls at all the other study intersections, for future scenarios.

4.13.3 Regulatory Framework

Richmond General Plan 2030

The General Plan Circulation Element contains the following goals, policies and actions that are relevant to the Specific Plan and the Sub-Area 4 Project. The General Plan document contains more detailed descriptions of these goals and policies; brief statements are provided below.

- **Goal CR1: An Expanded Multimodal Circulation System.** Make conditions safer and more attractive for all modes of transportation including travel by foot and bicycle, public transit and automobiles. Evaluate streets and potential enhancements based on surrounding land use, street function and desired character and by relying on the place-based approach to circulation planning articulated in the General Plan. Take potential improvement measures ranging from physical design treatment of the street environment to social and programmatic responses appropriate to the particular street context.

[2] http://sanfranciscobayferry.com/weta/richmond-ferry-terminal-project-construction
[3] www.ccta.net/uploads/7003.pdf

Policy 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.

Policy CR1.2: An Interconnected Street System. Promote an interconnected system of streets that adequately serves current and future travel needs.

Policy CR1.3: Local and Regional Transportation Linkages. Enhance circulation linkages within the City and region.

Policy CR1.4: Expanded and Affordable Public Transit. Coordinate with regional transportation agencies and support enhanced and expanded public transit to improve mobility options for residents and visitors.

Policy CR1.5: Safe and Convenient Walking and Bicycling. Promote walking and bicycling as a safe and convenient mode of transportation.

Policy 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.

Policy CR1.8: Place-Based Circulation Approach. Promote the place-based planning approach and classification system.

Policy CR1.9: Place-Based Circulation Classification System and Multi-Modal Level of Service Standards. Classify all streets in the City to conform to the Place-Based Circulation Classification System discussed in the Circulation Element of the General Plan and adopt multi-modal level of service (MMLOS) standards that are consistent with each street type's intended function and character.

Policy CR1.10: Vehicular Level of Service Standards for West County Routes of Regional Significance. Maintain vehicular level of service (LOS) standards for signalized intersections consistent with the Contra Costa Transportation Authority's (CCTA) West County Action Plan for Routes of Regional Significance.

- **Goal CR2: Walkable Neighborhoods and Complete Streets.** Activate the public right-of-way and improve the experience of moving people between key destinations at the pedestrian level. In order to make walking and bicycling a more attractive options, enhance connectivity between neighborhoods, schools, the workplace, and daily goods and services so that reaching key destinations is safer and more convenient. Contribute to walkability and livability by promoting mixed-use and complete streets, high-quality pedestrian environments, context-based street design, and efficient public transit.

  Policy CR2.2: Complete Streets. Promote mixed-use urban streets that balance public transit, walking and bicycling with other modes of travel.

  Policy CR2.3: Integrated Bicycle and Pedestrian System. Plan, construct and maintain a safe, comprehensive and integrated bicycle and pedestrian system.

- **Goal CR3: A safe and well-maintained Circulation System.** In order to create a safe and efficient circulation system, emphasize on-going street maintenance and safety improvements that consider all modes of transportation including walking, bicycling, and public transit. Require new facilities and infrastructure as development occurs in order to meet the needs of all users while enhancing mobility and connectivity.

Policy CR3.1: Safety and Accessibility. Enhance safety and accessibility for pedestrians, bicyclists and transit riders.

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.

- **Goal CR5: Sustainable and Green Practices.** In order to create sustainable and clean circulation options, encourage the use of low-impact alternative fuels and new technologies and implement transportation demand management programs. Encourage measures to treat and retain storm water in the design of pedestrian and parking amenities.

  Policy CR5.1: Transportation Demand Management. Promote transportation demand management (TDM) strategies among residents and businesses to reduce reliance on automobiles.

  Policy CR5.2: Renewable Energy and Clean Technology. Promote the use of renewable energy, including non-fossil fuels, and clean technology for transportation including public transit and goods movement.

  Policy CR5.3: Green Streets. Promote the development of street design elements that incorporate natural storm water drainage and landscaping in new and retrofitted streets.

Richmond Bicycle Master Plan

Consistent with the vision presented in the General Plan, the City of Richmond Bicycle Master Plan (City of Richmond, 2011a) provides detailed action items to complete a bikeway system and supporting facilities in the City of Richmond. The Richmond Bicycle Master Plan contains the following four goals and objectives:

- **Goal 1:** Expand the city's bicycle routes and parking facilities into an extensive, well-connected and well-designed network, and improve and maintain these facilities over time.

  ***Objective*:** Increase the number of bikeway miles by 75 percent, complete all gaps in the Bay Trail and double the number of bicycle parking spaces.

- **Goal 2:** Increase the number of people of all ages and backgrounds who bicycle for transportation, recreation and health.

  ***Objective*:** Double the number of trips made by bicycle.

- **Goal 3:** Make the streets safer for bicyclists, not only during the day but also at night.

  ***Objective*:** Reduce the number of bicycle fatalities and injuries by 25 percent (even as the number of bicyclists increases).

- **Goal 4:** Incorporate the needs and concerns of cyclists in all transportation and development projects.

  Objective: Adopt, institutionalize and have relevant City departments implement a "Complete Streets" policy and bicycle-friendly design standards and guidelines for streets and developments.

Richmond Pedestrian Plan

Consistent with the vision presented in the General Plan, the City of Richmond Pedestrian Plan (City of Richmond, 2011b) aims to improve the safety, convenience, and appeal of walking throughout the City of Richmond. The Richmond Pedestrian Plan contains the following goals:

- **Increased Safety.** Streets will be developed and retrofitted to accommodate all types of users. Designs and devices will produce speed moderation, visibility, awareness and communication for motorists and non-motorists alike.
- **Improved Security.** Streets, trails and other public spaces will be designed and improved to create active places that are watched over, maintained and that project a sense of control and community ownership.
- **Improved Connectivity.** A range of strategies and solutions will address physical barriers to walking, such as dead-end streets, railroad right of ways, wide roadways, and wide, complex intersections.
- **Increased Equity**. Walking, the cheapest form of transportation, will be a safe, viable and convenient choice for those who cannot afford, are unable, or choose not to drive a car.
- **Improved Health.** Walking and bicycling, the healthiest forms of transportation, will become desirable alternatives for trips to daily destinations.
- **Increased Sustainability**. Walking and bicycling in the city will reduce the number of vehicle miles Richmond residents and visitors travel, and will reduce associated climate change, air and water quality impacts from vehicle emissions. Opportunities will be identified to convert excess paved rights of way to lower impact spaces with trees and landscaping.
- **Neighborhood and Downtown Revitalization.** Improvements to the streets and pedestrian realm will beautify the public realm and set the stage for new investment in private property that can help fund improvements and attract development that supports walking, bicycling and the use of transit.

Contra Costa Transportation Authority (CCTA) and West Contra Costa Transportation Advisory Committee

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.

CCTA serves as the Congestion Management Agency (CMA) for Contra Costa County. CCTA adopted the county's first Congestion Management Program (CMP) in October 1991. The most recent CMP was adopted by CCTA in 2013. The CMP requires an analysis of any project that is expected to generate more than 100 peak hour vehicle trips. Since this project would generate more than 100 peak hour trips, an analysis of CMP facilities in the study area is required.

The CCTA includes several Regional Transportation Planning Committees that cover specific sub-areas of the County. Richmond is within the West Contra Costa County Transportation Advisory Committee's (WCCTAC) purview. The WCCTAC regularly updates the West Contra Costa Action Plan for Routes of Regional Significance. The Action Plan assesses transportation issues within West Contra Costa County and outlines a recommended package of goals, objectives and actions for addressing those issues. The latest Action Plan was proposed in December 2014, and has not yet been adopted.

The Action Plan designates Routes of Regional Significance and sets Multi-modal Traffic Service Objectives (MTSOs) for each route. Based on the *2014 Proposal for Adoption West County Action Plan for Routes of Regional Significance,* the Route of Regional Significance in the project vicinity and their relevant MTSO are:

- 23rd Street, Carlson Boulevard and Central Avenue: signalized intersections operating at LOS D or better during AM and PM peak hours
- San Pablo Avenue: signalized intersections operating at LOS E or better during AM and PM peak hours.

Consistent with General Plan Policy CR1.10, this EIR uses the above LOS standards as significance thresholds for the study intersections along these routes. The proposed 2014 Action Plan proposes to eliminate Cutting Boulevard and Macdonald Avenue as Routes of Regional Significance. However, this EIR continues to use the LOS standards that were previously established for intersections along these routes.

California Senate Bill 743

On September 27, 2013, California Governor Jerry Brown signed Senate Bill (SB) 743 into law and started a process that could fundamentally change transportation impact analysis as part of CEQA compliance. These changes will include elimination of auto delay, LOS, and other similar measures of vehicular capacity or traffic congestion as a basis for determining CEQA significant impacts in many parts of California (if not statewide).

Existing rules treat auto delay and congestion as an environmental impact. Instead, SB 743 requires the CEQA *Guidelines* to prescribe an analysis that better accounts for transit and reducing greenhouse gas emissions. The Office of Planning and Research (OPR) selected vehicle-miles traveled (VMT) as a replacement measure in the currently proposed *Guidelines.* VMT is suggested not only because it satisfies the explicit goals SB 743, but also because VMT is already used in CEQA to study greenhouse gas and energy impacts. VMT is also already used in planning for regional sustainable communities strategies. Therefore, according to OPR, the proposal is not adding a new CEQA requirement; instead, it suggests replacing LOS with an analysis that is already widely used in CEQA.

The *CEQA Guidelines* update for SB 743 is still in preliminary form. It is anticipated that the new Guidelines will be adopted sometime in 2017. Because these Guidelines have not yet been adopted, and the City of Richmond currently uses LOS to evaluate transportation and traffic impacts, this EIR continues to use an LOS significance threshold.

4.13.4 Project Transportation Characteristics

Various characteristics of the Specific Plan and the Sub-Area 4 Project relevant to the transportation and traffic impact analysis are described below. Chapter 3 provides a more detailed description.

Specific Plan Land Use Summary

The proposed Specific Plan would consist of residential, retail, office, and mixed-use developments within the 500-acre Plan Area in the City of Richmond. The Plan Area is divided into four sub-areas as shown on Figure 4.13-1. The Specific Plan provides the flexibility for a variety of uses and densities within each sub-area. The actual buildout will be consistent with the Specific Plan standards and will depend on future market demand.

The top portion of **Table 4.13-6** presents the conceptual buildout of the Plan Area by sub-area as envisioned in the Specific Plan document, which is illustrative in nature and demonstrates one way that the Specific Plan may be buildout. The Specific Plan would allow a denser development of both residential and non-residential uses than shown in Table 4.13-5. In order to present a robust traffic impact analysis in the EIR that would accommodate the various uses and densities that may occur within each sub-area, Table 4.13-6 also presents the foreseeable maximum theoretical buildout program (See Chapter 3 for more details on the Project Description). Thus, the project analyzed in this EIR is denser than the Specific Plan conceptual program. This development program is used in this EIR to evaluate the potential impacts of the Specific Plan. It would continue to be consistent with the Specific Plan standards, but would include a higher residential density, and would, therefore, result in a conservatively higher automobile trip

TABLE 4.13-6
RICHMOND BAY SPECIFIC PLAN – LAND USE BY SUB-AREA

Sub-Area	R&D/Business/ Service (Thousand Square Feet)	Retail (Thousand Square Feet)	Residential (Dwelling Units)	Open Space (acres)
Specific Plan Conceptual Program[a]				
Sub-Area 1	1,870	270	1,160	12.8
Sub-Area 2	140	130	1,330	12.4
Sub-Area 3	1,560	0	0	1.4
Sub-Area 4	2,120	320	1,590	7.6
Total	**5,690**	**720**	**4,080**	**34.2**
Foreseeable Maximum Theoretical Buildout[b]				
Sub-Area 1	1,870	270	1,840	12.8
Sub-Area 2	140	130	1,330	12.4
Sub-Area 3	1,560	0	0	1.4
Sub-Area 4	2,120	320	2,530	7.6
Total	**5,690**	**720**	**5,700**	**34.2**

[a] Source: Richmond Bay Specific Plan Public Review Draft (October 2015)
[b] Developed in consultation with City of Richmond staff and Specific Plan team to represent a higher trip generating alternative. See Chapter 3, *Project Description*.

generation for the Plan Area and each sub-area. Based on trip generation sensitivity analysis presented in **Appendix E-6**, the trip generation for the foreseeable maximum theoretical buildout program would not be exceeded if the Plan Area would develop with additional residential or non-residential uses than envisioned in the Specific Plan Conceptual Program.

It is expected that the City of Richmond would track the proposed and constructed developments in the Specific Plan area and each sub-area and their cumulative trip generation. Thus, regardless of the actual size, density, and particular use of the development that would occur in each sub-area, this traffic impact analysis would remain valid as long as the cumulative trip generation for each sub-area and the entire Specific Plan remain below the trip generation presented in this EIR.

Specific Plan Transportation Infrastructure

The Specific Plan aims to accommodate growth while minimizing new automobile traffic by shifting travel demand to non-auto modes of transportation. The Specific Plan achieves this goal through establishing a Thoroughfare Regulating Plan and requiring comprehensive parking and Transportation Demand Management (TDM) standards.

Thoroughfare Regulating Plan and Proposed Roadway Network

The Thoroughfare Regulating Plan (Specific Plan Section 4.6) establishes mandatory standards and requirements for all streets within the Specific Plan area. The implementation of the Thoroughfare Regulating Plan would provide a network of primary thoroughfares that represent a minimum grid of streets providing multi-modal connectivity for automobiles, bicycles, pedestrians, and trucks within the Plan Area, as well as standards for a system of minor streets to subdivide the current "superblocks" into smaller, pedestrian-scaled development blocks. The precise location of new streets within the Plan Area have not been established and would be subject to interpretation at the discretion of the City. All streets in the Plan Area would comply with the Thoroughfare Regulating Plan, which includes specific design standards, such as lane widths and bicycle facility type, to ensure that that new streets would accommodate all travel modes based on the available right-of-way, amount and type of traffic expected, and frontage type.

This EIR analysis assumes modifications to the existing major streets in the Plan Area and the provision of internal streets within each sub-area consistent with the Thoroughfare Regulating Plan's mandatory standards and requirements as part of the Specific Plan project.

The analysis also assumes the following mandatory roadway modifications at the study intersections included in the Specific Plan as part of the proposed project:

- Regatta Boulevard/Marina Way South intersection (#10) - Realign Marina Way South and Regatta Boulevard so that traffic between the south and the east would not cross the at-grade railroad crossing, and signalize the realigned intersection (Specific Plan Section 3.3.2).
- Meeker Avenue Extension – Extend Meeker Avenue to the west to connect with Marina Way South. At a minimum, provide a pedestrian/bicycle connection through the existing California Department of Public Health campus and connect to Sub-Area 3 (Specific Plan Section 3.3.2).

This EIR does not assume an extension of Lark Drive between Sub-Area 4 and the Richmond Field Station site as part of the Specific Plan project analysis. However, it evaluates the potential impacts of extending Lark Drive as a two-lane street connecting Sub-Area 4 to the Richmond Field Station site and Regatta Boulevard in Sub-Area 2 under 2040 conditions, as a Specific Plan variant (Lark Drive Variant).

The Specific Plan also proposes the reconfiguration of the I-580 freeway interchanges at Regatta Boulevard/Meade Street and Bay View Avenue as potential future improvements but their implementation is not mandatory under the Specific Plan. This EIR does not account for these interchange reconfigurations because they are not currently approved or funded, the Specific Plan does not require them, and they are outside the jurisdiction and control of the City of Richmond.

Pedestrian Circulation

The Specific Plan design standards(Specific Plan Section 4.6) require sidewalks or separated paths along both sides of all roadways in the Specific Plan Area to provide pedestrian connectivity within each sub-area, and connect the sub-areas to each other, the Bay Trail, and the surrounding neighborhoods, including Richmond Field Station. The Specific Plan also proposes short blocks to encourage pedestrian activity and includes “complete street” and “universal design” principals that prioritize pedestrian access, safety, and circulation within the Plan Area (Specific Plan Section 3.3.7).

Specific features of the pedestrian network would include (Specific Plan Sections 3.3.7 and 4.6):

- Directional curb ramps, bulb-outs, and/or high visibility crossings at intersections (where warranted)
- Pedestrian-scaled street lighting and street furniture along particular corridors
- Landscaping and/or parking lane to buffer sidewalks from vehicular traffic
- Median refuge islands at street crossings with more than two automobile travel lanes, such as at Regatta Boulevard, Marina Bay Parkway, and Marina Way South, to reduce the crossing distance.
- Sensor triggered in-pavement warning or rectangular rapid flashing beacons to alert drivers of crossing pedestrians and cyclists at trail crossing of major streets and selected midblock crossings and intersections.
- Locating driveways on side-streets and not on major pedestrian corridors.

This EIR assumes that the proposed pedestrian network within the Plan Area would be completed as part of the Specific Plan project because the Specific Plan imposes these requirements as mandatory standards through the Specific Plan Thoroughfare Regulating Plan (Specific Plan Section 4.6).

Bicycle Circulation

The Specific Plan includes an extensive bicycle network within the Plan Area to increase connectivity within the Specific Plan area and to key destinations, such as nearby BART and

Amtrak stations, the future Richmond Ferry Terminal, the Bay Trail, and adjacent neighborhoods and nearby commercial areas. These improvements would consist of new bikeways, including the following:

- **Shared-Use Paths (Off-Street):** also referred to as Class I bike facilities, are separate bicycle paths shared with pedestrians, wheelchair users, and other non-motorized traffic. Shared-use paths within the Plan Area would be marked with high-visibility trail crossing pavement markings. Shared-use paths in the Plan Area would include the existing Bay Trail, as well as proposed paths along Marina Bay Parkway and along the railroad right-of-way between Marina Bay Parkway and Marina Way South through Sub-Area 1.

- **Separated Bikeway (Cycle-Tracks)**: are bikeways that are separated from traffic with vertical physical barriers (curbs, planters, bollards, parking, etc.). The Specific Plan proposes separated bikeways along the major arterials in the Plan Area, such as along Regatta Boulevard, Meade Street, and Marina Way South.

- **Bicycle Lanes (On-Street)**: also referred to as Class II paths, utilize pavement markings to demarcate lanes within existing streets, and are typically found along the right side of the street. The Specific Plan proposes bicycle lanes along the main streets within the sub-areas, such as Seaport Avenue, Meeker Avenue, and the Meeker Avenue extension.

- **Bicycle Boulevards/Neighborhood Greenways:** are typically low-traffic streets with traffic calming/speed management or other measures to promote the function of the street as a public space and bikeway. The Specific Plan proposes bicycle boulevards along the smaller streets within the sub-areas,

The Specific Plan also includes robust bicycle parking requirements and bike share stations through the Plan Area and adjacent neighborhoods.

This EIR assumes that the proposed bicycle network within the Plan Area would be completed as part of the Specific Plan project because the Specific Plan imposes these requirements as mandatory standards through the Specific Plan Thoroughfare Regulating Plan (Specific Plan Section 4.6).

Transit Improvements

The Specific Plan proposes a framework to accommodate extension of transit service in the Plan Area (Specific Plan Section 3.3.6) to reduce the reliance on single-occupant automobiles in the Plan Area. In addition to street design standards that would accommodate bus service, the Specific Plan also proposes an extensive bus network consisting of primary transit corridors with service every 15 minutes, 18 hours a day on weekdays, and secondary transit corridors with local service provided at 20 to 60 minute intervals for at least 18 hours a day on weekdays. The proposed transit network would connect the four sub-areas to each other, the Richmond Field Station, the proposed Richmond Ferry Terminal, Downtown Richmond, Richmond and El Cerrito Plaza BART Stations and other destinations. The Specific Plan also accounts for potential future "Eastshore" passenger rail service along the UPRR rail tracks with a station near South 47th Street.

Since bus service in the Plan Area would be provided by AC Transit, and the City of Richmond, as lead agency, does not have jurisdiction or control over AC Transit bus service, this EIR assumes no changes to the current transit service in the Plan Area as part of the proposed Specific Plan. However, extension of the transit service in the Plan Area, consistent with the Specific Plan,

is includes as part of the multi-modal SRTCP improvement projects, detailed on page 4.13-69, which this EIR proposes as mitigation measure to reduce the automobile trips generated by the Specific Plan developments.

Truck Access and Goods Movement

Various heavy and light industrial uses are currently located in the Plan Area. In addition, the Port of Richmond is adjacent to the Plan Area. As a result, the volume of truck traffic on streets within the Plan Area is higher than on typical City streets, a condition that is expected to continue in the future. The Specific Plan acknowledges that goods movement would remain a priority for the Plan Area, and the Thoroughfare Regulating Plan (Specific Plan Sections 3.3.7 and 4.6) identifies truck routes through the Plan Area. The Thoroughfare Regulating Plan mandates street designs that not only serve the current industrial uses and the Port of Richmond, but also the anticipated needs of the proposed new residential, commercial, and research and development uses in the Plan Area. The Specific Plan would minimize potential conflicts between trucks and vulnerable road uses (pedestrians and cyclists) by requiring separated facilities (such as trails and cycle-tracks that provide physical separation between trucks and pedestrians and cyclists).

Rail Crossings

Currently, several active at-grade rail lines traverse the Plan Area. These rail lines limit connectivity across the tracks and can be disruptive to the flow of all vehicles and pedestrians when trains cross. The Specific Plan expects that a rail line would need to be maintained through the Plan Area; however, in the future, it anticipates the consolidation of the various existing rail lines into one corridor (Specific Plan Section 3.3.8), which would reduce the number of locations where multi-modal traffic would cross rail lines. The Specific Plan also anticipates that future study will be required prior to this consolidation, to ensure that the needs of rail and freight operations in the Plan Area are met. This EIR does not account for any reconfigurations to the railroads because they are not currently approved or funded, the Specific Plan does not require them, and they are outside the jurisdiction and control of the City of Richmond.

In addition, the proposed realignment of the Regatta Boulevard/Marina Way South intersection, which as described above and is included as part of the Specific Plan in this EIR, would eliminate one at-grade rail crossing.

Parking and Transportation Demand Management Requirements

The Specific Plan would include robust Transportation Demand Management (TDM) standards and constrained parking requirements to encourage residents, employees and visitors to shift from driving alone to other modes of travel. The TDM standards include the following:

- No minimum off-street parking requirement for proposed uses within the Plan Area. It establishes maximum parking allowances for all uses in order to reduce the drive-alone trips generated in the Plan Area. Since parking demand is estimated to be higher in the early phases of development, the Specific Plan proposes to reduce the maximum parking allowances over time with the ultimate maximum parking allowance of 1.5 spaces per 1,000 square feet for non-residential uses, and 2.0 spaces per residential units. The Specific Plan also encourages unbundling of parking (where parking spaces are rented separately

from the cost of rent or purchase), shared parking (where parking spaces are not reserved for specific tenants or designated for specific uses), market-rate pricing for all public parking, and discourages reserved parking(Specific Plan Sections 4.8.3 and 4.8.4).

- Minimum requirements for the amount of short-term (bike racks) and long-term (bike lockers) bicycle parking, and showers, as well as design requirements for these facilities (Specific Plan Section 4.8.5).
- Establishment of the Transportation Management Association (TMA). The City would coordinate with private employers and property owners to establish the TMA with authority to operate the shared parking supply in the Plan Area, and implement and monitor trip reducing TDM strategies. The City would oversee the effectiveness of TMA programs, including TDM programs and services, set measurable goals, evaluate existing strategies, and if necessary, revise or identify new strategies (Specific Plan Sections 4.8.6 and 4.8.7). Potential TDM strategies would include:
  - Providing residents, employers, employees, and visitors with information regarding available transportation alternatives
  - Providing full or partial transit subsidies, such as participation in AC Transit's EasyPass program which provides unlimited bus use at a discount bulk rate
  - Carpool/vanpool ride-matching and preferential parking for carpool/vanpools
  - Guaranteed Ride Home Program
  - Implement a comprehensive multi-modal wayfinding signage program
  - Designating dedicated car share spaces (Zipcar, City Car Share) in publicly accessible parking facilitates.
  - Providing shared bicycles

The automobile trip generation presented in the next section and the subsequent project traffic impact analyses, do not account for implementation of these TDM standards and parking requirements, because not all of the particular policies and strategies, and their effectiveness on reducing the proposed Specific Plan vehicle trip generation cannot be accurately estimated for the Plan Area at this time. Therefore, this EIR conservatively does not account for them in estimating trips generated by the proposed Specific Plan and does not rely on them to mitigate or reduce the magnitude of the identified impacts.

Specific Plan Project Trip Generation

Trip generation refers to the process of estimating the amount of vehicular traffic a project would add to the surrounding roadway system. Estimates are calculated on a daily basis and for the AM and PM peak hours when traffic volumes on the adjacent streets are highest. Buildout of the Specific Plan would potentially result in a net increase of about 5.6 million square feet of research and development (R&D)/business/service space, 720,000 square feet of retail, and 5,700 residential units.

The mix of proposed uses in an urban environment is expected to result in higher non-auto trips than typical suburban developments. If vehicle trip reduction in mixed-use dense urban developments such as this is understated, the result can be excessive traffic impacts and related

mitigation that can discourage development of otherwise desirable projects or transportation infrastructure that is not sized to the urban setting of the development. The Specific Plan trip generation estimated in this analysis accounts for the mix of uses, and the urban setting envisioned in the Specific Plan.

Current accepted methodologies, such as the Institute of Transportation Engineers (ITE) Trip Generation methodology, are primarily based on data collected at suburban, single-use, freestanding sites. These defining characteristics limit their applicability to mixed-use or multi-use development projects, such as the Richmond Bay Specific Plan, which is in a dense mixed-use setting. The land use mix, design features, and setting of the Specific Plan would include characteristics that influence travel behavior differently from typical single-use suburban developments. Thus, traditional data and methodologies, such as ITE, would not accurately estimate the project vehicle trip generation. In response to the limitations in the ITE methodology, and to provide a straightforward and empirically validated method of estimating vehicle trip generation at mixed-use developments, the US Environmental Protection Agency (EPA) sponsored a national study of the trip generation characteristics of multi-use sites. Based on travel survey data gathered from 239 mixed-use developments (MXDs) in six major metropolitan regions and correlated with the characteristics of the sites and their surroundings, the MXD methodology estimates the amount of external traffic that a mixed-use development would generate by reducing the ITE-based estimates to account for internal trips and external non-auto trips.

Appendix E-6 describes the MXD methodology, as implemented in the Main Street tool developed by Fehr & Peers, and its applicability to the Specific Plan in more detail.

Table 4.13-7 summarizes the external automobile trip generation for buildout of the Specific Plan by Sub-Area. The trip generation process starts with the ITE data for each land use category prior to the application of the MXD adjustments. Table 4.13-7 presents the following for each Sub-Area:

- Total trip generation based on ITE *Trip Generation Manual* (9th Edition). For each land use category. The following ITE data are used for each land use category:
    - *R&D/Business/Service* – This land use designation would consist of a variety of non-retail employment uses, such as office, R&D, and/or light industrial. Since office and R&D would represent the highest trip generating uses, the trip generation for this category is estimated using ITE data for general office building (land use category 710) and research and development center (land use category 760) for half of the uses within each sub-area.
    - *Retail* – The retail uses in the Specific Plan are expected to be primarily ground-level retail and mostly food-related. Their trip generation is estimated using ITE data for shopping center (land use category 820), which ITE defines as “integrated group of commercial establishments.” The data presented by ITE is based on data collected at existing shopping centers, “including neighborhood centers, community center, regional centers, and super regional centers” that can include “non-merchandizing facilities, such as office buildings, movie theaters, restaurants, post offices, and banks, health clubs, and recreational facilities.” Thus, the ITE shopping center data would cover the potential retail uses that would be expected in the Plan Area.

TABLE 4.13-7
RICHMOND BAY SPECIFIC PLAN
TRIP GENERATION SUMMARY

Sub-Area [a]	Daily	AM Peak Hour			PM Peak Hour		
		In	Out	Total	In	Out	Total
Sub-Area 1							
ITE Estimate	*38,790*	*2,125*	*1150*	*3,275*	*1,618*	*2,656*	*4,274*
MXD+ Adjustments	-7,580	-496	-269	-765	-450	-738	-1,188
Net	*31,210*	*1,629*	*881*	*2,510*	*1168*	*1,918*	*3,086*
Sub-Area 2							
ITE Estimate	*18,650*	*455*	*645*	*1,100*	*921*	*873*	*1,794*
MXD+ Adjustments	-4,410	-144	-205	-349	-306	-291	-597
Net	*14,240*	*311*	*440*	*751*	*615*	*582*	*1,197*
Sub-Area 3							
ITE Estimate	*11,790*	*1,515*	*251*	*1,766*	*271*	*1,407*	*1,678*
MXD+ Adjustments	-1,250	-160	-26	-186	-36	-188	-224
Net	*10,540*	*1,355*	*225*	*1,580*	*235*	*1,219*	*1,454*
Sub-Area 4							
ITE Estimate	*46,320*	*2,408*	*1,477*	*3,885*	*2,002*	*3,075*	*5,077*
MXD+ Adjustments	-9,460	-578	-355	-933	-571	-878	-1,449
Net	*36,860*	*1,830*	*1122*	*2,952*	*1,431*	*2,197*	*3,628*
All Sub-Areas [b]							
ITE Estimate	115,550	6,503	3,523	10,026	4,812	8,011	12,823
Non-Auto Trips							
Internal Non-Auto	17,050	869	580	1,449	1,039	1,555	2,594
External Non-Auto	5,650	509	276	785	324	540	864
Total	22,700	1,378	855	2,233	1,363	2,095	3,458
Auto Trips							
Internal Auto Trips	21,400	974	419	1,393	617	1,202	1,819
External Auto Trips	71,450	4,151	2,249	6,400	2,832	4,714	7,546
Total Auto Trips	**92,850**	**5,125**	**2,668**	**7,793**	**3,449**	**5,916**	**9,365**

a See Appendix E-6 for detailed trip generation for each Sub-Area.
b Total external auto reductions using the MXD+ model: Daily = 38% (15% internal non-auto, 5% external non-auto, 19% internal auto), AM Peak Hour = 36% (14% internal non-auto, 8% external non-auto, 14% internal auto), PM Peak Hour = 40% (20% internal non-auto, 6% external non-auto, 14% internal auto)

SOURCE: Fehr & Peers, 2016.

- *Residential* – Since the residential uses in the Plan Area would be multi-family units, their trip generation is estimated using ITE data for apartments (land use category 220).

- Reduction in automobile trip generation due to the mixed-use nature of the Specific Plan development as estimated by the MXD methodology, which accounts for trips internal to each Sub-Area and external non-auto trips (walk, bike, and transit trips). The MXD reduction for each Sub-Area ranges between 10 and 34 percent.

- External trips generated by each Sub-Area, including trips to and from the other Sub-Areas.

Appendix E-6 presents the detailed trip generation estimation for each Sub-Area. The trip generation estimate is conservative in that it does not account for the following:

- The multi-modal improvements envisioned in the South Richmond Transportation Connectivity Plan (SRTCP, July 2015) for outside the Plan Area. The trip generation only assumes the pedestrian, bicycle improvements proposed by the Specific Plan within the Plan area because they are consistent with the Specific Plan requirements. The SRTCP improvements outside the Specific Plan area are required as mitigation by this EIR.

The Specific Plan parking and TDM standards described above that would provide incentives and infrastructure improvements that encourage walking, biking and transit and reduce single-occupant automobile trips and parking.

Table 4.13-7 also presents the total trips generated by the Plan Area. Based on the difference between the application of the MXD Model to the entire Plan Area and each individual sub-area, it is estimated that about 20 percent of daily and 15 percent of peak hour trips are trips between the four Sub-Areas. Considering the relatively large size of the Plan Area, it is conservatively expected that these internal trips would be automobile trips.

Based on the application of the MXD methodology, the Plan Area is estimated to generate about 20 percent fewer daily, 22 percent fewer AM peak hour, and 27 percent fewer PM peak hour automobile trips than estimated by the ITE methodology. The buildout of the Specific Plan is estimated to generate about 71,450 daily, 6,400 AM peak hour, and 7,546 PM peak hour external auto trips. (See Mode Share Comparison discussion in **Appendix E-6** for a comparison of mode shares in the Plan Area with other mixed-use urban areas around the Bay Area).

Sub-Area 4 Project Description

The Sub-Area 4 Project would consist of the Zeneca/Campus Bay site and comprise about 60 percent of Sub-Area 4 on the west side of the Sub-Area 4, just east of the Richmond Field Station. The Sub-Area 4 Project site is currently mostly vacant.

Since the Sub-Area 4 Project would be about 60 percent of the total acreage for Sub-Area 4, this analysis assumes that the Sub-Area 4 Project would comprise approximately 60 percent of the foreseeable maximum theoretical buildout within Sub-Area 4 and would consist of 1,270,000 square feet of R&D/Business/Service uses, 190,000 square feet of retail, and 1,520 residential units, and 119 acres of open space.

All the Specific Plan development standards and requirements would be applicable to the Sub Area 4 Project. Thus, the Sub-Area 4 Project would provide a grid of new streets that would provide for multi-modal access and circulation through the site. All new streets in the Sub-Area 4 Project area would be consistent with the Thoroughfare Regulating Plan described above. Primary automobile access to the Sub-Area 4 Project would be through Seaport Avenue at the Bayview Avenue/51st Street/Seaport Avenue/ Eastbound I-580 Ramps intersection and through existing and new streets with access on 51st and Meade Streets. The Sub-Area 4 Project would also complete the pedestrian and bicycle network envisioned in the Thoroughfare Regulating Plan and provide non-motorized connections to the adjacent Bay Trail and Richmond Field Station site.

It is expected that developments in the Sub-Area 4 Project area would implement robust TDM and parking standards as required by the Specific Plan. However, similar to the Specific Plan assumptions presented above, the Sub-Area 4 Project trip generation and project traffic analyses do not account for the implementation of these TDM and parking standards.

Sub-Area 4 Project Trip Generation

Table 4.13-8 summarizes the external automobile trip generation for the buildout of the Sub-Area 4 Project only, without buildout of the other Sub-Areas 1 through 3. The trip generation is estimated using the same assumptions and methodology used to estimate the trip generation for each of the Sub-Areas and the overall Plan Area, as described above.

TABLE 4.13-8
SUB-AREA 4 PROJECT TRIP GENERATION

Land Use	ITE Code	Units[a]	Daily	AM Peak Hour			PM Peak Hour		
				In	Out	Total	In	Out	Total
R&D	760	640 KSF	4,690	542	111	653	92	523	616
Office	710	630 KSF	5,320	734	100	834	133	651	784
Retail	820	190 KSF	10,310	143	88	231	442	479	921
Residential	220	1,520 DU	10,110	155	620	775	613	330	942
Subtotal			30,430	1,574	919	2,493	1,280	1,983	3,263
MXD+ Trip Adjustments[b]			*-5,810*	*-361*	*-210*	*-571*	*-351*	*-543*	*-894*
Net New Project Trips			**24,620**	**1,213**	**709**	**1,922**	**929**	**1,440**	**2,369**

[a] DU = dwelling unit. KSF = 1,000 square feet
[b] Reductions based on application of MXD+ model: Daily = 19% (11% internal, 8% external), AM Peak Hour = 23% (12% internal, 13% external), PM Peak Hour = 27% (17% internal, 10% external). Internalization is based on trips internal to the Sub-Area 4 Project only.

Source: Fehr & Peers, 2016.

Based on the application of the MXD methodology, the Sub-Area 4 Project is estimated to generate about 19 percent fewer daily, 23 percent fewer AM peak hour, and 27 percent fewer PM peak hour automobile trips than estimated by the ITE methodology. At buildout, Sub-Area 4

Project is estimated to generate about 24,620 daily, 1,920 AM peak hour, and 2,370 PM peak hour auto trips.

Traffic Forecasting Methodology

A project of the size, density, and mix of the proposed Specific Plan is expected to change local and regional travel patterns. Therefore, the traditional methodology of applying isolated project trip generation, distribution, and assignment procedures would not accurately reflect such a project's impact on the surrounding transportation system.

The traffic volume forecasts were developed using the CCTA Countywide Travel Demand Model and existing traffic volumes. The main inputs to the forecasting process are the existing traffic counts and year 2010 and 2040 outputs from the most recent CCTA Model. Thus, the following basic steps were used in developing traffic forecasts for this analysis:

- **Step 1: Develop 2040 No Specific Plan traffic forecasts.** The most recent version of the CCTA Model, based on Association of Bay Area Government (ABAG) *Projections 2013* (i.e., Plan Bay Area), served as the basis for developing AM and PM peak hour intersection turning movement forecasts for the year 2040. The Model land use database in the City of Richmond was checked to ensure consistency with General Plan and to reflect recently approved and proposed developments in the vicinity of the Plan Area. The 2040 No Specific Plan scenario generally assumed the existing land uses within the Plan Area, and assumed the buildout of the University of California (UC) Berkeley Global Campus (BGC, previously known as Richmond Bay Campus), which would consist of about five million square feet of R&D space, and accommodate up to 10,000 employees. The Model transportation network was also checked to ensure that the 2040 network accounts for approved and funded transportation improvements.

  Consistent with the CCTA's *Technical Procedures* (2013), the forecasting process was run for the 2010 and 2040 models, then using the model produced segment volumes and existing turning movement counts, the 2040 intersection turning movements were estimated using the Furness method, which adjusts existing turning movement volumes to reflect changes in roadway segment volumes forecasted by the CCTA Model.[4]

- **Step 2: Estimate project auto trip generation.** As summarized in Table 4.13-7, the MXD methodology was used to estimate the external automobile trip generation for each Sub-area in the Plan Area, and the Sub-Area 4 Project.

- **Step 3: Develop 2040 Plus Specific Plan traffic forecasts.** The 2040 No Specific Plan CCTA Model land use database was adjusted to account for the Specific Plan uses as shown in Table 4.13-7. The CCTA Model was run through the final distribution step. The number of vehicle trips generated by the Specific Plan in the CCTA Model after final distribution was adjusted to match the number of project automobile trips estimated in Step 2 using MXD and shown in Table 4.137. The CCTA Model was then run through final assignment. Similar to Step 1, the AM and PM peak-hour roadway segment volumes forecasted by the CCTA

[4] Outlined in NCHRP-255, the industry-standard Furness technique is used to estimate projected (future) intersection turning movement volumes based on comparing existing traffic volume counts and the Model results. It uses mathematical formulae to balance roadway segment volumes approaching, and departing from, the intersection and thus balances turning volumes that make sense compared to the existing counts and Model results. This process improves the level of confidence in the forecasted future turning movement volumes.

Model were used to develop turning movement forecasts at the study intersections using the Furness method.

As a result, the 2040 project traffic assigned to the street network is consistent with the trip generation estimates presented in Table 4.13-7, and the 2040 Plus Specific Plan forecasts would reflect the potential changes in traffic patterns caused by the mix and size of the Richmond Bay Specific Plan.

- **Step 4: Develop Existing Plus Specific Plan traffic forecasts.** Intersection turning volumes for Existing Plus Specific Plan conditions were estimated by adding the incremental difference between 2040 Plus Specific Plan and 2040 No Specific Plan conditions to the Existing intersection volumes.

- **Step 5: Develop 2040 Plus Specific Plan and SRTCP (i.e., Modified External Transportation Network) traffic forecasts.** Traffic forecasts accounting for the proposed transportation network improvements, which primarily consist of SRTCP recommendations outside the Plan Area and described starting on page 4.13-69, were developed by using the process described in Steps 2 and 3. The MXD trip generation model and the CCTA Model transportation network were adjusted to account for these modifications to the transportation network.

- **Step 6: Develop Sub-Area 4 Project trip assignment.** The process described in Step 3 was used to estimate the trip assignment for the trips generated by the Sub-Area 4 Project only as shown in Table 4.13-8. The Sub-Area 4 Project trip assignment was added to the Existing intersection volumes to estimate Existing Plus Sub-Area 4 volumes. Since the 2040 Plus Specific Plan volumes already include the Sub-Area 4 Project trips, the Sub-Area 4 Project trip assignment was subtracted from the 2040 Plus Specific Plan traffic forecasts to estimate the 2040 No Sub-Area 4 Project forecasts.

4.13.5 Significance Criteria

Significance criteria describe the thresholds of significance used to determine if the proposed project would cause a significant impact. The following thresholds of significance are based on guidance provided in the General Plan, which is consistent with the *Proposal for Adoption West County Action Plan for Routes of Regional Significance* (WCCTAC, 2014). A significant adverse traffic-related impact would occur if:

a) The project would conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit. A significant impact could be identified:

   - If a freeway segment on I-580 is projected to operate at LOS E or better without the project and the project is expected to cause the freeway segment to operate at LOS F and increase peak hour volume by five percent or more.

   - If a freeway segment on I-80 or I-580 is projected to operate at LOS F regardless of the project and the project is expected to increase peak hour volume by five percent or more.

   - If a signalized intersection is projected to operate within expected delay ranges (i.e., LOS D or better with an average control delay of equal to or less than 55 seconds per

vehicle for study intersections not on San Pablo Avenue, and LOS E or better with an average control delay of equal to or less than 80 seconds per vehicle for study intersections not on San Pablo Avenue and) without the project and the project is expected to cause the facility to operate at an unacceptable LOS (LOS E or F for study intersections not on San Pablo Avenue and LOS F for study intersections on San Pablo Avenue);

- If a signalized intersection is projected to operate at or over capacity (LOS E or F for study intersections not on San Pablo Avenue and LOS F for study intersections on San Pablo Avenue) without the project, and the project is expected to increase the average control delay by more than 5 seconds or deteriorates from LOS E to LOS F; or
- If the operations of an unsignalized study intersection is projected to decline with the addition of project traffic, and if the installation of a traffic signal based on the *Manual on Uniform Traffic Control Devices* (MUTCD) Peak Hour Signal Warrant (Warrant 3) would be warranted (Caltrans, 2012).

For intersections that meet the above criteria, capacity-enhancing measures that do not degrade other modes of travel would be prioritized, including upgrading signal equipment, extending left-turn pocket storage, providing non-motorized facilities to reduce vehicular demand, enhancing transit access, or implementing other transportation demand management strategies.

b) The project would 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 roads and highways;

c) The project substantially increases traffic hazards due to a design feature (e.g. sharp curves or dangerous intersections) or incompatible uses (e.g. farm equipment);

d) The project results in inadequate emergency access;

e) The project conflicts with adopted policies, plans, or programs regarding public transit, bicycle or pedestrian facilities, or otherwise decrease the performance or safety of such facilities;

f) A pedestrian, bicycle or transit impact is considered significant if it would:

- Disrupt existing facilities;
- Interfere with planned facilities; or
- Create inconsistencies with adopted system plans, guidelines, policies, or standards.

g) Results in a change in air traffic patterns, including either an increase in traffic levels or a change in locations that result in substantial safety risks.

Topics with No Impact or Otherwise Not Addressed in this EIR

The proposed project would not result in significant impacts pursuant to Significance Criteria “g” (a change in air traffic patterns, including either an increase in traffic levels or a change in locations that result in substantial safety risks) listed above. The proposed project would have no impact on air traffic patterns as it would not introduce new air traffic or interfere with existing air traffic; the nearest public airport is Oakland International Airport, located approximately 15 miles south of the

Plan Area. The proposed project would not result in a change in air traffic patterns, including either an increase in air traffic levels or a change in location, which would result in substantial safety risks.

4.13.6 Discussion of Impacts and Mitigation Measures

This section discusses potential impacts to transportation and circulation that could result from the implementation of the Specific Plan or the Sub-Area 4 Project, based on application of significance thresholds, described above, which are used to determine whether an impact is significant. This section presents the impacts associated with the proposed Specific Plan and Sub-Area 4 Project and identifies mitigation measures, as appropriate. With respect to transportation and circulation, the project would have a significant impact on the environment if it meets or exceeds the City of Richmond CEQA transportation thresholds of significance detailed above.

Specific Plan Traffic Operations Analysis

This section evaluates impacts of the Specific Plan on traffic operations at the study intersections and freeway segments under Existing and 2040 conditions.

Existing Plus Specific Plan Intersection Operations Analysis

Figure A-2 in **Appendix E-1** presents the peak hour traffic volumes and intersection lane configurations and controls under Existing Plus Specific Plan Conditions at the study intersections. The Traffic Forecasting Methodology discussion, starting on page 4.13-32, describes the process used to develop traffic volumes under Existing Plus Specific Plan conditions.

This analysis assumes the following roadway modifications as part of the proposed project:

- Regatta Boulevard/Marina Way South intersection (#10) – Realign Marina Way South and Regatta Boulevard so that traffic between the south and the east would not cross the at-grade railroad crossing, and signalize the realigned intersection.
- Meeker Avenue Extension – Extend Meeker Avenue to the west to connect with Marina Way South. Provide at least pedestrian/bicycle connection through the existing California Department of Public Health campus and connect to Sub-Area 3.

This analysis assumes that signal timing parameters that do not require upgrades to the signal equipment, such as amount of green time assigned to each intersection approach, would be optimized at the signalized study intersections under the Existing Plus Specific Plan conditions.

Intersection LOS calculations for Existing Plus Specific Plan conditions were completed with the traffic volumes and roadway network described above. **Table 4.13-9** summarizes the intersection LOS results. **Appendix E-7** presents the detailed intersection LOS calculation worksheets under Existing Plus Specific Plan conditions.

TABLE 4.13-9
EXISTING PLUS SPECIFIC PLAN CONDITIONS INTERSECTION LOS SUMMARY

	Intersection	Traffic Control[a]	Peak Hour	Existing		Existing Plus Specific Plan		Significant Impact?	Existing Plus Specific Plan Mitigated		Significance After Mitigation (for intersections with potentially significant impacts)
				Delay[b,c]	LOS[b,c]	Delay[b,c]	LOS[b,c]		Delay[b,c]	LOS[b,c]	
1	Macdonald Avenue/ 22nd Street	Signal	AM	13.5	B	16.2	B	No	16.2	B	
			PM	14.6	B	14.6	B		14.6	B	
2	Macdonald Avenue/ 23rd Street	Signal	AM	6.8	A	7.7	A	No	7.7	A	
			PM	9.6	A	13.4	B		13.4	B	
3	Cutting Boulevard/ Hoffman Boulevard	Signal	AM	8.0	A	9.4	A	No	9.4	A	
			PM	8.8	A	8.9	A		8.9	A	
4	Cutting Boulevard/ I-580 Westbound Ramps	Signal	AM	6.4	A	7.2	A	No	7.2	A	
			PM	24.2	C	5.4	A		5.4	A	
5	Cutting Boulevard/ Harbour Way South	Signal	AM	38.9	D	42.0	D	No	42.0	D	
			PM	41.6	D	41.7	D		41.7	D	
6	Hoffman Boulevard/ Harbour Way South	Signal	AM	7.1	A	8.3	A	No	8.3	A	
			PM	3.9	A	4.9	A		4.9	A	
7	**Wright Avenue/ Harbour Way South[e]**	**SSSC**	**AM**	3.0 (12.0)	A (B)	24.7 **(>180)**	C **(F)**	**Yes**	8.3	A	**Less Than Significant**
			PM	3.2 (13.3)	A (B)	**63.5 (>180)**	**F (F)**		10.7	B	
8	Cutting Boulevard/ Marina Way South	Signal	AM	10.0	A	19.1	B	No	19.1	B	
			PM	8.8	A	17.5	B		17.9	B	
9	**Wright Avenue/ Marina Way South**	**Signal**	AM	3.6	A	27.7	C	**Yes**	32.0	C	**Less Than Significant**
			PM	3.2	A	**119.9**	**F**		45.1	D	
10	Regatta Boulevard/ Marina Way South[d, e]	SSSC	AM	4.6 (8.8)	A (A)	6.0	A	No	6.0	A	
			PM	2.3 (9.4)	A (A)	8.5	A		8.5	A	
11	Cutting Boulevard/ 23rd Street	Signal	AM	19.0	B	38.4	D	No	38.4	D	
			PM	19.8	B	53.1	D		53.1	D	
12	Westbound I-580 Ramps/ 23rd Street	Signal	AM	5.5	A	6.6	A	No	6.6	A	
			PM	6.9	A	8.3	A		8.3	A	
13	Eastbound I-580 Off-Ramp/ 23rd Street	Signal	AM	3.6	A	10.4	B	No	10.4	B	
			PM	5.9	A	8.8	A		8.8	A	
14	Meeker Avenue/ Marina Bay Parkway	Signal	AM	18.8	B	47.1	D	No	47.1	D	
			PM	12.0	B	30.5	C		30.5	C	
15	Regatta Boulevard/ Marina Bay Parkway	Signal	AM	33.7	C	54.6	D	No	54.6	D	
			PM	14.9	B	38.5	D		38.5	D	
16	Cutting Boulevard/ Carlson Boulevard[e]	Signal	AM	24.0	C	27.7	C	No	27.7	C	
			PM	23.5	C	24.1	C		24.1	C	

TABLE 4.13-9 (Continued)
EXISTING PLUS SPECIFIC PLAN CONDITIONS INTERSECTION LOS SUMMARY

	Intersection	Traffic Control[a]	Peak Hour	Existing		Existing Plus Specific Plan		Significant Impact?	Existing Plus Specific Plan Mitigated		Significance After Mitigation (for intersections with potentially significant impacts)
				Delay[b,c]	LOS[b,c]	Delay[b,c]	LOS[b,c]		Delay[b,c]	LOS[b,c]	
17	**Westbound I-580 Ramps/ Juliga Woods Street**	**SSSC**	**AM**	2.5 (10.0)	A (A)	**39.8 (>180)**	**E (F)**	**Yes**	23.0	C	**Significant and Unavoidable [f]**
			PM	4.4 (10.9)	A (B)	**>180 (>180)**	**F (F)**		20.3	C	
18	**Meade Street/Regatta Boulevard/ Eastbound I-580 Ramps [e]**	**Signal**	**AM**	9.7	A	**>180**	**F**	**Yes**	**>180**	**F**	**Significant and Unavoidable**
			PM	9.1	A	**>180**	**F**		**>180**	**F**	
19	**Regatta Boulevard/ Meade Street [e]**	**SSSC**	**AM**	6.0 (9.8)	A (A)	**84.7 (>180)**	**F (F)**	**Yes**	31.9	C	**Less Than Significant**
			PM	5.5 (9.7)	A (A)	**>180 (>180)**	**F (F)**		46.6	D	
20	Cutting Boulevard/ I-80 Westbound Off Ramp	Signal	AM	16.3	B	18.1	B	No	18.1	B	
			PM	11.2	B	13.3	B		13.3	B	
21	Cutting Boulevard/ I-80 HOV Ramps	Signal	AM	10.7	B	11.9	B	No	11.9	B	
			PM	0.9	A	2.9	A		2.9	A	
22	Cutting Boulevard/ I-80 Eastbound On-Ramp	UNC	AM	<1.0	A	<1.0	A	No	<1.0	A	
			PM	<1.0	A	<1.0	A		<1.0	A	
23	Cutting Boulevard/ San Pablo Avenue	Signal	AM	41.2	D	42.2	D	No	42.2	D	
			PM	38.2	D	41.5	D		41.5	D	
24	Meade Street/ Seaver Avenue	Signal	AM	1.3 (9.7)	A (A)	0.5 (13.8)	A (B)	No	0.5 (13.8)	A (B)	
			PM	3.0 (9.0)	A (A)	0.8 (22.4)	A (C)		0.8 (22.4)	A (C)	
25	**Bayview Avenue/51st Street/ Seaport Avenue/Eastbound I-580 Ramps**	**AWSC**	**AM**	27.6	D	**75.6**	**F**	**Yes**	48.4	D	**Significant and Unavoidable**
			PM	20.0	C	**66.8**	**F**		**77.6**	**E**	
26	Bayview Avenue/ Carlson Boulevard	Signal	AM	18.7	B	33.9	C	No	33.9	C	
			PM	17.3	B	24.7	C		24.7	C	
27	Bayview Avenue/ Westbound I-580 Ramps	Signal	AM	4.4	A	11.7	B	No	11.7	B	
			PM	8.2	A	26.9	C		26.9	C	
28	Carlson Boulevard/ Westbound I-80 Ramps	Signal	AM	19.3	B	38.9	D	No	38.9	D	
			PM	15.1	B	17.8	B		17.8	B	
29	Carlson Boulevard/ Eastbound I-80 Ramps	Signal	AM	5.0	A	5.5	A	No	5.5	A	
			PM	7.1	A	7.2	A		7.2	A	
30	Central Avenue/ Carlson Boulevard	Signal	AM	34.4	C	34.9	C	No	34.9	C	
			PM	29.7	C	31.6	C		31.6	C	
31	Fairmont Avenue/ San Pablo Avenue	Signal	AM	33.6	C	35.9	D	No	35.9	D	
			PM	24.1	C	25.1	C		25.1	C	
32	Barrett Avenue/ 22nd Street	Signal	AM	10.9	B	18.2	B	No	18.2	B	
			PM	9.1	A	10.8	B		10.8	B	

TABLE 4.13-9 (Continued)
EXISTING PLUS SPECIFIC PLAN CONDITIONS INTERSECTION LOS SUMMARY

	Intersection	Traffic Control[a]	Peak Hour	Existing		Existing Plus Specific Plan		Significant Impact?	Existing Plus Specific Plan Mitigated		Significance After Mitigation (for intersections with potentially significant impacts)
				Delay[b,c]	LOS[b,c]	Delay[b,c]	LOS[b,c]		Delay[b,c]	LOS[b,c]	
33	Barrett Avenue/ 23rd Street/	Signal	AM	9.8	A	11.1	B	No	11.1	B	
			PM	13.5	B	18.0	B		18.0	B	
34	MacDonald Avenue/ Harbour Way	Signal	AM	27.1	C	35.3	D	No	35.3	D	
			PM	24.2	C	35.5	D		35.5	D	
35	Cutting Boulevard/ South 37th Street	Signal	AM	18.9	B	19.2	B	No	19.2	B	
			PM	25.7	C	28.7	C		28.7	C	
36	**Central Avenue/ Eastbound I-580 Ramps**	**AWSC**	AM	12.6	B	15.1	C	**Yes**	10.3	B	**Significant and Unavoidable [f]**
			PM	24.9	C	**51.6**	**F**		9.6	A	
37	**Central Avenue/ Westbound I-580 Ramps**	**AWSC**	AM	14.4	B	18.8	C	**Yes**	10.3	B	**Significant and Unavoidable [f]**
			PM	25.8	D	**39.2**	**E**		13.2	B	
38	Central Avenue/Jacuzzi Street/San Joaquin Street/Eastbound I-80 Ramps [d]	Signal	AM	20.4	C	22.5	C	No	23.1	C	
			PM	25.2	C	32.9	C		32.9	C	
39	Central Avenue/ Westbound I-80 Ramps [d]	Signal	AM	12.2	B	11.3	B	No	11.3	B	
			PM	25.5	C	25.1	C		25.1	C	
40	Central Avenue/ San Pablo Avenue	Signal	AM	33.2	C	37.4	D	No	37.4	D	
			PM	48.7	D	66.2	E		66.2	E	
41	Cutting Boulevard/ Canal Boulevard [d]	Signal	AM	25.1	C	25.9	C	No	25.9	C	
			PM	22.3	C	23.3	C		23.3	C	

a Signal = intersection is controlled by a traffic signal; AWSC = All-way stop-controlled intersection; SSSC = Intersection is controlled by a stop-sign on the side-street approach; UNC = Intersection is uncontrolled.
b For signalized intersections, average intersection delay and LOS is shown. For side-street stop-controlled intersections, delays for worst movement and average intersection delay are shown: intersection average (worst movement). Delay and LOS calculated using HCM2010, unless noted.
c Intersections operating at unacceptable levels are shown in **bold**.
d Delay and LOS calculated using HCM 2000, due to limitations in HCM 2010.
e Operations may be worse than shown during rail crossing activity.
f The proposed mitigation measure would mitigate the impact to a less-than-significant level. The impact is conservatively identified as significant and unavoidable because the intersection is under the jurisdiction of Caltrans, and City of Richmond, as lead agency, does not have jurisdiction at this intersection.

SOURCE: Fehr & Peers, 2016.

In general, the study intersections are projected to experience more delay under Existing Plus Specific Plan conditions than under Existing Conditions, due to the additional traffic generated by the project. All study intersections, except the following nine intersections, are expected to continue to operate at LOS D or better during both AM and PM peak hours:

- The side-street stop-controlled Wright Avenue/Harbour Way South intersection (#7) would operate at LOS F during both AM and PM peak hours. The intersection would meet the California MUTCD peak-hour volume signal warrant.
- The signalized Wright Avenue/Marina Way South intersection (#9) would operate at LOS F during the PM peak hour.
- The side-street stop-controlled Westbound I-580 Ramps/Juliga Woods Street intersection (#17) would operate at LOS F during both AM and PM peak hours. The intersection would meet the California MUTCD peak-hour volume signal warrant.
- The signalized Meade Street/Regatta Boulevard/Eastbound I-580 Ramps intersection (#18) would operate at LOS F during both AM and PM peak hours.
- The side-street stop-controlled Regatta Boulevard/Meade Street intersection (#19) would operate at LOS F during both AM and PM peak hours. The intersection would meet the California MUTCD peak-hour volume signal warrant.
- The all-way stop-controlled Bayview Avenue/51st Street/Seaport Avenue/Eastbound I-580 Ramps intersection (#25) would operate at LOS F during both AM and PM peak hours. The intersection would meet the California MUTCD peak-hour volume signal warrant.
- The all-way stop-controlled Central Avenue/Eastbound I-580 Ramps intersection (#36) would operate at LOS F during both AM and PM peak hours. The intersection would meet the California MUTCD peak-hour volume signal warrant.
- The all-way stop-controlled Central Avenue/Westbound I-580 Ramps intersection (#37) would operate at LOS F during both AM and PM peak hours. The intersection would meet the California MUTCD peak-hour volume signal warrant.
- The signalized Central Avenue/San Pablo Avenue intersection (#40) would operate at LOS E during the PM peak hour.

The Specific Plan would cause a significant impact at eight of the nine intersections listed above. The Specific Plan would not cause a significant impact at the signalized Central Avenue/San Pablo Avenue intersection (#40) because the LOS standard for San Pablo Avenue is LOS E.

Existing Plus Specific Plan Freeway Operations Analysis

Table 4.13-10 summarizes the freeway mainline LOS for weekday AM and PM peak hours under Existing Plus Specific Plan conditions. **Appendix E-5** presents the detailed freeway LOS calculations.

TABLE 4.13-10
EXISTING PLUS SPECIFIC PLAN CONDITIONS
FREEWAY LOS SUMMARY

Freeway Segment	Peak Hour	Existing Conditions		Existing Plus Specific Plan Conditions		Significant Impact?
		Eastbound	Westbound	Eastbound	Westbound	
1. I-580: between Richmond Parkway and Harbour Way	AM	B	C	B	C	No
	PM	B	B	B	C	
2. I-580: between Harbour Way and Marina Bay Parkway	AM	B	B	B	C	No
	PM	B	B	C	C	
3. I-580: between Marina Bay Parkway and Regatta Boulevard	AM	B	B	C	C	No
	PM	B	C	C	C	
4. I-580: between Regatta Boulevard and Bayview Avenue	AM	B	B	B	C	No
	PM	B	C	C	C	
5. I-580: between Bayview Avenue and Central Avenue	AM	B	B	B	C	No
	PM	B	C	C	C	
6. I-580: between Central Avenue and I-80	AM	C	C	C	D	No
	PM	C	D	D	D	
7. I-80: between MacDonald Avenue and Cutting Boulevard	AM	B	**F**[a]	B	**F**[a]	No
	PM	**F**[a]	B	**F**[a]	B	
8. I-80: between Cutting Boulevard and Potrero Avenue	AM	A	**F**[a]	B	**F**[a]	No
	PM	**F**[a]	B	**F**[a]	B	
9. I-80: between Potrero Avenue and Carlson Boulevard	AM	B	**F**[a]	B	**F**[a]	No
	PM	**F**[a]	B	**F**[a]	B	
10. I-80: at the Gilman Street Overpass	AM	B	**F**[a]	B	**F**[a]	No
	PM	**F**[a]	B	**F**[a]	B	

[a] Segment operates at worse condition than calculated and assumed to operate at LOS F based on current observations.

SOURCE: Fehr & Peers, 2016.

As shown in the table, the study freeway segments along I-580 and the non-peak direction of I-80 are expected to operate at LOS D or better under Existing Plus Specific Plan conditions during both AM and PM peak hours. Similar to the Existing conditions, the estimated Existing Plus Specific Plan volumes are the volumes served, not the actual peak hour demand, and therefore, actual conditions may be worse than the reported LOS. Thus, segments along westbound I-80 during the AM peak hour and eastbound I-80 during the PM peak hour are expected to continue to operate at congested conditions. This analysis conservatively assumes that these segments would operate at LOS F under Existing Plus Specific Plan conditions. However, the Specific Plan would increase the peak hour volume on these freeway segments by less than five percent. Thus, the Specific Plan would not cause a significant impact on the freeway mainline sections under Existing Plus Specific Plan conditions.

Existing Plus Specific Plan Impacts and Mitigation Measures

The impacts and recommended mitigation measures are discussed below for Criteria a. and b., as described in Section 4.13.5 Significance Criteria on page 4.13-34.

Impact TRF-1.SP: Operations at the unsignalized *Wright Avenue/Harbour Way South* intersection (#7) would deteriorate due to traffic generated under the Specific Plan, and would warrant the installation of a traffic signal under Existing Plus Specific Plan conditions. (*Less Than Significant with Mitigation*)

Traffic generated under the Specific Plan would cause the side-street stop-controlled Wright Avenue/Harbour Way South intersection (#7) to operate at LOS F during both AM and PM peak hours under Existing Plus Specific Plan conditions. The intersection would meet the California MUTCD peak-hour volume signal warrant under Existing Plus Specific Plan conditions. Implementation of the following mitigation measure would reduce the impact to a less-than significant-level:

> **Mitigation Measure TRF-1.SP**: **Wright Avenue/Harbour Way South Intersection Signalization and Channelization Improvements.** All applicants proposing the development of projects within the Plan Area and meeting the trigger and funding criteria specified below shall be responsible for implementing the following improvements:
>
> a) Signalize intersection and provide warning lights and gates for the at-grade railroad crossing.
>
> b) Restripe the southbound Harbour Way South approach to provide an exclusive left-turn lane and a shared right/through lane within the current right-of-way.
>
> Signalization of the intersection is consistent with the mitigation measure proposed at this intersection by the *Richmond Ferry Terminal Project Initial Study/Mitigated Negative Declaration* (May 2014). If this improvement is implemented prior to the trigger identified in this mitigation measure, then it would not be required as a mitigation measure for the Specific Plan.
>
> It is estimated that the mitigation measure at this intersection may be required when about 55 percent of the Specific Plan area is developed (which corresponds to 50 percent of Specific Plan development excluding the Sub-Area 4 Project). At that time, the

development project that triggers the impact shall either fully fund or implement the mitigation measure. Alternatively, the City of Richmond may implement this mitigation measure prior to or at the time the 55 percent buildout trigger occurs, the mitigation measure would not be required to be implemented by an individual project and the City may collect fair-share contributions from the projects in the Plan Area to support implementation.

After implementation of this measure, the intersection would improve to LOS A during the AM peak hour and LOS B during the PM peak hour and reduce the impact to a less-than-significant level. No secondary significant impacts would result from implementation of this measure.

Significance after Mitigation: Less Than Significant.

Mitigation: Mitigation Measure TRF-1.SP.

Impact TRF-2.SP: Operations at the signalized *Wright Avenue/Marina Way South* intersection (#9) would deteriorate to an unacceptable LOS due to traffic generated by the Specific Plan under Existing Plus Specific Plan conditions. (*Less Than Significant with Mitigation*)

Traffic generated by the Specific Plan would cause the signalized Wright Avenue/Marina Way South intersection (#9) to degrade from LOS A to LOS F during the PM peak hour under Existing Plus Specific Plan conditions. Implementation of the following mitigation measure would reduce the impact to a less-than-significant level.

Mitigation Measure TRF-2.SP: **Wright Avenue/Marina Way South Intersection Improvements.** All applicants proposing the development of projects within the Plan Area and meeting the trigger and funding criteria specified below shall be responsible for implementing the following improvement:

a) Restripe the westbound Wright Avenue approach to provide an exclusive right-turn lane and a shared left/through lane within the current right-of-way.

It is estimated that the mitigation measure at this intersection may be required when about 40 percent of the Plan Area is developed (which corresponds to 40 percent of Specific Plan development excluding the Sub-Area 4 Project). At that time, the development project that triggers the impact shall either fully fund or implement the mitigation measure. Alternatively, the City of Richmond may implement this mitigation measure prior to or at the time the 40 percent buildout trigger occurs, the mitigation measure would not be required to be implemented by an individual project and the City may collect fair-share contributions from the projects in the Plan Area to support implementation.

After implementation of this measure, the intersection would improve to LOS C during the AM peak hour and LOS D during the PM peak hour and reduce the impact to a less-than-significant level. No secondary significant impacts would result from implementation of this measure.

Significance after Mitigation: Less Than Significant.

Mitigation: Mitigation Measure TRF-2.SP.

Impact TRF-3.SP: Operations at the unsignalized *Westbound I-580 Ramps/Juliga Woods Street* intersection (#17) would deteriorate due to traffic generated by the Specific Plan and would warrant the installation of a traffic signal under Existing Plus Specific Plan conditions. (*Significant and Unavoidable*)

Traffic generated by the Specific Plan would cause the side-street stop-controlled Westbound I-580 Ramps/Juliga Woods Street intersection (#17) to operate at LOS F during both AM and PM peak hours under Existing Plus Specific Plan conditions. The intersection would meet the California MUTCD peak-hour volume signal warrant under Existing Plus Specific Plan conditions. Implementation of the following mitigation measure would reduce the impact to a less-than-significant level:

> **Mitigation Measure TRF-3.SP**: **Westbound I-580 Ramps/Juliga Woods Street Intersection Signalization.** All applicants proposing the development of projects within the Plan Area and meeting the trigger and funding criteria specified below shall be responsible for implementing the following improvement:
>
> a) Install an actuated signal at the intersection with protected phasing on all approaches.
>
> The proposed signalization of this intersection is consistent with the mitigation measure proposed at this intersection by the *Richmond Bay Campus Long Range Development Plan Draft EIR* (November 2013). If this improvement is implemented prior to the trigger identified in this mitigation measure, then it would not be required as a mitigation measure for the Specific Plan.
>
> It is estimated that the mitigation measure at this intersection may be required when about 45 percent of the Specific Plan area is developed (which corresponds to 35 percent of Specific Plan development excluding the Sub-Area 4 Project). At that time, the development project that triggers the impact shall either fully fund or implement the mitigation measure. Alternatively, the City of Richmond may implement this mitigation measure prior to or at the time the 45 percent buildout trigger occurs, the mitigation measure would not be required to be implemented by an individual project and the City may collect fair-share contributions from the projects in the Plan Area to support implementation.
>
> After implementation of this measure, the intersection would improve to LOS C during both AM and PM peak hours and reduce the impact to a less-than-significant level. It is not certain that this mitigation measure could be implemented because the intersection is under the jurisdiction of Caltrans. The City of Richmond, as lead agency, does not have jurisdiction to implement Measure TRF-3.SP and the mitigation would need to be approved and implemented by Caltrans. Therefore, the impact is conservatively considered significant and unavoidable because the City cannot ensure its implementation. No secondary significant impacts would result from implementation of this measure.

Significance after Mitigation: Significant and Unavoidable.

Mitigation: Mitigation Measure TRF-3.SP.

Impact TRF-4.SP: Operations at the signalized *Meade Street/Regatta Boulevard/Eastbound I-580 Ramps* intersection (#18) would deteriorate to an unacceptable LOS due to traffic generated by the Specific Plan under Existing Plus Specific Plan conditions. (*Significant and Unavoidable*)

Traffic generated by the Specific Plan would cause the signalized Meade Street/Regatta Boulevard/ Eastbound I-580 Ramps intersection (#18) to degrade from LOS A to LOS F during both AM and PM peak hours under Existing Plus Specific Plan conditions. Implementation of the following mitigation measure would reduce the magnitude of the impact at this intersection:

> **Mitigation Measure TRF-4.SP**: **Meade Street/Regatta Boulevard/Eastbound I-580 Ramps Intersection Improvements.** All applicants proposing the development of projects within the Plan Area and meeting the trigger and funding criteria specified below shall be responsible for implementing the following improvements:
>
> a) Restripe westbound Meade Street to provide one exclusive right-turn lane and a shared left/through lane.
>
> b) Upgrade signal to actuated operations, convert the phasing for the east and west intersection approaches from protected phasing to split-phasing, and coordinate signal timings with the adjacent Regatta Boulevard/Meade Street intersection and the at-grade railroad crossing.
>
> It is estimated that the mitigation measure at this intersection may be required when about 25 percent of the Plan Area is developed (which corresponds to 20 percent of Specific Plan development excluding the Sub-Area 4 Project). At that time, the development project that triggers the impact shall either fully fund or implement the mitigation measure. Alternatively, the City of Richmond may implement this mitigation measure prior to or at the time the 25 percent buildout trigger occurs, the mitigation measure would not be required to be implemented by an individual project and the City may collect fair-share contributions from the projects in the Plan Area to support implementation.
>
> The implementation of this measure would improve conditions at the intersection; however, the intersection would continue to operate at LOS F during both AM and PM peak hours. Traffic operations at the intersection can be further improved by providing additional automobile travel lanes, such as a second left-turn lane on the southbound Regatta Boulevard approach and a second through lane on the northbound Regatta Boulevard approach. However, these modifications cannot be accommodated within the available automobile right-of-way and would require additional right-of-way, and/or loss of planned bicycle and/or pedestrian facilities, and are considered to be infeasible because they would be in conflict with the Specific Plan and General Plan goals to promote pedestrian, bicycle, and transit trips. Therefore, the impact would remain significant and unavoidable. Furthermore, it is not certain that this mitigation measure could be implemented because the intersection is under the jurisdiction of Caltrans. The City of Richmond, as lead agency, does not have jurisdiction to implement Measure TRF-4.SP and the mitigation would need

to be approved and implemented by Caltrans. No other secondary significant impacts would result from implementation of this measure.

Significance after Mitigation: Significant and Unavoidable.

Mitigation: Mitigation Measure TRF-4.SP.

Impact TRF-5.SP: Operations at the unsignalized *Regatta Boulevard/Meade Street* intersection (#19) would deteriorate due to traffic generated by the Specific Plan and would warrant the installation of a traffic signal under Existing Plus Specific Plan conditions. (*Less Than Significant with Mitigation*)

Traffic generated by the Specific Plan would cause the side-street stop-controlled Regatta Boulevard/Meade Street intersection (#19) to operate at LOS F during both AM and PM peak hours under Existing Plus Specific Plan conditions. The intersection would meet the California MUTCD peak-hour volume signal warrant under Existing Plus Specific Plan conditions. Implementation of the following mitigation measure would reduce the impact to a less-than-significant level:

Mitigation Measure TRF-5.SP: **Regatta Boulevard/Meade Street Intersection Signalization.** All applicants proposing the development of projects within the Plan Area and meeting the trigger and funding criteria specified below shall be responsible for implementing the following improvement:

a) Install an actuated signal at the intersection with protected phasing on all approaches. Coordinate signal timings with the adjacent Meade Street/Regatta Boulevard/ Eastbound I-580 Ramps intersection and the at-grade railroad crossing.

The proposed improvements at this intersection are consistent with the mitigation measure proposed at this intersection by the *Richmond Bay Campus Long Range Development Plan Draft EIR* (November 2013). If this improvement is implemented prior to the trigger identified in this mitigation measure, then it would not be required by the Specific Plan developments.

It is estimated that the mitigation measure at this intersection may be required when about 25 percent of the Plan Area is developed (which corresponds to 15 percent of Specific Plan development excluding the Sub-Area 4 Project). At that time, the development project that triggers the impact shall either fully fund or implement the mitigation measure. Alternatively, the City of Richmond may implement this mitigation measure prior to or at the time the 25 percent buildout trigger occurs, the mitigation measure would not be required to be implemented by an individual project and the City may collect fair-share contributions from the projects in the Plan Area to support implementation. After implementation of this measure, the intersection would improve to LOS C during the AM peak hour and LOS D during PM peak hour and reduce the impact to a less-than - significant level. No secondary significant impacts would result from implementation of this measure.

Significance after Mitigation: Less Than Significant.

Mitigation: Mitigation Measure TRF-5.SP.

Impact TRF-6.SP: Operations at the unsignalized *Bayview Avenue/51st Street/Seaport Avenue/Eastbound I-580 Ramps* intersection (#25) would deteriorate due to traffic generated by the Specific Plan and would warrant the installation of a traffic signal under Existing Plus Specific Plan conditions. (*Significant and Unavoidable*)

Traffic generated by the Specific Plan would cause the all-way stop-controlled Bayview Avenue/51st Street/Seaport Avenue/Eastbound I-580 Ramps intersection (#25) to degrade from LOS D during the AM peak hour and LOS C during the PM peak hour to LOS F during both AM and PM peak hours under Existing Plus Specific Plan conditions. The intersection would meet the California MUTCD peak-hour volume signal warrant under Existing Plus Specific Plan conditions. Implementation of the following mitigation measure would reduce the magnitude of the impact at this intersection:

> **Mitigation Measure TRF-6.SP**: **Bayview Avenue/51st Street/Seaport Avenue/Eastbound I-580 Ramps Intersection Signalization and Channelization Improvements.** All applicants proposing the development of projects within the Plan Area and meeting the trigger and funding criteria specified below shall be responsible for implementing the following improvements:
>
> a) Install an actuated signal at the intersection with protected left-turn phasing on all approaches.
>
> b) Restripe southbound 51st Street to provide two left-turn lanes and a shared right/ through lane.
>
> The proposed improvements at this intersection are consistent with the mitigation measure proposed at this intersection by the *Richmond Bay Campus Long Range Development Plan Draft EIR* (November 2013). If this improvement is implemented prior to the trigger identified in this mitigation measure, then it would not be required as a mitigation measure for the Specific Plan.
>
> It is estimated that the mitigation measure at this intersection may be required when about 35 percent of the Sub-Area 4 is developed. At that time, the development project that triggers the impact shall either fully fund or implement the mitigation measure. Alternatively, the City of Richmond may implement this mitigation measure prior to or at the time the 35 percent buildout trigger occurs, the mitigation measure would not be required to be implemented by an individual project and the City may collect fair-share contributions from the projects in the Plan Area to support implementation.
>
> After implementation of this measure, the intersection would improve to LOS D during the AM peak hour and operate at LOS E during the PM peak hour. Traffic operations at the intersection can be further improved by providing additional automobile travel lanes, such as an additional through lane on the northbound Bayview Avenue and southbound 51st Street approaches. However, these modifications cannot be accommodated within the available automobile right-of-way and would require additional right-of-way, and/or loss of planned bicycle and/or pedestrian facilities, and are considered to be infeasible because

they would be in conflict with the Specific Plan and General Plan goals to promote pedestrian, bicycle, and transit trips. Furthermore, it is not certain that this mitigation measure could be implemented because the intersection is under the jurisdiction of Caltrans. The City of Richmond, as lead agency, does not have jurisdiction to implement Measure TRF-6.SP and the mitigation would need to be approved and implemented by Caltrans. No other secondary significant impacts would result from implementation of this measure.

Significance after Mitigation: Significant and Unavoidable.

Mitigation: Mitigation Measure TRF-6.SP.

Impact TRF-7.SP: Operations at the unsignalized *Central Avenue/Eastbound I-580 Ramps* intersection (#36) would deteriorate due to traffic generated by the Specific Plan and would warrant the installation of a traffic signal under Existing Plus Specific Plan conditions. (*Significant and Unavoidable*)

Traffic generated by the Specific Plan would cause the all-way stop-controlled Central Avenue/Eastbound I-580 Ramps intersection (#36) to degrade from LOS C to LOS F during the PM peak hour under Existing Plus Specific Plan conditions. The intersection would meet the California MUTCD peak-hour volume signal warrant under Existing Plus Specific Plan conditions. Implementation of the following mitigation measure would reduce the impact to a less-than-significant level:

Mitigation Measure TRF-7.SP: Central Avenue/Eastbound I-580 Ramps Intersection Signalization. All applicants proposing the development of projects within the Plan Area and meeting the trigger and funding criteria specified below shall be responsible for implementing the following improvement:

a) Install a signal at the intersection.

The proposed improvement at this intersection is consistent with the planned and funded project to signalize the I-580/Central Avenue ramp intersections. If this improvement is implemented prior to the trigger identified in this mitigation measure, then it would not be required as a mitigation measure for the Specific Plan.

It is estimated that the mitigation measure at this intersection may be required when about 40 percent of the Plan Area is developed (which corresponds to 20 percent of Specific Plan development excluding the Sub-Area 4 Project). At that time, the development project that triggers the impact shall either fully fund or implement the mitigation measure. Alternatively, the City of Richmond may implement this mitigation measure prior to or at the time the 40 percent buildout trigger occurs, the mitigation measure would not be required to be implemented by an individual project and the City may collect fair-share contributions from the projects in the Plan Area to support implementation.

After implementation of this measure, the intersection would improve to LOS B during the AM peak hour and LOS A during the PM peak hour and reduce the impact to a less-than-significant level. It is not certain that this mitigation measure could be implemented

because the intersection is under the jurisdiction of Caltrans. The City of Richmond, as lead agency, does not have jurisdiction to implement Measure TRF-7.SP and the mitigation would need to be approved and implemented by Caltrans. Therefore, the impact is conservatively considered significant and unavoidable because the City cannot ensure its implementation. No secondary significant impacts would result from implementation of this measure.

Significance after Mitigation: Significant and Unavoidable.

Mitigation: Mitigation Measure TRF-7.SP.

Impact TRF-8.SP: Operations at the unsignalized *Central Avenue/Westbound I-580 Ramps* intersection (#37) would deteriorate due to traffic generated by the Specific Plan and would warrant the installation of a traffic signal under Existing Plus Specific Plan conditions. (*Significant and Unavoidable*)

Traffic generated by the Specific Plan would cause the all-way stop-controlled Central Avenue/Westbound I-580 Ramps intersection (#37) to degrade from LOS D to LOS E during the PM peak hour under Existing Plus Specific Plan conditions. The intersection would meet the California MUTCD peak-hour volume signal warrant under Existing Plus Specific Plan conditions. Implementation of the following mitigation measure would reduce the impact to a less-than-significant level:

Mitigation Measure TRF-8.SP: **Central Avenue/Westbound I-580 Ramps Intersection Signalization.** All applicants proposing the development of projects within the Plan Area and meeting the trigger and funding criteria specified below shall be responsible for implementing the following improvement:

a) Install a signal at the intersection.

The proposed improvement at this intersection is consistent with the planned and funded project to signalize the I-580/Central Avenue ramp intersections. If this improvement is implemented prior to the trigger identified in this mitigation measure, then it would not be required as a mitigation measure for the Specific Plan.

It is estimated that the mitigation measure at this intersection may be required when about 40 percent of the Plan Area is developed (which corresponds to 20 percent of Specific Plan development excluding the Sub-Area 4 Project). At that time, the development project that triggers the impact shall either fully fund or implement the mitigation measure. Alternatively, the City of Richmond may implement this mitigation measure prior to or at the time the 40 percent buildout trigger occurs, the mitigation measure would not be required to be implemented by an individual project and the City may collect fair-share contributions from the projects in the Plan Area to support implementation.

After implementation of this measure, the intersection would improve to LOS B during both AM and PM peak hours and reduce the impact to a less-than-significant level. It is not certain that this mitigation measure could be implemented because the intersection is under the jurisdiction of Caltrans. The City of Richmond, as lead agency, does not have

jurisdiction to implement Measure TRF-8.SP and the mitigation would need to be approved and implemented by Caltrans. Therefore, the impact is conservatively considered significant and unavoidable because the City cannot ensure its implementation. No secondary significant impacts would result from implementation of this measure.

Significance after Mitigation: Significant and Unavoidable.

Mitigation: Mitigation Measure TRF-8.SP.

2040 No Specific Plan Conditions Intersection Operations Analysis

Figure A-3 in **Appendix E-1** presents the peak hour traffic volumes and intersection lane configurations and controls under 2040 No Specific Plan Conditions at the study intersections. The Traffic Forecasting Methodology discussion, starting on page 4.13-32, describes the process used to develop traffic volumes under 2040 No Specific Plan conditions.

As previously described in the Planned Transportation Network Changes discussion starting on page 4.13-18, this analysis assumes the completion of the Richmond Ferry Terminal and the signalization of the I-580/Central Avenue Ramps (intersections #36 and 37) for the 2040 No Specific Plan conditions.

This analysis assumes that signal timing parameters that do not require upgrades to the signal equipment, such as amount of green time assigned to each intersection approach, would be optimized at the signalized study intersections under 2040 No Specific Plan conditions. This assumption reflects current practices that incorporate basic signal timing changes into routine maintenance of the traffic signal system. It is expected that retiming of signals in areas with the greatest need (e.g., major streets, areas with rapidly shifting traffic patterns) would be prioritized as part of the regular ongoing maintenance of signal equipment.

Intersection LOS calculations for 2040 No Specific Plan conditions were completed with the traffic volumes and roadway network described above. **Table 4.13-11** summarizes the intersection LOS results. **Appendix E-8** presents the detailed intersection LOS calculation worksheets under 2040 No Specific Plan conditions.

In general, the study intersections are projected to experience more delay under 2040 No Specific Plan conditions than under Existing Conditions, primarily due to planned regional growth, which is consistent with the General Plan for areas within the City of Richmond and ABAG Projections 2013 for areas outside the City of Richmond. All study intersections, except the following eight intersections, are expected to continue to operate at LOS D or better during both AM and PM peak hours:

- The signalized Cutting Boulevard/Harbour Way South intersection (#5) would operate at LOS E during the PM peak hour.
- The side-street stop-controlled Wright Avenue/Harbour Way South intersection (#7) would operate at LOS F during the PM peak hour.

TABLE 4.13-11
2040 INTERSECTION LOS SUMMARY (SPECIFIC PLAN)

	Intersection	Traffic Control[a]	Peak Hour	2040 No Specific Plan		2040 Plus Specific Plan		Signif. Impact?	2040 Plus Specific Plan and SRTCP		Significance After Mitigation (for intersections with potentially significant impacts)
				Delay[b,c]	LOS[b,c]	Delay[b,c]	LOS[b,c]		Delay[b,c]	LOS[b,c]	
1	Macdonald Avenue/ 22nd Street	Signal	AM	19.0	B	31.6	C	No	25.3	C	
			PM	14.5	B	15.8	B		15.3	B	
2	Macdonald Avenue/ 23rd Street	Signal	AM	10.9	B	13.7	B	No	13.8	B	
			PM	16.2	B	28.5	C		24.3	C	
3	Cutting Boulevard/ Hoffman Boulevard	Signal	AM	9.9	A	11.4	B	No	41.9	D	
			PM	9.6	A	10.2	B		42.2	D	
4	Cutting Boulevard/ I-580 Westbound Ramps	Signal	AM	6.9	A	8.3	A	No	10.6	B	
			PM	6.4	A	6.8	A		11.9	B	
5	**Cutting Boulevard/ Harbour Way South**	**Signal**	**AM**	39.7	D	**66.1**	**E**	**Yes**	**73.2**	**E**	**Significant and Unavoidable**
			PM	**59.1**	**E**	**95.6**	**F**		**102.7**	**F**	
6	Hoffman Boulevard/ Harbour Way South	Signal	AM	6.9	A	9.2	A	No	11.7	B	
			PM	5.0	A	7.0	A		12.0	B	
7	**Wright Avenue/ Harbour Way South[e]**	**SSSC/ Signal**	**AM**	6.7 (20.6)	A (C)	**>180 (>180)**	**F (F)**	**Yes**	9.0	C	**Less Than Significant**
			PM	**>180 (>180)**	**F (F)**	**>180 (>180)**	**F (F)**		41.3	D	
8	Cutting Boulevard/ Marina Way South	Signal	AM	14.6	B	34.4	C	No	39.9	D	
			PM	8.8	A	49.9	D		54.9	D	
9	**Wright Avenue/ Marina Way South**	**Signal**	**AM**	3.1	A	**66.9**	**E**	**Yes**	25.3	C	**Less Than Significant**
			PM	2.8	A	**160.1**	**F**		45.4	D	
10	Regatta Boulevard/ Marina Way South[d, e]	SSSC/ Signal	AM	2.7 (10.6)	A (B)	8.1	A	No	7.7	A	
			PM	1.8 (11.3)	A (B)	12.0	B		11.0	B	
11	**Cutting Boulevard/ 23rd Street**	**Signal**	**AM**	34.5	C	**92.6**	**F**	**Yes**	**60.4**	**E**	**Significant and Unavoidable**
			PM	**95.4**	**F**	**>180**	**F**		**155.8**	**F**	
12	Westbound I-580 Ramps/ 23rd Street	Signal	AM	6.3	A	7.8	A	No	12.4	B	
			PM	9.4	A	12.6	B		17.4	B	
13	Eastbound I-580 Off-Ramp/ 23rd Street	Signal	AM	4.9	A	14.4	B	No	18.3	B	
			PM	8.4	A	12.5	B		13.7	B	
14	**Meeker Avenue/ Marina Bay Parkway**	**Signal**	**AM**	14.9	B	**96.5**	**F**	**Yes**	43.9	D	**Less Than Significant**
			PM	13.7	B	**>180**	**F**		42.8	D	
15	Regatta Boulevard/ Marina Bay Parkway	Signal	AM	39.7	D	53.2	D	No	34.0	C	
			PM	17.5	B	46.7	D		28.5	C	
16	**Cutting Boulevard/ Carlson Boulevard[e]**	**Signal**	**AM**	31.9	C	47.4	D	**Secondary Impact**	**76.9**	**E**	**Significant and Unavoidable**
			PM	32.1	C	52.7	D		**106.0**	**F**	
17	**Westbound I-580 Ramps/ Juliga Woods Street**	**SSSC/ Signal**	**AM**	8.0 (24.7)	A (C)	**>180 (>180)**	**F (F)**	**Yes**	36.8	D	**Significant and Unavoidable[f]**
			PM	**140.9 (>180)**	**F (F)**	**>180 (>180)**	**F (F)**		25.1	C	

TABLE 4.13-11 (Continued)
2040 INTERSECTION LOS SUMMARY (SPECIFIC PLAN)

	Intersection	Traffic Control[a]	Peak Hour	2040 No Specific Plan		2040 Plus Specific Plan		Signif. Impact?	2040 Plus Specific Plan and SRTCP		Significance After Mitigation (for intersections with potentially significant impacts)
				Delay[b,c]	LOS[b,c]	Delay[b,c]	LOS[b,c]		Delay[b,c]	LOS[b,c]	
18	**Meade Street/Regatta Boulevard/ Eastbound I-580 Ramps [e]**	**Signal**	**AM**	**75.6**	**E**	**>180**	**F**	**Yes**	**>180**	**F**	**Significant and Unavoidable**
			PM	17.4	B	**>180**	**F**		**>180**	**F**	
19	**Regatta Boulevard/ Meade Street [e]**	**SSSC/ Signal**	**AM**	6.8 (25.9)	A (D)	**>180 (>180)**	**F (F)**	**Yes**	53.5	D	**Less Than Significant**
			PM	8.0 (26.8)	B (D)	**>180 (>180)**	**F (F)**		44.8	D	
20	**Cutting Boulevard/ I-80 Westbound Off Ramp**	**Signal**	**AM**	20.8	C	51.0	D	**Secondary Impact**	**99.4**	**F**	**Significant and Unavoidable**
			PM	16.3	B	49.5	D		**135.1**	**F**	
21	Cutting Boulevard/ I-80 HOV Ramps	Signal	AM	22.1	C	28.6	C	No	9.2	A	
			PM	3.3	A	2.8	A		1.3	A	
22	Cutting Boulevard/ I-80 Eastbound On-Ramp	UNC	AM	<1.0	A	<1.0	A	No	<1.0	A	
			PM	<1.0	A	<1.0	A		<1.0	A	
23	Cutting Boulevard/ San Pablo Avenue	Signal	AM	51.2	D	57.6	E	No	45.2	D	
			PM	45.8	D	49.7	D		44.0	D	
24	Meade Street/ Seaver Avenue	Signal	AM	20.5	C	49.0	D	No	9.5	A	
			PM	21.5	C	51.6	D		22.7	C	
25	**Bayview Avenue/51st Street/ Seaport Avenue/Eastbound I-580 Ramps**	**AWSC/ Signal**	**AM**	**59.8**	**F**	**83.2**	**F**	**Yes**	**78.1**	**E**	**Significant and Unavoidable**
			PM	**50.1**	**F**	**90.3**	**F**		**81.5**	**F**	
26	**Bayview Avenue/ Carlson Boulevard**	**Signal**	**AM**	35.8	D	**131.7**	**F**	**Yes**	**>180**	**F**	**Significant and Unavoidable**
			PM	31.4	C	**92.1**	**F**		51.9	D	
27	Bayview Avenue/ Westbound I-580 Ramps	Signal	AM	24.1	C	53.9	D	No	31.0	C	
			PM	12.4	B	33.4	C		19.7	B	
28	**Carlson Boulevard/ Westbound I-80 Ramps**	**Signal**	**AM**	**>180**	**F**	**>180**	**F**	**Yes**	**175.9**	**F**	**Significant and Unavoidable**
			PM	**>180**	**F**	**>180**	**F**		**136.0**	**F**	
29	**Carlson Boulevard/ Eastbound I-80 Ramps**	**Signal**	AM	20.5	C	47.0	D	**Yes**	6.1	A	**Significant and Unavoidable**
			PM	50.7	D	**129.1**	**F**		**160.7**	**F**	
30	Central Avenue/ Carlson Boulevard	Signal	AM	41.7	D	43.6	D	No	38.3	D	
			PM	29.8	C	31.6	C		31.0	C	
31	Fairmont Avenue/ San Pablo Avenue	Signal	AM	45.6	D	51.7	D	No	48.7	D	
			PM	38.8	D	41.0	D		41.2	D	
32	Barrett Avenue/ 22nd Street	Signal	AM	25.9	C	38.1	D	No	29.1	C	
			PM	15.5	B	21.2	C		18.2	B	
33	Barrett Avenue/ 23rd Street/	Signal	AM	14.1	B	17.0	B	No	17.3	B	
			PM	23.2	C	41.9	D		36.9	D	

TABLE 4.13-11 (Continued)
2040 INTERSECTION LOS SUMMARY (SPECIFIC PLAN)

Intersection		Traffic Control[a]	Peak Hour	2040 No Specific Plan		2040 Plus Specific Plan		Signif. Impact?	2040 Plus Specific Plan and SRTCP		Significance After Mitigation (for intersections with potentially significant impacts)
				Delay[b,c]	LOS[b,c]	Delay[b,c]	LOS[b,c]		Delay[b,c]	LOS[b,c]	
34	**MacDonald Avenue/ Harbour Way**	**Signal**	**AM**	39.9	D	**56.9**	**E**	**Yes**	52.1	D	**Less Than Significant**
			PM	47.7	D	**87.4**	**F**		47.3	D	
35	Cutting Boulevard/ South 37th Street	Signal	AM	23.5	C	40.1	D	No	35.3	D	
			PM	28.1	C	32.7	C		44.3	D	
36	Central Avenue/ Eastbound I-580 Ramps	Signal	AM	10.4	B	8.8	A	No	8.7	A	
			PM	10.0	A	11.8	B		11.1	B	
37	Central Avenue/ Westbound I-580 Ramps	Signal	AM	7.7	A	4.6	A	No	12.3	B	
			PM	9.7	A	10.9	B		14.2	B	
38	Central Avenue/Jacuzzi Street/ San Joaquin Street/Eastbound I-80 Ramps[d]	Signal	AM	24.1	C	27.9	C	No	36.5	D	
			PM	34.9	C	36.5	D		39.0	D	
39	Central Avenue/ Westbound I-80 Ramps[d]	Signal	AM	12.7	B	12.3	B	No	12.1	B	
			PM	25.8	C	30.6	C		34.6	C	
40	Central Avenue/ San Pablo Avenue	Signal	AM	37.9	D	43.0	D	No	37.4	D	
			PM	62.8	E	75.7	E		77.3	E	
41	Cutting Boulevard/ Canal Boulevard[d]	Signal	AM	40.7	D	43.2	D	No	43.2	D	
			PM	29.8	C	32.8	C		32.4	C	

a Signal = intersection is controlled by a traffic signal; AWSC = All-way stop-controlled intersection; SSSC = Intersection is controlled by a stop-sign on the side-street approach; UNC = Intersection is uncontrolled.
b For signalized intersections, average intersection delay and LOS is shown. For side-street stop-controlled intersections, delays for worst movement and average intersection delay are shown: intersection average (worst movement). Delay and LOS calculated using HCM2010, unless noted.
c Intersections operating at unacceptable levels are shown in **bold**.
d Delay and LOS calculated using HCM 2000, due to limitations in HCM 2010.
e Operations may be worse than shown during rail crossing activity.
f The proposed mitigation measure would mitigate the impact to a less-than-significant level. The impact is conservatively identified as significant and unavoidable because the intersection is under the jurisdiction of Caltrans, and City of Richmond, as lead agency, does not have jurisdiction at this intersection.

SOURCE: Fehr & Peers, 2016.

- The signalized Cutting Boulevard/23rd Street intersection (#11) would operate at LOS F during the PM peak hour.
- The side-street stop-controlled Westbound I-580 Ramps/Juliga Woods Street intersection (#17) would operate at LOS F during the PM peak hour.
- The signalized Meade Street/Regatta Boulevard/Eastbound I-580 Ramps intersection (#18) would operate at LOS E during the AM peak hour.
- The all-way stop-controlled Bayview Avenue/51st Street/Seaport Avenue/Eastbound I-580 Ramps intersection (#25) would operate at LOS F during both AM and PM peak hours.
- The signalized Carlson Boulevard/Westbound I-80 Ramps intersection (#28) would operate at LOS F during both AM and PM peak hours.

2040 No Specific Plan Freeway Operations Analysis

Table 4.13-12 summarizes the freeway mainline LOS for weekday AM and PM peak hours under 2040 No Specific Plan and 2040 Plus Specific Plan conditions. **Appendix E-5** presents the detailed freeway LOS calculations.

Westbound I-580 between Central Avenue and I-80 would operate at LOS F under 2040 No Specific Plan conditions during both AM and PM peak hours. The other study freeway segments along I-580 and the non-peak direction of I-80 are expected to operate at LOS D or better under 2040 No Specific Plan conditions during both AM and PM peak hours. Similar to the Existing conditions, the estimated 2040 volumes are the volumes served, not the actual peak hour demand, and therefore, actual conditions may be worse than the calculated LOS. Thus, segments along westbound I-80 during the AM peak hour and eastbound I-80 during the PM peak hour are assumed to continue to operate at LOS F under 2040 No Specific Plan conditions.

2040 Plus Specific Plan Conditions Intersection Operations Analysis

Figure A-4 in **Appendix E-1** presents the peak hour traffic volumes and intersection lane configurations and controls under 2040 Plus Specific Plan Conditions at the study intersections. The Traffic Forecasting Methodology discussion, starting on page 4.13-32, describes the process used to develop traffic volumes under 2040 Plus Specific Plan conditions.

This analysis assumes the following roadway modifications, in addition to the 2040 No Specific Plan improvements previously described:

- Regatta Boulevard\Marina Way South intersection (#10) - Realign Marina Way South and Regatta Boulevard so that traffic between the south and the east would not cross the at-grade railroad crossing, and signalize the realigned intersection.
- Meeker Avenue Extension – Extend Meeker Avenue to the west to connect with Marina Way South. Provide at least pedestrian/bicycle connection through the existing California Department of Public Health campus and connect to Sub-Area 3.

Similar to the 2040 No Specific Plan conditions, this analysis assumes that signal timing parameters that do not require upgrades to the signal equipment, such as amount of green time assigned to each intersection approach, would be optimized at the signalized study intersections under the 2040 Plus Specific Plan conditions.

TABLE 4.13-12
2040 CONDITIONS – FREEWAY LOS SUMMARY(SPECIFIC PLAN)

Freeway Segment	Peak Hour	2040 No Specific Plan Conditions		2040 Plus Specific Plan Conditions		Significant Impact?
		Eastbound	Westbound	Eastbound	Westbound	
1. I-580: between Richmond Parkway and Harbour Way	AM	B	D	B	D	No
	PM	B	C	C	D	
2. I-580: between Harbour Way and Marina Bay Parkway	AM	B	C	C	D	No
	PM	B	C	C	D	
3. I-580: between Marina Bay Parkway and Regatta Boulevard	AM	B	D	C	D	No
	PM	C	D	C	E	
4. I-580: between Regatta Boulevard and Bayview Avenue	AM	B	D	C	D	No
	PM	C	D	C	D	
5. I-580: between Bayview Avenue and Central Avenue	AM	B	D	C	D	No
	PM	C	D	C	D	
6. I-580: between Central Avenue and I-80	AM	D	**F**	D	**F**	Yes
	PM	D	**F**	**F**	**F**	
7. I-80: between MacDonald Avenue and Cutting Boulevard	AM	B	**F** [a]	B	**F**	No
	PM	**F** [a]	B	**F**[a]	C	
8. I-80: between Cutting Boulevard and Potrero Avenue	AM	B	**F** [a]	B	**F** [a]	No
	PM	**F**[a]	B	**F**[a]	B	
9. I-80: between Potrero Avenue and Carlson Boulevard	AM	B	**F**[a]	B	**F**[a]	No
	PM	**F** [a]	B	**F**[a]	B	
10. I-80: at the Gilman Street Overpass	AM	C	**F**[a]	C	**F** [a]	No
	PM	**F**[a]	C	**F** [a]	C	

[a] Segment operates at worse condition than calculated and assumed to operate at LOS F based on current observations.

SOURCE: Fehr & Peers, 2016.

Intersection LOS calculations for 2040 Plus Specific Plan conditions were completed with the traffic volumes and roadway network described above. Table 4.13-11 summarizes the intersection LOS results. **Appendix E-9** presents the detailed intersection LOS calculation worksheets under 2040 Plus Specific Plan conditions.

In general, the study intersections are projected to experience more delay under 2040 Plus Specific Plan conditions than under 2040 No Specific Plan Conditions, primarily due to the additional traffic generated by the Specific Plan. All study intersections, except the following 15 intersections, are expected to continue to operate at LOS D or better during both AM and PM peak hours:

- The signalized Cutting Boulevard/Harbour Way South intersection (#5) would operate at LOS E during the AM peak hour and LOS F during the PM peak hour.
- The side-street stop-controlled Wright Avenue/Harbour Way South intersection (#7) would operate at LOS F during both AM and PM peak hours. The intersection would meet the California MUTCD peak-hour volume signal warrant.
- The signalized Wright Avenue/Marina Way South intersection (#9) would operate at LOS E during the AM peak hour and LOS F during the PM peak hour.
- The signalized Cutting Boulevard/23rd Street intersection (#11) would operate at LOS F during both AM and PM peak hours.
- The signalized Meeker Avenue/Marina Bay Parkway intersection (#14) would operate at LOS F during both AM and PM peak hours.
- The side-street stop-controlled Westbound I-580 Ramps/Juliga Woods Street intersection (#17) would operate at LOS F during both AM and PM peak hours. The intersection would meet the California MUTCD peak-hour volume signal warrant.
- The signalized Meade Street/Regatta Boulevard/Eastbound I-580 Ramps intersection (#18) would operate at LOS F during both AM and PM peak hours.
- The side-street stop-controlled Regatta Boulevard/Meade Street intersection (#19) would operate at LOS F during both AM and PM peak hours. The intersection would meet the California MUTCD peak-hour volume signal warrant.
- The signalized Cutting Boulevard/San Pablo Avenue intersection (#23) would operate at LOS E during the AM peak hour.
- The all-way stop-controlled Bayview Avenue/51st Street/Seaport Avenue/Eastbound I-580 Ramps intersection (#25) would operate at LOS F during both AM and PM peak hours. The intersection would meet the California MUTCD peak-hour volume signal warrant.
- The signalized Bayview Avenue/Carlson Boulevard intersection (#26) would operate at LOS F during both AM and PM peak hours.
- The signalized Carlson Boulevard/Westbound I-80 Ramps intersection (#28) would operate at LOS F during both AM and PM peak hours.
- The signalized Carlson Boulevard/Eastbound I-80 Ramps intersection (#29) would operate at LOS F during the PM peak hour.
- The signalized MacDonald Way/Harbour Way intersection (#34) would operate at LOS E during the AM peak hour and LOS F during the PM peak hour.
- The signalized Central Avenue/San Pablo Avenue intersection (#40) would operate at LOS E during the PM peak hour.

The Specific Plan would cause a significant impact at 13 of the 15 intersections listed above. The Specific Plan would not cause a significant impact at the signalized Cutting Boulevard/San Pablo Avenue and Central Avenue/San Pablo Avenue intersections (#23 and #40) because the LOS standard for San Pablo Avenue, as established by WCCTAC in the Multi-Modal Traffic Service Objectives for the Routes of Regional Significance, is LOS E.

2040 Plus Specific Plan Freeway Analysis

Table 4.13-12 summarizes the freeway mainline LOS results. **Appendix E-5** presents the detailed freeway LOS calculation worksheets under 2040 Plus Specific Plan conditions.

As shown in the table, most study freeway segments along I-580 and the non-peak direction of I-80 would continue to operate at LOS E or better during both AM and PM peak hours under 2040 Plus Specific Plan conditions. Similar to the Existing conditions, the estimated 2040 volumes are the volumes served, not the actual peak hour demand, and therefore, actual conditions may be worse than the calculated LOS. Thus, segments along westbound I-80 during the AM peak hour and eastbound I-80 during the PM peak hour are assumed to continue to operate at LOS F under 2040 Plus Specific Plan conditions. The Specific Plan would increase the peak hour volumes on these I-80 freeway segments by less than five percent.

Westbound I-580 between Central Avenue and I-80 during both AM and PM peak hours and Eastbound I-580 between I-80 and Central Avenue would operate at LOS F during the PM peak hour under 2040 Plus Specific Plan conditions. The Specific Plan would increase the peak hour volumes on these I-580 freeway segments by more than five percent.

2040 Plus Specific Plan Impacts and Mitigation Measures

The impacts and recommended mitigation measures are discussed below for Criteria a. and b., as described in Section 4.13.5 Significance Criteria on page 4.13-34.

Impact TRF-9.SP: Signalized intersection operations at *Cutting Boulevard/Harbour Way South* (#5) would deteriorate to an unacceptable LOS due to traffic generated by the Specific Plan under 2040 Plus Specific Plan conditions. (*Significant and Unavoidable*)

Traffic generated by the Specific Plan would cause the signalized Cutting Boulevard/Harbour Way South intersection (#5) to degrade from LOS D to LOS E during the AM peak hour and from LOS E to LOS F during the PM peak hour under 2040 Plus Specific Plan conditions. Implementation of the following mitigation measure would reduce the magnitude of the impact at this intersection:

> **Mitigation Measure TRF-9.SP**: **Cutting Boulevard/Harbour Way South Intersection Improvements.** All applicants proposing the development of projects within the Plan Area and meeting the trigger and funding criteria specified below shall be responsible for implementing the following improvements:
>
> a) The multi-modal improvement projects as outlined in the SRTCP and detailed on page 4.13-69, which would reduce the overall automobile trip generation and reduce the project contribution at this intersection. Specifically, the *Cutting Boulevard* improvement would eliminate one through lane along both directions of both Cutting Boulevard and Harbour Way South to provide enhanced bicycle facilities.
>
> b) Convert the signal phasing for the north and south intersection approaches from split-phasing to protected phasing and coordinate signal timings with adjacent signals along Cutting Boulevard.

It is estimated that the mitigation measure at this intersection may be required when about 40 percent of the Specific Plan area is developed. At that time, the development project that triggers the impact shall either fully fund or implement the mitigation measure. Alternatively, the City of Richmond may implement this mitigation measure prior to or at the time the 40 percent buildout trigger occurs, the mitigation measure would not be required to be implemented by an individual project and the City may collect fair-share contributions from the projects in the Plan Area to support implementation.

After implementation of this measure, the intersection would continue to operate at LOS E during the AM peak hour and LOS F during the PM peak hour. Traffic operations at the intersection can be further improved by providing additional automobile travel lanes, such as a second through lane on eastbound and westbound Cutting Boulevard. However, these modifications cannot be accommodated within the available automobile right-of-way and would require additional right-of-way, and/or loss of planned bicycle and/or pedestrian facilities, and are considered to be infeasible because they would be in conflict with the Specific Plan and General Plan goals to promote pedestrian, bicycle, and transit trips. Therefore, the impact would remain significant and unavoidable. No other secondary significant impacts would result from implementation of this measure.

Significance after Mitigation: Significant and Unavoidable.

Mitigation: Mitigation Measure TRF-9.SP.

Impact TRF-10.SP: Unsignalized intersection operations at *Wright Avenue/Harbour Way South* (#7) would deteriorate due to traffic generated by the Specific Plan and would warrant the installation of a traffic signal under 2040 Plus Specific Plan conditions. (*Less Than Significant with Mitigation*)

Traffic generated by the Specific Plan would cause the side-street stop-controlled Wright Avenue/Harbour Way South intersection (#7) to operate at LOS F during the AM peak hour and would contribute to LOS F operations during the PM peak hour under 2040 Plus Specific Plan conditions. The intersection would meet the California MUTCD peak-hour volume signal warrant under 2040 Plus Specific Plan conditions. Implementation of the following mitigation measure would reduce the impact to a less-than-significant level:

Mitigation Measure TRF-10.SP: Wright Avenue/Harbour Way South Intersection Signalization, Channelization, and Safety Improvements. All applicants proposing the development of projects within the Plan Area and meeting the trigger and funding criteria specified below shall be responsible for implementing the following improvements:

a) The multi-modal improvement projects as outlined in the SRTCP and detailed on page 4.13-69, which would reduce the overall automobile trip generation and reduce the project contribution at this intersection. Specifically at this intersection, the *Harbour Way South/Wright Avenue intersection* improvement would signalize intersection and provide warning lights and gates for the at-grade railroad crossing.

b) Mitigation Measure TRF-1.SP, which would consist of signalizing intersection and restriping the southbound Harbour Way South approach to provide an exclusive left-turn lane and a shared right/through lane within the current right-of-way.

After implementation of this measure, the intersection would improve to LOS C during the AM peak hour and LOS D during the PM peak hour and reduce the impact to a less-than-significant level. No secondary significant impacts would result from implementation of this measure.

Significance after Mitigation: Less Than Significant.

Mitigation: Mitigation Measure TRF-10.SP.

Impact TRF-11.SP: Signalized intersection operations at *Wright Avenue/Marina Way South* (#9) would deteriorate to an unacceptable LOS due to traffic generated by the Specific Plan under 2040 Plus Specific Plan conditions. (*Less Than Significant with Mitigation*)

Traffic generated by the Specific Plan would cause the signalized Wright Avenue/Marina Way South intersection (#9) to degrade from LOS A during both AM and PM peak hours to LOS E during the AM peak hour and LOS F during the PM peak hour under 2040 Plus Specific Plan conditions. Implementation of the following mitigation measure would reduce the impact to a less-than-significant level:

Mitigation Measure TRF-11.SP: **Wright Avenue/Marina Way South Intersection Improvements.** All applicants proposing the development of projects within the Plan Area and meeting the trigger and funding criteria specified below shall be responsible for implementing the following improvements:

a) The multi-modal improvement projects as outlined in the SRTCP and detailed on page 4.13-69, which would reduce the overall automobile trip generation and reduce the project contribution at this intersection. Specifically, the *Marina Way South between Cutting Boulevard and Hall Avenue* improvement would eliminate one through traffic lane along both directions of Marina Way South to provide enhanced bicycle facilities.

b) Mitigation Measure TRF-2.SP, which would consist of restriping the westbound Wright Avenue approach to provide an exclusive right-turn lane and a shared left/through lane within the current right-of-way.

After implementation of this measure, the intersection would improve to LOS C during the AM peak hour and LOS D during the PM peak hour and reduce the impact to a less-than-significant level. No secondary significant impacts would result from implementation of this measure.

Significance after Mitigation: Less Than Significant.

Mitigation: Mitigation Measure TRF-11.SP.

Impact TRF-12.SP: Signalized intersection operations at *Cutting Boulevard/23rd Street* (#11) would deteriorate to an unacceptable LOS due to traffic generated by the Specific Plan under 2040 Plus Specific Plan conditions. (*Significant and Unavoidable*)

Traffic generated by the Specific Plan would cause the signalized Cutting Boulevard/23rd Street intersection (#11) to degrade from LOS C to LOS F during the AM peak hour and contribute to LOS F operations and increase the average control delay by more than five seconds during the PM peak hours under 2040 Plus Specific Plan conditions. Implementation of the following mitigation measure would reduce the magnitude of the impact at this intersection:

> **Mitigation Measure TRF-12.SP**: **Cutting Boulevard/23rd Street Intersection Improvements.** All applicants proposing the development of projects within the Plan Area and meeting the trigger and funding criteria specified below shall be responsible for implementing the following improvements:
>
> a) The multi-modal improvement projects as outlined in the SRTCP and detailed on page 4.13-69, which would reduce the overall automobile trip generation and reduce the project contribution at this intersection. Specifically the *Cutting Boulevard* improvement would eliminate one through traffic lane along both directions of Cutting Boulevard to provide enhanced bicycle facilities.
>
> b) Update signal to actuated-coordinated operations and coordinate signal timings with adjacent intersection along Cutting Boulevard.
>
> It is estimated that the mitigation measure at this intersection may be required when about 45 percent of the Plan Area is developed. At that time, the development project that triggers the impact shall either fully fund or implement the mitigation measure. Alternatively, the City of Richmond may implement this mitigation measure prior to or at the time the 45 percent buildout trigger occurs, the mitigation measure would not be required to be implemented by an individual project and the City may collect fair-share contributions from the projects in the Plan Area to support implementation.
>
> After implementation of this measure, the intersection would improve to LOS E during the AM peak hour and continue to operate at LOS F during the PM peak hour. Traffic operations at the intersection can be further improved by providing additional automobile travel lanes, such as a second through lane on eastbound and westbound Cutting Boulevard. However, these modifications cannot be accommodated within the available automobile right-of-way and would require additional right-of-way, and/or loss of planned bicycle and/or pedestrian facilities, and are considered to be infeasible because they would be in conflict with the Specific Plan and General Plan goals to promote pedestrian, bicycle, and transit trips. Therefore, the impact would remain significant and unavoidable. No other secondary significant impacts would result from implementation of this measure.

Significance after Mitigation: Significant and Unavoidable.

Mitigation: Mitigation Measure TRF-12.SP.

Impact TRF-13.SP: Signalized intersection operations at *Meeker Avenue/Marina Bay Parkway* (#14) would deteriorate to an unacceptable LOS due to traffic generated by the Specific Plan under 2040 Plus Specific Plan conditions. (*Less Than Significant with Mitigation*)

Traffic generated by the Specific Plan would cause the signalized Meeker Avenue/Marina Bay Parkway intersection (#14) to degrade from LOS B to LOS F during both AM and PM peak hours under 2040 Plus Specific Plan conditions. Implementation of the following mitigation measure would reduce the impact to a less-than-significant level.

> **Mitigation Measure TRF-13.SP**: **Meeker Avenue/Marina Bay Parkway Intersection Signal and Channelization Improvements.** All applicants proposing the development of projects within the Plan Area and meeting the trigger and funding criteria specified below shall be responsible for implementing the following improvements:
>
> a) The multi-modal improvement projects as outlined in the SRTCP and detailed on page 4.13-69, which would reduce the overall automobile trip generation and reduce the project contribution at this intersection. The SRTCP would not make any specific modifications at this intersection.
>
> b) Restripe the eastbound Meeker Avenue approach to provide an exclusive left-turn lane and a shared right/through lane within the current right-of-way.
>
> c) Update signal to actuated-coordinated operations and convert the phasing for the east and west intersection approaches from split-phasing to protected phasing. Coordinate signal timings with adjacent signal timings along Marina Bay Parkway.
>
> It is estimated that the mitigation measure at this intersection may be required when about 20 percent of the Specific Plan area is developed. At that time, the development project that triggers the impact shall either fully fund or implement the mitigation measure. Alternatively, the City of Richmond may implement this mitigation measure prior to or at the time the 20 percent buildout trigger occurs, the mitigation measure would not be required to be implemented by an individual project and the City may collect fair-share contributions from the projects in the Plan Area to support implementation.
>
> After implementation of this measure, the intersection would improve to LOS D during both AM and PM peak hours and reduce the impact to a less-than-significant level. No secondary significant impacts would result from implementation of this measure.

Significance after Mitigation: Less Than Significant.

Mitigation: Mitigation Measure TRF-13.SP.

Impact TRF-14.SP: Unsignalized intersection operations at *Westbound I-580 Ramps/Juliga Woods Street* (#17) would deteriorate due to traffic generated by the Specific Plan would warrant the installation of a traffic signal under 2040 Plus Specific Plan conditions. (*Significant and Unavoidable)*

Traffic generated by the Specific Plan would cause the side-street stop-controlled Westbound I-580 Ramps/Juliga Woods Street intersection (#17) to operate at LOS F during the AM peak hour and would contribute to LOS F operations during the PM peak hour under 2040 Plus Specific Plan conditions. The intersection would meet the California MUTCD peak-hour volume signal warrant under 2040 Plus Specific Plan conditions. Implementation of the following mitigation measure would reduce the impact to a less-than-significant level:

> **Mitigation Measure TRF-14.SP**: **Westbound I-580 Ramps/Juliga Woods Street Intersection Signalization.** All applicants proposing the development of projects within the Plan Area shall be responsible for implementing the following improvements:
>
> a) The multi-modal improvement projects as outlined in the SRTCP and detailed on page 4.13-69, which would reduce the overall automobile trip generation and reduce the project contribution at this intersection. The SRTCP would not make any specific modifications at this intersection.
>
> b) Mitigation Measure TRF-3.SP, which would consist of installing an actuated signal at the intersection with protected phasing on all approaches.
>
> After implementation of this measure, the intersection would improve to LOS D during the AM peak hour and LOS C during the PM peak hour and reduce the impact to a less-than - significant level. It is not certain that this mitigation measure could be implemented because the intersection is under the jurisdiction of Caltrans. City of Richmond, as lead agency, does not have jurisdiction to implement Measure TRF-14**.**SP and the mitigation would need to be approved and implemented by Caltrans. Therefore, the impact is conservatively considered significant and unavoidable because the City cannot ensure its implementation. No secondary significant impacts would result from implementation of this measure.

Significance after Mitigation: Significant and Unavoidable.

Mitigation: Mitigation Measure TRF-14.SP.

Impact TRF-15.SP: Signalized intersection operations at *Meade Street/Regatta Boulevard/ Eastbound I-580 Ramps* (#18) would deteriorate to an unacceptable LOS due to traffic generated by the Specific Plan under 2040 Plus Specific Plan conditions. (*Significant and Unavoidable*)

Traffic generated by the Specific Plan would cause the signalized Meade Street/Regatta Boulevard/Eastbound I-580 Ramps intersection (#18) to degrade from LOS E to LOS F during the AM peak hour and from LOS B to LOS F during the PM peak hour under 2040 Plus Specific Plan conditions. Implementation of the following mitigation measure would reduce the magnitude of the impact at this intersection:

Mitigation Measure TRF-15.SP: ***Meade Street/Regatta Boulevard/Eastbound I-580 Ramps*** **Intersection** Signal and Channelization Improvements. All applicants proposing the development of projects within the Plan Area shall be responsible for implementing the following improvements:

a) The multi-modal improvement projects as outlined in the SRTCP and detailed on page 4.13-69, which would reduce the overall automobile trip generation and reduce the project contribution at this intersection. The SRTCP would not make any specific modifications at this intersection.

b) Mitigation Measure TRF-4.SP, which would consist of restriping westbound Meade Street to provide one exclusive right-turn lane and a shared left/through lane, upgrading the signal to actuated operations, changing the signal phasing for the east and west intersection approaches from protected phasing to split-phasing, and coordinating signal timings with the adjacent Regatta Boulevard/ Meade Street intersection and the at-grade railroad crossing.

After implementation of this measure, the intersection would continue to operate at LOS F during both AM and PM peak hours. Therefore, the impact would remain significant and unavoidable. No other secondary significant impacts would result from implementation of this measure.

Significance after Mitigation: Significant and Unavoidable.

Mitigation: Mitigation Measure TRF-15.SP.

Impact TRF-16.SP: Unsignalized intersection operations at *Regatta Boulevard/Meade Street* (#19) would deteriorate due to traffic generated by the Specific Plan and would warrant the installation of a traffic signal under 2040 Plus Specific Plan conditions. (*Less Than Significant with Mitigation*)

Traffic generated by the Specific Plan would cause the side-street stop-controlled Regatta Boulevard/Meade Street intersection (#19) to operate at LOS F during both AM and PM peak hours under 2040 Plus Specific Plan conditions. The intersection would meet the California MUTCD peak-hour volume signal warrant under 2040 Plus Specific Plan conditions. Implementation of the following mitigation measure would reduce the impact to a less-than-significant level:

Mitigation Measure TRF-16.SP: **Regatta Boulevard/Meade Street Intersection Signalization.** All applicants proposing the development of projects within the Plan Area shall be responsible for implementing the following improvements:

a) The multi-modal improvement projects as outlined in the SRTCP and detailed on page 4.13-69, which would reduce the overall automobile trip generation and reduce the project contribution at this intersection. The SRTCP would not make any specific modifications at this intersection.

b) Mitigation Measure TRF-5.SP, which would consist of installing an actuated signal at the intersection with protected phasing on all approaches, and coordinating

signal timings with the adjacent Meade Street/Regatta Boulevard/Eastbound I-580 Ramps intersection and the at-grade railroad crossing.

After implementation of this measure, the intersection would improve to LOS D during both AM and PM peak hours and reduce the impact to a less-than-significant level. No secondary significant impacts would result from implementation of this measure.

Significance after Mitigation: Less Than Significant.

Mitigation: Mitigation Measure TRF-16.SP.

Impact TRF-17.SP: Unsignalized intersection operations at *Bayview Avenue/ 51st Street/Seaport Avenue/Eastbound I-580 Ramps* (#25) would deteriorate due to traffic generated by the Specific Plan and would warrant the installation of a traffic signal under 2040 Plus Specific Plan conditions. (*Significant and Unavoidable*)

Traffic generated by the Specific Plan would contribute to the LOS F operations during both AM and PM peak hours at the all-way stop-controlled Bayview Avenue/ 51st Street/Seaport Avenue/ Eastbound I-580 Ramps intersection (#25) under 2040 Plus Specific Plan conditions. The intersection would meet the California MUTCD peak-hour volume signal warrant under 2040 Plus Specific Plan conditions. Implementation of the following mitigation measure would reduce the magnitude of the impact at this intersection:

Mitigation Measure TRF-17.SP: Bayview Avenue/ 51st Street/Seaport Avenue/Eastbound I-580 Ramps intersection Signalization and Channelization Improvements. All applicants proposing the development of projects within the Plan Area shall be responsible for implementing the following improvements:

a) The multi-modal improvement projects as outlined in the SRTCP and detailed on page 4.13-69, which would reduce the overall automobile trip generation and reduce the project contribution at this intersection. The SRTCP would not make any specific modifications at this intersection.

b) Mitigation Measure TRF-6.SP, which would consist of installing an actuated signal at the intersection with protected signal phasing (i.e., vehicles turning left do not have to yield to oncoming traffic) on all approaches, and restriping southbound 51st Street to provide two left-turn lanes and a shared right/through lane.

After implementation of this measure, the intersection would continue to operate at LOS E during the AM peak hour and LOS F during the PM peak hour. Therefore, the impact would remain significant and unavoidable. No other secondary significant impacts would result from implementation of this measure.

Significance after Mitigation: Significant and Unavoidable.

Mitigation: Mitigation Measure TRF-17.SP.

Impact TRF-18.SP: Signalized intersection operations at *Bayview Avenue/Carlson Boulevard* (#26) would deteriorate to an unacceptable LOS due to traffic generated by the Specific Plan under 2040 Plus Specific Plan conditions. (*Significant and Unavoidable*)

Traffic generated by the Specific Plan would cause the signalized Bayview Avenue/Carlson Boulevard intersection (#26) to degrade from LOS D to LOS F during the AM peak hour and LOS C to LOS F during the PM peak hour under 2040 Plus Specific Plan conditions. Implementation of the following mitigation measure would reduce the magnitude of the impact at this intersection:

> **Mitigation Measure TRF-18.SP**: **Bayview Avenue/Carlson Boulevard intersection Signal and Channelization Improvements.** All applicants proposing the development of projects within the Plan Area and meeting the trigger and funding criteria specified below shall be responsible for implementing the following improvements:
>
> a) The multi-modal improvement projects as outlined in the SRTCP and detailed on page 4.13-69, which would reduce the overall automobile trip generation and reduce the project contribution at this intersection. Specifically the *Carlson Boulevard between Broadway and Tehama Avenue* and *Bayview Avenue Overcrossing I-580* improvements would eliminate one through traffic lane along both directions of both Bayview Avenue and Carlson Boulevard to provide enhanced bicycle facilities, provide marked pedestrian crossings across all intersection approaches, and replace the northbound slip right-turn with a dedicated right-turn lane.
>
> b) Convert the signal phasing for the east and west intersection approaches from split-phasing to protected phasing and provide an overlap phase for the northbound right-turn movement.
>
> It is estimated that the mitigation measure at this intersection may be required when about 30 percent of the Specific Plan area is developed. At that time, the development project that triggers the impact shall either fully fund or implement the mitigation measure. Alternatively, the City of Richmond may implement this mitigation measure prior to or at the time the 30 percent buildout trigger occurs, the mitigation measure would not be required to be implemented by an individual project and the City may collect fair-share contributions from the projects in the Plan Area to support implementation.
>
> After implementation of this measure, the intersection would continue to operate at LOS E during the AM peak hour and improve to LOS D during the PM peak hour. Traffic operations at the intersection can be further improved by providing additional automobile travel lanes, such as a second through lane on eastbound and westbound Carlson Boulevard. However, these modifications cannot be accommodated within the available automobile right-of-way and would require additional right-of-way, and/or loss of planned bicycle and/or pedestrian facilities, and are considered to be infeasible because they would be in conflict with the Specific Plan and General Plan goals to promote pedestrian, bicycle, and transit trips. Therefore, the impact would remain significant and unavoidable. No other secondary significant impacts would result from implementation of this measure.

Significance after Mitigation: Significant and Unavoidable.

Mitigation: Mitigation Measure TRF-18.SP.

Impact TRF-19.SP: Signalized intersection operations at *Carlson Boulevard/Westbound I-80 Ramps* (#28) would worsen the already unacceptable LOS F conditions due to traffic generated by the Specific Plan under 2040 Plus Specific Plan conditions. (Significant and Unavoidable)

Traffic generated by the Specific Plan would contribute to the LOS F operations during both AM and PM peak hours at the signalized Carlson Boulevard/Westbound I-80 Ramps intersection (#28) under 2040 Plus Specific Plan conditions. Implementation of the following mitigation measure would reduce the magnitude of the impact at this intersection:

Mitigation Measure TRF-19.SP: Carlson Boulevard/Westbound I-80 Ramps Intersection Widening and Channelization Improvements. All applicants proposing the development of projects within the Plan Area and meeting the trigger and funding criteria specified below shall be responsible for implementing the following improvements:

a) The multi-modal improvement projects as outlined in the SRTCP and detailed on page 4.13-69, which would reduce the overall automobile trip generation and reduce the project contribution at this intersection. Specifically, the *Carlson Boulevard between Broadway and Tehama Avenue* improvement would eliminate one through lane along both directions of Carlson Boulevard to provide enhanced bicycle facilities.

b) Widen the southbound Westbound I-80 Off-Ramp to provide one right-turn lane and one shared through/left turn lane.

The proposed improvement (item b) at this intersection is consistent with the mitigation measure proposed at this intersection by the *Richmond Bay Campus Long Range Development Plan Draft EIR* (November 2013).

It is estimated that the mitigation measure at this intersection may be required when about 60 percent of the Specific Plan area is developed. At that time, the development project that triggers the impact shall either fully fund or implement the mitigation measure. Alternatively, the City of Richmond may implement this mitigation measure prior to or at the time the 60 percent buildout trigger occurs, the mitigation measure would not be required to be implemented by an individual project and the City may collect fair-share contributions from the projects in the Plan Area to support implementation.

After implementation of this measure, the intersection would continue to operate at LOS F during both AM and PM peak hours. Traffic operations at the intersection can be further improved by providing additional automobile travel lanes, such as second through lanes on eastbound and westbound Carlson Boulevard. However, these modifications cannot be accommodated within the available automobile right-of-way and would require additional right-of-way, and/or loss of planned bicycle and/or pedestrian facilities, and are considered to be infeasible because they would be in conflict with the Specific Plan and General Plan goals to promote pedestrian, bicycle, and transit trips. Furthermore, it is not certain that this mitigation measure could be implemented because the intersection is under the jurisdiction of Caltrans. City of Richmond, as lead agency, does not have jurisdiction to implement Measure TRF-19.SP and the mitigation would need to be approved and implemented by Caltrans. Therefore, the impact would remain significant and unavoidable. No other secondary significant impacts would result from implementation of this measure.

Significance after Mitigation: Significant and Unavoidable.

Mitigation: Mitigation Measure TRF-19.SP.

Impact TRF-20.SP: Signalized intersection operations at *Carlson Boulevard/Eastbound I-80 Ramps* (#29) would worsen the already unacceptable LOS F conditions due to traffic generated by the Specific Plan under 2040 Plus Specific Plan conditions. (*Significant and Unavoidable*)

Traffic generated by the Specific Plan would contribute to the LOS F operations during the PM peak hours at the signalized Carlson Boulevard/Eastbound I-80 Ramps intersection (#29) under 2040 Plus Specific Plan conditions. Implementation of the following mitigation measure would reduce the magnitude of the impact at this intersection:

> **Mitigation Measure TRF-20.SP**: ***Carlson Boulevard/Eastbound I-80 Ramps Intersection*** Improvements. All applicants proposing the development of projects within the Plan Area and meeting the trigger and funding criteria specified below shall be responsible for implementing the following improvement:
>
> a) The multi-modal improvement projects as outlined in the SRTCP and detailed on page 4.13-69, which would reduce the overall automobile trip generation and reduce the project contribution at this intersection. Specifically, the *Carlson Boulevard between Broadway and Tehama Avenue* improvement would eliminate one through lane along both directions of Carlson Boulevard to provide enhanced bicycle facilities.
>
> It is estimated that the mitigation measure at this intersection may be required when about 40 percent of the Specific Plan area is developed. At that time, the development project that triggers the impact shall either fully fund or implement the mitigation measure. Alternatively, the City of Richmond may implement this mitigation measure prior to or at the time the 40 percent buildout trigger occurs, the mitigation measure would not be required to be implemented by an individual project and the City may collect fair-share contributions from the projects in the Plan Area to support implementation.
>
> After implementation of this measure, the intersection would continue to operate at LOS F during the PM peak hour. Traffic operations at the intersection can be further improved by providing additional automobile travel lanes, such as second through lanes on eastbound and westbound Carlson Boulevard. However, these modifications cannot be accommodated within the available automobile right-of-way and would require additional right-of-way, and/or loss of planned bicycle and/or pedestrian facilities, and are considered to be infeasible because they would be in conflict with the Specific Plan and General Plan goals to promote pedestrian, bicycle, and transit trips. Therefore, the impact would remain significant and unavoidable. Furthermore, it is not certain that this mitigation measure could be implemented because the intersection is under the jurisdiction of Caltrans. City of Richmond, as lead agency, does not have jurisdiction to implement Measure TRF-6.SP and the mitigation would need to be approved and implemented by Caltrans. No other secondary significant impacts would result from implementation of this measure.

Significance after Mitigation: Significant and Unavoidable.

Mitigation: Mitigation Measure TRF-20.SP.

Impact TRF-21.SP: Signalized intersection operations at *MacDonald Way/Harbour Way* (#34) would deteriorate to an unacceptable LOS due to traffic generated by the Specific Plan under 2040 Plus Specific Plan conditions. (*Less Than Significant with Mitigation*)

Traffic generated by the Specific Plan would cause the signalized MacDonald Way/Harbour Way intersection (#34) to degrade from LOS D to LOS E during the AM peak hour and LOS D to LOS F during the PM peak hour under 2040 Plus Specific Plan conditions. Implementation of the following mitigation measure would reduce the impact to a less-than-significant level:

> **Mitigation Measure TRF-21.SP: MacDonald Way/Harbour Way Intersection Signal and Channelization Improvements.** All applicants proposing the development of projects within the Plan Area and meeting the trigger and funding criteria specified below shall be responsible for implementing the following improvements:
>
> a) The multi-modal improvement projects as outlined in the SRTCP and detailed on page 4.13-69, which would reduce the overall automobile trip generation and reduce the project contribution at this intersection. The SRTCP would not make any specific modifications at this intersection.
>
> b) Restripe the southbound Harbour Way approach to provide an exclusive left-turn lane and a shared right/through lane within the current right-of-way.
>
> c) Upgrade intersection signal equipment to convert the signal phasing for the north and south intersection approaches from split-phasing to protected phasing.
>
> It is estimated that the mitigation measure at this intersection may be required when about 50 percent of the Plan Area is developed. At that time, the development project that triggers the impact shall either fully fund or implement the mitigation measure. Alternatively, the City of Richmond may implement this mitigation measure prior to or at the time the 50 percent buildout trigger occurs, the mitigation measure would not be required to be implemented by an individual project and the City may collect fair-share contributions from the projects in the Plan Area to support implementation.
>
> After implementation of this measure, the intersection would improve to LOS D during both AM and PM peak hours and reduce the impact to a less-than-significant level. No secondary significant impacts would result from implementation of this measure.

Significance after Mitigation: Less Than Significant.

Mitigation: Mitigation Measure TRF-21.SP.

Impact TRF-22.SP: Traffic generated by the Specific Plan would cause a significant impact on the following freeway segments under 2040 Plus Project conditions because they would operate at LOS F and the Specific Plan would increase the freeway segment volumes by more than five percent: Westbound I-580 between Central Avenue and I-80 during both AM and PM peak hours and Eastbound I-580 between I-80 and Central Avenue during the PM peak hour. (*Significant and Unavoidable*)

No feasible mitigation measures are available that would mitigate the project impacts at the adversely affected freeway segments. The implementation of the multi-modal improvement projects as outlined in the SRTCP and detailed on page 4.13-69, and the implementation of the TDM Plan as described on page 4.13-27, would reduce the project traffic on the freeway segments; however, the cumulative reduction of project traffic on the freeway segments due to these improvements is not known, and therefore the impact is conservatively identified to remain significant.

Operations at these freeway segments can be improved by providing additional automobile travel lanes. However, additional travel lanes cannot be accommodated within the existing automobile right-of-way and would require additional right-of-way, which may require condemnation of private property that may be developed. Furthermore, expanding freeway capacity would be in conflict with the Specific Plan, General Plan, and other regional and statewide goals to reduce VMT, and promote pedestrian, bicycle, and transit connectivity.

In addition, all freeway segments are under the jurisdiction of Caltrans. The City of Richmond, as lead agency, does not have jurisdiction over freeways. Thus, all mitigation measures would need to be approved and implemented by Caltrans. Therefore, the impact is considered significant and unavoidable because no feasible mitigation measures are available and the City of Richmond cannot ensure implementation of any potential mitigation measure.

Significance after Mitigation: Significant and Unavoidable.

Mitigation: None.

2040 Plus Specific Plan and SRTCP Conditions

The South Richmond Transportation Connectivity Plan (SRTCP) consists of various multi-modal improvements in and around the Plan Area. Since these improvements would encourage non-automobile trips and reduce automobile trips generated by the Plan Area, this EIR proposes certain SRTCP improvements as mitigation measures for the traffic related impacts caused by the proposed Specific Plan.

Currently, most of the SRTCP improvements do not have funding and many would require approval from various jurisdictions.

The major improvement projects recommended in the SRTCP and identified as EIR mitigation measures are listed and described below:

- *Cutting Boulevard* – Eliminate one automobile travel lane in each direction to provide enhanced bicycle facilities and potential transit/HOV lanes.

- *South 23rd Street/Marina Bay Parkway at I-580 Overpass* (Intersections #12 and #13) – Modify the I-580 overpass by squaring the ramp intersections, reducing automobile lanes from six to four, and adding separated bikeways on each side of roadway.

- *South 23rd Street/Marina Bay Parkway between Cutting Boulevard and Meeker Avenue* – Reduce automobile lanes from six to four and provide enhanced bicycle facilities, a median, and turn-pockets north and south of the *interchange.*

- *Marina Way South between Cutting Boulevard and Hall Avenue* – Eliminate one automobile travel lane in each direction to provide enhanced bicycle facilities.

- *Harbour Way South between Ford Point and Hoffman Boulevard* – Provide a two-way cycletrack on the east side and formalize parking on west side.

- *Harbour Way South between Hoffman Boulevard and Cutting Boulevard – Provide* one-way separated bikeways, and square the off- and on-ramps.

- *Harbour Way South/Wright Avenue intersection* (#7) – signalize intersection and provide warning lights and gates for the at-grade railroad crossing.

- *Hoffman Boulevard between Cutting Boulevard and Harbour Way South* – Eliminate one automobile lane and remove parking in the southbound direction, and provide enhanced bicycle facilities.

- *Hoffman Boulevard/Harbour Way South Intersection* – Eliminate one automobile lane on the eastbound approach, and realign the I-580 Eastbound off-ramp as part of intersection.

- *Carlson Boulevard between Broadway and Tehama Avenue* – Reduce automobile lanes from four to three and provide enhanced bicycle facilities.

- *Carlson Boulevard and I-80 Ramps* – Narrow on-ramps to one *lane*, extend curbs, and remove right-turn slip lane.

- *Bayview Avenue Overcrossing I-580* – Reduce to two *automobile* lanes in each direction and improve pedestrian and bicycle facilities.

- *Bayview Avenue/Carlson Boulevard intersection* (#26) – Provide pedestrian crossings on all approaches. Replace northbound slip right-turn with a dedicated right-turn lane.

- *Spring Street between Regatta Boulevard and Cutting Boulevard* – Establish direct pedestrian and bicycle connections between the Regatta Boulevard overpass and Cutting Boulevard.

- *South 47th Street Overcrossing* – Construct a new bridge over I-580, the UPRR and Carlson Boulevard to connect the Northeast corner of the BGC with a landing north of Carlson Boulevard. The bridge would provide non-motorized access only.

- *Passenger Rail Service* – If BART implements diesel multiple unit (DMU) commuter rail service along the UP railroad, construct a new in-fill station near South 47th Street with non-motorized access to south of the I-580 freeway.

- *Bus Service Expansion* – Provide high frequency service (every 15 minutes or better) for 18 hours on weekdays on the primary transit corridors (Cutting Boulevard, Marina Way

South, Regatta Boulevard, Carlson Boulevard, Bayview Avenue, and Lark Drive) and lower frequency service (every 20 to 60 minutes) for 18 hours on weekdays on the secondary transit corridors *connecting* the 4 sub-areas to each other and Richmond Ferry Terminal, BART stations in El Cerrito and Richmond, and Downtown Richmond.

Consistent with the Specific Plan Thoroughfare Regulating Plan, The SRTCP also includes smaller improvements, such as providing curb extensions at intersections and implementing bicycle facilities that can be accommodated within the current right-of-way. These improvements which would not affect traffic operations are not listed. They are also consistent with the Thoroughfare Regulating Plan within the Plan Area.

Table 4.13-13 presents the external automobile trips generated by the Foreseeable Maximum Theoretical Buildout of the Specific Plan after implementation of all the SRTCP mitigation measures described above. The effects of these mitigation measures on the project trip generation were estimated using the CCTA Model, which was primarily used to estimate the effectiveness of transit improvements, and refining the MXD Model, which was used to estimate the effectiveness of pedestrian and bicycle improvements.

TABLE 4.13-13
RICHMOND BAY SPECIFIC PLAN
PROJECT TRIP GENERATION ACCOUNTING FOR SRTCP IMPROVEMENTS

All Sub-Areas	Daily	AM Peak Hour			PM Peak Hour		
		In	Out	Total	In	Out	Total
External Auto Trips[a]	**71,450**	**4,151**	**2,249**	**6,400**	**2,832**	**4,714**	**7,546**
External Non-Auto Trips (SRTCP Improvements) [b]	-16,180	-1,103	-597	-1,700	-819	-1,361	-2,180
Mitigated External Auto Trips	**55,270**	**3,048**	**1,652**	**4,700**	**2,013**	**3,353**	**5,366**

[a] See Table 4.13-7 for detail.
[b] Based on application of CCTA Model and MXD Model.

SOURCE: Fehr & Peers, 2016.

It is estimated that the implementation of all the SRTCP mitigation measures would further reduce external automobile trips generated by the buildout of the Specific Plan by about 23 percent for daily trips, 27 percent for AM peak hour trips, and 29 percent for PM peak hour trips. Similar to the project trip generation previously described, this estimate does not account for the TDM strategies, as described in the Specific Plan document, that developments would implement.

These proposed mitigation measures would similarly reduce the automobile trips generated by the existing and other future developments in the areas surrounding the Plan Area.**Figure A-5** in **Appendix E-1** presents the peak hour traffic volumes and intersection lane configurations and controls under 2040 Plus Specific Plan and SRTCP Conditions at the study intersections. The Traffic Forecasting Methodology discussion, starting on page 4.13-32, describes the process used to develop traffic volumes under 2040 Plus Specific Plan and SRTCP conditions.

Similar to the 2040 No Specific Plan and 2040 Plus Specific Plan conditions, this analysis assumes that signal timing parameters that do not require upgrades to the signal equipment, such as amount of green time assigned to each intersection approach, would be optimized at the signalized study intersections under the 2040 Plus Specific Plan conditions.

Intersection LOS calculations for 2040 Plus Specific Plan and SRTCP conditions were completed with the traffic volumes and roadway network described above. Table 4.13-11 summarizes the intersection LOS results at all the study intersections. **Appendix E-10** presents the detailed intersection LOS calculation worksheets under 2040 Plus Specific Plan and SRTCP conditions.

Considering that many of the mitigation measures described above would prioritize non-automobile modes over automobile modes, such as converting an automobile lane to protected bicycle facilities, many of the mitigation measures would result in reduced automobile capacity on the surrounding roadways. Although, the mitigation measures would reduce automobile trips, the traffic generated by the buildout of the Specific Plan combined with the reduction in roadway capacity caused by the mitigation measures would result in the following ten intersections operating at LOS E or LOS F under the 2040 Plus Specific Plan and SRTCP conditions during either one or both AM and PM peak hours:

- The signalized Cutting Boulevard/Harbour Way South intersection (#5) would operate at LOS E during the AM peak hour and LOS F during the PM peak hour.
- The signalized Cutting Boulevard/23rd Street intersection (#11) would operate at LOS E during the AM peak hour and LOS F during the PM peak hour.
- The signalized Cutting Boulevard/Carlson Boulevard intersection (#16) would operate at LOS E during the AM peak hour and LOS F during the PM peak hour.
- The signalized Meade Street/Regatta Boulevard/Eastbound I-580 Ramps intersection (#18) would operate at LOS F during both AM and PM peak hours.
- The signalized Cutting Boulevard/1-80 Westbound Off-Ramp intersection (#20) would operate at LOS F during both AM and PM peak hours.
- The signalized Bayview Avenue/51st Street/Seaport Avenue/Eastbound I-580 Ramps intersection (#25) would operate at LOS E during the AM peak hour and LOS F during PM peak hour.
- The signalized Bayview Avenue/Carlson Boulevard intersection (#26) would operate at LOS F during the AM peak hour.
- The signalized Carlson Boulevard/Westbound I-80 Ramps intersection (#28) would operate at LOS F during both AM and PM peak hours.
- The signalized Carlson Boulevard/Eastbound I-80 Ramps intersection (#29) would operate at LOS F during the AM peak hour.
- The signalized Central Avenue/San Pablo Avenue intersection (#40) would operate at LOS E during the PM peak hour.

2040 Plus Specific Plan and SRTCP Secondary Significant Impacts

The secondary significant impacts of the SRTCP improvements, which this EIR proposes as part of mitigation measures at the intersections impacted by project-generated traffic, were previously discussed. In addition, the proposed SRTP mitigation measures, combined with the project-generated traffic would result in the following secondary significant impacts, based on threshold of significance a. and b., as discussed in Section 4.13.5 Significance Criteria on page 4.13-34.

Impact TRF-23.SP: Traffic generated by the Specific Plan combined with the implementation of the proposed SRTCP mitigation measures (specifically, eliminating one travel lane in both directions of both Cutting and Carlson Boulevards) would cause the signalized *Cutting Boulevard/Carlson Boulevard* intersection (#16) to degrade from LOS D during both AM and PM peak hours under 2040 Plus Specific Plan conditions to LOS E during the AM peak hour and LOS F during the PM peak hour under the 2040 Plus Specific Plan and SRTCP conditions. (*Significant and Unavoidable*)

No feasible mitigation measures are available that would mitigate the project impacts on the Cutting Boulevard/Carlson Boulevard intersection.

Traffic operations at the intersection can be improved by providing additional automobile travel lanes, such as second through lanes in both directions of either Cutting or Carlson Boulevards. However, these modifications cannot be accommodated within the available automobile right-of-way and would require additional right-of-way, and/or loss of planned bicycle and/or pedestrian facilities, and are considered to be infeasible because they would be in conflict with the Specific Plan and General Plan goals to promote pedestrian, bicycle, and transit trips. Therefore, the impact would remain significant and unavoidable. No other secondary significant impacts would result from implementation of this measure.

Significance after Mitigation: Significant and Unavoidable.

Mitigation: None.

Impact TRF-24.SP: Traffic generated by the Specific Plan combined with the implementation of the proposed SRTCP mitigation measures (specifically, eliminating one travel lane in both directions of Cutting Boulevard) would cause the signalized *Cutting Boulevard/I-80 Westbound Off-Ramp* intersection (#20) to degrade from LOS D under 2040 Plus Specific Plan conditions to LOS F during under the 2040 Plus Specific Plan and SRTCP conditions during both AM and PM peak hours. (*Significant and Unavoidable*)

No feasible mitigation measures are available that would mitigate the project impacts on the Cutting Boulevard/ I-80 Westbound Off-Ramp intersection.

Traffic operations at the intersection can be improved by providing additional automobile travel lanes, such as second through lanes in both directions of Cutting Boulevard. However, these modifications cannot be accommodated within the available automobile right-of-way and would require additional right-of-way, and/or loss of planned bicycle and/or pedestrian facilities, and are

considered to be infeasible because they would be in conflict with the Specific Plan and General Plan goals to promote pedestrian, bicycle, and transit trips. Therefore, the impact would remain significant and unavoidable. No other secondary significant impacts would result from implementation of this measure.

Significance after Mitigation: Significant and Unavoidable.

Mitigation: None.

Sub-Area 4 Project Traffic Operations Analysis

This section evaluates impacts of the Sub-Area 4 Project on traffic operations at the study intersections and freeway segments under Existing and 2040 conditions. The 2040 conditions assume the full buildout of the Specific Plan.

Existing Plus Sub-Area 4 Project Intersection Operations Analysis

Figure A-6 in **Appendix E-1** presents the peak hour traffic volumes and intersection lane configurations and controls under Existing Plus Sub-Area 4 Project Conditions at the study intersections. The Traffic Forecasting Methodology discussion, starting on page 4.13-32, describes the process used to develop traffic volumes under Existing Plus Sub-Area 4 Project conditions, which consists traffic generated by the Sub-Area 4 Project only added to the existing volumes.

The Existing Plus Sub-Area 4 Project conditions assumes that all study intersections would have the same lane configurations and controls as the Existing Conditions. As required by the Specific Plan, this analysis assumes that the roadway network within the Sub-Area 4 Project would be consistent with the Thoroughfare Regulating Plan requirements.

Intersection LOS calculations for Existing Plus Sub-Area 4 Project conditions were completed with the traffic volumes and roadway network described above. **Table 4.13-14** summarizes the intersection LOS results. **Appendix E-11** presents the detailed intersection LOS calculation worksheets under Existing Plus Sub-Area 4 Project conditions.

In general, the study intersections are projected to experience more delay under Existing Plus Sub-Area 4 Project conditions than under Existing Conditions, due to the additional traffic generated by the Sub-Area 4 Project. All study intersections, except the following two intersections, are expected to continue to operate at LOS D or better during both AM and PM peak hours:

- The side-street stop-controlled Regatta Boulevard/Meade Street intersection (#19) would operate at LOS F during the PM peak hour. The intersection would not meet the California MUTCD peak-hour volume signal warrant.
- The all-way stop-controlled Bayview Avenue/51st Street/Seaport Avenue/Eastbound I-580 Ramps intersection (#25) would operate at LOS F during both AM and PM peak hours. The intersection would meet the California MUTCD peak-hour volume signal warrant.

TABLE 4.13-14
EXISTING PLUS SUB-AREA 4 PROJECT CONDITIONS INTERSECTION LOS SUMMARY

	Intersection	Traffic Control[a]	Peak Hour	Existing		Existing Plus Sub-Area 4 Project		Significant Impact?	Existing Plus Sub-Area 4 Project Mitigated		Significance After Mitigation (for intersections with potentially significant impacts)
				Delay[b,c]	LOS[b,c]	Delay[b,c]	LOS[b,c]		Delay[b,c]	LOS[b,c]	
1	Macdonald Avenue/ 22nd Street	Signal	AM	13.5	B	13.6	B	No	13.6	B	
			PM	14.6	B	14.6	B		14.6	B	
2	Macdonald Avenue/ 23rd Street	Signal	AM	6.8	A	6.8	A	No	6.8	A	
			PM	9.6	A	9.7	A		9.7	A	
3	Cutting Boulevard/ Hoffman Boulevard	Signal	AM	8.0	A	8.0	A	No	8.0	A	
			PM	8.8	A	8.6	A		8.6	A	
4	Cutting Boulevard/ I-580 Westbound Ramps	Signal	AM	6.4	A	6.5	A	No	6.5	A	
			PM	24.2	C	15.5	B		15.5	B	
5	Cutting Boulevard/ Harbour Way South	Signal	AM	38.9	D	39.1	D	No	39.1	D	
			PM	41.6	D	40.3	D		40.3	D	
6	Hoffman Boulevard/ Harbour Way South	Signal	AM	7.1	A	7.0	A	No	7.0	A	
			PM	3.9	A	3.9	A		3.9	A	
7	Wright Avenue/ Harbour Way South[e]	SSSC	AM	3.0 (12.0)	A (B)	2.9 (12.1)	A (B)	No	2.9 (12.1)	A (B)	
			PM	3.2 (13.3)	A (B)	3.1 (13.6)	A (B)		3.1 (13.6)	A (B)	
8	Cutting Boulevard/ Marina Way South	Signal	AM	10.0	A	10.2	B	No	10.2	B	
			PM	8.8	A	8.4	A		8.4	A	
9	Wright Avenue/ Marina Way South	Signal	AM	3.6	A	3.6	A	No	3.6	A	
			PM	3.2	A	3.2	A		3.2	A	
10	Regatta Boulevard/ Marina Way South[d, e]	SSSC	AM	4.6 (8.8)	A (A)	4.7 (8.9)	A (A)	No	4.7 (8.9)	A (A)	
			PM	2.3 (9.4)	A (A)	2.5 (9.7)	A (A)		2.5 (9.7)	A (A)	
11	Cutting Boulevard/ 23rd Street	Signal	AM	19.0	B	19.6	B	No	19.6	B	
			PM	19.8	B	21.0	C		21.0	C	
12	Westbound I-580 Ramps/ 23rd Street	Signal	AM	5.5	A	5.8	A	No	5.8	A	
			PM	6.9	A	7.1	A		7.1	A	
13	Eastbound I-580 Off-Ramp/ 23rd Street	Signal	AM	3.6	A	3.6	A	No	3.6	A	
			PM	5.9	A	5.9	A		5.9	A	
14	Meeker Avenue/ Marina Bay Parkway	Signal	AM	18.8	B	20.4	C	No	20.4	C	
			PM	12.0	B	12.4	B		12.4	B	
15	Regatta Boulevard/ Marina Bay Parkway	Signal	AM	33.7	C	42.0	D	No	42.0	D	
			PM	14.9	B	16.4	B		16.4	B	
16	Cutting Boulevard/ Carlson Boulevard[e]	Signal	AM	24.0	C	25.5	C	No	25.5	C	
			PM	23.5	C	24.7	C		24.7	C	

TABLE 4.13-14 (Continued)
EXISTING PLUS SUB-AREA 4 PROJECT CONDITIONS INTERSECTION LOS SUMMARY

Intersection		Traffic Control[a]	Peak Hour	Existing		Existing Plus Sub-Area 4 Project		Significant Impact?	Existing Plus Sub-Area 4 Project Mitigated		Significance After Mitigation (for intersections with potentially significant impacts)
				Delay[b,c]	LOS[b,c]	Delay[b,c]	LOS[b,c]		Delay[b,c]	LOS[b,c]	
17	Westbound I-580 Ramps/ Juliga Woods Street	SSSC	AM	2.5 (10.0)	A (A)	2.8 (12.6)	A (B)	No	2.8 (12.6)	A (B)	
			PM	4.4 (10.9)	A (B)	6.2 (21.3)	A (C)		6.2 (21.3)	A (C)	
18	Meade Street/Regatta Boulevard/ Eastbound I-580 Ramps [e]	Signal	AM	9.7	A	25.1	C	No	25.1	C	
			PM	9.1	A	23.8	C		23.8	C	
19	Regatta Boulevard/ Meade Street [e]	SSSC	AM	6.0 (9.8)	A (A)	4.3 (15.8)	A (C)	No	4.3 (15.8)	A (C)	
			PM	5.5 (9.7)	A (A)	10.1 **(75.0)**	B **(F)**		10.1 **(75.0)**	B **(F)**	
20	Cutting Boulevard/ I-80 Westbound Off Ramp	Signal	AM	16.3	B	16.4	B	No	16.4	B	
			PM	11.2	B	11.3	B		11.3	B	
21	Cutting Boulevard/ I-80 HOV Ramps	Signal	AM	10.7	B	10.8	B	No	10.8	B	
			PM	0.9	A	0.9	A		0.9	A	
22	Cutting Boulevard/ I-80 Eastbound On-Ramp	UNC	AM	<1.0	A	<1.0	A	No	<1.0	A	
			PM	<1.0	A	<1.0	A		<1.0	A	
23	Cutting Boulevard/ San Pablo Avenue	Signal	AM	41.2	D	41.4	D	No	41.4	D	
			PM	38.2	D	39.2	D		39.2	D	
24	Meade Street/ Seaver Avenue	Signal	AM	1.3 (9.7)	A (A)	0.5 (13.9)	A (B)	No	0.5 (13.9)	A (B)	
			PM	3.0 (9.0)	A (A)	0.8 (17.4)	A (C)		0.8 (17.4)	A (C)	
25	**Bayview Avenue/51st Street/ Seaport Avenue/Eastbound I-580 Ramps**	**AWSC**	**AM**	27.6	D	**77.4**	**F**	**Yes**	44.7	D	**Significant and Unavoidable**
			PM	20.0	C	**59.4**	**F**		**66.6**	**E**	
26	Bayview Avenue/ Carlson Boulevard	Signal	AM	18.7	B	27.2	C	No	27.2	C	
			PM	17.3	B	19.3	B		19.3	B	
27	Bayview Avenue/ Westbound I-580 Ramps	Signal	AM	4.4	A	10.3	B	No	10.3	B	
			PM	8.2	A	12.7	B		12.7	B	
28	Carlson Boulevard/ Westbound I-80 Ramps	Signal	AM	19.3	B	28.8	C	No	28.8	C	
			PM	15.1	B	14.7	B		14.7	B	
29	Carlson Boulevard/ Eastbound I-80 Ramps	Signal	AM	5.0	A	4.5	A	No	4.5	A	
			PM	7.1	A	6.9	A		6.9	A	
30	Central Avenue/ Carlson Boulevard	Signal	AM	34.4	C	34.6	C	No	34.6	C	
			PM	29.7	C	30.4	C		30.4	C	
31	Fairmont Avenue/ San Pablo Avenue	Signal	AM	33.6	C	34.1	C	No	34.1	C	
			PM	24.1	C	24.2	C		24.2	C	
32	Barrett Avenue/ 22nd Street	Signal	AM	10.9	B	11.0	B	No	11.0	B	
			PM	9.1	A	9.3	A		9.3	A	

TABLE 4.13-14 (Continued)
EXISTING PLUS SUB-AREA 4 PROJECT CONDITIONS INTERSECTION LOS SUMMARY

Intersection		Traffic Control[a]	Peak Hour	Existing		Existing Plus Sub-Area 4 Project		Significant Impact?	Existing Plus Sub-Area 4 Project Mitigated		Significance After Mitigation (for intersections with potentially significant impacts)
				Delay[b,c]	LOS[b,c]	Delay[b,c]	LOS[b,c]		Delay[b,c]	LOS[b,c]	
33	Barrett Avenue/ 23rd Street/	Signal	AM	9.8	A	9.8	A	No	9.8	A	
			PM	13.5	B	13.6	B		13.6	B	
34	MacDonald Avenue/ Harbour Way	Signal	AM	27.1	C	27.1	C	No	27.1	C	
			PM	24.2	C	24.2	C		24.2	C	
35	Cutting Boulevard/ South 37th Street	Signal	AM	18.9	B	18.9	B	No	18.9	B	
			PM	25.7	C	25.2	C		25.2	C	
36	Central Avenue/ Eastbound I-580 Ramps	AWSC	AM	12.6	B	12.7	B	No	12.7	B	
			PM	24.9	C	25.9	D		25.9	D	
37	Central Avenue/ Westbound I-580 Ramps	AWSC	AM	14.4	B	14.7	B	No	14.7	B	
			PM	25.8	D	30.0	D		30.0	D	
38	Central Avenue/Jacuzzi Street/San Joaquin Street/Eastbound I-80 Ramps[d]	Signal	AM	20.4	C	20.5	C	No	20.5	C	
			PM	25.2	C	24.8	C		24.8	C	
39	Central Avenue/ Westbound I-80 Ramps[d]	Signal	AM	12.2	B	12.6	B	No	12.6	B	
			PM	25.5	C	27.6	C		27.6	C	
40	Central Avenue/ San Pablo Avenue	Signal	AM	33.2	C	33.4	C	No	33.4	C	
			PM	48.7	D	50.5	D		50.5	D	
41	Cutting Boulevard/ Canal Boulevard[d]	Signal	AM	25.1	C	25.3	C	No	25.3	C	
			PM	22.3	C	22.4	C		22.4	C	

[a] Signal = intersection is controlled by a traffic signal; AWSC = All-way stop-controlled intersection; SSSC = Intersection is controlled by a stop-sign on the side-street approach; UNC = Intersection is uncontrolled.
[b] For signalized intersections, average intersection delay and LOS is shown. For side-street stop-controlled intersections, delays for worst movement and average intersection delay are shown: intersection average (worst movement). Delay and LOS calculated using HCM2010, unless noted.
[c] Intersections operating at unacceptable levels are shown in **bold**.
[d] Delay and LOS calculated using HCM 2000, due to limitations in HCM 2010.
[e] Operations may be worse than shown during rail crossing activity.

SOURCE: Fehr & Peers, 2016.

The Sub-Area 4 Project would cause a significant impact at one of the two intersections listed above. The Sub- Area 4 Project would not cause a significant impact at the side-street stop-controlled Regatta Boulevard/Meade Street intersection (#19) because the intersection would not meet the California MUTCD peak-hour volume signal warrant.

Existing Plus Sub-Area 4 Project Freeway Operations Analysis

Table 4.13-15 summarizes the freeway mainline LOS for weekday AM and PM peak hours under Existing Plus Sub-Area 4 Project conditions. **Appendix E-5** presents the detailed freeway LOS calculations.

TABLE 4.13-15
EXISTING PLUS SUB-AREA 4 PROJECT CONDITIONS – FREEWAY LOS SUMMARY

Freeway Segment	Peak Hour	Existing Conditions		Existing Plus Sub-Area 4 Project Conditions		Significant Impact?
		Eastbound	Westbound	Eastbound	Westbound	
1. I-580: between Richmond Parkway and Harbour Way	AM	B	C	B	C	No
	PM	B	B	B	B	
2. I-580: between Harbour Way and Marina Bay Parkway	AM	B	B	B	C	No
	PM	B	B	C	B	
3. I-580: between Marina Bay Parkway and Regatta Boulevard	AM	B	B	C	C	No
	PM	B	C	C	C	
4. I-580: between Regatta Boulevard and Bayview Avenue	AM	B	B	B	C	No
	PM	B	C	C	C	
5. I-580: between Bayview Avenue and Central Avenue	AM	B	B	B	C	No
	PM	B	C	C	C	
6. I-580: between Central Avenue and I-80	AM	C	C	C	C	No
	PM	C	D	D	D	
7. I-80: between MacDonald Avenue and Cutting Boulevard	AM	B	**F**[a]	B	**F**[a]	No
	PM	**F**[a]	B	**F**[a]	B	
8. I-80: between Cutting Boulevard and Potrero Avenue	AM	A	**F**[a]	A	**F**[a]	No
	PM	**F**[a]	B	**F**[a]	B	
9. I-80: between Potrero Avenue and Carlson Boulevard	AM	B	**F**[a]	B	**F**[a]	No
	PM	**F**[a]	B	**F**[a]	B	
10. I-80: at the Gilman Street Overpass	AM	B	**F**[a]	B	**F**[a]	No
	PM	**F**[a]	B	**F**[a]	B	

[a] Segment operates at worse condition than calculated and assumed to operate at LOS F based on current observations.

SOURCE: Fehr & Peers, 2016.

As shown in the table, the study freeway segments along I-580 and the non-peak direction of I-80 are expected to operate at LOS D or better under Existing Plus Sub-Area 4 Project conditions during both AM and PM peak hours. Similar to the Existing conditions, the estimated Existing Plus Sub-Area 4 Project volumes are the volumes served, not the actual peak hour demand, and therefore, actual conditions may be worse than the reported LOS. Thus, segments along westbound I-80 during the AM peak hour and eastbound I-80 during the PM peak hour are expected to continue to operate at congested conditions. This analysis conservatively assumes that these segments would operate at LOS F under Existing Plus Sub-Area 4 Project conditions. However, the Sub-Area 4 Project would increase the peak hour volume on these freeway segments by less than five percent. Thus, the Sub-Area 4 Project would not cause a significant impact on the freeway mainline sections under Existing Plus Sub-Area 4 Project conditions.

Existing Plus Sub-Area 4 Project Impacts and Mitigation Measures

The impacts and recommended mitigation measures are discussed below for Criteria a. and b., as discussed in Section 4.13.5 Significance Criteria on page 4.13-34.

Impact TRF-1.SA4: Unsignalized intersection operations at *Bayview Avenue/51st Street/Seaport Avenue/Eastbound I-580 Ramps* (#25) would deteriorate to an unacceptable LOS due to traffic generated by the Sub-Area 4 Project and would warrant the installation of a traffic signal under Existing Plus Sub-Area 4 Project conditions. (*Significant and Unavoidable*)

Traffic generated by the Sub-Area 4 Project would cause the all-way stop-controlled Bayview Avenue/51st Street/Seaport Avenue/Eastbound I-580 Ramps intersection (#25) to degrade from LOS D during the AM peak hour and LOS C during the PM peak hour to LOS F during both AM and PM peak hours under Existing Plus Sub-Area 4 Project conditions. The intersection would meet the California MUTCD peak-hour volume signal warrant under Existing Plus Sub-Area 4 Project conditions. Implementation of the following mitigation measure would reduce the magnitude of the impact at this intersection:

> **Mitigation Measure TRF-1.SA4**: **Bayview Avenue/51st Street/Seaport Avenue/Eastbound I-580 Ramps Intersection Signalization and Channelization Improvements.** All applicants proposing the development of projects within Sub-Area 4 and meeting the trigger and funding criteria specified below shall be responsible for implementing the following improvement:
>
> a) **Mitigation Measure TRF-6.SP**, which would consist of installing an actuated signal at the intersection with protected phasing on all approaches, and restriping southbound 51st Street to provide two left-turn lanes and a shared right/through lane.
>
> It is estimated that the mitigation measure at this intersection may be required when about 60 percent of the Sub-Area 4 Project is developed. At that time, if the improvement has not already been implemented, the individual Sub-Area 4 Project development project that triggers the impact shall either fully fund or implement the mitigation measure. Alternatively, the City of Richmond may implement this mitigation measure prior to or at the time the 60 percent buildout trigger occurs, the mitigation measure would not be

required to be implemented by an individual project and the City may collect fair-share contributions from the projects in Sub-Area 4 to support implementation.

After implementation of this measure, the intersection would improve to LOS D during the AM peak hour and LOS E during the PM peak hour. Traffic operations at the intersection can be further improved by providing additional automobile travel lanes, such as an additional through lane on the northbound Bayview Avenue and southbound 51st Street approaches. However, these modifications cannot be accommodated within the available automobile right-of-way and would require additional right-of-way, and/or loss of planned bicycle and/or pedestrian facilities, and are considered to be infeasible because they would be in conflict with the Specific Plan and General Plan goals to promote pedestrian, bicycle, and transit trips. Furthermore, it is not certain that this mitigation measure could be implemented because the intersection is under the jurisdiction of Caltrans. The City of Richmond, as lead agency, does not have jurisdiction to implement Mitigation Measure TRF-1.SA4 and the mitigation would need to be approved and implemented by Caltrans. No other secondary significant impacts would result from implementation of this measure.

Significance after Mitigation: Significant and Unavoidable.

Mitigation: TRF-6.SP and TRF-1.SA4.

2040 Plus Sub-Area 4 Project Conditions Intersection Operations Analysis

Figure A-7 in **Appendix E-1** presents the peak hour traffic volumes and intersection lane configurations and controls under 2040 No Sub-Area 4 Project Conditions at the study intersections. The Traffic Forecasting Methodology discussion, starting on page 4.13-32, describes the process used to develop traffic volumes under 2040 No Sub-Area 4 Project conditions.

Similar to the 2040 Plus Specific Plan conditions, the 2040 No Sub-Area 4 Project conditions and the 2040 Plus Sub-Area 4 Project conditions (which is the same as the 2040 Plus Specific Plan conditions) assume the completion of the Richmond Ferry Terminal, the signalization of the I-580/ Central Avenue Ramps intersections (#36 and 37), the realignment of the Regatta Boulevard\Marina Way South intersection (#10), and the extension of the Meeker Avenue to Marina Way South.

Similar to the 2040 Plus Specific Plan conditions, the 2040 No Sub-Area 4 Project conditions and the 2040 Plus Sub-Area 4 Project conditions also assumes that signal timing parameters that do not require upgrades to the signal equipment, such as amount of green time assigned to each intersection approach, would be optimized at the signalized study intersections under the 2040 No Sub-Area 4 Project and the 2040 Plus Sub-Area 4 Project conditions.

Intersection LOS calculations for 2040 No Sub-Area 4 Project conditions and the 2040 Plus Sub-Area 4 Project conditions were completed with the traffic volumes and roadway network described above. **Table 4.13-16** summarizes the intersection LOS results. **Appendix E-12** presents the detailed intersection LOS calculation worksheets under 2040 No Sub-Area 4 Project conditions.

TABLE 4.13-16
2040 INTERSECTION LOS SUMMARY (SUB-AREA 4 PROJECT)

	Intersection	Traffic Control[a]	Peak Hour	2040 No Sub-Area 4 Project		2040 Plus Sub-Area 4 Project		Signif. Impact?	2040 Plus Sub-Area 4 Project Mitigated		Significance After Mitigation (for intersections with potentially significant impacts)
				Delay[b,c]	LOS[b,c]	Delay[b,c]	LOS[b,c]		Delay[b,c]	LOS[b,c]	
1	Macdonald Avenue/ 22nd Street	Signal	AM	30.9	C	31.6	C	No	31.6	C	
			PM	15.6	B	15.8	B		15.8	B	
2	Macdonald Avenue/ 23rd Street	Signal	AM	13.5	B	13.7	B	No	13.7	B	
			PM	27.6	C	28.5	C		28.5	C	
3	Cutting Boulevard/ Hoffman Boulevard	Signal	AM	11.5	B	11.4	B	No	11.4	B	
			PM	10.2	B	10.2	B		10.2	B	
4	Cutting Boulevard/ I-580 Westbound Ramps	Signal	AM	8.1	A	8.3	A	No	8.3	A	
			PM	6.6	A	6.8	A		6.8	A	
5	Cutting Boulevard/ Harbour Way South	Signal	AM	**61.4**	**E**	**66.1**	**E**	No	**66.1**	**E**	
			PM	**95.0**	**F**	**95.6**	**F**		**95.6**	**F**	
6	Hoffman Boulevard/ Harbour Way South	Signal	AM	9.2	A	9.2	A	No	9.2	A	
			PM	6.9	A	7.0	A		7.0	A	
7	Wright Avenue/ Harbour Way South[e]	SSSC	AM	**>180 (>180)**	**F (F)**	**>180 (>180)**	**F (F)**	No	**>180 (>180)**	**F (F)**	
			PM	**>180 (>180)**	**F (F)**	**>180 (>180)**	**F (F)**		**>180 (>180)**	**F (F)**	
8	Cutting Boulevard/ Marina Way South	Signal	AM	33.4	C	34.4	C	No	34.4	C	
			PM	47.4	D	49.9	D		49.9	D	
9	Wright Avenue/ Marina Way South	Signal	AM	**66.9**	**E**	**66.9**	**E**	No	**66.9**	**E**	
			PM	**160.1**	**F**	**160.1**	**F**		**160.1**	**F**	
10	Regatta Boulevard/ Marina Way South[d, e]	SSSC/ Signal	AM	8.1	A	8.1	A	No	8.1	A	
			PM	12.1	B	12.0	B		12.0	B	
11	**Cutting Boulevard/ 23rd Street**	**Signal**	**AM**	**88.1**	**F**	**92.6**	**F**	**Yes**	**73.9**	**E**	**Less Than Significant**
			PM	**>180**	**F**	**>180**	**F**		**131.9**	**F**	
12	Westbound I-580 Ramps/ 23rd Street	Signal	AM	7.4	A	7.8	A	No	7.8	A	
			PM	12.0	B	12.6	B		12.6	B	
13	Eastbound I-580 Off-Ramp/ 23rd Street	Signal	AM	14.1	B	14.4	B	No	14.4	B	
			PM	12.4	B	12.5	B		12.5	B	
14	**Meeker Avenue/ Marina Bay Parkway**	**Signal**	**AM**	**82.9**	**F**	**96.5**	**F**	**Yes**	**75.9**	**E**	**Less Than Significant**
			PM	**>180**	**F**	**>180**	**F**		**86.5**	**F**	
15	Regatta Boulevard/ Marina Bay Parkway	Signal	AM	49.8	D	53.2	D	No	53.2	D	
			PM	44.6	D	46.7	D		46.7	D	
16	Cutting Boulevard/ Carlson Boulevard[e]	Signal	AM	39.9	D	47.4	D	No	47.4	D	
			PM	43.6	D	52.7	D		52.7	D	
17	**Westbound I-580 Ramps/ Juliga Woods Street**	**SSSC/ Signal**	**AM**	**>180 (>180)**	**F (F)**	**>180 (>180)**	**F (F)**	**Yes**	**108.5**	**F**	**Significant and Unavoidable[f]**
			PM	**>180 (>180)**	**F (F)**	**>180 (>180)**	**F (F)**		**73.8**	**E**	

TABLE 4.13-16 (Continued)
2040 INTERSECTION LOS SUMMARY (SUB-AREA 4 PROJECT)

	Intersection	Traffic Control[a]	Peak Hour	2040 No Sub-Area 4 Project		2040 Plus Sub-Area 4 Project		Signif. Impact?	2040 Plus Sub-Area 4 Project Mitigated		Significance After Mitigation (for intersections with potentially significant impacts)
				Delay[b,c]	LOS[b,c]	Delay[b,c]	LOS[b,c]		Delay[b,c]	LOS[b,c]	
18	**Meade Street/Regatta Boulevard/ Eastbound I-580 Ramps [e]**	**Signal**	**AM**	**>180**	**F**	**>180**	**F**	**Yes**	**>180**	**F**	**Significant and Unavoidable [f]**
			PM	**>180**	**F**	**>180**	**F**		**>180**	**F**	
19	**Regatta Boulevard/ Meade Street [e]**	**SSSC/ Signal**	**AM**	**>180 (>180)**	**F (F)**	**>180 (>180)**	**F (F)**	**Yes**	**87.3**	**F**	**Less Than Significant**
			PM	**>180 (>180)**	**F (F)**	**>180 (>180)**	**F (F)**		**113.1**	**F**	
20	Cutting Boulevard/ I-80 Westbound Off Ramp	Signal	AM	42.0	D	51.0	D	No	51.0	D	
			PM	42.3	D	49.5	D		49.5	D	
21	Cutting Boulevard/ I-80 HOV Ramps	Signal	AM	27.2	C	28.6	C	No	28.6	C	
			PM	3.0	A	2.8	A		2.8	A	
22	Cutting Boulevard/ I-80 Eastbound On-Ramp	UNC	AM	<1.0	A	<1.0	A	No	<1.0	A	
			PM	<1.0	A	<1.0	A		<1.0	A	
23	Cutting Boulevard/ San Pablo Avenue	Signal	AM	56.0	E	57.6	E	No	57.6	E	
			PM	47.8	D	49.7	D		49.7	D	
24	Meade Street/ Seaver Avenue	Signal	AM	14.2	B	49.0	D	No	49.0	D	
			PM	22.9	C	51.6	D		51.6	D	
25	**Bayview Avenue/51st Street/ Seaport Avenue/Eastbound I-580 Ramps**	**AWSC/ Signal**	**AM**	**60.5**	**F**	**83.2**	**F**	**Yes**	**107.4**	**F**	**Significant and Unavoidable**
			PM	**51.9**	**F**	**90.3**	**F**		**146.2**	**F**	
26	**Bayview Avenue/ Carlson Boulevard**	**Signal**	**AM**	54.9	D	**131.7**	**F**	**Yes**	**138.5**	**F**	**Significant and Unavoidable**
			PM	46.4	D	**92.1**	**F**		51.1	D	
27	Bayview Avenue/ Westbound I-580 Ramps	Signal	AM	15.4	B	53.9	D	No	53.9	D	
			PM	16.7	B	33.4	C		33.4	C	
28	**Carlson Boulevard/ Westbound I-80 Ramps**	**Signal**	**AM**	**>180**	**F**	**>180**	**F**	**Yes**	**>180**	**F**	**Significant and Unavoidable**
			PM	**>180**	**F**	**>180**	**F**		**113.2**	**F**	
29	**Carlson Boulevard/ Eastbound I-80 Ramps**	**Signal**	AM	32.7	C	47.0	D	**Yes**	46.0	D	**Significant and Unavoidable**
			PM	**85.2**	**F**	**129.1**	**F**		**125.7**	**F**	
30	Central Avenue/ Carlson Boulevard	Signal	AM	42.8	D	43.6	D	No	43.6	D	
			PM	30.8	C	31.6	C		31.6	C	
31	Fairmont Avenue/ San Pablo Avenue	Signal	AM	51.5	D	51.7	D	No	51.7	D	
			PM	40.7	D	41.0	D		41.0	D	
32	Barrett Avenue/ 22nd Street	Signal	AM	37.0	D	38.1	D	No	38.1	D	
			PM	20.1	C	21.2	C		21.2	C	
33	Barrett Avenue/ 23rd Street/	Signal	AM	16.9	B	17.0	B	No	17.0	B	
			PM	40.2	D	41.9	D		41.9	D	
34	MacDonald Avenue/	Signal	AM	**56.9**	**E**	**56.9**	**E**	No	**56.9**	**E**	

TABLE 4.13-16 (Continued)
2040 INTERSECTION LOS SUMMARY (SUB-AREA 4 PROJECT)

	Intersection	Traffic Control[a]	Peak Hour	2040 No Sub-Area 4 Project		2040 Plus Sub-Area 4 Project		Signif. Impact?	2040 Plus Sub-Area 4 Project Mitigated		Significance After Mitigation (for intersections with potentially significant impacts)
				Delay[b,c]	LOS[b,c]	Delay[b,c]	LOS[b,c]		Delay[b,c]	LOS[b,c]	
	Harbour Way		PM	**87.4**	**F**	**87.4**	**F**		**87.4**	**F**	
35	Cutting Boulevard/ South 37th Street	Signal	AM	33.4	C	40.1	D	No	40.1	D	
			PM	32.2	C	32.7	C		32.7	C	
36	Central Avenue/ Eastbound I-580 Ramps	Signal	AM	8.7	A	8.8	A	No	8.8	A	
			PM	11.8	B	11.8	B		11.8	B	
37	Central Avenue/ Westbound I-580 Ramps	Signal	AM	4.5	A	4.6	A	No	4.6	A	
			PM	10.7	B	10.9	B		10.9	B	
38	Central Avenue/Jacuzzi Street/San Joaquin Street/Eastbound I-80 Ramps [d]	Signal	AM	27.5	C	27.9	C	No	27.9	C	
			PM	35.5	D	36.5	D		36.5	D	
39	Central Avenue/ Westbound I-80 Ramps [d]	Signal	AM	12.0	B	12.3	B	No	12.3	B	
			PM	29.0	C	30.6	C		30.6	C	
40	Central Avenue/ San Pablo Avenue	Signal	AM	42.9	D	43.0	D	No	43.0	D	
			PM	76.1	E	75.7	E		75.7	E	
41	Cutting Boulevard/ Canal Boulevard [d]	Signal	AM	42.8	D	43.2	D	No	43.2	D	
			PM	32.8	C	32.8	C		32.8	C	

[a] Signal = intersection is controlled by a traffic signal; AWSC = All-way stop-controlled intersection; SSSC = Intersection is controlled by a stop-sign on the side-street approach; UNC = Intersection is uncontrolled.
[b] For signalized intersections, average intersection delay and LOS is shown. For side-street stop-controlled intersections, delays for worst movement and average intersection delay are shown: intersection average (worst movement). Delay and LOS calculated using HCM2010, unless noted.
[c] Intersections operating at unacceptable levels are shown in **bold**.
[d] Delay and LOS calculated using HCM 2000, due to limitations in HCM 2010.
[e] Operations may be worse than shown during rail crossing activity.
[f] The proposed mitigation measure would mitigate the impact to a less-than-significant level. The impact is conservatively identified as significant and unavoidable because the intersection is under the jurisdiction of Caltrans, and City of Richmond, as lead agency, does not have jurisdiction at this intersection.

SOURCE: Fehr & Peers, 2016.

All study intersections, except the following 15 intersections, are expected to continue to operate at LOS D or better during both AM and PM peak hours under 2040 No Sub-Area 4 Project and the 2040 Plus Sub-Area 4 Project conditions:

- The signalized Cutting Boulevard/Harbour Way South intersection (#5) would operate at LOS E during the AM peak hour and LOS F during the PM peak hour.
- The side-street stop-controlled Wright Avenue/Harbour Way South intersection (#7) would operate at LOS F during both AM and PM peak hours. The intersection would meet the California MUTCD peak-hour volume signal warrant regardless of the Sub-Area 4 Project.
- The signalized Wright Avenue/Marina Way South intersection (#9) would operate at LOS E during the AM peak hour and LOS F during the PM peak hour.
- The signalized Cutting Boulevard/23rd Street intersection (#11) would operate at LOS F during both AM and PM peak hours.
- The signalized Meeker Avenue/Marina Bay Parkway intersection (#14) would operate at LOS F during both AM and PM peak hours.
- The side-street stop-controlled Westbound I-580 Ramps/Juliga Woods Street intersection (#17) would operate at LOS F during both AM and PM peak hours. The intersection would meet the California MUTCD peak-hour volume signal warrant regardless of the Sub-Area 4 Project.
- The signalized Meade Street/Regatta Boulevard/Eastbound I-580 Ramps intersection (#18) would operate at LOS F during both AM and PM peak hours.
- The side-street stop-controlled Regatta Boulevard/Meade Street intersection (#19) would operate at LOS F during both AM and PM peak hours. The intersection would meet the California MUTCD peak-hour volume signal warrant regardless of the Sub-Area 4 Project.
- The signalized Cutting Boulevard/San Pablo Avenue intersection (#23) would operate at LOS E during the AM peak hour.
- The all-way stop-controlled Bayview Avenue/51st Street/Seaport Avenue/Eastbound I-580 Ramps intersection (#25) would operate at LOS F during both AM and PM peak hours. The intersection would meet the California MUTCD peak-hour volume signal warrant regardless of the Sub-Area 4 Project.
- The signalized Bayview Avenue/Carlson Boulevard intersection (#26) would operate at LOS D during both AM and PM peak hours under 2040 No Sub-Area 4 Project conditions and at LOS F during both AM and PM peak hours under 2040 Plus Sub-Area 4 Project conditions.
- The signalized Carlson Boulevard/Westbound I-80 Ramps intersection (#28) would operate at LOS F during both AM and PM peak hours.
- The signalized Carlson Boulevard/Eastbound I-80 Ramps intersection (#29) would operate at LOS F during the PM peak hour.
- The signalized MacDonald Way/Harbour Way intersection (#34) would operate at LOS E during the AM peak hour and LOS F during the PM peak hour.
- The signalized Central Avenue/San Pablo Avenue intersection (#40) would operate at LOS E during the PM peak hour.

The Sub-Area 4 Project would cause a significant impact at nine of the 15 intersections listed above. The Sub-Area 4 Project would not cause a significant impact at the signalized Cutting Boulevard/San Pablo Avenue and Central Avenue/San Pablo Avenue intersections (#23 and #40) because the LOS standard for San Pablo Avenue, as established by WCCTAC in the Multi-Modal Traffic Service Objectives for the Routes of Regional Significance, is LOS E. The Sub-Area 4 Project would not cause an impact at the Cutting Boulevard/Harbour Way South, Wright Avenue/Harbour Way South, Wright Avenue/Marina Way South, and MacDonald Way/Harbour Way intersections (#5, #7, #9, and #34) because the traffic added to the intersection by the Sub-Area 4 Project would not exceed a significance threshold.

2040 Plus Sub-Area 4 Project Freeway Analysis

Table 4.13-17 summarizes the freeway mainline LOS results. **Appendix E-5** presents the detailed freeway LOS calculation worksheets under 2040 Plus Specific Plan conditions.

TABLE 4.13-17
2040 CONDITIONS – FREEWAY LOS SUMMARY(SUB-AREA 4 PROJECT)

Freeway Segment	Peak Hour	2040 No Sub-Area 4 Project Conditions		2040 Plus Sub-Area 4 Project Conditions		Significant Impact?
		Eastbound	Westbound	Eastbound	Westbound	
1. I-580: between Richmond Parkway and Harbour Way	AM	B	D	B	D	No
	PM	B	C	C	D	
2. I-580: between Harbour Way and Marina Bay Parkway	AM	B	D	C	D	No
	PM	C	C	C	D	
3. I-580: between Marina Bay Parkway and Regatta Boulevard	AM	B	D	C	D	No
	PM	C	D	C	E	
4. I-580: between Regatta Boulevard and Bayview Avenue	AM	C	D	C	D	No
	PM	C	D	C	D	
5. I-580: between Bayview Avenue and Central Avenue	AM	B	D	C	D	No
	PM	C	D	C	D	
6. I-580: between Central Avenue and I-80	AM	D	**F**	D	**F**	Yes
	PM	D	**F**	**F**	**F**	
7. I-80: between MacDonald Avenue and Cutting Boulevard	AM	B	**F** [a]	B	**F** [a]	No
	PM	**F** [a]	C	**F** [a]	C	
8. I-80: between Cutting Boulevard and Potrero Avenue	AM	B	**F** [a]	B	**F** [a]	No
	PM	**F** [a]	B	**F** [a]	B	
9. I-80: between Potrero Avenue and Carlson Boulevard	AM	B	**F**[a]	B	**F**[a]	No
	PM	**F** [a]	B	**F** [a]	B	
10. I-80: at the Gilman Street Overpass	AM	C	**F** [a]	C	**F** [a]	No
	PM	**F** [a]	C	**F** [a]	C	

[a] Peak hour served volumes based on Caltrans Performance Measurement System (PeMS) data collected in Fall 2015. Volumes do not account for upstream bottlenecks. Segment operates at worse condition than calculated.

SOURCE: Fehr & Peers, 2016.

As shown in the table, most study freeway segments along I-580 and the non-peak direction of I-80 would continue to operate at LOS E or better during both AM and PM peak hours under 2040 conditions regardless of the Sub-Area 4 Project. Since similar to the Existing conditions, the estimated 2040 volumes are the volumes served, not the actual peak hour demand, and therefore, actual conditions may be worse than the calculated LOS. Thus, segments along westbound I-80 during the AM peak hour and eastbound I-80 during the PM peak hour are assumed to continue to operate at LOS F under 2040 conditions regardless of the Sub-Area 4 Project. The Sub-Area 4 Project would increase the peak hour volumes on these I-80 freeway segments by less than five percent.

Westbound I-580 between Central Avenue and I-80 during both AM and PM peak hours and Eastbound I-580 between I-80 and Central Avenue would operate at LOS F during the PM peak hour under 2040 No Sub-Area 4 Project and 2040 Plus Sub-Area 4 Project conditions. The Sub-Area 4 Project would increase the peak hour volumes on these I-580 freeway segments by more than five percent.

2040 Plus Sub-Area 4 Project Impacts and Mitigation Measures

The impacts and recommended mitigation measures are discussed below for Criteria a. and b., as discussed in Section 4.13.5 Significance Criteria on page 4.13-34.

Impact TRF-2.SA4: Signalized intersection operations at *Cutting Boulevard/23rd Street* (#11) would worsen the already unacceptable LOS F conditions due to traffic generated by the Sub-Area 4 Project under 2040 Plus Sub-Area 4 Project conditions. (*Less Than Significant with Mitigation*)

Traffic generated by the Sub-Area 4 Project would contribute to the LOS F operations during both AM and PM peak hours at the signalized Cutting Boulevard/23rd Street intersection (#11) and increase the average control delay by more than five seconds under 2040 Plus Sub-Area 4 Project conditions. Implementation of the following mitigation measure would reduce the impact to a less-than-significant level:

> **Mitigation Measure TRF-2.SA4: Cutting Boulevard/23rd Street Intersection Signal Improvements.** All applicants proposing the development of projects within Sub-Area 4 and meeting the trigger and funding criteria specified below shall be responsible for implementing the following improvement:
>
> a) **Mitigation Measure TRF-12.SP**, item b, which would update the signal to actuated-coordinated operations and coordinate signal timings with adjacent intersection along Cutting Boulevard.
>
> It is estimated that the mitigation measure at this intersection may be required when about 90 percent of the Sub-Area 4 Project is developed. At that time, the development project that triggers the impact shall either fully fund or implement the mitigation measure. Alternatively, the City of Richmond may implement this mitigation measure prior to or at the time the 90 percent buildout trigger occurs, the mitigation measure would not be required to be implemented by an individual project and the City may collect fair-share contributions from the projects in Sub-Area 4 to support implementation.

After implementation of this measure, the intersection would improve to LOS E during the AM peak hour and continue to operate at LOS F during the PM peak hour with less delay than under 2040 No Sub-Area 4 Project conditions. The mitigation measure would reduce the impact to a less-than-significant level. No secondary significant impacts would result from implementation of this measure.

Significance after Mitigation: Less Than Significant.

Mitigation: Mitigation Measure TRF-12.SP, TRF-2.SA4.

Impact TRF-3.SA4: Signalized intersection operations at *Meeker Avenue/Marina Bay Parkway* (#14) would worsen the already unacceptable LOS F conditions due to traffic generated by the Sub-Area 4 Project under 2040 Plus Sub-Area 4 Project conditions. (*Less Than Significant with Mitigation*)

Traffic generated by the Sub-Area 4 Project would contribute to the LOS F operations during both AM and PM peak hours at the signalized Meeker Avenue/Marina Bay Parkway intersection (#14) and increase the average control delay by more than five seconds under 2040 Plus Sub-Area 4 Project conditions. Implementation of the following would reduce the impact to a less-than-significant level:

Mitigation Measure TRF-3.SA4: Meeker Avenue/Marina Bay Parkway Intersection Signal and Channelization Improvements. All applicants proposing the development of projects within Sub-Area 4 and meeting the trigger and funding criteria specified below shall be responsible for implementing the following improvements:

a) **Mitigation Measure TRF-12.SP**, items b and c, which would restripe the eastbound Meeker Avenue approach to provide an exclusive left-turn lane and a shared right/through lane within the current right-of-way, update the signal to actuated-coordinated operations, convert the phasing for the east and west intersection approaches from split-phasing to protected phasing, and coordinate signal timings with adjacent signal timings along Marina Bay Parkway.

It is estimated that the mitigation measure at this intersection may be required when about 90 percent of the Sub-Area 4 Project is developed. At that time, the development project that triggers the impact shall either fully fund or implement the mitigation measure. Alternatively, the City of Richmond may implement this mitigation measure prior to or at the time the 90 percent buildout trigger occurs, the mitigation measure would not be required to be implemented by an individual project and the City may collect fair-share contributions from the projects in Sub-Area 4 to support implementation.

After implementation of this measure, the intersection would improve to LOS E during the AM peak hour and continue to operate at LOS F during the PM peak hour with less delay than under 2040 No Sub-Area 4 Project conditions. The mitigation measure would reduce the impact to a less-than-significant level. No secondary significant impacts would result from implementation of this measure.

Significance after Mitigation: Less Than Significant.

Mitigation: Mitigation Measure TRF-12.SP, TRF-3.SA4.

Impact TRF-4.SA4: Unsignalized intersection operations at *Westbound I-580 Ramps/Juliga Woods Street* (#17) would worsen the already unacceptable LOS F conditions due to traffic generated by the Sub-Area 4 Project and would warrant the installation of a traffic signal under 2040 Plus Sub-Area 4 Project conditions. (*Significant and Unavoidable*)

Traffic generated by the Sub-Area 4 Project would contribute to LOS F operations during both AM and PM peak hours at the side-street stop-controlled Westbound I-580 Ramps/Juliga Woods Street intersection (#17) under 2040 Plus Sub-Area 4 conditions. The intersection would meet the California MUTCD peak-hour volume signal warrant under 2040 Plus Sub-Area 4 Project conditions. Implementation of the following mitigation measure would reduce the magnitude of the impact at this intersection:

> **Mitigation Measure TRF-4.SA4**: **Westbound I-580 Ramps/Juliga Woods Street Intersection Signalization.** All applicants proposing the development of projects within Sub-Area 4 and meeting the trigger and funding criteria specified below shall be responsible for implementing the following improvement:
>
> a) **Mitigation Measure TRF-3.SP**, which would install an actuated signal at the intersection with protected phasing on all approaches.
>
> It is estimated that the mitigation measure at this intersection may be required when about 10 percent of the Sub-Area 4 Project is developed. At that time, the development project that triggers the impact shall either fully fund or implement the mitigation measure. Alternatively, the City of Richmond may implement this mitigation measure prior to or at the time the 10 percent buildout trigger occurs, the mitigation measure would not be required to be implemented by an individual project and the City may collect fair-share contributions from the projects in Sub-Area 4 to support implementation.
>
> After implementation of this measure, the intersection would continue to operate at LOS F during the AM peak hour with less delay than under 2040 No Sub-Area 4 Project conditions, and would improve to LOS E during the AM peak hour. The mitigation measure would reduce the impact to a less-than-significant level. However, the City cannot ensure implementation of this mitigation measure because the intersection is under the jurisdiction of Caltrans. The City of Richmond, as lead agency, does not have jurisdiction to implement Measure TRF-4.SA4 and the mitigation would need to be approved and implemented by Caltrans. Therefore, the impact is conservatively considered significant and unavoidable because the City cannot ensure its implementation. No secondary significant impacts would result from implementation of this measure.

Significance after Mitigation: Significant and Unavoidable.

Mitigation: Mitigation Measure TRF-4.SA4.

Impact TRF-5.SA4: Signalized intersection operations at *Meade Street/Regatta Boulevard/ Eastbound I-580 Ramps* (#18) would worsen the already unacceptable LOS F conditions due to traffic generated by the Sub-Area 4 Project under 2040 Plus Sub-Area 4 Project conditions. (*Significant and Unavoidable*)

Traffic generated by the Sub-Area 4 Project would contribute to the LOS F operations during both AM and PM peak hours at the signalized Meade Street/Regatta Boulevard/Eastbound I-580 Ramps intersection (#18) and increase the average control delay by more than five seconds under 2040 Plus Sub-Area 4 Project conditions. Implementation of the following mitigation measure would reduce the magnitude of the impact at this intersection:

> **Mitigation Measure TRF-5.SA4: Meade Street/Regatta Boulevard/Eastbound I-580 Ramps Intersection Signal and Channelization Improvements.** All applicants proposing the development of projects within Sub-Area 4 and meeting the trigger and funding criteria specified below shall be responsible for implementing the following improvement:
>
> a) **Mitigation Measure TRF-4.SP**, which would restripe westbound Meade Street to provide one exclusive right-turn lane and a shared left/through lane, upgrade the signal to actuated operations, convert the signal phasing for east and west intersection approaches from protected phasing to split-phasing, and coordinate signal timings with the adjacent Regatta Boulevard/Meade Street intersection and the at-grade railroad crossing.
>
> It is estimated that the mitigation measure at this intersection may be required when about 75 percent of the Sub-Area 4 Project is developed. At that time, the development project that triggers the impact shall either fully fund or implement the mitigation measure. Alternatively, the City of Richmond may implement this mitigation measure prior to or at the time the 75 percent buildout trigger occurs, the mitigation measure would not be required to be implemented by an individual project and the City may collect fair-share contributions from the projects in Sub-Area 4 to support implementation.
>
> After implementation of this measure, the intersection would continue to operate at LOS F during both AM and PM peak hour with less delay than under 2040 No Sub-Area 4 Project conditions. The mitigation measure would reduce the impact to a less-than-significant level. However, the City cannot ensure implementation of this mitigation measure because the intersection is under the jurisdiction of Caltrans. The City of Richmond, as lead agency, does not have jurisdiction to implement Measure TRF-5.SA4 and the mitigation would need to be approved and implemented by Caltrans. Therefore, the impact is conservatively considered significant and unavoidable because the City cannot ensure its implementation. No secondary significant impacts would result from implementation of this measure.

Significance after Mitigation: Significant and Unavoidable.

Mitigation: Mitigation Measure TRF-5.SA4.

Impact TRF-6.SA4: Unsignalized intersection operations at *Regatta Boulevard/Meade Street* (#19) would worsen the already unacceptable LOS F conditions due to traffic generated by the Sub-Area 4 Project and would warrant the installation of a traffic signal under 2040 Plus Sub-Area 4 Project conditions. (*Less Than Significant with Mitigation*)

Traffic generated by the Sub-Area 4 Project would cause the side-street stop-controlled Regatta Boulevard/Meade Street intersection (#19) to operate at LOS F during both AM and PM peak hours under 2040 Plus Sub-Area 4 Project conditions. The intersection would meet the California MUTCD peak-hour volume signal warrant under 2040 Plus Sub-Area 4 Project conditions. Implementation of the following mitigation measure would reduce the impact to a less-than-significant level:

> **Mitigation Measure TRF-6.SA4: Regatta Boulevard/Meade Street Intersection Signalization.** All applicants proposing the development of projects within Sub-Area 4 and meeting the trigger and funding criteria specified below shall be responsible for implementing the following improvement:
>
> a) **Mitigation Measure TRF-5.SP**, which would install an actuated signal at the intersection with protected phasing on all approaches, and coordinate signal timings with the adjacent Meade Street/Regatta Boulevard/Eastbound I-580 Ramps intersection and the at-grade railroad crossing.
>
> It is estimated that the mitigation measure at this intersection may be required when about 85 percent of the Sub-Area 4 Project is developed. At that time, the development project that triggers the impact shall either fully fund or implement the mitigation measure. Alternatively, the City of Richmond may implement this mitigation measure prior to or at the time the 85 percent buildout trigger occurs, the mitigation measure would not be required to be implemented by an individual project and the City may collect fair-share contributions from the projects in Sub-Area 4 to support implementation.
>
> After implementation of this measure, the intersection would continue to operate at LOS F during both AM and PM peak hour with less delay than under 2040 No Sub-Area 4 Project conditions. The mitigation measure would reduce the impact to a less-than-significant level. No secondary significant impacts would result from implementation of this measure.

Significance after Mitigation: Less Than Significant.

Mitigation: Mitigation Measure TRF-5.SP, TRF-6.SA4.

Impact TRF-7.SA4: Unsignalized intersection operations at *Bayview Avenue/51st Street/ Seaport Avenue/Eastbound I-580 Ramps* (#25) would worsen the already unacceptable LOS F conditions due to traffic generated by the Sub-Area 4 Project and would warrant the installation of a traffic signal under 2040 Plus Sub-Area 4 Project conditions. (*Significant and Unavoidable*)

Traffic generated by the Sub-Area 4 Project would contribute to the LOS F operations during both AM and PM peak hours at the all-way stop-controlled Bayview Avenue/51st Street/Seaport Avenue/Eastbound I-580 Ramps intersection (#25) under 2040 Plus Sub-Area 4 Project conditions. The intersection would meet the California MUTCD peak-hour volume signal warrant

under 2040 Plus Sub-Area 4 Project conditions. Implementation of the following mitigation measure would reduce the magnitude of the impact at this intersection:

> **Mitigation Measure TRF-7.SA4: Bayview Avenue/51st Street/Seaport Avenue/Eastbound I-580 Ramps Intersection Signalization and Channelization Improvements.** All applicants proposing the development of projects within Sub-Area 4 shall be responsible for implementing the following improvements:
>
> a) **Mitigation Measure TRF-6.SP**, which would install an actuated signal at the intersection with protected signal phasing on all approaches, and restripe southbound 51st Street to provide two left-turn lanes and a shared right/through lane.
>
> After implementation of this measure, the intersection would continue to operate at LOS F during both AM and PM peak hours. Therefore, the impact would remain significant and unavoidable. No other secondary significant impacts would result from implementation of this measure.

Significance after Mitigation: Significant and Unavoidable.

Mitigation: Mitigation Measure TRF-6.SP, TRF-7.SA4.

Impact TRF-8.SA4: Signalized intersection operations at *Bayview Avenue/Carlson Boulevard* (#26) would deteriorate to an unacceptable LOS due to traffic generated by the Sub-Area 4 Project under 2040 Plus Sub-Area 4 Project conditions. (*Significant and Unavoidable*)

Traffic generated by the Sub-Area 4 Project would cause the signalized Bayview Avenue/Carlson Boulevard intersection (#26) to degrade from LOS D to LOS F during both the AM and PM peak hours under 2040 Plus Sub-Area 4 Project conditions. Implementation of the following mitigation measure would reduce the magnitude of the impact at this intersection:

> **Mitigation Measure TRF-8.SA4: Bayview Avenue/Carlson Boulevard Intersection Signal Improvements.** All applicants proposing the development of projects within Sub-Area 4 and meeting the trigger and funding criteria specified below shall be responsible for implementing the following improvements:
>
> a) **Mitigation Measure TRF-18.SP**, item b, which would convert the signal phasing for the east and west intersection approaches from split-phasing to protected phasing and provide an overlap phase for the northbound right-turn movement.
>
> It is estimated that the mitigation measure at this intersection may be required when about 30 percent of the Sub-Area 4 Project is developed. At that time, the development project that triggers the impact shall either fully fund or implement the mitigation measure. Alternatively, the City of Richmond may implement this mitigation measure prior to or at the time the 30 percent buildout trigger occurs, the mitigation measure would not be required to be implemented by an individual project and the City may collect fair-share contributions from the projects in Sub-Area 4 to support implementation.

After implementation of this measure, the intersection would continue to operate at LOS F during the AM peak hour and improve to LOS D during the PM peak hour. Traffic operations at the intersection can be further improved by providing additional automobile travel lanes, such as a third through lane on eastbound or westbound Carlson Boulevard. However, these modifications cannot be accommodated within the available automobile right-of-way and would require additional right-of-way, and/or loss of planned bicycle and/or pedestrian facilities, and are considered to be infeasible because they would be in conflict with the Specific Plan and General Plan goals to promote pedestrian, bicycle, and transit trips. Therefore, the impact would remain significant and unavoidable. No other secondary significant impacts would result from implementation of this measure.

Significance after Mitigation: Significant and Unavoidable.

Mitigation: Mitigation Measure TRF-18.SP, TRF-8.SA4.

Impact TRF-9.SA4: Signalized intersection operations at *Carlson Boulevard/ Westbound I-80 Ramps* (#28) would worsen the already unacceptable LOS F conditions due to traffic generated by the Sub-Area 4 Project under 2040 Plus Sub-Area 4 Project conditions. (*Significant and Unavoidable*)

Traffic generated by the Sub-Area 4 Project would contribute to the LOS F operations during both AM and PM peak hours at the signalized Carlson Boulevard/ Westbound I-80 Ramps intersection (#28) and increase the average control delay by more than five seconds under 2040 Plus Sub-Area 4 Project conditions. Implementation of the following mitigation measure would reduce the magnitude of the impact at this intersection:

Mitigation Measure TRF-9.SA4: ***Carlson Boulevard/ Westbound I-80 Ramps* Intersection** Widening. All applicants proposing the development of projects within Sub-Area 4 and meeting the trigger and funding criteria specified below shall be responsible for implementing the following improvement:

a) **Mitigation Measure TRF-19.SP**, item b, which would widen the southbound Westbound I-80 Off-Ramp to provide one right-turn lane and one shared through/left turn lane.

It is estimated that the mitigation measure at this intersection may be required when about 80 percent of the Sub-Area 4 Project is developed. At that time, the development project that triggers the impact shall either fully fund or implement the mitigation measure. Alternatively, the City of Richmond may implement this mitigation measure prior to or at the time the 80 percent buildout trigger occurs, the mitigation measure would not be required to be implemented by an individual project and the City may collect fair-share contributions from the projects in Sub-Area 4 to support implementation.

After implementation of this measure, the intersection would continue to operate at LOS F during both AM and PM peak hours. Traffic operations at the intersection can be further improved by providing additional automobile travel lanes, such as second through lanes on eastbound and westbound Carlson Boulevard. However, these modifications cannot be accommodated within the available automobile right-of-way and would require additional right-of-way, and/or loss of planned bicycle and/or pedestrian facilities, and are considered

to be infeasible because they would be in conflict with the Specific Plan and General Plan goals to promote pedestrian, bicycle, and transit trips. Furthermore, it is not certain that this mitigation measure could be implemented because the intersection is under the jurisdiction of Caltrans. The City of Richmond, as lead agency, does not have jurisdiction to implement Measure TRF-9.SA4 and the mitigation would need to be approved and implemented by Caltrans. Therefore, the impact would remain significant and unavoidable. No other secondary significant impacts would result from implementation of this measure.

Significance after Mitigation: Significant and Unavoidable.

Mitigation: Mitigation Measure TRF-19.SP, TRF-9.SA4.

Impact TRF-10.SA4: Signalized intersection operations at *Carlson Boulevard/ Eastbound I-80 Ramps* (#29) would worsen the already unacceptable LOS F conditions due to traffic generated by the Sub-Area 4 Project under 2040 Plus Sub-Area 4 Project conditions. (*Significant and Unavoidable*)

Traffic generated by the Sub-Area 4 Project would contribute to the LOS F operations during both AM and PM peak hours at the signalized Carlson Boulevard/ Eastbound I-80 Ramps intersection (#29) under 2040 Plus Sub-Area 4 Project conditions. No feasible mitigation measures are available that would mitigate the project impacts on the Carlson Boulevard/Eastbound I-80 Ramps intersection.

Traffic operations at the intersection can be improved by providing additional automobile travel lanes, such as additional through lanes on eastbound and westbound Carlson Boulevard. However, these modifications cannot be accommodated within the available automobile right-of-way and would require additional right-of-way, and/or loss of planned bicycle and/or pedestrian facilities, and are considered to be infeasible because they would be in conflict with the Specific Plan and General Plan goals to promote pedestrian, bicycle, and transit trips. Therefore, the impact would remain significant and unavoidable. No other secondary significant impacts would result from implementation of this measure.

Mitigation: None.

Significance after Mitigation: Significant and Unavoidable.

Impact TRF-11.SA4: Traffic generated by the Sub-Area 4 Project would cause a significant impact on the following freeway segments under 2040 Plus Sub-Area 4 Project conditions because they would operate at LOS F and the Sub-Area 4 Project would increase the freeway segment volumes by more than five percent: Westbound I-580 between Central Avenue and I-80 during both AM and PM peak hours and Eastbound I-580 between I-80 and Central Avenue during the PM peak hour. (*Significant and Unavoidable*)

No feasible mitigation measures are available that would mitigate the Sub-Area 4 Project impacts on the freeway segments.

The implementation of the multi-modal improvement projects as outlined in the SRTCP and detailed on page 4.13-69, and the implementation of the TDM Plan as described on page 4.13-27, would reduce the project traffic on the freeway segments; however, the cumulative reduction of project traffic on the freeway segments due to these improvements is not known and, therefore the impact is conservatively identified to remain significant.

Operations at these freeway segments can be improved by providing additional automobile travel lanes. However, additional travel lanes cannot be accommodated within the existing automobile right-of-way and would require additional right-of-way, which may require condemnation of private property that may be developed. Furthermore, expanding freeway capacity would be in conflict with the Specific Plan, General Plan, and other regional and statewide goals to reduce VMT, and promote pedestrian, bicycle, and transit connectivity.

In addition, all freeway segments are under the jurisdiction of Caltrans. The City of Richmond, as lead agency, does not have jurisdiction over freeways. Thus, all mitigation measures would need to be approved and implemented by Caltrans. Therefore, the impact is considered significant and unavoidable because no feasible mitigation measures are available and the City of Richmond cannot ensure implementation of any potential mitigation measure.

Significance after Mitigation: Significant and Unavoidable.

Mitigation: None.

Transportation Hazards and Safety

Impacts of the proposed Specific Plan and Sub-Area 4 Project on various aspects of safety are discussed below for Criterion c., as discussed in Section 4.13.5 Significance Criteria on page 4.13-34.

Specific Plan Analysis

Roadway Hazards and Safety

Impact TRF-25.SP: The Specific Plan would not substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment). (*Less Than Significant, No Mitigation Required*)

The proposed Specific Plan would include developments and modifications to the public right-of-way that could affect transportation safety. The particular location and/or design elements of individual future developments under the proposed Specific Plan are not known. However, the Specific Plan includes mandatory requirements, such as the Thoroughfare Regulating Plan (Specific Plan Section 4.6), that would ensure changes in the public right-of-way would not adversely affect safety for all street users. In addition, the design for each individual development project and changes in the public right-of-way under the Specific Plan would be required to be consistent with appropriate regulations and design standards in effect at the time.

This EIR proposes certain SRTCP improvements as mitigation measures. The SRTCP improvements, as described on page 4.13-69, focus on improving the safety and comfort of vulnerable roadway users, such as pedestrians and bicyclists.

The proposed Specific Plan would increase the amount of residential and commercial uses in an area that is currently dominated by industrial uses. The Specific Plan acknowledges that industrial uses would continue to remain in and around the Specific Plan area and the roadway network serving the Plan Area would continue to need to accommodate trucks that serve these uses (Specific Plan Sections 3.3.7). Thus, the Thoroughfare Regulating Plan requires specific design elements to improve the safety of various roadway users. It identifies truck routes through the Specific Plan area, and mandates various design features to reduce the potential conflicts between trucks, automobiles, bicycles, and pedestrians. These design features include: roadway design speed of 35 miles per hour or lower on designated truck routes, provision for separated bikeways, separated paths, and/or sidewalks buffered by landscaping and/or parking, and other features as described on page 4.13-24.

Since the Specific Plan imposes these requirements as mandatory standards through the Thoroughfare Regulating Plan, the Specific Plan would not substantially increase hazards due to a design feature or incompatible uses along the roadways within the Specific Plan. The impact is considered less than significant and no mitigation measures are required.

Significance after Mitigation: Less Than Significant

Mitigation: None.

At-Grade Railroad Crossings

Impact TRF-26.SP: Buildout of the proposed Specific Plan would generate substantial multi-modal traffic traveling across at-grade railroad crossings that cause or expose roadway users (e.g., motorists, pedestrians, bicyclists) to a permanent and substantial transportation hazard. (*Significant and Unavoidable*)

Currently, several active at-grade rail lines traverse the Plan Area. Existing at-grade crossings that would potentially be affected by the proposed Specific Plan include:

- On Meade Street between the I-580 Eastbound Ramps/Regatta Boulevard/Meade Street and Meade Street/Regatta Boulevard intersections (#18 and #19)
- On Regatta Boulevard, just west of the Regatta Boulevard/Marina Way South intersection (#10)
- On Marina Way South, just north of the Regatta Boulevard/Marina Way South intersection (#10)
- On Marina Way South, between Regatta Boulevard and Wright Avenue
- Across the Wright Avenue/Harbour Way South intersection (#7)

- On Cutting Boulevard between Hoffmann Boulevard and Fourth Street

The Specific Plan and the EIR mitigation measures include the following that would improve safety at these at-grade crossings:

- The Specific Plan would realign the Regatta Boulevard/Marina Way South intersection (#10) and eliminate one of the two at-grade railroad crossings
- Mitigation Measure TRF-1.SP would signalize the Wright Avenue/Harbour Way South intersection (#7) and improve the at-grade crossing at the intersection
- Mitigation Measure TRF-4.SP would signalize the I-580 Eastbound Ramps/Regatta Boulevard/Meade Street intersection (#18) and coordinate signal timings with the adjacent railroad crossing and Meade Street/Regatta Boulevard intersection (#19)

Although the Specific Plan and the mitigation measures recommended in this EIR would eliminate one at-grade crossing and improve conditions at several existing at-grade crossings, the proposed Specific Plan has the potential to introduce additional vehicle, bicycle and pedestrian traffic at the remaining at-grade railroad crossings.

The Specific Plan acknowledges that rail service would need to be maintained through the Plan Area to serve the industrial uses in the area; however, the Specific Plan anticipates the consolidation of the various existing rail lines into one corridor in the future (Specific Plan Section 3.3.8), which would reduce the number of locations where multi-modal traffic would cross rail lines. The Specific Plan also anticipates that future study will be required prior to this consolidation, to ensure that the needs of rail and freight operations in the Plan Area are met. This EIR does not account for any reconfigurations to the railroads because they are not currently approved or funded, the Specific Plan does not require them, and they are outside the jurisdiction and control of the City of Richmond.

Mitigation: No feasible mitigation measures are currently available that would mitigate the Specific Plan impact on at-grade railroad crossings. The safety of the at-grade crossings can be improved by grade-separating the railroad crossings and/or consolidating the multiple rail lines in the Plan Area and vicinity. These potential reconfigurations to the railroads and adjacent roadways are not currently planned, approved, or funded. Furthermore, they are outside the jurisdiction and control of the City of Richmond and the City of Richmond cannot ensure implementation of any potential mitigation measure. Therefore, the impact is identified as significant and unavoidable.

Significance after Mitigation: Significant and Unavoidable

Mitigation: None.

Freeway Off-Ramp Queues

Impact TRF-27.SP: Buildout of the proposed Specific Plan would generate automobile traffic that would result in automobile queues on off-ramps extending to the I-580 freeway mainline at the Regatta Boulevard/Meade Street and Bayview Avenue interchanges. (*Significant and Unavoidable*)

The Plan Area is served by four interchanges on I-580: Harbour Way South, Marina Bay Parkway, Regatta Boulevard/Meade Street and Bayview Avenue. It is expected that the Harbour Way South and Marina Bay Parkway off-ramps would provide adequate space to accommodate the estimated queues within the off-ramp and queues would not spillback onto the mainline I-580 freeway. However, the additional traffic generated by the buildout of the Specific Plan would results in the queues on Regatta Boulevard/Meade Street and Bayview Avenue interchanges to spill back onto the mainline freeway and interfere with the traffic flow on the freeway.

The Specific Plan identifies the reconfiguration of the I-580 freeway interchanges at Regatta Boulevard/Meade Street and Bay View Avenue as potential future improvements, which may reduce the potential for queue spill back on the off-ramps. This EIR does not account for any modifications to these interchanges because they are not currently approved or funded, the Specific Plan does not require them, and they are outside the jurisdiction and control of the City of Richmond.

Mitigation: No feasible mitigation measures are currently available that would mitigate the Specific Plan impacts at the Regatta Boulevard/Meade Street and Bayview Avenue off-ramps. The impact can be mitigated by reconfiguring the Regatta Boulevard/Meade Street and Bayview Avenue interchanges, which may include providing additional lanes on the off-ramps. These potential freeway interchange reconfigurations are not currently planned, approved, or funded. Furthermore, they are outside the jurisdiction and control of the City of Richmond and the City of Richmond cannot ensure implementation of any potential mitigation measure. Therefore the impact is identified as significant and unavoidable.

Significance after Mitigation: Significant and Unavoidable

Mitigation: None.

Sub-Area 4 Project Analysis

Impact TRF-12.SA4: The Sub-Area 4 Project would not substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment). (*Less Than Significant, No Mitigation Required*)

The Sub-Area 4 Project would include developments and modifications to the public right-of-way that could affect transportation safety. These developments and modifications would be consistent with the Specific Plan and its mandatory requirements, such as the Thoroughfare Regulating Plan. Since, as described above, the Specific Plan would not substantially increase hazards due to a

design feature or incompatible uses, the Sub-Area 4 Project would not also substantially increase hazards due to a design feature or incompatible uses.

No rail lines traverse the Sub-Area 4 Project and no at-grade crossings are located within or adjacent to the Sub-Area 4 Project. Thus, the Sub-Area 4 Project would not generate substantial multi-modal traffic traveling across at-grade railroad crossings that cause or expose roadway users.

The traffic generated by the Sub-Area 4 Project would not results in the queues on Regatta Boulevard/ Meade Street or Bayview Avenue interchanges to spill back onto the mainline freeway.

The Sub-Area 4 Project would not substantially increase hazards due to a design feature or incompatible uses along the roadways within the Specific Plan. The impact is considered less than significant and no mitigation measures are required.

Significance after Mitigation: Less Than Significant

Mitigation: None.

Emergency Access

Impacts of the proposed Specific Plan and Sub-Area 4 Project on emergency access are discussed below for Criterion d), as discussed in Section 4.13.5 Significance Criteria on page 4.13-34.

Specific Plan Analysis

Impact TRF-28.SP: The Specific Plan would not result in inadequate emergency access. (*Less Than Significant, No Mitigation Required*)

Three existing fire stations currently serve the Specific Plan area: Richmond Fire Department (RFD) Station 61, located at 140 West Richmond Avenue, about 2 miles west of Sub-Area 1; RFD Station 64, located at 4801 Bayview Avenue, about 0.4 mile east of Sub-Area 4; and RFD Station 67, located at 1131 Cutting Boulevard, about 0.4 miles north of Sub-Area 1. At buildout, the overall Specific Plan area and each Sub-Area would continue to provide multiple access points and each development within the Plan area would be designed to provide multiple access points. Thus, if one access point were blocked, emergency vehicles from other fire stations can use other access point(s) to reach any part of the Plan Area.

In addition, based on the thoroughfare standards presented in the Specific Plan (Section 4.6), all streets within the Specific Plan area would be designed to accommodate access by fire apparatus and other emergency response vehicles.

Thus, there would be adequate emergency service and access at buildout of the Plan Area, and the Specific Plan would not cause a significant impact on emergency access.

Significance after Mitigation: Less Than Significant

Mitigation: None.

Sub-Area 4 Project Analysis

Impact TRF-13.SA4: The Sub-Area 4 Project would not result in inadequate emergency access. (*Less Than Significant, No Mitigation Required*)

The Sub-Area 4 Project would provide multiple access points and each development within the Sub-Area 4 Project would be designed to provide multiple access points. Thus, if one access point were blocked, emergency vehicles can use other access point(s) to reach any part of the Sub-Area 4 Project.

In addition, based on the thoroughfare standards presented in the Specific Plan (Section 4.6), all streets within the Sub-Area 4 Project would be designed to accommodate access by fire apparatus and other emergency response vehicles.

Thus, there would be adequate emergency service and access at buildout of the Sub-Area 4 Project, and the Sub-Area 4 Project would not cause a significant impact on emergency access.

Significance after Mitigation: Less Than Significant

Mitigation: None.

Consistency with Adopted Policies, Plans or Programs Supporting Alternative Transportation

Impacts of buildout under the Specific Plan and Sub-Area 4 Project on alternative transportation plan consistency are discussed below for Criteria e. and f., as discussed in Section 4.13.5 Significance Criteria on page 4.13-34.

Specific Plan Analysis

Impact TRF-29.SP: The Specific Plan would not conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities. (*Less Than Significant, No Mitigation Required*)

A discussion of applicable polices and plans is provided below. The Specific Plan, and the associated mitigation measures presented in this EIR, are consistent with these policies, plans and programs, and would not cause a significant impact by conflicting with adopted policies, plans, or programs supporting public transit, bicycle, or pedestrian transportation.

The General Plan (Goal CR1) states a strong preference for encouraging the use of non-automobile transportation modes, such as transit, bicycling, and walking and directs the City, in constructing and maintaining its transportation infrastructure, to provide for a safer and more attractive transportation network for all modes of transportation including travel by foot and bicycle, public transit, and automobile. The goals of the proposed Specific Plan include

development of pedestrian-oriented, mixed-use neighborhoods (Goal #1), and providing improved and efficient multi-modal connectivity (Goal #3).

The Specific Plan would provide for high-density development in a compact area with an emphasis on improving pedestrian and bicycle infrastructure and encouraging transit service. As previously documented in the trip generation section (see page 4.13-28), the Specific Plan is estimated to generate about 38 percent fewer external automobile trips during a typical weekday than the same uses in a more suburban setting. The high usage of non-auto modes is due to the Specific Plan locating a mix of uses in a dense walkable urban environment with quality pedestrian, bicycle, and transit infrastructure. Policies and infrastructure improvements, as outlined in previous sections, would also provide for safer and more attractive pedestrian, bicycle, and transit infrastructure and further encourage these activities.

Furthermore, this EIR proposes the implementation of the multi-modal improvement projects as outlined in the SRTCP (See page 4.13-69) to mitigate the impacts of the Specific Plan development on the transportation network. The SRTCP consists of various multi-modal improvements in and around the Plan Area that would primarily improve non-automobile connectivity between the Plan Area and surrounding communities and the Bay Area region. It is estimated that the implementation of all of the SRTCP improvements would reduce the project automobile trip generation by about 23 percent on a typical weekday.

Although not accounted for in the automobile trip generation estimates and the traffic impact analysis presented in this EIR, the Specific Plan would include robust Transportation Demand Management (TDM) standards and constrained parking requirements that would encourage more residents, employees and visitors to shift from driving alone to other modes of travel.

The Thoroughfare Regulating Plan would ensure a multi-modal transportation network that prioritizes access and circulation for vulnerable low-impact road users (pedestrians and cyclists). As described in subsection 4.13.4, the Specific Plan would modify existing roadways and proposes new roadways that encourage pedestrian activity by creating a safer and more attractive pedestrian environment. The Specific Plan includes previously discussed policies, such as minimizing driveways on pedestrian thoroughfares and providing ample sidewalks with pedestrian scale lighting, that further encourage pedestrian activity. Therefore, the Specific Plan is consistent with the City's *Pedestrian Plan* by including infrastructure improvements, and facilitating developments that would improve pedestrian safety and encourage and promote pedestrian activity.

Most of the bicycle network in the Plan Area and surroundings envisioned in the City of Richmond *Bicycle Master Plan* has not been completed. The bicycle network envisioned in the Specific Plan, including shared trails or separated bikeway (cycle-tracks) along major high-volume arterials, would complete the bicycle network in the Plan Area and connect to the larger bicycle network in the City and beyond. The Specific Plan also provides for design treatments, such as rectangular rapid flashing beacons at trail crossing that further enhance safety and comfort for bicyclists. In addition, the Specific Plan includes other policies, such as robust short-

term and long-term bicycle parking requirements and potential bike share stations, that further encourage bicycling.

Furthermore, other infrastructure modification proposed by the Specific Plan or mitigation measures (i.e., SRTCP improvements) in this EIR would not interfere with the completion of the bicycle network or conflict with existing bicycle facilities in the Plan Area. Therefore, the Specific Plan is consistent with the City's Bicycle Master Plan by including infrastructure improvements, development standards, policies, and facilitating developments that would improve bicycle safety, and encourage and promote bicycle use.

The Specific Plan also envisions a robust transit service and infrastructure as described on page 4.13-26 that would improve local and regional transit accessibility. This EIR includes the expanded transit service as a mitigation measure; implementation of which would be consistent with the General Plan policies that promote transit.

The Specific Plan would not conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities or otherwise decrease the performance or safety of such facilities.

Significance after Mitigation: Less Than Significant.

Mitigation: None.

Sub-Area 4 Project

Impact TRF-14.SA4: The proposed Sub-Area 4 Project would not conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities. (*Less Than Significant, No Mitigation Required*)

The Sub-Area 4 Project developments would be consistent with the Specific Plan and the roadway network within the Sub-Area 4 Project would also be consistent with the Thoroughfare Regulating Plan. Since, as described above, the Specific Plan is consistent with the adopted policies, plans, and programs regarding public transit, bicycle, and pedestrian facilities, the Sub-Area 4 Project is also consistent with these policies, plans, and programs.

The Sub-Area 4 Project would not conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities or otherwise decrease the performance or safety of such facilities.

Significance after Mitigation: Less Than Significant.

Mitigation: None.

Construction Period Impacts

Impact TRF-30.SP and TRF-15.SA4: Project construction would result in a substantial, though temporary, adverse effect on the circulation system during the project construction period. (*Less Than Significant, No Mitigation Required*)

During construction activities in the Plan Area and Sub-Area 4 Project area, temporary and intermittent transportation impacts would result from truck movements as well as construction worker vehicles traveling to and from the sites, or temporary closure of roads, sidewalks and/or bicycle lanes. Construction-related traffic would temporarily increase traffic along affected roadways due to the short-term influx in construction worker vehicles, haul trucks, and the transport of materials. In addition, construction-related traffic may reduce capacities of roadways in the immediate vicinity of the Plan Area and Sub-Area 4 Project area because of the slower movements and larger turning radii of construction trucks compared to passenger vehicles and due to potential lane closures during construction activities. Truck traffic that occurs during peak commute hours (7:00 to 9:00 AM and 4:00 to 6:00 PM) may result in temporarily worse LOS and higher delays at study intersections during the construction period. Truck traffic would use City-designated truck routes (e.g., Cutting Boulevard) for access to and from the Plan Area and Sub-Area 4 Project area.

Per the requirements of the City Engineering Division, the project applicants for developments with the Plan Area and Sub-Area 4 Project area will develop and implement a construction Traffic Control Plan (TCP) to the satisfaction of the City of Richmond Department of Public Works, Police Department, and Fire Department. The plan shall include (but not be limited to) items such as:

- An estimate of the number and size of trucks per day entering and leaving the project site;
- Identification of arrival/departure times that would minimize traffic effects;
- Approved truck routes;
- Locations of staging areas;
- Locations of employee parking and methods to encourage carpooling and use of alternative transportation;
- If necessary, methods for partial/complete street closures (e.g., timing, signage, location and duration restrictions);
- Criteria for use of flaggers and other traffic controls;
- Preservation of safe and convenient passage for bicyclists and pedestrians at the Bay Trail and Miller/Knox park through/around construction areas;
- Monitoring for roadbed damage and timing for completing repairs;
- Preservation of emergency vehicle access; and
- Providing a point of contact for Point Richmond residents to obtain construction information, have questions answered, and convey complaints.

With the implementation of the construction Traffic Control Plan, impacts would be less than significant.

Significance after Mitigation: Less Than Significant.

Mitigation: None.

Specific Plan Variant: Lark Drive

The analysis presented in this EIR assumed that Lark Drive would not be a through street between Sub-Area 4 and the Richmond Field Station site. This subsection evaluates the potential impacts of extending Lark Drive as a two-lane street connecting Sub-Area 4 to the Richmond Field Station site and Regatta Boulevard in Sub-Area 2 under 2040 conditions (Lark Drive Variant). Under this Specific Plan Variant, the Lark Drive extension would provide a secondary east-west connection between Sub-Area 4 and the rest of the Plan Area, in addition to the existing Regatta Boulevard/Meade Street corridor. The Lark Drive Variant would only affect operations at the following three intersections:

18. Meade Street/Regatta Boulevard/Eastbound I-580 Ramps

19. Regatta Boulevard/Meade Street

24. Meade Street/Seaver Avenue

25. Bayview Avenue/51st Street/Seaport Avenue/Eastbound I-580 Ramps

The effects of the Lark Drive Extension for the Specific Plan and Sub-Area 4 Project analyses were evaluated using the same methodology and assumptions used earlier in this chapter.

Specific Plan Analysis

Table 4.13-18 summarizes the intersection LOS results under 2040 No Project and 2040 Plus Project conditions assuming the extension of Lark Drive. As shown, the Specific Plan would continue to cause significant impacts at the same three intersections and the same mitigation measures would continue to be applicable.

Sub-Area 4 Project Analysis

Table 4.13-19 summarizes the intersection LOS results under 2040 No Sub-Area 4 Project and 2040 Plus Sub-Area 4 Project conditions assuming the extension of Lark Drive. As shown, the Sub-Area 4 Project would continue to cause significant impacts at the same three intersections and the same mitigation measures would continue to be applicable.

TABLE 4.13-18
2040 WITH LARK DRIVE EXTENSION INTERSECTION LOS SUMMARY (SPECIFIC PLAN)

	Intersection	Traffic Control[a]	Peak Hour	2040 No Specific Plan		2040 Plus Specific Plan		Signif. Impact?	2040 Plus Specific Plan and SRTCP		Significance After Mitigation
				Delay[b,c]	LOS[b,c]	Delay[b,c]	LOS[b,c]		Delay[b,c]	LOS[b,c]	
18	**Meade Street/Regatta Boulevard/ Eastbound I-580 Ramps [d]**	**Signal**	**AM**	**75.6**	**E**	**>180**	**F**	**Yes**	**>180**	**F**	**Significant and Unavoidable [e]**
			PM	17.4	B	**>180**	**F**		**>180**	**F**	
19	**Regatta Boulevard/ Meade Street [d]**	**SSSC/ Signal**	**AM**	4.6 (21.2)	A (C)	**>180 (>180)**	**F (F)**	**Yes**	27.2	C	**Less Than Significant**
			PM	5.8 (23.2)	B (C)	**>180 (>180)**	**F (F)**		43.0	D	
24	Meade Street/ Seaver Avenue	Signal	AM	14.7	B	28.7	C	No	8.4	A	
			PM	18.1	B	35.6	D		17.2	B	
25	**Bayview Avenue/51st Street/ Seaport Avenue/Eastbound I-580 Ramps**	**AWSC/ Signal**	**AM**	**59.6**	**F**	**84.2**	**F**	**Yes**	**84.7**	**F**	**Significant and Unavoidable**
			PM	**49.9**	**E**	**89.5**	**F**		**94.0**	**F**	

[a] Signal = intersection is controlled by a traffic signal; AWSC = All-way stop-controlled intersection; SSSC = Intersection is controlled by a stop-sign on the side-street approach; UNC = Intersection is uncontrolled.
[b] For signalized intersections, average intersection delay and LOS is shown. For side-street stop-controlled intersections, delays for worst movement and average intersection delay are shown: intersection average (worst movement). Delay and LOS calculated using HCM2010, unless noted.
[c] Intersections operating at unacceptable levels are shown in **bold**.
[d] Operations may be worse than shown during rail crossing activity.
[e] The proposed mitigation measure would mitigate the impact to a less-than-significant level. The impact is conservatively identified as significant and unavoidable because the intersection is under the jurisdiction of Caltrans, and City of Richmond, as lead agency, does not have jurisdiction at this intersection.

SOURCE: Fehr & Peers, 2016.

TABLE 4.13-19
2040 WITH LARK DRIVE EXTENSION INTERSECTION LOS SUMMARY (SUB-AREA 4 PROJECT)

	Intersection	Traffic Control[a]	Peak Hour	2040 No Sub-Area 4 Project		2040 Plus Sub-Area 4 Project		Signif. Impact?	2040 Plus Sub-Area 4 Project Mitigated		Significance After Mitigation
				Delay[b,c]	LOS[b,c]	Delay[b,c]	LOS[b,c]		Delay[b,c]	LOS[b,c]	
18	**Meade Street/Regatta Boulevard/ Eastbound I-580 Ramps [d]**	**Signal**	**AM**	**>180**	**F**	**>180**	**F**	**Yes**	**>180**	**F**	**Significant and Unavoidable [e]**
			PM	**>180**	**F**	**>180**	**F**		**>180**	**F**	
19	**Regatta Boulevard/ Meade Street [d]**	**SSSC/ Signal**	**AM**	**>180 (>180)**	**F (F)**	**>180 (>180)**	**F (F)**	**Yes**	42.1	D	**Less Than Significant**
			PM	**>180 (>180)**	**F (F)**	**>180 (>180)**	**F (F)**		**111.1**	**F**	
24	Meade Street/ Seaver Avenue	Signal	AM	11.6	B	28.7	C	No	28.7	C	
			PM	19.4	B	35.6	D		35.6	D	
25	**Bayview Avenue/51st Street/ Seaport Avenue/Eastbound I-580 Ramps**	**AWSC/ Signal**	**AM**	**60.7**	**F**	**84.2**	**F**	**Yes**	**105.8**	**F**	**Significant and Unavoidable**
			PM	**52.1**	**F**	**89.5**	**F**		**188.6**	**F**	

[a] Signal = intersection is controlled by a traffic signal; AWSC = All-way stop-controlled intersection; SSSC = Intersection is controlled by a stop-sign on the side-street approach; UNC = Intersection is uncontrolled.
[b] For signalized intersections, average intersection delay and LOS is shown. For side-street stop-controlled intersections, delays for worst movement and average intersection delay are shown: intersection average (worst movement). Delay and LOS calculated using HCM2010, unless noted.
[c] Intersections operating at unacceptable levels are shown in **bold**.
[d] Operations may be worse than shown during rail crossing activity.
[e] The proposed mitigation measure would mitigate the impact to a less-than-significant level. The impact is conservatively identified as significant and unavoidable because the intersection is under the jurisdiction of Caltrans, and City of Richmond, as lead agency, does not have jurisdiction at this intersection.

SOURCE: Fehr & Peers, 2016.

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4.14 Utilities and Service Systems

4.14.1 Introduction

This section addresses potential impacts that development under the Specific Plan could have to public utility and service systems. This section also presents a project-level analysis of the Sub-Area 4 Project site, which is located within the Plan Area. The Specific Plan and Project impacts related to surface water and stormwater runoff are also discussed in Section 4.8, *Hydrology and Water Quality* and impacts related to electricity and natural gas supply and demand are also discussed in Section 4.6, *GHGs* Section 4.15, *Energy*, and Section 6.0 *Other Statutory Sections.*

Primary resources used in this analysis include the Plan-specific Utility Infrastructure Analysis (Utility Analysis) prepared by NCE Engineering and Environmental Services in April 2015 (NCE, 2015),[1] the Water Supply Assessment (WSA) prepared for the Specific Plan by the East Bay Municipal Utility District (EBMUD) on May 2014 (included as **Appendix F**), additional resources supplied by the City of Richmond, and resources from the California Department of Resources Recycling and Recovery (CalRecycle), the East Bay Municipal Utilities District (EBMUD), and the U.S. Census.

Estimates of potable water demand and sanitary sewer generation presented in the Utility Analysis are based on the conceptual buildout as presented in the Specific Plan; estimates of potable water demand and sanitary sewer generation as presented in this section are based on generation rates presented in the Utility Analysis but have been revised to include buildout under the Foreseeable Maximum Theoretical Buildout scenario, in order to address the flexibility in land uses contemplated in the Specific Plan.

4.14.2 Environmental Setting

Water

The East Bay Municipal Utility District (EBMUD) provides water to the Plan Area. EBMUD's service area extends into Contra Costa and Alameda Counties, from Crockett in the north to San Lorenzo in the south, including the cities of Berkeley and Oakland, and from San Francisco Bay east to Walnut Creek (EBMUD, 2011).

Municipal Water Supply

The EBMUD is a publicly owned water utility supplying water and wastewater treatment for parts of western Alameda and Contra Costa Counties, including the Plan Area. The 627-square-mile Mokelumne River watershed is the major water source for EBMUD, with the source of water originating in the Sierra Nevada Mountains of eastern California. The

[1] This analysis is available at the City Planning and Building Division office for review.

watershed of this river collects snowmelt from western slope of the Sierra Nevada in Alpine, Amador, and Calaveras counties. Water from the river is collected at the Pardee Dam and Reservoir, located 38 miles northeast of Stockton near the town of Jackson. A portion of the water stored in Pardee Reservoir is conveyed to the EBMUD service area via the Mokelumne Aqueducts. The remainder of the water is released into the nearby Camanche Reservoir. EBMUD has water rights and contracts for up to 325 million gallons per day (mgd) from the Mokelumne River, but the precise amount of this entitlement available in any given year is dependent on a range of variables.

In addition, EBMUD has been recycling water at its main wastewater treatment facility since the early 1970s. Recycled water is suitable for land uses that do not require potable water sources, such as golf courses, some agricultural areas, and industrial uses. Incentives used by EBMUD to encourage customers to utilize recycled water include rate discounts on recycled water and low-interest loans used to retrofit buildings to accommodate recycled water. EBMUD's existing and committed inventory of recycled water projects were estimated to generate 8.4 mgd of recycled water in 2014 (EBMUD, 2016a).

There are six water treatment plants in the EBMUD water supply and distribution system. Combined, the six plants have a treatment capacity of more than 375 mgd. The City of Richmond is served by the Sobrante and Orinda Water Treatment Plants, which have a combined maximum capacity to treat 240 mgd, and as of June 2016 were operating at 55 percent of capacity (EBMUD, 2014, and EBMUD, 2015b). EBMUD's system storage generally allows it to continue serving its customers during dry-year events.

Municipal Water Supply Plans

EBMUD's 2015 Urban Water Management Plan (UWMP) was adopted by the EBMUD Board of Directors on June 28, 2016, and addresses current and projected water usage, water supply planning, water conservation, and recycling programs over a long-term planning horizon (EBMUD, 2016a). The 2015 UWMP sets minimum performance goals for water supply in the service area including reliability, flexibility, and the minimization of water rationing. Key components of the UWMP are water conservation and recycling. According to the 2015 UWMP, the projected average annual total water demand for the EBMUD service area in 2015 was 232 mgd and is anticipated to increase to 290 mgd in 2030. Use of conservation measures, recycled water, and raw water products reduced the average annual demand for potable water in 2015 to 190 mgd, and to 222 mgd in 2030 (ibid.). EBMUD's water demand projections account for anticipated future water demands within EBMUD's service boundaries and for variations in demand-attributed changes in development patterns.

On April 24, 2012, EBMUD adopted the *Water Supply Management Program 2040 Plan* (WSMP). The WSMP is a program-level effort that estimates EBMUD's dry-year water supply needs through 2040 and anticipates 50 mgd of future supply to be provided by water conservation and recycling. This plan also describes EBMUD's mitigation and adaptation strategies for dealing with the changing climate and its effects on water resources (EBMUD, 2012).

System-wide, EBMUD's customers reduced water use 12 percent from February 2014 to February 2015, as compared to one year earlier (EBMUD, 2015b). In 2015, EBMUD's Water Shortage Emergency Action Plan 2015 called for customers to voluntarily cut back water use to 15 percent below average, and provided specific advice to customers about how to achieve that reduction, in order to implement state water use prohibitions (EBMUD, 2015a). In April 2015, EBMUD declared a Stage 4 critical drought and adopted two ordinances pertaining to water use. EBMUD's excessive water use ordinance penalizes households that use more than 1,000 gallons per day, which is four times the amount of water used by the average residential customer. EBMUD's water theft ordinance permits EBMUD to fine persons for stealing water or making unauthorized use of a public fire hydrant. In 2015, EBMUD also increased the community-wide goal of water savings from 15 percent to 20 percent (EBMUD, 2015c and 2015b).

Through use of these measures and following an adequate refilling of reservoirs to meet demands, on May 10, 2016 EBMUD declared an end to the drought emergency (EBMUD, 2016b).

Supply Entitlements

EBMUD's water rights and delivery are subject to the availability of Mokelumne River runoff and the senior water rights of other users. Upstream water use by prior right holders, downstream obligations, and variability in rainfall and runoff all can restrict EBMUD's ability to receive its full entitlement. The Mokelumne River supply cannot meet EBMUD's projected customer demands during prolonged droughts (see Appendix F).

To address demand, EBMUD has completed construction of its Freeport Regional Water Facility and its Bayside Groundwater Facility as supplemental suppliers. The Freeport Regional Water Facility receives water from the Central Valley Project under EBMUD's Long Term Renewal Contract with the U.S. Bureau of Reclamation (LTRC). The LTRC provides for up to 133,000 acre feet of water in a single dry year, not to exceed a total of 165,000 acre feet in three consecutive dry years, during years when EBMUD's total stored water supply is forecast to be below 500 total acre feet. A permit for the Bayside Groundwater Project from the Department of Public Health is pending, and required before the groundwater can be extracted for municipal use. The facility is designed to yield 2 mgd over a 6-month period, and result in an average annual production capacity of 1 mgd per year (see Appendix F).

Additional supplies beyond those provided by the Freeport Regional Water Facility and the Bayside Groundwater Facility will be required to address drought-caused water shortages. EBMUD has obtained and continues to seek supplemental supplies. Other potential supplemental water projects identified in EBMUD's UWMP include northern California water transfers, Bayside Groundwater Project Expansion, Los Vaqueros Expansion and others that would be implemented as necessary to meet the projected long-term water supplemental needs during multi-year drought periods (see Appendix F).

Water Demand Reduction

EBMUD's Water Supply Management Program 2040 (WSMP 2040), an update to the previous program (WSMP 2020) was adopted in 2000. The WSMP 2040 estimates that Region GN, which encompasses the cities of Richmond, San Pablo, Albany, western Berkeley, and northern Emeryville, would experience a 10 percent increase in water demand from 29 mgd in 2005 to 32 mgd in 2040 (City of Richmond, 2011).

The City has implemented extensive, active water conservation and recycling programs, including requiring low-flow appliances and fixtures in new development, and working with water providers for incentives and rebates that encourage retrofitting existing development with low-flow water fixtures. The City also requires that new development and landscaped public areas install state-of-the-art irrigation systems that incorporate graywater systems and rainwater catchment to reduce water consumption. New development project approvals must include a finding that all feasible and cost-effective options for conservation and water reuse, including graywater systems, are incorporated into project design (City of Richmond, 2012a; City of Richmond, 2016a; EBMUD, 2015d).

Recycled Water

EBMUD uses water recycling to help reduce the need for additional potable water supplies and the severity of water rationing during droughts. EBMUD supplies more than 8.1 mgd of recycled water to sites within Alameda and Contra Costa County for irrigation, commercial, and industrial uses. It is anticipated that EBMUD will expand existing recycled water projects long-term, with service area increases to 20 mgd by 2040.

While the City requires water recycling and rainwater catchment in new development as appropriate to recycle water, it does not have a recycled water program specific to its jurisdiction. Recycled water is not available for use within the Plan Area, nor are there immediate plans to develop new sources of recycled water for the Plan Area. The recycled water service pipeline closest to the Plan Area is about 1.5 miles from the Plan Area boundary (and some parcels within the Plan Area are located 3 to 5 miles away from this source). However, the size of the Plan Area coupled with the proposed Global Campus present several opportunities to use recycled water for landscape irrigation, commercial and industrial processes, and toilet and urinal flushing in non-residential buildings and cooling towers. In the future, EBMUD may investigate expanding existing recycled water infrastructure to construct a localized satellite facility that utilizes onsite waste and rain water treatment to provide recycled water to the Plan Area (NCE, 2015).

Plan Area Water Infrastructure

The Plan Area is currently served by four, 12-inch diameter steel water mains which cross I-580 and enter the Plan Area at Marina Way South, Marina Bay Parkway, Regatta Boulevard, and South 47th Street. A fifth, 12-inch steel water main enters the Plan Area from the west on Regatta Boulevard at Marina Way South. An 8-inch steel water main also crosses I-580

and enters the Plan Area at South 19th Avenue. The interior of the Plan Area is served by a combination of 6-, 8-, and 12-inch water lines which branch off these main lines.

In addition, the Plan Area is within EBMUD's "Zero" Pressure Zone, which serves elevations from approximately 0 to 100 feet. Recent EBMUD flow and pressure data at six locations within and in the vicinity of the Plan Area indicate that the static pressure varies from 77-82 pounds per square inch (psi) (NCE, 2015).

Wastewater Collection and Treatment

Wastewater collection and treatment services within the Plan Area are provided by the City through their subsidiary district, the Richmond Municipal Sewer District (RMSD). The RMSD, along with the West County Wastewater District (WCWD) and the City, are members of the West County Agency, a Joint Powers Authority[2]. The West County Agency, WCWD, City and RMSD operate under the San Francisco Regional Water Quality Control Board (RWQCB) National Pollutant Discharge Elimination System (NPDES) permit number CA0038539. The RMSD collection system comprises 187 miles of sewer and 11 pump stations. RMSD serves a population of approximately 68,000 residents covering most of the incorporated area of Richmond.

Wastewater generated within the City limits is treated at the City of Richmond's Water Pollution Control Plant (WPCP), located at 601 Canal Boulevard east of the Plan Area. Chlorinated effluents from the WPCP are combined with those from the West County Wastewater District Treatment Plant, and subsequently de-chlorinated and discharged through the West County Agency Common Outfall about 8,200 feet offshore into Central San Francisco Bay. The WPCP does not recycle treated wastewater (RWQCB, 2013, and NCE, 2015).

Wastewater Treatment Capacity

The WPCP has a design capacity of 16 mgd for dry weather and a hydraulic capacity for full biological treatment of 20 mgd for wet weather conditions (City of Richmond, 2016b). The annual average daily flow in 2011 was approximately 8.1 mgd (RWQCB, 2013). At this current capacity the City has experienced challenges with inflow and infiltration (I&I) of storm and sea water into the City sewer lines as wet weather conditions sometime exceed the secondary treatment capacity at the facility due to infiltration into the collection system. When wet weather conditions exceed the secondary treatment capacity of the WPCP (20 mgd) due to infiltration into the collection system, excess primary-treated flows are blended with secondary-treated wastewater for disinfection and de-chlorination prior to discharge into the San Francisco Bay (RWQCB, 2013). With blending, the WPCP has a total hydraulic capacity of 40 mgd (City of Richmond, 2016b).

[2] The West County Agency was established for the purpose of providing for more efficient disposal of wastewater produced in each member's jurisdiction.

While this blending is currently approved under the RMSD NPDES permit, the RWQCB and State Water Resources Control Board (SWRCB) are actively requiring sewer agencies to take steps to eliminate the need to blend flows. It is therefore likely that blending will be prohibited in the next NPDES permit (NCE, 2015).

During heavy rain events when the WPCP influent pump station capacity is exceeded, the sewer system south of I-580 is heavily surcharged and cannot accept any additional flow. In the past, the gravity trunk sewer on Cutting Boulevard and at Harbor Way South and Wright Avenue has backed up, forcing wastewater into the Bay through two engineered overflow structures that normally separate the sanitary sewer system from the stormwater system. These two structures are known as the "Harbor & Wright" and "Boat Ramp" overflows, and are located at the north end of Richmond Harbor.

The RMSD is in the process of eliminating sewer overflows as well as reducing blending of primary and secondary treated wastewater at the WPCP. Richmond has reviewed both the collection/pump stations system and the treatment facilities as part of a negotiated settlement of overflow and effluent discharge litigation under the San Francisco Baykeeper Settlement Agreement[3]. This agreement was incorporated into the most recent NPDES permit and includes the requirement to prevent overflow at the Harbor and Wright and Boat Ramp overflow structures. It also involved an assessment of the collection mains and laterals to identify high priority replacement sections including several large areas primarily in the commercial and industrial areas where I&I are causing overflows. Several local storm water collection and inflow prevention programs were recently implemented which have resulted in measured reductions of peak flows, and several pump stations have been remodeled to increase efficiencies and redundancies to reduce overflows (NCE, 2015). In 2015, the City also completed construction of a new, 5 million gallon wet weather storage facility at the WPCP that is designed to capture and temporarily store discharges (NCE, 2015). This facility became fully operational in November 2015.

In 2010, the City Council approved a sewer fee increase of 5 percent for three years, raising 40 million in capital improvement funds. The City has used these funds for I&I reduction projects, an influent pump station upgrade, and the new wet weather storage facility, to address immediate health and safety issues at the treatment plant, and facilitate a digester facility rehabilitation project (City of Richmond, 2015b). The City approved another rate increase in 2015 to fund additional critical treatment plant and sewer improvements.

Plan Area Wastewater Infrastructure

As shown, the majority of the sanitary wastewater generated within the Plan Area is conveyed to a gravity trunk sewer that ranges in diameter from 24 to 36 inches. The trunk line traverses the northern portion of Plan Area and flows from east to west. The pipeline collects wastewater from

[3] In 2006, the City entered into a settlement agreement with San Francisco Baykeeper requiring the City to make improvements to the City's sewer collection system that the City would eliminate capacity related sewer overflows.

neighborhoods located north of I-580 before crossing under the freeway and entering the Plan Area near the intersection of Meade Street and South 46th Street. It leaves the Plan Area within Wright Avenue as a 36-inch diameter pipe and then continues west through the southern part of the City to the WPCP.

The central portion of the Plan Area, which includes the Global Campus site, Regatta Property, and the PG&E Service Center, is served by a 12- to 15-inch-diameter sewer main that connects to the trunk sewer near the terminus of South 27th Street at the Richmond Pacific Railroad tracks. A 10-inch-diameter gravity main collects wastewater from the Anchorage at the Bay multi-family residential community located inside the Plan Area before joining the 15-inch diameter pipeline flowing north along South 27th Street at Pierson Avenue.

An 18-inch diameter gravity sewer main flowing north on Marina Way South collects wastewater from existing developments located within the western portions of the Plan Area as well as to the west and south of the Plan Area. This sewer main joins the joins the trunk sewer at the intersection of Wright Avenue.

Wastewater from the Campus Bay/Harbor Front Tract area (within Sub-Area 4) is collected and conveyed via 6- and 8-inch-diameter sewer lines to the ICI Pump Station located at Seaport Avenue and 49th Street and then pumped through a 6-inch-diameter force main to the trunk sewer at a connection near the intersection of Meade Street and South 47th Street. Pumping is required due to the low elevations in this area.

The ICI Pump Station includes a 50-foot by 4-foot deep wet well, 7.5 and 10 horse power (hp) pumps, and a back-up power supply generator. The pump station discharges approximately 50,000 gpd with average and peak flow rates of 82 gpm and 158 gpm, respectively. The firm capacity (i.e. capacity with the largest pump out of service) is approximately 440 gpm, which is sufficient to convey existing flows from the 10-year, 24-hour design storm.

Two additional wastewater pump stations, “Marina Bay Cove” and “Marina Bay Parkway,” with average flows of 440,000 gpd and 1.37 mgd, respectively, are located immediately south of the Plan Area. The Marina Bay Parkway Pump Station pumps flow through a 10-inch-diameter force main that runs north along Marina Bay Parkway before connecting to the trunk sewer where it runs beneath the newly constructed Officer Bradley A. Moody Memorial Underpass. The Marina Bay Cove Pump Station is part of the sewer system that feeds the 18-inch sewer main in Marina Way South.

The City contracts with Veolia Water to operate and maintain sanitary sewer system facilities on City property, rights-of-way, and easements.

Storm Water Collection and Treatment

The Plan Area is located within five existing drainage areas that discharge directly or indirectly into San Francisco Bay. The main drainage areas include the lower portions of the Baxter Creek

and Meeker Slough watersheds, and the eastern portion of the Santa Fe/Harbor Channel Watershed.

The stormwater collection and treatment system within the Plan Area is owned by the City. The City's storm drain system consists of approximately 94 miles of underground storm drain pipelines, 6 miles of open ditches and 7 stormwater lift stations, which collect, convey, and eventually discharge runoff into San Francisco Bay. As with the sanitary sewer system, the City also contracts with Veolia Water to operate and maintain storm drain facilities on City property, rights-of-way, and easements.

Under the Utility Analysis prepared by NCE, existing stormwater conditions were calculated using area calculations based on land use coefficients for each of the proposed sub-areas as follows:

- Industrial = 0.75
- Light Industrial/Commercial = 0.77
- Commercial = 0.8
- Retail = 0.8
- Residential = 0.75
- Open Space/Undeveloped = 0.40

Based on these coefficients, the sub-areas of the Plan Area as it currently exists (see **Table 4.14-1**) has a weighted coefficient (Weighted C) of 0.71 (see NCE, 2015).

TABLE 4.14-1
EXISTING WEIGHTED COEFFICIENT OF STORMWATER RUNOFF

Sub-Area	Industrial (%) C=0.75	Commercial (%) C=0.80	Light Industrial (Low-Permeability Cap) (%) C=0.77	Undeveloped (%) C=0.40	% of total Area	Weighted C (Coefficient)
1	75%	25%	0%	0%	30%	0.75
2	100%	0%	0%	0%	17%	0.75
3	90%	10%	0%	0%	19%	0.76
4	60%	0%	0%	40%	34%	0.61
Total	-	-	-	-	100%	0.71
Sub-Area 4 Project	40%	0%	36%	24%	100%	0.67

SOURCE: NCE, 2015; ESA

Solid Waste

In 2013, approximately 143,000 tons of solid waste was disposed from the West Contra Costa County Integrated Waste Management Authority (WCCCIWA) service area, which includes El Cerrito, Hercules, Pinole, Richmond, San Pablo, and unincorporated areas. Approximately 88 percent, or 126,000 tons of solid waste were sent to Keller Canyon Landfill; the remaining waste was disposed in much smaller amounts to various other landfills used by West Contra Costa County (CalRecycle, 2015).

The Keller Canyon Landfill accepts municipal solid waste, non-liquid industrial waste, contaminated soil, ash, grit and sludge. Active disposal occurs on 244 acres of the 1,399 acres of permitted property. The total design capacity is 75 million cubic yards of air space, which translates into approximately 60 to 64 million cubic yards of net waste. As of 2009, the landfill had approximately 96 percent of its capacity remaining. There is a maximum daily permitted disposal of 3,500 tons. The Keller Canyon Landfill is not expected to close until 2050 (CalRecycle, 2009).

Assembly Bill 939 (AB 939), enacted in 1989, requires the Source Reduction and Recycling Element of each city and county to include an implementation schedule to divert at least 50 percent of its solid waste from landfill disposal through source reduction, recycling, and composting activities. The California Department of Resources Recycling and Recovery (CalRecycle) indicates that the WCCCIWAs diversion rate was 53 percent in 2006. Beginning with the 2007 jurisdiction annual reports, diversion rates were no longer measured. With the passage of SB 1016 in 2006 (the Per Capita Disposal Measurement System), only per capita disposal rates are measured to determine if a jurisdiction's efforts are meeting the intent of AB 939. WCCCIWA's per resident disposal target rate is 5.4 pounds per person per day (ppd), and its per employee disposal target rate is 22.1 ppd. As of 2014, which is the most recent year for which data are available, the measured disposal rate was 3.3 ppd for residents and 12.9 ppd for employees, thereby meeting the WCCIWA's target rates (CalRecycle, 2016).

Power, Gas and Telecommunications

Power to the City of Richmond is provided by Pacific Gas & Electric Company (PG&E), a natural gas and electric company. Electricity is generated from hydroelectric, fossil fuels, nuclear, solar, and other renewable facilities. 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 (City of Richmond, 2011). Electrical power is delivered to the Plan Area from various PG&E substations interconnected by 115-kilovolt (kV) transmission lines located along Cutting Boulevard, north of I-580. The Plan Area is served by underground, 12-kV feeder lines crossing I-580 at Marina Way South, Marina Bay Parkway, Regatta Boulevard, and South 47th Street. Based on preliminary discussions with PG&E, the existing electrical system has sufficient capacity to support the Specific Plan (NCE, 2015). If needed, PG&E would provide additional conduits during the process of installing the underground infrastructure (NCE, 2015).

PG&E has two high-pressure (greater than 60 pounds per square inch gauge (psig)), 4-inch transmission lines that transport natural gas to the Plan Area across I-580 at Marina Bay Parkway and South 47th Street. Additional natural gas is supplied into the Plan Area by a 6-inch gas main (greater than 60 psig) that crosses I-580 at Marina Way South. PG&E maintains an extensive distribution system of 2- and 3-inch gas mains throughout the Plan Area.

In the City of Richmond, broadband service is provided by American Telephone and Telegraph (AT&T) and Comcast. This includes residential and commercial communication facilities consisting of telephone, cable television, and internet. Both networks are composed of copper and fiber-optic cable and are located both overhead and underground throughout the Plan Area. Overall, the majority of the Plan Area would receive broadband service through the extension and/or upgrades in the existing systems (NCE, 2015).

4.14.3 Regulatory Setting

Water

U.S. Safe Drinking Water Act

The U.S. Safe Drinking Water Act (SDWA), established on December 16, 1974, is the main federal law that ensures the quality of drinking water by setting standards for drinking water quality and by providing guidance to the states, localities, and water suppliers who implement those standards.

Senate Bill 610 and Senate Bill 221

The purpose and legislative intent of Senate Bill 610 (SB 610) and Senate Bill 221 (SB 221) is to preclude projects from being approved without specific evaluations being performed and documented by the local water provider that indicate that water is available to serve the project. SB 610 primarily affects the Water Code, and SB 221 principally applies to the Subdivision Map Act. SB 610 requires the preparation of a Water Supply Assessment (WSA) for large-scale development projects.[4] The WSA evaluates the water supply available for new development based on anticipated demand. For the broad range of projects that are subject to this law, the statutory WSA must be requested by the lead agency from the local water provider at the time the lead agency determines that an Environmental Impact Report (EIR) is required for the project under CEQA. The water agency must then provide the assessment within 90 days (but may request a time extension under certain circumstances). The WSA must include specific information including an identification

[4] All projects that meet any of the following criteria require a WSA: 1) a proposed residential development of more than 500 dwelling units; 2) a proposed shopping center or business establishment employing more than 1,000 persons or having more than 500,000 ft^2 of floor space; 3) a proposed commercial office building employing more than 1,000 persons or having more than 250,000 ft^2 of floor space; 4) a proposed hotel or motel, or both, having more than 500 rooms; 5) a proposed industrial, manufacturing, or processing plant, or industrial park planned to house more than 1,000 persons, occupying more than 40 acres of land, or having more than 650,000 square feet (sf) of floor area; 6) a mixed-use project that includes one or more of the projects specified in this subdivision; or 7) a project that would demand an amount of water equivalent to, or greater than, the amount of water required by a 500 dwelling unit project.

of existing water supply entitlements and contracts. The governing board of the water agency must approve the assessment at a public hearing.

SB 221 prohibits approval of a tentative subdivision map, or a parcel map for which a tentative subdivision map is not required, for a subdivision of property of more than 500 dwelling units unless the local agency provides written verification from the applicable public water system that a sufficient water supply is available. In addition, the law requires the local agency to make a finding that sufficient water supplies are, or will be, available prior to completion of the project.

Senate Bill 365

Existing provisions of the California Water Code declare that the use of potable water for certain non-potable uses "is a waste or an unreasonable use of water." SB 365 amends and expands the Water Code to strengthen the provision that the use of potable water for the irrigation of residential landscaping, floor-trap priming, cooling towers, or air-conditioning devices, is wasteful and unsound if reclaimed water suitable for these purposes is available. SB 365 also gives the power to any public agency, including a State agency, city, county, district, or any other political subdivision of the State, to require the use of reclaimed water for these purposes if certain conditions are met. The conditions that must be met are:

- Reclaimed water meeting the requirements of existing law (Section 13550 of the Water Code) is available to the user;
- The use of reclaimed water does not cause any loss or diminution of any existing water right;
- Public health concerns regarding exposure to mist or spray must be addressed, if appropriate; and
- The water user must prepare an engineering report pursuant to Title 22 regulations governing the use of reclaimed water.

The requirements of the law are applicable to all new industrial facilities and subdivisions for which the Department of Health Services has approved the use of reclaimed water, and for which a building permit is issued on or after March 15, 1994; or, if a building permit is not required, new structures for which construction begins on or after this date.

Assembly Bill 901

Assembly Bill 901 (AB 901) requires the urban water management plan to document the quality of a supplier's available water source(s) and provide an assessment of the ways in which water quality affects its water management strategies and supply.

Assembly Bill 325

Assembly Bill 325 (AB 325), the Water Conservation in Landscaping Act, directs local governments to require the use of low-flow plumbing fixtures and the installation of drought-

tolerant landscaping in all new development. Pursuant to the Act, the Department of Water Resources developed a Model Water Efficient Landscape Ordinance.

State Health and Safety Code Section 64562

Section 64562 of the California Health and Safety Code requires each public water system to have sufficient water available from its water sources and distribution reservoirs to supply adequately, dependably, and safely the total requirements of all its users under maximum demand conditions before an agreement can be made to permit additional service connections to that system.

Water Code Sections 10608 et seq. ("SB 7" or "SB X7 7")

Water Code Sections 10608 et seq. require urban retail water suppliers to set and achieve water use targets that will help the state achieve 20 percent per capita urban water use reduction by 2020.

East Bay Municipal Utilities District Water Efficiency Requirements

EBMUD Regulations Section 31 requires the district to review applications for new water service to determine the applicability of, and compliance with, water-efficiency requirements. District staff may inspect the installation of water efficiency measures and fixtures to verify that the items are installed and performing to the required water use levels. Among other requirements, residential service includes high-efficiency or dual-flush toilets, dishwashers, and clothes washing machines, as well as low-flow showerheads and faucets. Outdoor landscaping plans are required for any new or retrofitted landscaping great than 5,000 square feet (sf) of irrigated area, and ornamental turf must be limited to no more than 25 percent of total irrigated area.

Richmond General Plan 2030

The Richmond General Plan 2030 Community Facilities and Infrastructure Element contains the following policy applicable to the proposed Specific Plan and water supply.

> *Policy CF1.2: 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.

The Richmond General Plan 2030 Conservation, Natural Resources, and Open Space Element contains the following action applicable to the Specific Plan and water supply:

> *Action 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.

The Richmond General Plan 2030 *Energy and Climate Change* Element contains the following policy applicable to the proposed Specific Plan and water supply:

> *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 and water catchment 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.

City of Richmond Green Building Standards

Ordinance number 12-10 N.S. established Chapter 6.46 of the City's Municipal Code, titled "Commercial and Residential Green Building Standards." All projects seeking discretionary planning entitlements and building permit applications must include a Green Building Checklist appropriate for the project type, including new multifamily residential projects. This checklist calculates a project's score on the applicable Green Building Rating System. Multi-family residential projects must achieve 60 points on the Build It Green Multi-family Green Building Guidelines, which must be certified by the City of Richmond prior to issuing certificate of occupancy. The checklist provides flexibility for project sponsors to meet the 60-point rating by choosing among several energy-efficiency, water-use-reduction, and waste-reduction methods.

2013 California Fire Code

In accordance with the 2013 California Fire Code and Chapter 8.16 of the City's Municipal Code, potable water systems must be designed to deliver maximum daily demand coincident with the required fire flow while maintaining at least 20 psi residual.

Wastewater Collection and Treatment

National Pollutant Discharge Elimination System

Federal and state laws relating to wastewater primarily focus on the regulation of pollutant discharges that could contaminate surface waters or groundwater. As such, the Federal Clean Water Act and National Pollutant Discharge Elimination System (NPDES), as well as the state Porter-Cologne Water Quality Control Act, all regulate wastewater treatment and the discharge of treated effluent (see Section 4.8, *Hydrology and Water Quality*, *Regulatory Setting* for additional requirements). NPDES Permit number CA0038539 sets discharge requirements for the Joint Powers Authority comprising the West County Agency, West County Wastewater District, City of Richmond, and RMSD. The current order is effective through June 2018 and permits dry weather flows from RMSD Plant of up to 16 mgd, and wet weather design flows up to 20 mgd (RWQCB, 2013). It also currently permits wet weather runoff blending as described under the Existing Setting above, but will likely end this as of a negotiated settlement of overflow and

effluent discharge litigation under the San Francisco Baykeeper Settlement Agreement (NCE, 2015).

Richmond General Plan 2030

The Richmond General Plan 2030 Community Facilities and Infrastructure Element contains the following action applicable to the Specific Plan and stormwater.

> *Action 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.

City of Richmond Municipal Sewer District

In November 2011, RMSD completed the City of Richmond Sewer Collection System Master Plan. The primary purpose of the plan was to evaluate the City of Richmond gravity sewer collection system under a specific design storm, using a computerized hydraulic model, to determine whether the system can convey flows without sewer system overflows (SSOs). Where SSOs are predicted, the Master Plan provides recommended solutions. In August 2013, RMSD updated the Sewer System Management Plan to comply with the Regional Water Quality Control Board Sewer System Master Plan Guidelines and Statewide Water Discharge Requirements (City of Richmond, 2013).

RMSD released a Sewer Lateral Compliance Plan in 2012 (City of Richmond, 2012b). This plan sets for standards and procedures intended to reduce leakage of sewage in public receiving waters, as well as reduce infiltration and inflow of stormwater, groundwater, and tidal waters from private laterals into the publicly owned sanitary sewer collection system. It establishes practices for testing, repair, and replacement of defective sewer laterals.

Stormwater

Contra Costa Clean Water Program and Municipal Regional Permit

The Contra Costa Clean Water Program has been established as the local entity responsible for implementing compliance with the federal CWA to control stormwater pollution. It comprises Contra Costa County, 16 incorporated cities, and the Contra Costa County Flood Control and Water Conservation District. The program is being conducted in compliance with the NPDES Municipal Regional Permit (MRP) issued by the SFRWQCB for municipal separate storm sewer systems (also referred to as MS4s). The permit contains a comprehensive plan to reduce the discharge of pollutants to the "maximum extent practicable" and mandates that participating municipalities implement an approved stormwater management plan. The program incorporates BMPs that include construction controls (such as a model grading ordinance), legal and regulatory approaches (such as stormwater ordinances), public education and industrial outreach

(to encourage the reduction of pollutants at various sources), inspection activities, wet-weather monitoring, and special studies.

The SFRWQCB first added Provision C.3 to the stormwater permit in February 2003. The MRP was then adopted in October 2009 (Order R2-2009-0074 NPDES Permit No. CAS612008); an update was adopted November 18, 2015 (Order R2-2015-0049). The MRP governs discharges from municipal storm drains operated by 76 local government entities, including those in Contra Costa County.

In accordance with these updated requirements, new development and redevelopment projects in Richmond are required to incorporate treatment measures and other appropriate source control and site design features to reduce the pollutant load in stormwater discharges and manage runoff flows. The Specific Plan and Project would be subject to these requirements.

Provision C.3 Permit Requirements

The NPDES MS4 permit includes Provision C.3 that governs storm drain systems and regulates post-construction stormwater runoff. The provision requires new development and redevelopment projects to incorporate treatment measures and other appropriate source control and site design features to reduce the pollutant load in stormwater discharges and to manage runoff flows. "Redevelopment" is defined as a project on a previously developed site that results in the addition or replacement of a minimum of 10,000 square feet of impervious surface. Projects that would add or replace more than 10,000 square feet of impervious surfaces would be required to implement treatment measures and appropriate source control and site design measures under the NPDES permit. Other thresholds outlined in the C.3 Guidebook are summarized below.

Example Thresholds and Requirements of the C.3 Guidebook (CCCWP, 2012) include:

- *All projects requiring municipal approvals or permits (includes single-family residences):* As encouraged or directed by local staff, preserve or restore open space, riparian areas, and wetlands as project amenities, minimize land disturbance and impervious surfaces (especially parking lots) cluster structures and pavements, include micro-detention in landscaped and other areas, and direct runoff to vegetated areas; use Bay-friendly landscaping features and techniques; include Source Controls specified in Appendix D.
- *Projects between 2,500 and 10,000 square feet requiring approvals or permits (includes single-family residences):* Install one or more of the following: direct roof runoff into cisterns or rain barrels for reuse; direct roof runoff onto vegetated areas; direct runoff from sidewalks, walkways, and/or patios on to vegetated areas; direct runoff from driveways and/or uncovered parking lots on to vegetated areas; construct sidewalks, walkways, and/or patios with permeable surfaces; construct bike lanes, driveways, and uncovered parking lots with permeable surfaces.
- *Auto service facilities, gas stations, restaurants, and uncovered parking lots over 5,000 square feet, as well as projects between 10,000 square feet and one acre:* Prepare and submit a Stormwater Control Plan, including features and facilities to ensure runoff is treated before leaving the site; evaluate feasibility of storage for later use; use the Low-

Impact Design (LID) Design Guide, including sizing factors and criteria for "treatment only."

- *Projects an acre and larger:* Select one of four flow-control compliance options in Appendix C. Where required, design project features and facilities for hydrograph modification management (flow-control) as well as stormwater treatment; evaluate feasibility of storage for later use; prepare and submit a Stormwater Control Plan and use the LID Design Guide, including the sizing factors and criteria for "treatment and flow control."

Solid Waste

Assembly Bill 939

Assembly Bill 939 (AB 939), enacted in 1989 and known as the Integrated Waste Management Act, requires each city and/or county to prepare a Source Reduction and Recycling Element to demonstrate reduction in the amount of waste being disposed to landfills, with diversion goals of 50 percent by the year 2000. Diversion includes waste prevention, reuse, and recycling. Senate Bill (SB) 1016 revised the reporting requirements of AB 939 by implementing a per capita disposal rate based on a jurisdiction's population (or employment) and its disposal.

California Integrated Waste Management Act

The California Integrated Waste Management Act of 1989 required cities to divert 25 percent of their solid waste from landfills by 1995, and 50 percent by the year 2000. As noted above, the City of Richmond was diverting approximately 53 percent of its waste stream by 2006. The California Integrated Waste Management Board works with municipalities to help improve recycling programs. The State generally places the burden of responsibility for waste stream reduction on local municipalities (i.e., cities and counties), and the City of Richmond has met the California Integrated Waste Management Board requirements while incorporating expanded recycling requirements and policies into its General Plan (City of Richmond, 2012a).

California Green Building Standards Code

The 2013 state building standards code (CalGreen) requires that at least 50 percent of weight of non-hazardous job site debris generated by new construction be recycled, reused, or otherwise diverted from landfill disposal. CalGreen requires submission of plans and verifiable post-project documentation to demonstrate compliance.

Richmond General Plan 2030

The Richmond General Plan 2030 Community Facilities and Infrastructure Element contains the following action applicable to the Specific Plan and solid waste.

> *Action CF3.A. 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.

City of Richmond Green Building Standards

As stated above, ordinance number 12-10 N.S. established Chapter 6.46 of the municipal code, titled "Commercial and Residential Green Building Standards." Multi-family housing projects are required to meet a minimum Build It Green rating by choosing among several energy-efficiency, water-use-reduction, and waste-reduction methods.

4.14.4 Significance Criteria

Based on CEQA *Guidelines* Appendix G, a project would cause adverse impacts to utilities and service systems if it were to:

a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board;

b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects;

c) 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;

d) Not have sufficient water supplies available to serve the project from existing entitlements and resources, or if new or expanded entitlements are needed;

e) Result in a determination by the wastewater treatment provider which serves or may serve the project that it does not have adequate capacity to serve the project's projected demand in addition to the provider's existing commitments;

f) Be served by a landfill without sufficient permitted capacity to accommodate the project's waste disposal needs; or

g) Not comply with federal, state and local statutes and regulations related to solid waste.

Approach to Analysis

Specific Plan

The analysis of the Specific Plan in this section and throughout this document is based on the Foreseeable Maximum Theoretical Buildout scenario (as described in Chapter 3, *Project Description*, of this EIR) for which development could take place anywhere within the developable portions of the Plan Area, and refers specifically to findings from the Utility Analysis prepared by NCE in April 2015 (NCE, 2015), the 2014 WSA prepared by EBMUD (Appendix F), additional resources supplied by the City of Richmond, and resources from CalRecycle, EBMUD and the U.S. Census. It should be noted that estimates of potable water demand and sanitary sewer generation presented in the Utility Analysis are based on the

conceptual buildout as presented in the Specific Plan; estimates of potable water demand and sanitary sewer generation as presented in this section are based on generation rates presented in the Utility Analysis but have been revised to include buildout under the Foreseeable Maximum Theoretical Buildout scenario, in order to address the flexibility in land uses contemplated in the Specific Plan.

Water Demand and Supply

NCE's Utility Analysis calculated Specific Plan water demands and measured Plan Area emergency water pressure (NCE, 2015). In order to determine reasonable Plan Area water demand, NCE used industry standard rates for daily water usage then conservatively increased them by 10 percent beyond the wastewater unit flow factors specified by the Contra Costa County Sanitation District (CCCSD) to account for system losses and leakage in the system, using the following factors:

- Light Industrial/Commercial Water Demand – 0.11 gallons/day/sf
- Retail Water Demand – 0.11 gallons/day/sf
- Multi-Family Residential Unit Water Demand – 215 gallons/day/unit
- Open Space Water Demand – 330 gallons/day/acre landscaped areas

Similarly, to account for peak demands, NCE took the totals of the estimated average day demand and conservatively multiplied this value by 1.5 for the Maximum Day Demand value, and by 2.5 for the Peak Hour Demand. Therefore, the analysis conservatively calculates that potable water demand average per day for the Plan Area at full buildout would be approximately 1.94 mgd with a maximum day demand of 2.91 mgd. See **Table 4.14-2** below which presents demand by sub-area.

TABLE 4.14-2
ESTIMATED POTABLE WATER DEMANDS

Specific Plan Area	Average Day Demand (mgd)	Maximum Day Demand (mgd)	Peak Hour Demand (gph)
Sub-Area 1	0.64	0.95	66,170
Sub-Area 2	0.32	0.48	33,300
Sub-Area 3	0.17	0.26	17,900
Sub-Area 4	0.81	1.22	84,900
Total, Specific Plan	**1.94**	**2.91**	**202,300**
Sub-Area 4 Project	**0.49**	**0.73**	**51,000**

SOURCE: NCE, 2015. Estimated potable water demand for Specific Plan conceptual buildout, adjusted based on Foreseeable Maximum Theoretical Buildout scenario.

In order to measure the adequacy of emergency water pressure throughout the site, NCE also collected data from EBMUD's 2015 Urban Water Management Plan. The data are based on pressure data provided by EBMUD at six locations within and in the vicinity of the Plan Area, as well as a maximum day hydraulic model analysis of EBMUD's water distribution system. The test data provided confirmation that static pressure varies from 77-82 pounds per square inch (psi)

throughout the Plan Area. When each of these test locations were analyzed at a test flow of 1,500 gallons per minute (gpm), there was a pressure decrease between the static and residual pressure at all test locations of 5-13 psi (NCE, 2015). As such, at the test flow of 1,500 gpm, all test locations maintained a residual static pressure of well above the minimum 20 psi residual pressure required in the 2013 California Fire Code and Chapter 8.16 of the City's Municipal Code.

In addition, in 2014, the City of Richmond requested consultation with EBMUD regarding the water supply needs of the Specific Plan. In response, EBMUD prepared the 2014 WSA which evaluated historical average water demand, and estimated water demand of the Specific Plan conceptual development scenario in relation to the 2015 UWMP. Historical average annual water demand for the Plan Area was estimated to be approximately 220,000 gallons per day (gpd); water demand was estimated to increase up to 1,580,000 gpd at full Specific Plan build out (Appendix F).

In August 2016, the City requested an additional determination from EBMUD as to whether an amendment to the WSA was required in order to accurately capture the water demand from the Foreseeable Maximum Theoretical Buildout scenario, which includes 1,630 more residential units than was previously analyzed in the 2014 WSA, representing an increase of approximately 350,450 gpd (1,630 X 215 gpd/units) of water demand. After receiving this request, EBMUD indicated that a revised WSA is required to accurately reflect the Foreseeable Maximum Theoretical Buildout scenario, and that the revised WSA will be heard at the October 11, 2016 meeting of the EBMUD Board of Directors (EBMUD, 2016c).

As noted above, both the WSA and the Utility Analysis were used for the water supply and demand analysis in this section, although estimates of water demand as presented in the Utility Analysis have been revised to accurately represent the Foreseeable Maximum Theoretical Buildout scenario.

Wastewater and Sewer Treatment

As described above, the Plan Area lies within the City's sanitary sewer service area and currently uses minimal on-site water resulting in sewer flow. In order to analyze the Specific Plan's impact on wastewater capacity and facilities the Utility Analysis estimated dry weather flows by multiplying the size or number of dwelling units of each land use by the respective generation unit factors specified by the Contra Costa County Sanitation District (CCCSD) and input from the City, as follows:

- Light Industrial/Commercial Wastewater Generation – 0.10 gallons/day/sf
- Retail Wastewater Generation – 0.05 gallons/day/sf
- Multi-Family Residential Unit Wastewater Generation – 105 gallons/day/unit
- Open Space Wastewater Generation – 300 gallons/day/ac landscaped areas

The resulting flows were summed by sub-area to obtain the total average dry weather flow for the entire Plan Area. To estimate the maximum or peak wet weather flow, the average dry weather flow

was multiplied by a peaking factor of 4.0. **Table 4.14-3** below shows the expected average dry and peak wet weather flow which could be expected on buildout of the Specific Plan.

TABLE 4.14-3
ESTIMATED SANITARY SEWER GENERATION
(gallons per day)

Specific Plan Area	Average Dry Weather Flow (gpd)	Peak Wet Weather Flow (gpd)
Sub-Area 1	397,540	1,590,160
Sub-Area 2	163,870	655,480
Sub-Area 3	156,420	625,680
Sub-Area 4	495,930	1,983,720
Total, Specific Plan	**1,213,760**	**4,855,040**
Sub-Area 4 Project	**298,050**	**1,192,200**

SOURCE: NCE, 2015. Estimated sanitary sewer generation for Specific Plan conceptual buildout, adjusted based on Foreseeable Maximum Theoretical Buildout scenario.

Stormwater Drainage Facilities

The amount of impervious surface in a watershed is the principal determinant of both the peak rate and total volume of stormwater runoff. In order to calculate the changes of peak rate stormwater flow generated by buildout of the Specific Plan, NCE used weighted coefficients to compare changes in the permeability of land surfaces, a method referred to as the Rational Method. The method is based on the use of runoff coefficients, which represent an estimate of the percentage of total rainfall expected to result in runoff and can be applied to both undeveloped and developed watersheds.

For each sub-area of a watershed, the runoff coefficient is multiplied by the number of acres within the contributing drainage area and by the expected peak rainfall intensity (expressed in inches per hour) to calculate the peak rate of storm water runoff (expressed as cubic feet per second). This relationship is expressed in the following equation: Peak Runoff = Runoff Coefficient x Drainage Area x Rainfall Intensity or: Q (cfs) = C x A (acres) x I (inches/hour) (see **Table 4.14-4** for these calculations for each sub-area of the Specific Plan).

TABLE 4.14-4
PROPOSED WEIGHTED COEFFICIENT OF STORMWATER RUNOFF

Sub-Area	Industrial (%)	Commercial (%)	Residential (%)	Undeveloped (%)	% of total Area	Weighted C (Coefficient)
	C=0.75	C=0.80	C=0.75	C=0.40		
1	30	6	42	22	30	0.68
2	46	5	12	38	17	0.63
3	96	0	0	4	19	0.76
4	58	6	28	9	34	0.73
Total	-	-	-	-	**100**	**0.69**
Sub-Area 4 Project	**56**	**6**	**27**	**11**	**100**	**0.74**

SOURCE: NCE, 2015

It is noted that in watersheds with mixed uses, the runoff coefficient represents a weighted average of the coefficients assigned to each land use. Since Rainfall Intensity is a function of site location and local climate, it remains constant for both the existing and proposed conditions. Consequently, a comparison of the product of the Area and Coefficient variables under existing and proposed conditions is sufficient to determine how the proposed development will affect peak rates of stormwater runoff, and whether some associated mitigation would be necessary.

Solid Waste

Project-generated solid waste from construction activities and operations were analyzed using the latest data provided by the U.S. Census, CalRecycle, and United States Environmental Protection Agency (U.S. EPA) waste generation rates.

Under the foreseeable maximum theoretical buildout scenarios for the Specific Plan, as presented in Chapter 3, *Project Description*, the maximum buildout of the Plan Area could result in up to 5,690,000 square feet of R&D/Business/Service, 720,000 square feet of retail, and up to 5,700 residential dwelling units. Based on construction waste estimates provided by the U.S. EPA, residential construction produces a weighted average estimate of 4.39 pounds per square foot, and 4.34 pounds per square foot for non-residential construction (U.S. EPA, 2009).[5] Based on assumptions used in the Specific Plan for average size of multifamily dwellings, an average size dwelling unit of 1,200 is used as the assumed dwelling unit size. Therefore, an estimated total sum of 28,900 tons of construction-related solid waste could be generated over the period of development occurring under the Specific Plan, consisting largely of concrete and asphalt materials (per U.S. EPA, 2009).[6] Demolition waste for the Plan Area as a whole is estimated to be approximately 830,000 cubic yards, using an estimate of the total existing floor area (square feet) of buildings that would be demolished within the Plan Area of 3.71 million square feet

[5] Construction waste generation varies dependent on materials used and construction practice, for instance residential construction produces between 2.41 to 11.3 pounds of waste per square foot of construction (U.S. EPA, 2009).

[6] This estimate relies on a factor of [(5,700 dwelling units X 1,200 square feet per dwelling unit X 4.39 pounds of waste) + ((5,690,000 square feet of R &D + 720,000 square feet of retail) X 4.34 pounds of waste)/2,000 pounds per ton]= 28,900 tons.

based on Google Earth calculations; an average generation rate of non-residential demolition waste of 173 pounds per square foot (U.S.EPA, 1998); and standard conversion factors to determine total cubic yards of wood, roofing, concrete, and other materials that would be demolished (USEPA, 1998; City of Oakland undated).[7]

CalRecycle publishes per capita disposal rates for residential and business uses for the West Contra Costa Integrated Waste Management Authority region, that for 2014 were 3.3 pounds per day (ppd) per resident, and 12.9 ppd per employee which is less than the target rate of 5.4 ppd per resident and 22.1 ppd per employee (CalRecycle, 2016). Based on these rates, the planned commercial and residential uses in the Plan Area would generate approximately 273,342 pounds per day (136.7 tons per day), equating to approximately 99.8 million pounds per year of solid waste (49,900 tons per year).[8]

Sub-Area 4 Project

The analysis of the Sub-Area 4 Project site in this section similarly relies largely on the data described above for the Specific Plan and from the Utility Analysis prepared by NCE.

Sub-Area 4 would consist of 1,270,000 sf of Research and Development/Business/Service, 190,000 sf of retail, 1,520 residential dwelling units, and 6.5 acres of open space. As discussed in Section 4.11, *Population, Housing and Employment*, the Sub-Area 4 Project development would result in up to 3,070 new residents directly associated with the new housing units and up to 4,190 new employees associated with the approximately 1.46 million square feet of new non-residential space (businesses), as specified in the foreseeable maximum theoretical buildout scenario (see Chapter 3, *Project Description*. This would represent approximately 27 percent of the total Specific Plan-generated residents and 23 percent of total employees.

Using these estimates and the same factors used above for the Plan Area, the estimated construction-related solid waste that could be generated over the period of development of the Sub-Area 4 Project would be approximately 7,170 tons; estimated demolition waste would be approximately 60,000 cubic yards. Also based on the rates used above, the planned commercial and residential uses in the Sub-Area 4 Project site would generate approximately 11,720 tons per year.

Cumulative

The Specific Plan's contribution to cumulative impacts on utilities and service systems would be considered significant if, either together or independently, combined with other cumulative

7 This estimate relies on a factor of [(3.71 million square feet X 173 pounds per square foot)/(2,000 pounds per ton) X 2.58 conversion factor] = 830,000.

8 This estimate relies on estimated population and employment generation rates calculated in Section 4.11, *Population and Housing* : such that residential waste is generated at 11,490 [residents] x 3.3[pounds per day] x 365 [days per year] = 13,839,705 pounds per year; and commercial waste is generated at 18,250 [employees] x 12.9 [pounds per day] x 365 [days per year] = 85,930,125 pounds per year for employee waste. For a total of ((13,839,705 [pounds per year of residential waste] + 85,930,125 [pounds per year of commercial waste])/ 2,000 [pounds per ton]) = 49,900 tons per year total waste.

projects, their contribution to a significant cumulative effect (if one is found) is determined to be considerable.

4.14.5 Program-Level Impacts of the Richmond Bay Specific Plan

Water and Recycled Water System

Impact UTL-1.SP: The Specific Plan would not require or result in the construction of new water treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects. (Criteria b.) (*Less Than Significant*)

Water Treatment

EBMUD would provide potable water to the Specific Plan Area. As explained in Impact UTL-2.SP, below, there is no need identified by EBMUD that would require the construction of new water treatment facilities or expansion of existing water treatment facilities to serve the Specific Plan.

Water and Recycled Water Distribution

As described in Section 3.0, *Project Description*, the existing water distribution system would be expanded and distributed throughout each sub-area to provide reliable potable and fire protection water to all development areas. This would consist of a network of interconnected mains ranging in size from 8-inch to 12-inch in diameter that connect to the existing EBMUD water facilities. Additional smaller diameter water lines will be required for building service connections. Ultimately this new water distribution system would be designed and constructed consistent with EBMUD's Standard Specifications for Pipelines 20-inches and smaller (NCE, 2015) for the preliminary layout and pipe sizes of the proposed primary water distribution mains based on the current Specific Plan layout).

The Project would not require or result in the construction of new water system distribution facilities or expansion of existing facilities that are not already anticipated in the Specific Plan and this EIR.

As described in Section 3.0, *Project Description*, no system improvements are proposed for recycled water at this time. Nevertheless, the proximity of the Specific Plan area to the adjacent Global Campus presents several opportunities to use recycled water for landscape irrigation, commercial and industrial processes, toilet and urinal flushing in non-residential buildings, and cooling towers. In addition, as previously discussed, EBMUD may consider expansion of the existing recycled water infrastructure, and the construction of a localized satellite facility that would utilize on-site water and rain water treatment to provide recycled water to the Plan Area.

All potential construction-related environmental effects associated with installation of new potable water and/or recycled water infrastructure that would serve the Specific Plan area are addressed and mitigated to the extent feasible in Sections 4.2, *Air Quality*; 4.4, *Cultural*

Resources; 4.5, *Geology, Soils and Seismicity*; 4.6, *Greenhouse Gases and Energy*; 4.7, *Hazards and Hazardous Materials*; Section 4.8, *Hydrology and Water Quality*; and 4.10, *Noise,* of this EIR.

Fire Flow

Each new water distribution system installed within the Plan Area would be looped to provide redundancy and to ensure adequate system pressure is maintained, sufficient for emergencies. As described above under *Approach to Analysis*, EBMUD-supplied water pressure data indicated that pressure under a test flow of 1,500 gallons per minute (gpm) had a system pressure ranging between 68 to 74 psi. It should be noted that evaluated fire flows and residual pressures were based on ground surface elevations, and do not account for required minimum water service pressures on higher floors in multi-story buildings. As such, utility system designs for some buildings within the Plan Area may require the provision of booster pumps to provide adequate water service pressures on higher floors and for fire suppression systems. In accordance with the 2013 California Fire Code and Chapter 8.16 of the City's Municipal Code, the potable water system within the Plan Area would be designed to deliver maximum daily demand coincident with the required fire flow while maintaining at least 20 psi residual. Under the 2013 Fire Code, the minimum required fire flow and flow duration for Type V building construction with a fire area of 55,000 square feet, is 6,250 gpm for a four-hour duration. Reducing the fire flow by 50 percent under the assumption that the building is installed with an approved automatic fire sprinkler system provides for a fire flow requirement of 3,125 gpm. Therefore, the new potable system would be required to deliver the maximum daily demand of 2.39 mgd or 1,660 gpm across the Plan Area and still be able to provide 3,125 gpm at 20 pounds per inch (psi) residual pressure to the fire hydrants. The initial test of 1,500 gpm at 68 to 74 psi supplied by EBMUD suggests the Plan Area would be sufficiently served through its water system for emergency water. In addition, compliance with the 2013 California Fire Code and Chapter 8.16 of the City's Municipal Code would ensure development within the Plan Area is adequately served by water.

Significance: Less Than Significant.

Mitigation: None required.

Water Supply

Impact UTL-2.SP: The water demand generated by development under the Specific Plan would not exceed water supplies available from existing entitlements and resources, or need expanded entitlements. (Criteria d.) (*Less Than Significant*)

The Specific Plan meets the definition of a "project" under SB 610 (i.e., residential development projects of more than 500 dwelling units or other types of developments such as commercial buildings, industrial parks, etc.) and therefore requires a Water Supply Assessment (WSA). As presented under Approach to Analysis above, the WSA prepared for the Specific Plan evaluated

historical average water demand, and estimated water demand for the conceptual Specific Plan development program and its accounting within the 2015 UWMP (NCE, 2015).

The WSA water demand projections for the Specific Plan were formulated using EBMUD's water demand projections from the 2040 Demand Study (Demand Study), completed in 2009. The WSA conservatively estimated the Specific Plan's average daily water demand at 1.58 mgd. The WSA examined the Specific Plan's water demand through 2040 and determined it would fit within EBMUD's 2040 demand projections. EBMUD concluded that it has sufficient water supplies available during normal, single-dry and multiple dry water years to meet the expected future water demands of the Specific Plan.

After EBMUD made this conclusion, the City requested an additional determination from EBMUD as to whether an amendment to the WSA was required in order to accurately capture the water demand from the Foreseeable Maximum Theoretical Buildout scenario, which includes 1,630 more residential units than was previously analyzed in the 2014 WSA, representing an increase of approximately 350,450 gpd (1,630 X 215 gpd/units) of water demand. After receiving this request, EBMUD indicated that a revised WSA is required to accurately reflect the Foreseeable Maximum Theoretical Buildout scenario.

The EBMUD has water rights permits and licenses that allow for delivery of up to a maximum of 325 mgd from the Mokelumne River, subject to the availability of Mokelumne River runoff and the senior water rights of other users. As discussed above under Environmental Setting, during prolonged droughts, the Mokelumne River supply by itself cannot meet EBMUD's projected customer demands. To address this, EBMUD has completed construction of the Freeport Regional Water Facility and the Bayside Groundwater Facility as supplemental suppliers. In addition, EBMUD's UWMP includes a broad mix of other potential supplemental water projects that would be implemented as necessary to meet the projected long-term water supplemental needs during multi-year drought periods.

As stated above, EBMUD has confirmed the estimated potable water use for the Specific Plan under the conceptual buildout program is included in EBMUD's water demand projections in its UWMP, and as a result, would not affect the ability for EBMUD to meet projected water needs. The Utility Analysis prepared in support of the Specific Plan estimated the Specific Plan would generate an average daily demand of 1.59 mgd and peak demand of 2.39 mgd (see **Tables 4.14-2** above). Unlike the EBMUD estimate of water demand, this estimate is gross, not net – subtracting the historic rate of water use within the Plan Area of approximately 220,000 gpd, the average net daily demand as calculated by NCE would be approximately 1.37 mgd, well below the EBMUD estimate of water use that would be generated under conceptual buildout of the Plan Area.

Under the Foreseeable Maximum Theoretical Buildout scenario, water demand would increase by an increment of approximately 350,450 gpd. EBMUD will confirm at its October 11, 2016 Board of Directors meeting whether it has sufficient water supplies to meet this additional demand; it is anticipated that this review will not change EBMUD's determination that adequate water supplies are available for buildout of the Specific Plan.

Despite water savings from EBMUD's conservation and recycling programs and rationing of up to 15 percent, additional supplemental supplies would be needed during a multi-year drought. As discussed under the Drought Management Program of the UWMP, EBMUD's system storage generally allows it to continue serving its customers during dry-year events. With respect to years 2 and 3 of multiple drought years, the UWMP has identified a variety of projects for providing supplemental supplies that will allow EBMUD to meet water demand in the future, including, as discussed above, northern California water transfers, the Bayside Groundwater Project Expansion, the Los Vaqueros Expansion and others that would be implemented as necessary to meet the projected long-term water supplemental needs during multi-year drought periods.

In addition, buildout under the Specific Plan would be required to be outfitted with water-conserving fixtures, as required by the Uniform Building Code, and the Specific Plan Green Building Standards, through requiring compliance with CALGreen, would require projects developed under the Specific Plan to implement the CALGreen Code, which requires new construction and major remodels to use high efficiency plumbing fixtures, including toilets, urinals, showerheads, and faucet fixtures. For outdoor water use, CALGreen requires that irrigation controllers shall be weather- or soil-moisture based, and shall automatically account for rainfall, or else be attached to a rainfall sensor. As described above, in drought years, EBMUD implements water use restrictions throughout its service area. In years 2 and 3 of multiple drought years, projects developed under the Specific Plan would be subject to the same water use restrictions that are applied to all EBMUD customers. The City may also offer incentives to comply with water efficiency requirements.

No recycled water system improvements are proposed in the Plan Area; however, given water conservation incentives from EBMUD and the likely buildout under the Specific Plan over many years or even decades, planning for future use of recycled water in the Plan Area could include the installation of such features as dual plumbing and irrigation systems constructed to recycled water standards that can be connected to an expanded recycled water system. The City is not currently constrained in supplying additional recycled water supplies to customers.

With compliance with EBMUD drought restriction requirements and programs and implementation of CALGreen Code requirements and other City programs for water management and conservation, this analysis indicates that buildout under the Specific Plan would not result in water demand that exceeds water supplies available from entitlements and resources. Adoption and development under the Specific Plan would have a less-than-significant impact on water supply.

Significance: Less Than Significant.

Mitigation: None required.

Wastewater Treatment

Impact UTL-3.SP: Adoption and development under the Specific Plan would not exceed the wastewater treatment requirements of the San Francisco Bay Regional Water Quality Control Board, but could result in a determination that new or expanded wastewater treatment facilities would be required. (Criteria a., e.) (*Less Than Significant with Mitigation*)

Development under the Specific Plan would increase the intensity of uses within the Plan Area and therefore increase of amount of wastewater generated. Buildout of the Specific Plan is estimated to increase wastewater generation to approximately 1.2 mgd average dry weather flow and up to 4.9 mgd peak wet weather flow as shown in Table 4.14-3 above.

As described above under *Existing Setting*, the City's wastewater is treated by the Richmond Municipal Sewer District's (RMSD) Water Pollution Control Plant (WPCP). The WPCP operates in compliance with all relevant San Francisco Bay Regional Water Quality Control Board requirements.

The WPCP has an operating capacity of 16 million gallons per day (mgd) for average dry weather flow and 20 mgd for wet weather conditions, and operated with an annual average daily flow of about 8.1 mgd in 2011. As described above, during heavy rain events, when the wet weather storage reaches capacity (primarily due to I&I of failing sewer lines), excess flows are initially treated, but blended with other treated wastewater, processed, and then discharged to Central San Francisco Bay. While this is currently permitted under the existing NPDES permit, it is not likely that blending would be permitted in future permits.

The NCE Utility Analysis addressed wastewater capacity through modeling and consultation with V.W. Housen and Associates (VWHA), who evaluated the effects of the preliminary flow estimates on existing downstream facilities using the City's current hydraulic sewer model. The results of the modelling show that the existing downstream facilities, including the WPCP, have adequate capacity during dry weather to accommodate increased sewer generation in the Plan Area, but do not have capacity during periods of heavy rain as the system at large does not currently address heavy rain flows sufficiently.

As addressed under *Existing Setting*, the City currently has approved funding, raising 40 million dollars in capital improvement funds, and developed plans and initiated construction to improve the downstream facilities to reduce and capture the problematic I&I flows during a 10-year, 24-hour storm event. These RMSD capital improvements as required by the San Francisco Baykeeper Settlement Agreement consist of I&I reduction projects, an influent pump station upgrade, a new wet weather storage facility (which has been constructed and is fully operational), health and safety improvements at the WPCP, and facilitation of the digester facility rehabilitation project, and would address buildout within the City as anticipated under the Richmond General Plan 2030 (which also anticipates development to an extent that encompasses buildout of the Specific Plan).

Other funded critical projects (identified for implementation within the next 5± years) at the WPCP include grit removal system upgrades, aeration system upgrades and secondary clarifier improvements; and for the sanitary sewer collection system include the replacement and/or upsizing of sewer pipes at various locations in the City (City of Richmond, 2016b, 2016c).

The City's *Draft WWTP Facility Plan* also recommends other critical projects, as well as near-term projects (recommended for implementation in 5 to 10± years) and long-term projects (recommended for implementation in next 11 to 30± years) for the WPCP (City of Richmond, 2016b); however, none of these additional projects are fully funded as of the date of this document (City of Richmond, 2016c).

Buildout of the Specific Plan is anticipated to begin in 2017; less than 20 percent of full buildout will need to be served by the sanitary sewer system prior to 2020. While it is likely that some or all of the critical projects listed in the City's Draft WWTP will be funded, under construction, and/or completed by 2020, as of the date of this document, it is uncertain when and how the Specific Plan's contribution of wastewater flows to the WPCP would be addressed by existing and/or planned facilities. This would result in a significant impact.

The City would ensure the implementation of **Mitigation Measure UTL-3a.SP** and **Mitigation Measure UTL-3b.SP** to address this impact.

> **Mitigation Measure UTL-3a.SP: Confirmation of Sanitary Sewer System Capacity.** For each project developed within the Plan Area, the project applicant shall ensure that a qualified civil engineer confirm the capacity of the surrounding sanitary sewer system to accommodate the proposed project, prior to the issuance of final certificate of occupancy or equivalent permit to operate or occupy. As part of project plan review, the project applicant shall provide a plan to the City that shows how any necessary stormwater and sanitary sewer infrastructure improvements would be implemented to accommodate the proposed project, and commit to funding improvements that are not otherwise funded through City programs, and/or to implementing the improvements, which may include onsite treatment of stormwater to reduce demand on the sanitary sewer system due to Infiltration/Inflow.
>
> **Mitigation Measure UTL-3b.SP: Determine Upgrades to Water Pollution Control Plant.** For each project developed within the Plan Area, the City Planning and Building Division shall review the sanitary sewer system capacity study prepared per Mitigation Measure UTL-3a.SP, and additionally confirm whether improvements planned for the Water Pollution Control Plant (WPCP) in the most current Wastewater Treatment Plant Facility Plan are required to be operational prior to project operation, and shall ensure that any required improvements are completed prior to issuance of a building permit for the project. The City shall also identify a fair share funding mechanism to support the implementation of the identified required improvements, and shall establish a program to collect funds and guarantee they are used for these improvements.

The implementation of Mitigation Measure UTL-3a.SP and Mitigation Measure UTL-3b.SP would ensure that facilities would be available and online to treat sanitary sewer flows associated with buildout under the Specific Plan, and that the existing and planned facilities would meet the

wastewater treatment requirements established by the RWQCB for discharge into San Francisco Bay, even with the additional wastewater generated, resulting in a less-than-significant impact.

Significance After Mitigation: Less Than Significant.

Mitigation: Mitigation Measure UTL-3a.SP, and Mitigation Measure UTL-3b.SP.

Wastewater Collection

Impact UTL-4.SP: Development under the Specific Plan could result in a determination that new or expanded wastewater treatment facilities would be required. (Criterion b.) (*Less Than Significant with Mitigation*)

Under the Specific Plan, the existing sanitary sewer infrastructure within the Plan Area would be designed and constructed in accordance with the latest City and County standards. Specific parameters of onsite improvements consist of:

1) Removal or relocation of sewer facilities due to conflicts with the proposed land use areas and roadway alignments;

2) Upsizing of pipes to support the increased land use;

3) Repair or replacement of damaged and/or aging pipelines to reduce I&I;

4) Extension of facilities to service new development areas or redevelopment areas where no facilities currently exist; and

Based on the preliminary design for these infrastructure improvements, numerous 8-inch sewer line improvements would be installed throughout all Specific Plan sub-areas, with larger sewer line expansions (upsizing) of 10 inches primarily along Meeker Avenue in Sub-Area 1 and along Mead Street in Sub-Area 4, as well as removal of various lines consistent with right-of-way modifications.

Based on modeling of Plan Area wastewater flow by VWHA (see Table 4.14-3), onsite and offsite wastewater facilities would have the capacity to support the increased average dry weather flow of up to 1.2 mgd as produced by build out of the Specific Plan. However, during wet weather flows, such as a 10-year 24-hour event, both downstream facilities, as well as the current Plan Area-serving ICI Pump Station would experience service deficiencies serving the potential 4.9 mgd generated by buildout of the Specific Plan.

As described above, the RMSD capital improvements (and/or implementation of Mitigation **Measure UTL-3a.SP** and **Mitigation Measure UTL-3b.SP**) would ensure the WPCP has sufficient capacity downstream to address the City's existing and planned 10-year 24-hour wet weather wastewater flows including the flows generated by full buildout of the Specific Plan. The current ICI Pump Station that would service Sub-Area 4 within the Plan Area, however, has a firm capacity of 440 gpm which is sufficient to convey existing flows from the 10-year, 24- hour

design storm, but may not be sufficient to handle the increase in sewage flows. This analysis therefore assumes that the ICI Pump Station would need to be upsized, which would likely entail replacing the existing pumps to provide for an increased firm capacity (improvements that would take place within the existing footprint of the pump station). Increasing the pump station's firm capacity may additionally require upsizing the existing 6-inch diameter pipe in order to maintain peak velocities below the maximum allowable of 10 feet per second (fps) **Mitigation Measure UTL-4.SP: ICI Pump Station Upgrades** would ensure that prior to the recordation of a Final Map, the issuance of a grading permit, the issuance of a building permit, or utility extension approval, developers within the Plan Area have demonstrated sufficient pump station pressure to address increased flow of the proposed development.

> **Mitigation Measure UTL-4.SP: ICI Pump Station Upgrades.** For any development proposed within the Plan Area, prior to the recordation of a Final Map, the issuance of a grading permit, the issuance of a building permit, or utility extension approval, whichever is sooner, the project developer shall submit written verification from the City's Utility Planning Division (or Engineer) that the ICI Pump Station is adequately improved to provide service to the proposed development. Alternatively, project applicants may construct equivalent improvements to ensure the facility's function to the satisfaction of the City Public Works Department.

While the construction of the WPCP improvements are expected to provide a sufficient capacity for the City overall, the existing sewer distribution system within the Plan Area would require improvements to meet future demands and address existing deficiencies. The proposed utility improvements within each sub-area would involve the addition of 8-inch diameter and upsizing to 10-inch diameter lines running throughout Plan Area right-of-ways connecting to the existing 8-inch to 18-inch or larger diameter gravity sewer lines, the removal of lines consistent with modifications to Plan Area right-of-ways. Each section of line would be sized to provide adequate capacity for build-out of the property. In addition, improvements to the ICI Pump Station would ensure the Plan Area has adequate pressure to maintain all sewage lines. Specific Plan compliance with NPDES General Construction Activities Permit requirements would prevent significant construction-related impacts to water quality and ensure that all construction activities minimize the potential to adversely affect receiving waters.

Because the Plan would not exceed wastewater treatment requirements of the applicable RWQCB nor result in a determination by the wastewater treatment provider that it does not have adequate capacity to serve the Project's projected demand in addition to the provider's existing commitments, adoption and development under the Specific Plan would have a less-than-significant impact. Implementation of the Specific Plan would require improvements to the existing sewer distribution system to meet future demands. Implementation of Mitigation Measure UTL-4.SP would involve improvements to the ICI facility to ensure the site has adequate wastewater flow pressure.

All potential construction-related environmental effects associated with installation of new sanitary sewer infrastructure that would serve buildout under the Specific Plan, including improvements to the ICI Pump Station, are addressed and mitigated to the extent feasible in Sections 4.2, *Air Quality*; 4.4, *Cultural Resources*; 4.5, *Geology, Soils and Seismicity*; 4.6,

Greenhouse Gases and Energy; 4.7, *Hazards and Hazardous Materials*; Section 4.8, *Hydrology and Water Quality*; and 4.10, *Noise*, of this EIR. To the extent that these or other improvements to infrastructure are required, they would generally take place within existing rights-of-way. Construction of these improvements is not expected to result in significant environmental impacts, because the area of improvements would be relatively small and typical of minor infrastructure upgrades. Impacts to noise and air quality would be temporary and regulated by City ordinances, further described in Sections 4.10 and 4.2, respectively, of this EIR. Impacts to traffic and transportation would be similar to temporary construction impacts described in Section 4.13 of this EIR, and less than significant.

With implementation of Mitigation Measure UTL-4.SP, the adoption and development under the Specific Plan would have a less-than-significant impact.

Significance After Mitigation: Less than Significant.

Mitigation: Mitigation Measure UTL-4.SP.

Stormwater Drainage Facilities

Impact UTL-4.SP: Development under the Specific Plan would not require or result in construction of new stormwater drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects (Criterion c.). (*Less Than Significant, No Mitigation Required*)

The Specific Plan proposes improvements that would collect and treat stormwater runoff prior to discharge to the Bay. In addition to the proposed system layout, the Specific Plan also includes a landscape design intent (Specific Plan CF 3.2: Green Infrastructure and Landscape) to encourage a focus for increased vegetated streetscape features and an integration of landscape-based stormwater management features into new development projects within the Plan Area.

As described under the Approach to Analysis, above, the analysis of stormwater flow and capacity utilizes runoff coefficients to compare the existing setting of the Plan Area with that of the Plan Area under future build out. The runoff coefficients were assumed to remain constant within a given land use type, despite the likelihood that the landscape design intent of the Specific Plan would increase the permeability of the ground cover, and thus result in lower runoff coefficients.

Based on the runoff coefficient rates, the Plan Area currently experiences a weighted C of 0.71 and with full Specific Plan buildout would experience a weighted C of 0.69 (see Tables 4.14-1 and 4.14-4 above). Analysis of existing and proposed conditions show that there would be little change in total coverage by impervious surfaces and the total area/coefficient product would actually decline by a small amount (from 0.71 to 0.69). Since the amount of impervious surface in a watershed is the primary determining factor of both the peak rate and total volume of

stormwater runoff, the reduction in the coefficient indicates there would be little difference between build-out under the Specific Plan and build-out under the existing condition.

As discussed in Section 4.8, *Hydrology and Water Quality*, a combination of existing and proposed stormwater treatment facilities and features, as well as additional stormwater treatment features that would be required to be implemented under the NPDES MS4 permit consistent with the Contra Costa County Clean Water Program and the Storm Water Management Plan, would address the treatment of stormwater runoff from within the Plan Area. As a result, it is anticipated that existing, planned, and otherwise required downstream facilities would have sufficient capacity to convey future flows from the Specific Plan. This impact is less than significant.

All potential construction-related environmental effects associated with installation of new stormwater infrastructure that would serve the Specific Plan area are addressed and mitigated to the extent feasible in Sections 4.2, *Air Quality*; 4.4, *Cultural Resources*; 4.5, *Geology, Soils and Seismicity*; 4.6, *Greenhouse Gases and Energy*; 4.7, *Hazards and Hazardous Materials*; Section 4.8, *Hydrology and Water Quality*; and 4.10, *Noise*, of this EIR.

Significance: Less Than Significant.

Mitigation: None required.

Solid Waste Services

Impact UTL-5.SP: Development under the Specific Plan could violate applicable federal, state, and local statutes and regulations related to solid waste; or generate solid waste that would exceed the permitted capacity of the landfills serving the area. (Criteria f., g.) (*Less Than Significant, No Mitigation Required*)

Development under the Specific Plan would generate construction/demolition debris. As explained under Approach to Analysis, above, an estimated 28,900 tons of construction-related solid waste and 830,000 cubic yards of demolition waste could be generated over the period of development occurring under the Specific Plan.

In addition, the residential and employee population increase associated with development under the Specific Plan would increase demand for recycling and solid waste services. As estimated above, the Plan Area would generate approximately 137 tons of solid waste per day, or 49,900 tons per year.

As stated above, the Keller Canyon Landfill is currently permitted to operate through 2050, and as of 2009 has approximately 96 percent of its capacity remaining (CalRecycle, 2009). It is anticipated that the City will continue to have use of capacity at the Keller Landfill. With a maximum daily permitted disposal of 3,500 tons, the development and operation under the Specific Plan would have a less-than-significant impact on solid waste services and landfill capacity.

The construction and operation of the Specific Plan would comply with AB 939, the California Integrated Waste act, as well as California Green Building Standards Code which would require reductions in waste. Anticipating waste diversion rates remain similar to the existing conditions, the Specific Plan would not impede the ability of the City to meet waste diversion requirements or cause the City to violate other applicable federal, state, and local statutes and regulations related to solid waste, resulting in a less-than-significant impact on solid waste services.

Significance: Less Than Significant.

Mitigation: None required.

4.14.6 Project-Level Impacts of the Sub-Area 4 Project

Water and Recycled Water System

Impact UTL-1.SA4: The Sub-Area 4 Project would not require or result in the construction of new water treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects. (Criteria b.) (*Less Than Significant, No Mitigation Required*)

Water Treatment

EBMUD would provide potable water to the Project site. As explained under Impact UTL-2.SA4, there is no need identified by EBMUD that would require the construction of new water treatment facilities or expansion of existing water treatment facilities to serve the Specific Plan.

Water and Recycled Water Distribution

The Sub-Area 4 site is currently serviced by a 12-inch main which transects I-580 and runs along East Montgomery Avenue. This main leads to additional 8-inch lines which run along 49th, 50th, and 51st Street as well as Seaport Avenue. Site development would involve relocation of existing water lines that currently run where new block development is proposed including the 12-inch line after it crosses I-580, and the 8-inch line under 50th Street. Water infrastructure improvements within the Project site would involve installation of 8-inch and 12-inch lines throughout, and would not involve recycled water lines.

Although no system improvements are proposed for recycled water at this time, the proximity of the Sub-Area 4 Project to the adjacent Global Campus presents several opportunities to use recycled water for landscape irrigation, commercial and industrial processes, toilet and urinal flushing in non-residential buildings, and cooling towers. In addition, as previously discussed, EBMUD may consider expansion of the existing recycled water infrastructure, and the construction of a localized satellite facility that would utilize on-site water and rain water treatment to provide recycled water to the Plan Area, including Sub-Area 4.

All potential construction-related environmental effects associated with installation of new potable water and/or recycled water infrastructure that would serve the Sub-Area 4 Project are addressed and mitigated to the extent feasible in Sections 4.2, *Air Quality*; 4.4, *Cultural* Resources; 4.5, *Geology, Soils and Seismicity*; 4.6, *Greenhouse Gases and Energy*; 4.7, *Hazards and Hazardous Materials*; Section 4.8, *Hydrology and Water Quality*; and 4.10, *Noise*, of this EIR.

Fire Flow

The new water distribution system installed within the Sub-Area 4 Project would be looped to provide redundancy and to ensure adequate system pressure is maintained, sufficient for emergencies. The initial water flow test for pressure, of 1,500 gpm at 68 to 74 psi supplied by EBMUD suggests the Plan Area, including the Sub-Area 4 Project site, would be sufficiently served through its water system for emergency water. In addition, compliance with the 2013 California Fire Code and Chapter 8.16 of the City's Municipal Code would ensure Project development is adequately served by water.

Significance: Less Than Significant.

Mitigation: None required.

Water Supply

Impact UTL-2.SA4: The water demand generated by development under the Sub-Area 4 Project would not exceed water supplies available from existing entitlements and resources, or need expanded entitlements. (Criteria d.) (*Less Than Significant, No Mitigation Required*)

The Sub-Area 4 Project would result in an increase in the demand for potable water, as the existing water demand is limited due to minimal development. Under project conditions, the proposed average daily water demand would be approximately 490,000 gpd with a potential maximum demand of 730,000 gpd and a maximum flow of 51,000 gallons per hour (NCE, 2015).

The WSA conducted for the Specific Plan and related materials are provided in Appendix F to this EIR. As discussed above under Impact UTL-2.SP, EBMUD and the City have sufficient water to meet the expected future water demands of the Specific Plan, which includes and encompasses the water demands of the Project. Also as discussed above, the foreseeable maximum theoretical buildout scenario of the Specific Plan has a total potable water demand of 1.94 mgy, which fits within the development projections established in the 2015 UWMP. Development of the Sub-Area 4 Project would be within this projected demand. Therefore, the water demand generated by the development of the Sub-Area 4 Project would result in a less-than-significant impact to water supply. In addition, the Project would not require or result in the construction of new water system distribution facilities or expansion of existing facilities.

Significance: Less Than Significant.

Mitigation: None required.

Wastewater Collection and Treatment

Impact UTL-3.SA4: Development of the Sub-Area 4 Project could exceed the wastewater treatment requirements of the San Francisco Regional Water Quality Control Board or result in a determination that new or expanded wastewater treatment facilities would be required. (Criteria a., b., and e.) (*Less Than Significant with Mitigation*)

Wastewater Treatment Plant Capacity

The Sub-Area 4 Project proposes to redevelop the site with a gross building area of approximately 1,460,00 sf, as well as up to 1,520 residential units prompting an increase in the demand for wastewater treatment. The Project would have an average dry weather flow of approximately 298,050 gpd, and potential peak wet weather flow of 1,192,200 gpd. As described in the Existing Setting, the City's wastewater is treated by the RMSD's WPCP. The WPCP has an operating capacity of 16 million gallons per day (mgd) for average dry weather flow and 20 mgd for wet weather conditions operating with an annual average daily flow of about 8.1 mgd in 2011. As discussed in the Setting, downstream system flow challenges are currently being addressed through capital improvement projects, and which will improve the downstream facilities' ability to reduce and capture problematic I&I flows during a 10-year, 24-hour storm event. The increase in sewer flows from the Sub-Area 4 Project (an estimated 396,720 gpd dry weather flow as well as an estimated 1,586,880 gpd peak wet weather flow) are included in and encompassed by the estimated flows that would result from buildout under the Specific Plan.

As described above, the RMSD capital improvements (and/or implementation of **Mitigation Measure UTL-3a.SP** and **Mitigation Measure UTL-3b.SP**) would ensure the WPCP has sufficient capacity downstream to address the City's existing and planned 10-year 24-hour wet weather wastewater flows including the flows generated by full buildout of the Sub-Area 4 Project, as well as the Specific Plan. In addition, **Mitigation Measure UTL-4.SP: ICI Pump Station Upgrades** would ensure that prior to the recordation of a Final Map, the issuance of a grading permit, the issuance of a building permit, or utility extension approval, developers within the Plan Area have demonstrated sufficient pump station pressure to address increased flow of the proposed development.

Wastewater Conveyance

The Project site is current serviced by main utility infrastructures including a 24-inch sewer main which crosses I-580. Site development would involve removal of an existing 6-inch sanitary sewer lines and installation of additional 8-inch and 10-inch lines.

Based on modeling of Plan Area and Project site wastewater flow by VWHA, onsite and offsite wastewater facilities would have the capacity to support the increased average dry weather flow of up to 0.3 mgd as produced by build out of the Project. However, preliminary calculations by NCE in the Utility Analysis determined that the ICI Pump Station, which would service Sub-Area 4, may not have sufficient capacity to handle the increase in sewage flows during wet weather flows, and may therefore need to be upsized. If needed, it would require replacing the existing pumps to provide for greater firm capacity; this could require upsizing the existing 6-inch

diameter in order to keep velocities below the maximum allowable of 10 feet per second (fps) (NCE, 2015).

Implementation of Mitigation Measure UTL-4.SP: ICI Pump Station Upgrades would require Project developers to provide evidence of sufficient pump station capacity prior to the recordation of a Final Map, the issuance of a grading permit, the issuance of a building permit, or utility extension approval, whichever is first.

All potential construction-related environmental effects associated with installation of new sanitary sewer infrastructure that would serve buildout under the Sub-Area 4 Project, including improvements to the ICI Pump Station, are addressed and mitigated to the extent feasible in Sections 4.2, *Air Quality*; 4.4, *Cultural Resources*; 4.5, *Geology, Soils and Seismicity*; 4.6, *Greenhouse Gases and Energy*; 4.7, *Hazards and Hazardous Materials*; Section 4.8, *Hydrology and Water Quality*; and 4.10, *Noise*, of this EIR. To the extent that these or other improvements to infrastructure are required, they would generally take place within existing rights-of-way. Construction of these improvements is not expected to result in significant environmental impacts, because the area of improvements would be relatively small and typical of minor infrastructure upgrades. Impacts to noise and air quality would be temporary and regulated by City ordinances, further described in Sections 4.10 and 4.2, respectively, of this EIR. Impacts to traffic and transportation would be similar to temporary construction impacts described in Section 4.13 of this EIR, and less than significant.

Project compliance with NPDES General Construction Activities Permit requirements would prevent significant construction-related impacts to water quality and ensure that all construction activities minimize the potential to adversely affect receiving waters. Through implementation of Mitigation Measures UTL-3a.SP, UTL-3b.SP, and UTL-4.SP; because the Sub-Area 4 Project would not exceed wastewater treatment requirements of the applicable RWQCB nor result in a determination by the wastewater treatment provider that it does not have adequate capacity to serve the Project's projected demand in addition to the provider's existing commitments; and because planned infrastructure improvements to manage I&I are underway, the Sub-Area 4 Project would result in a less-than-significant impact related to wastewater generation.

Significance After Mitigation: Less Than Significant.

Mitigation: Mitigation Measure UTL-3a.SP, Mitigation Measure UTL-3b.SP, Mitigation Measure UTL-4.SP.

Stormwater Drainage Facilities

Impact UTL-4.SA4: Development of the Sub-Area 4 Project would require or result in construction of new onsite stormwater drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects. (Criterion c.) (*Less Than Significant, No Mitigation Required*)

The Project site is current serviced by main utility infrastructure including a 36-inch drainage outfall releasing stormwater into Stege Marsh. Stormwater treatment is discussed further in Section 4.8, *Hydrology and Water Quality*.

As described under the Approach to Analysis, the analysis of stormwater flow and capacity utilizes runoff coefficients to compare the existing setting of the Plan Area including Sub-Area 4 with that of the Plan Area and Sub-Area 4 under future build out. The runoff coefficients were assumed to remain constant within a given land use type. The existing and proposed runoff coefficients used by the NCE report are presented under the Existing Setting and Approach to Analysis for Stormwater above. Based on these rates, Sub-Area 4 currently experiences a runoff weighted C of 0.67 and would experience a weighted C of 0.74 (see Table 4.14-1 and 4.14-4 above).

Comparing the existing and proposed conditions shows that there would be an increase in total coverage by impervious surfaces. Since the amount of impervious surface in a watershed is the primary determining factor of both the peak rate and total volume of stormwater runoff, the increase in the coefficient indicates there would be an increase in stormwater flow between the existing condition and buildout under the Sub-Area 4 Project.

As discussed further in Section 4.8, *Hydrology and Water Quality*, the Sub-Area 4 Project site is not subject to the same requirements as upland sites with regards to ensuring the on-site treatment of stormwater flows, per the Municipal Region Stormwater Permit (MRP), Section C.3.gi. Because the site is located in a catchment that drains to enclosed pipes that extend continuously to the Bay and areas that are tidally influenced, the Sub-Area 4 Project site is exempt from hydromodification requirements under the MRP. Regardless, stormwater treatment through the use of landscaping, planters, and other on-site facilities will be installed on the Sub-Area 4 Project site, per the Stormwater Quality Standards described in the Specific Plan.

Construction activities within the Sub-Area 4 site would be required to comply with NPDES General Construction Activities Permit requirements. The Project applicant would be required to prepare a SWPPP for General Construction Activities to reduce potential impacts to surface water quality during construction. The erosion control and storm water quality BMPs that would be employed to minimize pollutants in storm water runoff would be effective in preventing the discharge of NPDES pollutants to downstream waters. Project compliance with NPDES General Construction Activities Permit requirements are required by law and have proven effective in protecting water quality at construction sites. Routine inspection of all BMPs is required under the provisions of the Construction General Permit.

In addition, the SWPPP is required to contain a visual monitoring program, a chemical monitoring program for non-visible pollutants, and a sediment monitoring plan if the site discharges directly to a water body listed on the 303(d) list for sediment. Implementation of the SWPPP at the Project site would prevent significant construction-related impacts to water quality by ensuring that all construction activities include the implementation of BMPs that minimize the offsite discharge of sedimentation and other pollutants. Moreover, the potential effects that could occur during the construction necessary to connect the Project site to existing infrastructure onsite

have been thoroughly analyzed in these respective sections of this EIR analysis chapter, and mitigation measures are identified where warranted. This includes factors of construction period noise, emissions from construction equipment, earth movement and dust, water quality, and construction traffic.

All potential construction-related environmental effects associated with installation of new stormwater infrastructure that would serve buildout under the Sub-Area 4 Project, are addressed and mitigated to the extent feasible in Sections 4.2, *Air Quality*; 4.4, *Cultural Resources*; 4.5, *Geology, Soils and Seismicity*; 4.6, *Greenhouse Gases and Energy*; 4.7, *Hazards and Hazardous Materials*; Section 4.8, *Hydrology and Water Quality*; and 4.10, *Noise*, of this EIR. To the extent that these or other improvements to infrastructure are required, they would generally take place within existing rights-of-way. Construction of these improvements is not expected to result in significant environmental impacts, because the area of improvements would be relatively small and typical of minor infrastructure upgrades. Impacts to noise and air quality would be temporary and regulated by City ordinances, further described in Sections 4.10 and 4.2, respectively, of this EIR. Impacts to traffic and transportation would be similar to temporary construction impacts described in Section 4.13 of this EIR, and less than significant.

While the Sub-Area 4 Project would generate an increase in stormwater runoff, with adherence to the regulatory requirements described above, the construction of new and expanded stormwater facilities would have a less-than-significant environmental impact.

Significance: Less Than Significant.

Mitigation: None required.

Solid Waste Services

Impact UTL-5.SA4: Development of the Sub-Area 4 Project would not violate applicable federal, state, and local statutes and regulations related to solid waste; or generate solid waste that would exceed the permitted capacity of the landfills serving the area. (Criteria g. and h.) (*Less Than Significant, No Mitigation Required*)

The Sub-Area 4 Project could generate approximately 3,070 new residents directly associated with the new housing units and up to 4,190 new employees on the Project site, thereby prompting a potential increase in the demand for solid waste services. Based on average solid waste generation rates for the Project as described above under Approach to Analysis, the Sub-Area 4 Project could generate approximately 7,170 tons of construction-related solid waste and 60,000

cubic yards of demolition waste, as well as 12,000 tons per year (or 32 tons per day) of solid waste.[9]

As stated above, the Keller Canyon Landfill is currently permitted to operate through 2050, and as of 2009, has approximately 96 percent of its capacity remaining (CalRecycle, 2009). It is anticipated that the City will continue to have use of capacity at the Keller Landfill. With a maximum daily permitted disposal of 3,500 tons, development and operation under the Sub-Area 4 Project would have a less-than-significant impact on solid waste services and landfill capacity.

The construction and operation of the Sub-Area 4 Project would comply with AB 939, the California Integrated Waste act, as well as California Green Building Standards Code which would require reductions in waste. Anticipating waste diversion rates remain similar to existing conditions, the Project would not impede the ability of the City to meet waste diversion requirements or cause the City to violate other applicable federal, state, and local statutes and regulations related to solid waste, resulting in a less-than-significant impact on solid waste services

Significance: Less Than Significant.

Mitigation: None required.

4.14.7 Cumulative Impacts

Impact C-UTL-1.SP: Construction activity and operations for the development under the Specific Plan in combination with past, present, existing, approved, pending, and reasonably foreseeable future projects in the vicinity of the Plan Area, would not contribute considerably to cumulative impacts to utilities and service systems. (*Less Than Significant with Mitigation*)

The cumulative geographic context for utilities and service systems considerations for development under the Specific Plan includes the City of Richmond and the service areas of the local utility providers and the cumulative projects list (past, approved, pending, under construction) included in Table 4.0-1. EBMUD provides water for parts of Alameda and Contra Costa counties, and the City of Richmond Municipal Sewer District (RMSD) provides wastewater and treatment services to the Plan Area and adjacent areas covering most of the incorporated area of Richmond. The West Contra Costa County Integrated Waste Management Authority (WCCCIWA) contracts to provide solid waste and recycling services to the cities of El Cerrito, Hercules, Pinole, Richmond, San Pablo, and incorporated areas of west Contra Costa County.

[9] This rough estimate relies on estimated population and employment generation rates calculated in Section 4.11, *Population and Housing* : such that residential waste is generated at 3,070 [residents] x 3.3[pounds per day] = 11,720 pounds per day, and commercial waste is generated at 4,190 [employees] x 12.9 [pounds per day] = 54,000 pounds per day for employee waste.

The General Plan EIR identified a significant cumulative impact to wastewater treatment facilities. As discussed above, full buildout of the Specific Plan would have less-than-significant impacts related to water and wastewater treatment facilities, stormwater facilities, water supply, and solid waste disposal with implementation of Mitigation Measures UTL-3a.SP, UTL-3b.SP, and UTL-4.SP. These determinations are based on NCE's analysis of the various facilities' projected and permitted capacities which also consider anticipated growth in the respective service areas.

The change to runoff drainage patterns and quantities resulting from the Specific Plan would not exceed the capacity of the existing drainage system, and would not require or result in the construction of new stormwater drainage facilities or expansion of existing facilities. The Keller Canyon Landfill, which receives approximately 88 percent of solid waste generated in the WCCCIWA service area, has an estimated available capacity and operating permits until 2050 and the additional waste quantities generated by construction and operation of the Specific Plan would result in a less-than-significant impact.

The cumulative projects would increase demand for water and wastewater conveyance, storage and supply. These developments, however, would provide additional tax revenue and other development fees that would go toward paying for increased utilities and service systems. Adherence to state, regional, and General Plan policies described above as well as Mitigation Measures UTL-3a.SP, UTL-3b.SP, and UTL-4.SP would reduce the potential for significant impacts. Further, improvements discussed throughout this section result in improved capacity and conveyance of utilities and service systems. Overall, cumulative development, in combination with development under the Specific Plan would result in a less-than-significant cumulative impact on utilities and service systems after implementation of the above-recommended mitigation.

Overall, the effect of the development under the Specific Plan, combined with past, present, and other foreseeable development in the area, would not result in a considerable contribution to existing cumulative impacts.

Significance After Mitigation: Less Than Significant.

Mitigation: Mitigation Measure UTL-3a.SP, Mitigation Measure UTL-3b.SP, Mitigation Measure UTL-4.SP.

Impact C-UTL-1.SA4: Construction activity and operations for the development under the Sub-Area 4 Project in combination with past, present, existing, approved, pending, and reasonably foreseeable future projects in the vicinity of the Plan Area, would not contribute considerably to cumulative impacts to utilities and service systems. (*Less Than Significant with Mitigation*)

The cumulative geographic context for utilities and service systems considerations for development under the Sub-Area 4 Project includes the City of Richmond and the service areas of

the local utility providers and the cumulative projects list (past, approved, pending, under construction) included in Table 4.0-1. EBMUD provides water for parts of Alameda and Contra Costa counties, and the City of Richmond Municipal Sewer District (RMSD) provides wastewater and treatment services to the Project site and adjacent areas covering most of the incorporated area of Richmond. The West Contra Costa County Integrated Waste Management Authority (WCCCIWA) contracts to provide solid waste and recycling services to the cities of El Cerrito, Hercules, Pinole, Richmond, San Pablo, and incorporated areas of west Contra Costa County.

The General Plan EIR identified a significant cumulative impact to wastewater treatment facilities. As discussed above, full buildout of the Sub-Area 4 Project would have less-than-significant impacts related to water and wastewater treatment facilities, stormwater facilities, water supply, and solid waste disposal with implementation of Mitigation Measures UTL-3a.SP, UTL-3b.SP, and UTL-4.SP. These determinations are based on NCE's analysis of the various facilities' projected and permitted capacities which also consider anticipated growth in the respective service areas.

The change to runoff drainage patterns and quantities resulting from the Project would not exceed the capacity of the existing drainage system, and would not require or result in the construction of new stormwater drainage facilities or expansion of existing facilities. The Keller Canyon Landfill, which receives approximately 88 percent of solid waste generated in the WCCCIWA service area, has an estimated available capacity and operating permits until 2050 and the additional waste quantities generated by construction and operation of the Project would result in a less-than-significant impact.

The cumulative projects would increase demand for water and wastewater conveyance, storage and supply. These developments, however, would provide additional tax revenue and other development fees that would go toward paying for increased utilities and service systems. Adherence to state, regional, and General Plan policies described above as well as Mitigation Measures UTL-3a.SP, UTL-3b.SP, and UTL-4.SP would reduce the potential for significant impacts. Further, improvements discussed throughout this section result in improved capacity and conveyance of utilities and service systems. Overall, cumulative development, in combination with development under the Sub-Area 4 Project would result in a less-than-significant cumulative impact on utilities and service systems after implementation of the above-recommended mitigation.

Overall, the effect of the development under the Project, combined with past, present, and other foreseeable development in the area, would not result in a considerable contribution to existing cumulative impacts.

Significance After Mitigation: Less Than Significant.

Mitigation: Mitigation Measure UTL-3a.SP, Mitigation Measure UTL-3b.SP, Mitigation Measure UTL-4.SP.

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4.15 Energy

4.15.1 Introduction

Section 21100(b) of the California Public Resources Code (PRC) directs all State Agencies, Boards and Commissions to assess the environmental impacts of projects for which they are a Lead Agency under CEQA to determine whether a project could result in significant effect on the environment, including effects from the wasteful, inefficient, and unnecessary consumption of energy, and to identify mitigation measures to minimize any such significant effects. The goal of this assessment is to ensure the wise and efficient use of energy, which could be accomplished by a number of means, including:

- decreasing overall per capita energy consumption
- decreasing reliance on fossil fuels such as coals, natural gas, and oil; and
- increasing reliance on renewable energy sources

This section examines the Specific Plan and Sub-Area 4 Project energy usage characteristics to determine whether that could result in any significant environmental impacts during construction or operation activities. This section also describes the California energy profile (i.e. mix of energy resources and consumption characteristics) and identifies regulatory and policy frameworks that govern the production and consumption of energy resources and aim to increase energy efficiency while reducing reliance on fossil fuels.

4.15.2 Environmental Setting

State

Energy Profile

California had the 48th lowest per capita energy consumption rate in the country in 2013, with a yearly per capita consumption rate of 200 million British Thermal Units (BTUs). The transportation sector is the largest energy consumer in California, at nearly 37.8 percent of total energy consumption, with more registered vehicles than any other state and among the longest work commute times in the nation. Residential uses account for just over 19.3 percent, commercial uses consume about 18.5 percent, and industrial uses consume about 24.4 percent (EIA, 2015).

California relies on a regional power system composed of a diverse mix of natural gas, renewable, hydroelectric, and nuclear generation resources. Approximately 68 percent of the electrical power needed to meet California's demand is produced in the state; the balance, approximately 32 percent, is imported from the Pacific Northwest and the Southwest (CEC, 2016b). In 2014, California's in-state electricity was derived from natural gas (44.5 percent), coal (6 percent), large hydroelectric resources (5.5 percent), nuclear sources (8.5 percent), and renewable resources that include geothermal, biomass, small hydroelectric resources, wind, and solar (20.1 percent) (CEC, 2016b). In 2014, California ranked fourth in the nation in conventional

hydroelectric generation, second in net electricity generation from other renewable energy resources, and first in electricity production from both solar and geothermal energy.

Transportation Fuels

The energy consumed by the transportation sector accounts for roughly 41 percent of California's petroleum demand and 38 percent of its greenhouse gas emissions. Gasoline and diesel, both derived from petroleum (also known as crude oil), are the two most common fuels used for vehicular travel. According to the California Energy Commission (CEC), the State relies on petroleum-based fuels for 96 percent of its transportation needs. The transportation sector, including on-road and rail transportation (but excluding aviation), accounts for nearly 99 percent of all motor gasoline use, at roughly 3.4 million barrels in 2014 (EIA, 2016). California is the third largest consumer of gasoline in the world, behind the U.S. (as a whole) and China (EIA, 2010). Approximately 37 percent of California's crude oil is produced within the state, about 11.8 percent is produced in Alaska, and the remaining 51.2 percent is produced in foreign countries.[1]

In 2013, approximately 14.54 billion gallons of gasoline were consumed in California, along with approximately 3.48 billion gallons of diesel fuel (CEC, 2015). Base gasoline demand dropped by about 13 percent between 2003 and 2013. Over that time, ethanol became a larger component of the gasoline supply, due to California's Renewable Fuel Standard (RFS), with an increase of 148 percent. In 2013, ethanol comprised 10 percent of each gallon of gasoline. Base diesel fuel demand remain unchanged between 2003 and 2013; however, biodiesel use increased due to the RFS and the Low Carbon Fuel Standard (LCFS). Diesel now accounts for 5.3 percent of a total diesel gallon.

Northern California refineries process 45.4 percent of the state's crude oil and produce approximately 39.9 percent of the state's gasoline, and 48.7 percent of the diesel fuel, along with 34.4 percent of the jet fuel and 45.2 percent of the export fuel. Combined production capacity at the five Bay Area refinery centers was approximately 496,101 barrels per day (Western States Petroleum Association, 2008). A majority of gasoline, diesel and jet fuels produced at refineries are shipped by pipeline to over 60 distribution terminals. From there, tanker trucks transport fuels to retail and non-retail stations for direct consumer purchases. Truck deliveries to retail and non-retail stations statewide totaled 4,980 trucks/day for gasoline and 1,191 trucks/day for diesel.

California experienced an approximate 5 percent decrease in production between 2007 and 2015 as a result of several factors, including declining fuel reserves and economic and regulatory factors (California State Board of Equalization, 2016a). Statewide, Californians used approximately 2.8 billion gallons of diesel and 14.9 billion gallons of gasoline in 2015 (California State Board of Equalization, 2016a and 2016b). Per capita consumption of petroleum products in transportation is expected to slow down with the increasing use of alternative fuels and improved fuel efficiency in vehicles.

[1] In-state, other domestic, and foreign crude oil source information is from the U.S. Energy Information Administration, "Company Level Imports," cited in the CEC presentation of March 26, 2015.

Pacific Gas and Electric Company

Pacific Gas and Electric Company (PG&E) is an investor-owned utility company that provides electricity and natural gas supplies and services throughout a 70,000 square miles service area that extends from Eureka in the north, to Bakersfield in the south, and from the Pacific Ocean in the west to the Sierra Nevada in the east. The nine-county Bay Area is within its service area for both kinds of energy. Operating characteristics of PG&E's electricity and natural gas supply and distribution systems are provided below.

PG&E Electric Utility Operations

PG&E provides "bundled" services (i.e., electricity, transmission and distribution services) to most of the six million customers in its service territory, including residential, commercial, industrial and agricultural consumers. Customers also can obtain electricity from alternative providers such as municipalities or Customer Choice Aggregators (CCAs), as well as from self-generation resources, such as rooftop solar installations.

In recent years, PG&E continued to make improvements to its electric transmission and distribution systems to accommodate the integration of new renewable energy resources, distributed generation resources, and energy storage facilities, and to help create a platform for the development of new Smart Grid technologies. In December 2014, the CPUC issued a decision that permits the California investor-owned electric utilities to own electric vehicle (EV) retail charging equipment in their respective service territories to help meet the state's goal of reducing Greenhouse Gas (GHG) emissions by promoting cleaner transportation. On February 9, 2015, PG&E filed an application to request that the CPUC approve their proposal to develop, maintain, and operate an EV-charging infrastructure in its service territory.

PG&E is required to maintain physical generating capacity adequate to meet its customers' demand for electricity ("load"), including peak demand and planning and operating reserves, deliverable to the locations and at times as may be necessary to provide reliable electric service. PG&E is required to dispatch or schedule all of the electricity resources within its portfolio in the most cost-effective way.

In 2014, PG&E generated and/or procured a total of 74,547 gigawatt hours (GWh) of electricity. Of this total, PG&E owns 7,684 megawatts (MW) of generating capacity, itemized below. The remaining electrical power is purchased from other sources in and outside of California. Approximately 27 percent of the electricity produced by PG&E comes from natural gas-fired sources (see **Table 4.15-1**).

Renewable Energy Resources

California law requires load-serving entities, such as PG&E, to gradually increase the amount of renewable energy they deliver to their customers to at least 33 percent of their total annual retail sales by 2020. This program, known as the RPS program, became effective in December 2011, established three multi-year compliance periods that have gradually increasing RPS targets: 2011 through 2013, 2014 through 2016, and 2017 through 2020. After 2020, the RPS compliance periods will be annual.

TABLE 4.15-1
PG&E-OWNED ELECTRICITY GENERATING SOURCES

Source	Generating Capacity (Megawatts MW)
Nuclear (Diablo Canyon-2 reactors)	2,240
Hydroelectric	3,889
Fossil Fuel-Fired	1,400
Fuel Cell	3
Solar Photovoltaic (13 units-12 in Fresno County, 1 in Kings County)	152
Total	7,684

SOURCE: PG&E, 2014 Annual Report.

TABLE 4.15-2
PG&E RENEWABLE ENERGY SOURCES

Source	Percent of Total Energy Portfolio
Biopower	4.6
Geothermal	5.27
Wind	7.2
RPS-Eligible Hydroelectric	1.3
Solar	8.7
Total	**27**

SOURCE: PG&E, 2014 Annual Report.

Renewable generation resources, for purposes of the RPS program, include bioenergy such as biogas and biomass, certain hydroelectric facilities (30 MW or less), wind, solar, and geothermal energy. During 2014, 27 percent of PG&E's energy deliveries were from renewable energy sources, exceeding the annual RPS target of 23.3 percent, as listed below. With existing contracts in place for 2020, this rises to 31.3 percent.

Electricity Transmission

By December 31, 2014, PG&E owned approximately 18,100 circuit miles of interconnected transmission lines operating at voltages ranging from 60 kV to 500 kV. PG&E also operated 91 electric transmission substations with a capacity of approximately 63,400 MVA. PG&E's electric transmission system is interconnected with electric power systems in the Western Electricity Coordinating Council, which includes many western states, Alberta and British Columbia, and parts of Mexico. In November 2013, PG&E, MidAmerican Transmission, LLC, and Citizens Energy Corporation were selected to jointly develop a new 230-kV transmission line to address the growing power demand in Fresno, Madera and Kings Counties area. The transmission line is expected to commence operations by 2022, and could come online earlier.

Electricity Distribution

PG&E's electricity distribution network consists of approximately 141,700 circuit miles of distribution lines (of which approximately 20 percent are underground and approximately 80 percent are overhead), 55 transmission switching substations, and 603 distribution substations, with a capacity of approximately 30,200 Mega Volt Amps (MVA).

These distribution substations serve as the central hubs for PG&E's electric distribution network. Emanating from each substation are primary and secondary distribution lines connected to local transformers and switching equipment that link distribution lines and provide delivery to end-users. In October 2014, PG&E commenced operations at the first of three new electric distribution control centers. This 24,000-square foot, state-of-the-art facility, located in Fresno, California, will enhance electric reliability and resiliency for PG&E's customers throughout the Central Valley and will utilize current and future Smart Grid technologies. Additional facilities in Rocklin and Concord, California, are expected to be completed by 2016. These control centers form a key part of PG&E's efforts to create a smarter, more resilient grid.

PG&E Natural Gas Operations

PG&E provides natural gas transportation services to "core" customers and to "non-core" customers (i.e., industrial, large commercial, and natural gas-fired electric generation facilities) that are connected to its gas system in its service territory. Core customers can purchase natural gas procurement service (i.e., natural gas supply) from either PG&E or non-utility third-party gas procurement service providers (referred to as core transport agents). When core customers purchase gas supply from a core transport agent, PG&E continues to provide gas delivery, metering and billing services to customers. When PG&E provides both transportation and procurement services, PG&E refers to the combined service as "bundled" natural gas service. Currently, more than 91 percent of core customers, representing nearly 80 percent of the annual core market demand, receive bundled natural gas service from PG&E.

PG&E does not provide procurement service to non-core customers, who must purchase their gas supplies from third-party suppliers. PG&E offers backbone gas transmission, gas delivery (local transmission and distribution), and gas storage services as separate and distinct services to its non-core customers. Access to PG&E's backbone gas transmission system is available for all natural gas marketers and shippers, as well as non-core customers. PG&E also delivers gas to off-system customers (i.e., outside of PG&E's service territory) and to third-party natural gas storage customers. In 2014, total sales of natural gas were 185,594 million cubic feet (MMcf) (PG&E, 2016).

Natural Gas Supplies

PG&E can receive natural gas from all the major natural gas basins in western North America, including basins in western Canada, the Rocky Mountains, and the southwestern United States. PG&E also is supplied by natural gas fields in California. PG&E purchases natural gas to serve its core customers directly from producers and marketers in both Canada and the United States. The contract lengths and natural gas sources of PG&E's portfolio of natural gas purchase contracts have fluctuated generally based on market conditions. During 2014, PG&E purchased approximately 269,590 MMcf of natural gas (net of the sale of excess supply of gas). Nearly all

this natural gas was purchased under contracts with a term of one year or less. PG&E's largest individual supplier represented approximately 17 percent of the total natural gas volume PG&E purchased during 2014 (PG&E, 2016).

Natural Gas System Assets

PG&E owns and operates an integrated natural gas transmission, storage, and distribution system that includes most of northern and central California. By December 31, 2014, PG&E's natural gas system consisted of approximately 42,700 miles of distribution pipelines, over 6,400 miles of backbone and local transmission pipelines, and various storage facilities. PG&E owns and operates eight natural gas compressor stations on its backbone transmission system and one small station on its local transmission system that are used to move gas through PG&E's pipelines. PG&E's backbone transmission system is used to transport gas from PG&E's interconnection with interstate pipelines, other local distribution companies, and California gas fields to PG&E's local transmission and distribution systems (PG&E, 2016).

PG&E has agreements for delivery of natural gas from western Canada to the United States-Canada border with TransCanada NOVA Gas Transmission, Ltd. and TransCanada Foothills Pipe Lines Ltd., B.C. System. These companies' pipeline systems connect at the border to the pipeline system owned by Gas Transmission Northwest, LLC, which provides natural gas transportation services to a point of interconnection with PG&E's natural gas transportation system on the Oregon-California border near Malin, Oregon.

PG&E also has firm transportation agreements with Ruby Pipeline, LLC to transport this gas from the U.S Rocky Mountains to the interconnection point with PG&E's natural gas transportation system in the area of Malin, Oregon, at the California border, and firm transportation agreements with Transwestern Pipeline Company, LLC and El Paso Natural Gas Company to transport this natural gas from supply points in the U.S. Southwest to interconnection points with PG&E's natural gas transportation system in the area of California near Topock, Arizona. PG&E also has a transportation agreement with Kern River Gas Transmission Company to transport gas from the U.S. Rocky Mountains to the interconnection point with PG&E's natural gas system in the area of Daggett, California.

PG&E owns and operates three underground natural gas storage fields and has a 25 percent interest in a fourth storage field, all of which are connected to PG&E's transmission system. PG&E owns and operates compressors and other facilities at these storage fields that are used to inject gas into the fields for storage and later withdrawal. In addition, four independent storage operators are interconnected to PG&E's northern California transmission system.

PG&E Local Energy Infrastructure

Electrical power is delivered to the Plan Area from various PG&E substations interconnected by 115-kilovolt (kV) transmission lines located along Cutting Boulevard, north of I-580. The Plan Area is served by underground, 12-kV feeder lines crossing I-580 at Marina Way South, Marina Bay Parkway, Regatta Boulevard, and South 47th Street. Based on preliminary discussions with PG&E, the existing electrical system has sufficient capacity to support the Specific Plan

(Appendix E). If needed, PG&E would provide additional conduits during the process of installing the underground infrastructure (see Appendix E).

PG&E has two high-pressure (greater than 60 pounds per square inch gauge [psig]), 4-inch transmission lines that transport natural gas to the Plan Area across I-580 at Marina Bay Parkway and South 47th Street. Additional natural gas is supplied into the Plan Area by a 6-inch gas main (greater than 60 psig) that crosses I-580 at Marina Way South. PG&E maintains an extensive distribution system of 2- and 3-inch gas mains throughout the Plan Area.

Marin Clean Energy

Marin Clean Energy also supplies electricity to businesses and residents of Richmond. Marin Clean Energy is a community choice aggregator that procures power from renewable sources of energy and sells it to consumers through PG&E's distribution system. As of October 1, 2013, Marin Clean Energy serves approximately 84 percent of customers in Richmond, with the remainder served by PG&E and Direct Access (MCE Clean Energy, 2016). Marin Clean Energy's portfolio for their Light Green product includes 58.8 percent of energy coming from carbon-free or carbon-neutral sources in 2011. Marin Clean Energy's portfolio for their Deep Green product includes 100 percent of the portfolio sourced from carbon-free or carbon-neutral sources.

4.15.3 Regulatory Setting

Federal

National Energy Conservation Policy Act

The National Energy Conservation Policy Act (NECPA) serves as the underlying authority for federal energy management goals and requirements. Signed into law in 1978, it has been regularly updated and amended by subsequent laws and regulations. This act is the foundation of most federal energy requirements. NECPA established energy-efficiency standards for consumer projects and includes a residential program for low-income weatherization assistance, grants and loan guarantees for energy conservation in schools and hospitals, and energy-efficiency standards for new construction. Initiatives in these areas continue today.

National Energy Policy Act of 2005

The National Energy Policy Act of 2005 sets equipment energy efficiency standards and seeks to reduce reliance on nonrenewable energy resources and provide incentives to reduce current demand on these resources. For example, under the act, consumers and businesses can attain federal tax credits for purchasing fuel-efficient appliances and products, including hybrid vehicles; constructing energy-efficient buildings; and improving the energy efficiency of commercial buildings. Additionally, tax credits are available for the installation of qualified fuel cells, stationary microturbine power plants, and solar power equipment.

Executive Order 13423 (Strengthening Federal Environmental, Energy, and Transportation Management), signed in 2007, strengthens the key energy management goals for the federal government and sets more challenging goals than the Energy Policy Act of 2005. The energy reduction and environmental performance requirements of Executive Order 13423 were expanded upon in Executive Order 13514 (Federal Leadership in Environmental, Energy, and Economic Performance), signed in 2009.

Energy and Independence Security Act of 2007 and Corporate Average Fuel Economy Standards

The Energy and Independence Security Act of 2007 sets federal energy management requirements in several areas, including energy reduction goals for federal buildings, facility management and benchmarking, performance and standards for new buildings and major renovations, high-performance buildings, energy savings performance contracts, metering, energy-efficient product procurement, and reduction in petroleum use, including by setting automobile efficiency standards,and increase in alternative fuel use. This act also amends portions of the National Energy Policy Conservation Act.

State

Warren-Alquist Act

The 1975 Warren-Alquist Act established the California Energy Resources Conservation and Development Commission, now known as the California Energy Commission (CEC). The Act established a State policy to reduce wasteful, uneconomical and unnecessary uses of energy by employing a range of measures.

California Energy Action Plan

California's *2008 Energy Action Plan Update* updates the *2005 Energy Action Plan II*, which is the State's principal energy planning and policy document. The plan maintains the goals of the original *Energy Action Plan*, describes a coordinated implementation plan for state energy policies, and identifies specific action areas to ensure that California's energy is adequate, affordable, technologically advanced, and environmentally sound. First-priority actions to address California's increasing energy demands are to promote energy efficiency, demand response (i.e., reducing customer energy usage during peak periods to address power system reliability and support the best use of energy infrastructure), and use of renewable power sources. To the extent that these strategies are unable to satisfy increasing energy and capacity needs, the plan supports clean and efficient fossil-fuel fired generation.

State of California Integrated Energy Policy

In 2002, the Legislature passed Senate Bill 1389, which required the CEC to develop an integrated energy plan biannually for electricity, natural gas, and transportation fuels, for the California Energy Report. The plan calls for the state to assist in the transformation of the transportation system to improve air quality, reduce congestion, and increase the efficient use of

fuel supplies with the least environmental and energy costs. To further this policy, the plan identifies a number of strategies, including assistance to public agencies and fleet operators in implementing incentive programs for Zero Emission Vehicles and their infrastructure needs, and encouragement of urban designs that reduce vehicle miles traveled and accommodate pedestrian and bicycle access.

An overarching goal of the Integrated Energy Policy Report (IEPR) is to achieve the statewide greenhouse gas reduction targets, while improving overall energy efficiency is the main focus. The IEPR has replaced the Energy Action Plan as the chief program intended to provide a comprehensive statewide energy strategy to guide energy investments, energy-related regulatory efforts and greenhouse gas reduction measures.

Energy Efficiency

Existing Buildings Energy Efficiency

California needs to significantly increase energy efficiency in existing buildings to meets its greenhouse gas reduction goals. Commercial and residential buildings account for nearly 70 percent of California's electricity consumption and 55 percent of the state's natural gas consumption. New efforts are needed to activate efficiency markets that compete with other energy supplies. Assembly Bill 758 (Skinner, Chapter 470, Statutes of 2009) recognized the importance of reducing existing building energy demands to achieve state climate change concerns. Senate Bill 350 (De Leon, Chapter 547, Statues of 2015) established a goal to double energy savings in existing buildings by 2030 and to conduct regular monitoring and reporting to assure continued progress in meeting that goal. This bill also requires the Energy Commission to update its Existing Building Energy Efficiency Action Plan every three years. In its Final AB 758 Action Plan, the Energy Commission emphasized actions involving energy benchmarking, improved data access, local government leadership, zero net energy buildings, plug load efficiency, increased access to efficiency financing, appliance efficiency standards, and application of building efficiency standards to retrofits of existing buildings. Doubling the rate of energy savings from existing building efficiency improvement projects would result in lower total building energy use in 2030 than in 2014, even with significant population and economic growth, and is equivalent to a 20 percent reduction in usage compared to projected 2030 levels.

Utility Energy Efficiency Procurement

For many years, the state's Investor-Owned-Utilities and Publicly-Owned-Utilities have funded a variety of programs to facilitate purchase and installation of energy efficiency improvements within existing homes and commercial buildings. These programs will continue to play an important role in the statewide effort to expand the level of energy efficiency improvements within existing buildings.

California Clean Energy Jobs Program

California voters passed the California Clean Energy Jobs Act (Proposition 39) in November 2012, which changed the California corporate tax code and allocates projected revenue to the General Fund and the Clean Energy Job Creation Fund for five fiscal years, beginning in 2013/2014. The goal was to create jobs and promote and provide funding for eligible energy

projects, such as equipment upgrades, other efficiency improvements, and clean energy generation. The Proposition 39 program is authorized to continue for eight years, including five years of disbursements and three years for completion of projects and reporting from recipients to the Energy Commission. Senate Bill 73 focused the program efforts in K-12 schools and community colleges. As of the beginning of the third fiscal year (2015/2016), the total estimated annual energy cost savings achieved through this program are more than $25 million, along with an estimated 1,700 job-years. These jobs include construction, installation contractors, vendors and purchasers, and school employees.

Zero Net Energy Homes

For newly constructed low-rise homes, the state is steadily moving toward implementing zero-net energy buildings, in which energy efficiency is part of an integrated solution to developing homes that generate as much energy as they consume. The CPUC has set a goal of achieving ZNE performance for all new low-rise homes constructed in or after 2020, and for all new commercial buildings constructed in or after 2030. Outstanding issues remain, however, including needing to identify compliance pathways when on-site renewable generation is not feasible, and the appropriate role for natural gas in zero-net-energy buildings. The primary challenge is to build a technical and regulatory foundation for orchestration of energy efficiency and all other feasible distributed and customer-sited clean energy resources.

Decarbonizing the Electricity Sector

Another important tool in meeting climate and air quality goals is decarbonizing the electricity sector as part of an integrated approach to reducing emissions from energy use. As of 2014, the California Energy Commission estimated that about 25 percent of the state's electricity demand was being met through renewable sources, including solar, wind, small hydroelectric, geothermal, and biomass. In his inaugural address in January 2015, Governor Edmund G. Brown, Jr. called for increasing the portion of electricity derived from renewable sources from one-third by 2020 to one-half by 2030. This goal was codified through Senate Bill 350, the Clean Energy and Pollution Reduction Act of 2015. Potential solutions to achieving these renewable energy portfolio and GHG reduction goals include: a regional marketplace that balances time of supply and demand; time of use rates that encourage shifts when consumers use energy; demand response programs that adjust loads to generation availability; zero emission vehicle deployment that provides incentives to charge vehicles when energy generation is high; and building enhancements such as batteries and control systems to better manage energy usage. Efforts to procure renewable electricity sources should be accomplished in tandem with increased loads from an electrified transportation sector. If that does not occur, then California won't realize the full potential of the GHG reduction benefits from decarbonizing the electricity sector.

At the start of 2015, there were about 11,800 MW of new renewable capacity projects proposed that have required permits and were in pre-construction or construction phases. Photovoltaic solar projects account for nearly all of the new capacity expected to come online by 2016. The California Solar Initiative, established in 2007, has a goal of installing 3,000 MW of solar energy systems on homes and businesses by the end of 2016, plus 585 million therms of gas-displacing hot water systems by the end of 2017. The 3,000 MW goal was accomplished in 2015.

A declining reliance on coal-fired electricity, together with an expansion of renewable sources, have been and will continue to be the two major programs that will de-carbonize the state's electricity sector. Carbon capture and storage ("CCS") techniques represent another method of reducing GHG emissions from the electricity sector; successful application of such techniques could reduce emissions from large point sources by 90 percent. A number of significant technological, regulatory and economic constraints still exist, however that are inhibiting the implementation of CCS strategies in general, and in the natural gas supply sector in particular.

Strategic Transmission Investment Planning to Support Decarbonization. Strategic transmission investments are still needed to link our extensive renewable resources to load centers throughout the grid. Transmission planning processes will need to be streamlined and coordinated to ensure the siting, permitting, and construction of the most appropriate transmission projects takes proper consideration of renewable energy potential, land-use, and environmental factors.

To plan for meeting California's 2030 climate and renewable energy goals, the California Natural Resources Agency, the Energy Commission, the California Public Utilities Commission, and the California Independent System Operator have initiated the Renewable Energy Transmission Initiative 2.0 process to consider the relative potential of various renewable energy resources and to explore the associated transmission infrastructure through an open and transparent stakeholder process.

Moving to a Low-Carbon Transportation System. California has long been a leader in transportation policy and a low-carbon transportation system is essential for meeting the state's 2030 greenhouse gas reduction goal. The transportation sector represents the state's largest source of greenhouse gas emissions, accounting for 37 percent of California's total. Furthermore, it is the largest source of criteria air pollutants that are harmful to human health, especially in the most impacted areas of the state. To help address these issues, the state has developed a portfolio of goals, policies, and strategies designed to reduce greenhouse gas emissions, improve air quality, and reduce petroleum use while meeting the transportation demands of the future.

Governor Brown called for a 50 percent reduction in petroleum used by California's cars and trucks by 2030 in his 2015 inaugural address. The Governor has released several executive orders easing the transition to a low carbon transportation future. These include calling for 1.5 million zero-emission vehicles to be on California roadways by 2025 and for the development of an integrated action plan that establishes targets to improve freight efficiency, increases adoption of zero-emission technologies, and increases competitiveness of California's freight system. California was also one of the 14 members of the International Zero-Emission Vehicle Alliance to pledge at the United Nations climate-change conference in December 2015 that all new cars sold within their jurisdictions would be emissions-free by 2050.

The Energy Commission staff has also developed a draft transportation energy demand forecast through 2026 to help inform policy makers. The draft results show that given the information available today, gasoline and diesel will continue to be the primary sources of transportation fuel

through 2026. Long-term transformation of the transportation system is achievable and will require efforts on many fronts with a diverse range of actors and partnerships.

Electricity Demand Forecasts. The 2015 IEPR forecast results show slightly lower growth for electricity consumption compared to the forecast from the 2014 IEPR Update. Annual growth rates from 2014–2025 for baseline forecast consumption average 1.27 percent, 0.97 percent, and 0.54 percent in the high, mid, and low cases, respectively, compared to 1.21 percent in the 2014 IEPR Update mid case. Lower baseline consumption, combined with higher projections for self-generation, particularly photovoltaic systems, reduce growth in peak demand and retail sales. Annual growth rates for peak demand average 0.97 percent, 0.46 percent, and -0.28 percent in the high, mid, and low scenarios, respectively, compared to 1.08 percent in the 2014 IEPR Update mid case. For sales, annual growth averages 1.00 percent, 0.48 percent, and 0.26 percent in the high, mid, and low cases, respectively.

Natural Gas Demand Forecasts. Similar to electricity, the Energy Commission develops a forecast of natural gas prices, production, and demand as detailed in the 2015 Natural Gas Outlook. By 2024, the final forecast for end-use natural gas demand is about 9.3 percent higher than the 2013 IEPR forecast. Staff attributes the higher growth rates to an increase in natural gas demand in the residential, commercial, and transportation sectors. Demand for natural gas used in electricity generation, however, is expected to decline over the forecast period. This is driven by increases in the share of electricity generated from renewable resources that reduce the need for power from fossil-fueled sources.

While natural gas may provide a lower carbon fuel source when compared to other fossil fuels used for electricity generation or transportation, recent studies indicate that methane leakage can reduce the climate benefits of switching to natural gas. The gas well leak at Southern California Gas' storage facility at Aliso Canyon is an example of an unexpected methane leak that is having an impact on California's short term carbon footprint while also impacting the daily lives of residents in an entire neighborhood. Other examples of leaks in the natural gas supply chain are far less obvious yet are of increasing concern. Many research efforts are aimed at better understanding the leakage rates and the associated impacts. Converting biomass to renewable natural gas for use in the transportation sector, electricity generation, and end-use consumption reduces the climate impacts of this fuel, but resource availability may be limited and costs may be high. Protecting public safety remains an important focus in managing the natural gas system.

Title 24 - California Energy Efficiency Standards

The Energy Efficiency Standards for Residential and Nonresidential Buildings specified in Title 24, Part 6 of the California Code of Regulations were established in 1978 in response to a legislative mandate to reduce California's energy consumption. The standards are updated periodically to allow for consideration and possible incorporation of new energy-efficiency technologies and methods. The CEC adopted its most recent update to its standards in 2016 (CEC, 2016c). These new standards are expected to be 28 percent and 5 percent more efficient than previous standards for residential construction and commercial construction, respectively,

offering builders better windows, insulation, lighting, ventilation systems, and other features that reduce energy consumption in homes and businesses.

California Green Building Standards Code (CALGreen or Title 24)

CALGreen is a Statewide regulatory code for all buildings, including residential and commercial. The regulations are intended to encourage more sustainable and environmentally friendly building practices, require low-pollution emitting substances that cause less harm to the environment, conserve natural resources, and promote the use of energy-efficient materials and equipment. Title 24 standards require that all new residential and non-residential development implements various energy conservation measures, including ceiling, wall, and concrete slab insulation; vapor barriers; weather stripping on doors and windows; closeable doors on fireplaces; insulated heating and cooling ducts; water heater insulation blankets; and certified energy efficient appliances. CALGreen became mandatory on January 1, 2011, for new residential and commercial construction, and has been updated periodically since then.

Senate Bills 1078 and 107 and Executive Order S-14-08 and S-21-09

Senate Bill (SB) 1078 (Chapter 516, Statutes of 2002) requires retail sellers of electricity, including investor-owned utilities and community choice aggregators, to provide at least 20 percent of their supply from renewable sources by 2017. SB 107 (Chapter 464, Statutes of 2006) changed the target date to 2010. In November 2008, then-Governor Schwarzenegger signed Executive Order S-14-08, which expands the state's Renewable Portfolio Standard to 33 percent renewable power by 2020. In September 2009, then-Governor Schwarzenegger continued California's commitment to the Renewable Portfolio Standard by signing Executive Order S-21-09, which directs the California Air Resources Board under its Assembly Bill (AB) 32 authority to enact regulations to help the state meet its Renewable Portfolio Standard goal of 33 percent renewable energy by 2020.

SB 350 – Clean Energy and Pollution Reduction Act of 2015

SB 350, known as the Clean Energy and Pollution Reduction Act of 2015 was enacted on October 7, 2015 and provides a new set of objectives in clean energy, clean air, and pollution reduction by 2030. The objectives include the following:

1. To increase from 33 percent to 50 percent, the procurement of our electricity from renewable sources.

2. To double the energy efficiency savings in electricity and natural gas final end uses of retail customers through energy efficiency and conservation.

AB 1007 (Pavley)-Alternative Fuel Standards

Assembly Bill 1007, (Pavley, Chapter 371, Statutes of 2005) required the CEC to prepare a state plan to increase the use of alternative fuels in California (State Alternative Fuels Plan). The CEC prepared the State Alternative Fuels Plan in partnership with the California Air Resources Board and in consultation with other state, federal, and local agencies. The final State Alternative Fuels

Plan, published in December 2007, attempts to achieve an 80 percent reduction in greenhouse gas emissions associated with personal transportation, even as California's population increases. Measures proposed that would reduce petroleum fuel use include:

1) Lowering the energy needed for personal transportation by tripling the energy efficiency of on-road vehicles by 2050 through:
    a) Conventional gas, diesel, and flexible fuel vehicles (FFVs) averaging more than 40 miles per gallon (mpg).
    b) Hybrid gas, diesel, and FFVs averaging almost 60 mpg.
    c) All electric and plug-in hybrid electric vehicles (PHEVs) averaging well over 100 mpg (on a greenhouse gas equivalents [GGE] basis) on the electricity cycle.
    d) Fuel cell vehicles (FCVs) averaging over 80 mpg (on a GGE basis).
2) Moderating growth in per capita driving, reducing today's average per capita driving miles by about 5 percent or back to 1990 levels.
3) Changing the energy sources for transportation fuels from the current 96 percent petroleum-based to approximately:
    a) 30 percent from gasoline and diesel from traditional petroleum sources or lower GHG emission fossil fuels such as natural gas.
    b) 30 percent from transportation biofuels.
    c) 40 percent from a mix of electricity and hydrogen.
4) Producing transportation biofuels, electricity, and hydrogen from renewable or very low carbon-emitting technologies that result in, on average, at least 80 percent lower life cycle GHG emissions than conventional fuels.
5) Encouraging more efficient land uses and greater use of mass transit, public transportation, and other means of moving goods and people.

Appliance Efficiency Regulations, California Code of Regulations Title 20

California's Appliance Efficiency Regulations (20 CCR Part 160-1608) contain standards for both federally regulated appliances and non-federally regulated appliances. The regulations are updated regularly to allow consideration of new energy efficiency technologies and methods. The current regulations were adopted by the California Energy Commission on November 18, 2009. The standards outlined in the regulations apply to appliances that are sold or offered for sale in California. More than 23 different categories of appliances are regulated, including refrigerators, freezers, water heaters, washing machines, dryers, air conditioners, pool equipment, and plumbing fittings.

Local

In 2008, the City Council adopted Resolution 108-08 committing to the GHG emissions target established by AB 32 (1990 emissions levels by 2020), and to achieving an 80 percent reduction

below 1990 levels by 2050. Subsequently, the City has developed the following plans and strategies for achieving this 2008 commitment:

General Plan

Chapter 8 (Energy and Climate Change Element), of the General Plan (City of Richmond, 2013) includes the following goals, policies and actions that are relevant to GHG emissions and energy consumption from land use development within Richmond:

- **Goal EC-4: Sustainable Development.** Reduce energy consumption by promoting sustainable land uses and development patterns. Pursue infill development opportunities and encourage the construction of higher-density, mixed-use projects around existing public transit infrastructure, schools, parks, neighborhood-serving retail and other critical services. Incorporate ecologically sustainable practices and materials into new development, building retrofits and streetscape improvements.

  ***Policy EC-2.4*: *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

  ***Policy EC-2.6*: *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.

  Action 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.

  Action 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.

Action EC2.F: Promote Bicycle Use. 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.

Policy EC-3.1*: *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.

Policy EC-3.2: 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. Collaborate with local workforce development programs to train and employ Richmond residents in these other green jobs sectors.

Policy EC-3.3: 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. Develop a comprehensive recycling and composting program for all city-owned facilities.

Policy EC-3.3: 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 and water catchment 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.

Action 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 in accordance with EBMUD Water Service Regulations;
- 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.

Action 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.

Policy EC-4.1*: *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. Protect existing affordable housing and develop strategies to prevent the displacement of renters and low-income residents. Require property owners to comply with and pay for state and federal requirements for site remediation as a condition for approving development on contaminated sites.

Policy EC-4.2: 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.

Policy EC-4.3: 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.

Action EC4.H: 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.

Policy EC-6.2: 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.

Policy EC-6.3: Adapting to Climate Change. Prepare for and adapt to future impacts of changing weather patterns and sea level fluctuations. Protect neighborhoods, infrastructure and facilities, the shoreline and natural resources from the impacts of climate change. Require new developments to include an evaluation of climate change impacts in the project review process. Shoreline and public access improvements shall be designed to allow future increases in elevation along the shoreline edge to keep up with higher sea level values, when they occur. Design elements shall include providing adequate setbacks to allow for future elevation increases of at least three feet from the existing elevation along the shoreline.

City of Richmond Commercial and Residential Green Building Standards

In July 2009, Richmond adopted its green building ordinance codified in Section 6.46 of the Municipal Code (see Action EC4.H above). Program requirements are based on the size of the structure, as follows:

- Single family residences under 1,750 square feet must earn 50 green points on the GreenPoint Rated checklist; larger buildings must earn 55 points, plus two additional points for every 100 additional square feet over 1,750 square feet.
- Additions to single family and duplexes that are subject to design review must earn 50 green points, plus two more points for each 100 square feet over 1,200 square feet.
- Multi-family projects must earn 60 points on the GreenPoint Rated checklist.
- New commercial buildings between 5,000 – 20,000 square feet must meet LEED certification standards; larger buildings must meet LEED Silver standards.
- Renovations on commercial buildings 5,000 – 20,000 square feet must earn 35 percent of all possible LEED points.
- Renovations on commercial buildings larger than 20,000 square feet must earn 45 percent of all possible LEED points.

City of Richmond Draft Climate Action Plan

The Climate Action Plan, under preparation by the City, is an implementing action of the Energy and Climate Change Element adopted in 2012. The Climate Action Plan is developed to further the goals of the Energy and Climate Change Element, Community Health and Wellness Element, and other General Plan Elements and will serve as a roadmap for significantly reducing energy consumption and meeting or exceeding state GHG emissions reduction targets. The Climate Action Plan will also update the City's emissions inventory, establish an emissions reduction

target, and identify and prioritize potential City and community actions to reduce emissions. Consistent with Resolution No. 108-08 and with BAAQMD guidance, the City has established a 2020 GHG reduction target for the CAP of 15 percent below 2005 levels by 2020. In addition, although executive orders do not have the same status as legislation, the City is committed to supporting the state's progress toward the deeper reductions called for in Executive Orders S-3-05 and B-3-15.

4.15.4 Discussion of Impacts

Significance Criteria

Significance criteria used in this analysis are based on CEQA *Guidelines* Section Appendix F. Specifically, a significant impact would occur if implementation of the Specific Plan or Sub-Area 4 Project were to:

a) Result in a wasteful, inefficient and unnecessary use of energy; or

b) Result in a significant demand on regional energy supply or requirements of substantial additional capacity.

Approach to Analysis

This impact analysis evaluates the potential for the Specific Plan and Sub-Area 4 Project to result in a substantial increase in energy demand, consistent with Public Resources Code 21100(b)(3), and/or wasteful use of energy during project construction and operation. The impact analysis is informed by Appendix F of the *CEQA Guidelines*. Though the analysis provides construction and operational energy use estimates for the Specific Plan and Sub-Area 4 Project, the impacts are analyzed based on an evaluation of whether this energy use would be considered excessive, wasteful or inefficient taking into account energy efficiency features, as well as required compliance with applicable standards and policies aimed to reduce energy consumption including the City's CAP and the State's Title 24 Energy Efficiency Standards. Energy emissions detail supporting the Sub-Area 4 Project estimates presented in this section are also presented in Section 4.6, *Climate Change and Greenhouse Gas Emissions*.

4.15.5 Program-Level Impacts of the Richmond Bay Specific Plan

Impact ENE-1.SP: Development under the Specific Plan would not result in wasteful, inefficient and unnecessary use of energy and would not require substantial additional capacity. (Criteria a. and b.) (*Less than Significant, No Mitigation Required*)

Development under the Specific Plan would result in demolition and construction activities resulting in a net increase of up to approximately 5,700 residential units, 5.69 million square feet of R&D business service space, 720,000 square feet of retail space, and approximately 34.2 acres of

passive and active open space areas over the period of development.[2] Construction activities would require energy for the operation of off-road construction equipment, vendor and construction worker vehicle trips, and material haul trips, which would require the use of diesel fuel. Once constructed, projects developed under the Specific Plan would increase energy demand for electricity and natural gas, as well as gasoline for increased motor vehicle trips compared to existing conditions.

Types of land uses envisioned to occur under the Specific Plan would involve energy consumption quantities typical for the development of a mixed use waterfront neighborhood within an area of approximately 430 acres. No construction activities or land uses would occur that have extraordinary energy consumption. In addition, several aspects of future development in the Plan Area would help manage the amount and efficiency of energy consumption and would ensure that the related consumption is not inefficient, wasteful or unnecessary or place a significant demand on regional energy supplies, as discussed below.

Reduced Energy Demand Strategies

Through the City's administration of the requirements of the California Building Standards Code, energy conservation requirements in Title 24, Part 6, California Code of Regulations, would be applied. The California Energy Commission (CEC) adopted Energy Efficiency Standards for Residential and Nonresidential Buildings that went into effect on January 1, 2014 (2103 Standards). Among the reasons that the CEC adopted the 2013 Standards was to respond to AB 32 and climate change concerns. The CEC also wanted to emphasize energy efficiency measures that save energy at peak periods and seasons and to improve the quality of installation of energy efficiency measures. Projects that apply for a building permit on or after January 1, 2014, must comply with the standards. According to the CEC, the 2013 Standards are 25 percent more efficient than previous standards for residential construction and 30 percent more efficient that previous standards for nonresidential construction.

Pursuant to the California Building Standards Code and the 2013 Standards, each development project under the Specific Plan would be subject to the City Building Division's review of the project's design components and energy conservation measures when they are proposed for development. In addition, consistent with the City's General Plan, each project would be subject to the City of Richmond Commercial and Residential Green Building Standards. These measures would improve building efficiency and could include require the following: insulation; use of energy-efficient heating, ventilation and air conditioning equipment (HVAC); solar-reflective roofing materials; energy-efficient indoor and outdoor lighting systems; reclamation of heat rejection from refrigeration equipment to generate hot water; incorporation of skylights; and other measures.

A greater percentage of building energy used in the City is projected to be generated from renewable sources over time. Compliance with regulations such as the federal Energy Policy Act of 2005 is likely to result in the more efficient use of all types of energy, and reduction in reliance

[2] Open space acreage total does not include existing areas of the Meeker Slough Wetlands, Stege Marsh, and Hoffman Marsh within the Plan Area (approximately 112.3 acres).

on non-renewable sources of energy. The Energy Policy Act is designed to reduce reliance on non-renewable energy resources and provide incentives to reduce demand by means such as federal tax credits for purchasing fuel-efficient items, developing energy efficient buildings, and improving the energy efficiency of commercial buildings. This law also promotes innovation through such measures as providing tax credits for certain fuel cells, stationary microturbine power plants, and solar power equipment. Federal regulations also encourage more fuel-efficient engines that achieve higher mileage (the U.S. Department of Energy reports that fuel efficiency standards have evolved from 18 miles per gallon in 1978 to a requirement for 54.5 miles per gallon by 2025).

As outlined in Table 4.6-3 under Impact GHG-2.SP (refer to Section 4.6, *Climate Change and Greenhouse Gas Emissions*), the General Plan contains several policies that relate to energy conservation that would apply to projects developed under the Specific Plan. These policies promote efficient management and use of energy resources and encourage the use of greener, alternative energy sources. Several policies also address ways to reduce vehicle trips and vehicle miles traveled thereby reducing associated energy use. As shown in Table 4.6-3 of Section 4.6, the Specific Plan would be generally consistent with these policies.

Infill Development Strategies

Development under the Specific Plan would represent infill development, located in an urbanized area where existing infrastructure provides for efficient delivery of electricity and natural gas. Electrical and gas services to the Plan Area would be provided by Marin Clean Energy and Pacific Gas & Electric (PG&E). PG&E has not identified any deficiencies in electric and gas service in the Plan Area, and has agreed to provide adequate infrastructure to the Plan Area. The Plan Area would also have connections to existing transit options, including the future Richmond ferry terminal, and bus service, thereby reducing vehicle miles travelled from the Plan Area and the associated energy used by vehicle trips. Development and implementation of TDM programs is required for projects developed under the Specific Plan, further reducing vehicle trips, and consequently reducing the vehicle miles travelled and the energy usage associated with travel.

Existing regulations and policies combine with attributes of the Specific Plan Area's location to prevent wasteful and unnecessary use of energy. Therefore, the impact on energy consumed by development under the Specific Plan would be less than significant.

Significance: Less Than Significant.

Mitigation: None required.

4.5.6 Project-Level Impacts of the Sub-Area 4 Project

Impact ENE-1.SA4: Construction and operation of the Sub-Area 4 Project would not result in wasteful, inefficient and unnecessary use of energy and the Sub-Area 4 Project would not require substantial additional capacity. (Criterion a. and b.) (*Less than Significant*)

During construction of the Sub-Area 4 Project, energy use would be consumed primarily in the form of diesel fuel in on-site construction equipment and off-site heavy duty trucks during the 13-year construction period. Once operational, the Sub-Area 4 Project would increase energy demand for electricity and natural gas, as well as gasoline for motor vehicle trips. As discussed under Impact ENE-1.SP, energy service to the Sub-Area 4 Project site, which is located within the Plan Area, will be provided by Marin Clean Energy and PG&E, which currently serve the area.

The CalEEMod model estimates that the total electrical demand for the Sub-Area 4 Project is 20,400 megawatt hours per year (99,600 Mega British thermal units per year). Additionally, natural gas demand would be approximately 35,000 Mega British thermal units per year, resulting in a total project energy demand of 55,400 Mega British thermal units per year. This does not include energy demand in the form of fuel used in vehicle trips generated by the Sub-Area 4 Project. This energy demand is relatively modest for a project of this type and size. The Sub-Area 4 Project would be subject to the Specific Plan Green Building Standards and CALGreen, which would require energy efficient appliances for all projects developed under the Specific Plan. Additionally, the Sub-Area 4 Project applicant/s would be required to implement the City of Richmond's Commercial and Residential Green Building Standards which would require LEED building measures and "GreenPoint" rated checklists on new projects to improve energy efficiency and conservation. No aspect of the Sub-Area 4 Project or land use would involve higher than typical energy demands. Several features of Sub-Area 4 Project design discussed in Section 4.6, *Climate Change and Greenhouse Gas Emissions* of this EIR would promote energy efficiency and conservation. Further, the Sub-Area 4 Project would be subject to all regulations and General Plan policies, as previously discussed for Impact ENE-1.SP, and more stringent fuel efficiency regulations and Title 24 standards in the future would continue to reduce the energy demand from the Sub-Area 4 Project. Therefore, the energy demand from the construction and operation of the Sub-Area 4 Project would not result in wasteful, inefficient and unnecessary use of energy. This impact would be less than significant.

Significance: Less Than Significant.

Mitigation: None required.

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CHAPTER 5
Alternatives to the Proposed Project

Pursuant to the provisions of CEQA, this chapter is provided to describe and evaluate alternatives to the Specific Plan and Sub-Area 4 Project, including one or more "No Project" alternatives, and to identify one or more "environmentally superior" alternatives. The primary purpose of this section is to provide decision-makers and the public with a qualitative review of alternatives to the Specific Plan or Project that eliminate or substantially reduce any identified adverse environmental impacts while, at the same time, attaining most of the Specific Plan or Project objectives.

The focus of the alternatives analysis in this chapter is on assessing the extent to which the Specific Plan or Project alternatives would result in eliminating or reducing impacts identified as significant and unavoidable in Chapter 4. Alternatives that would eliminate or reduce the less-than-significant impacts that have been identified in Chapter 4 are also considered, but to a lesser extent.

5.1 CEQA Requirements

The California Environmental Quality Act requires an evaluation of the comparative effects of a range of reasonable alternatives to a project that would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project on the environment (CEQA *Guidelines* Section 15126.6[a]). An EIR considers a reasonable range of potentially feasible alternatives that will foster informed decision-making and public participation. The discussion of alternatives focuses on alternatives to the project or its location that 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 project objectives, or would be more costly (CEQA *Guidelines* Section 15126.6[b]).

The focus of the alternatives analysis under CEQA is the avoidance or substantial lessening of a project's significant environmental effects. Chapter 4 of this EIR assesses the direct and indirect environmental impacts that could potentially result from implementation of the Specific Plan or Project. This environmental impact analysis not only includes consideration and discussion of the Specific Plan's and Project's potentially significant environmental effects, but also identifies mitigation measures which, when incorporated as part of the Specific Plan or Project, will have the effect of reducing each of the potentially significant effects to a less-than-significant level. The alternatives analysis set forth in this chapter is provided in order to foster informed decision making and public participation in the decision-making process.

Accordingly, this chapter presents a meaningful comparative analysis of the Specific Plan and Sub-Area 4 Project impacts, as identified in Chapter 4, *Environmental Setting, Impacts, and Mitigation Measures*, of this EIR, and a range of alternatives to the Specific Plan and Project (CEQA *Guidelines* Section 15126.6[d]); identifies and discusses any alternatives that were considered by the City, as lead agency, but that the City rejected for detailed analysis in this EIR (CEQA *Guidelines* Section 15126.6[c]); and provides comparative evaluation of the Specific Plan and/or Project to one or more No Project Alternatives (CEQA *Guidelines* Section 15126.6[e]).

5.2 Factors in the Selection of Alternatives

The nature and scope of the reasonable range of alternatives to be discussed is governed by the "rule of reason." The CEQA *Guidelines* recommend that an EIR should briefly describe the rationale for selecting the alternatives to be discussed (Section 15126.6[c]). This alternatives analysis considers the following factors:

- The extent to which the alternative would accomplish most of the basic objectives of the proposed project;
- The extent to which the alternative would avoid or lessen the identified significant, or less-than-significant with mitigation, environmental effects of the proposed project;
- Requests by interested parties, community members, and decision makers at the EIR scoping session for information regarding the relative environmental impacts of different development programs and different numbers of housing units;
- The feasibility of the alternative, taking into account site suitability, availability of infrastructure, general plan consistency, and consistency with other applicable plans and regulatory limitations;
- The extent to which an alternative contributes to a "reasonable range" of alternatives necessary to permit a reasoned choice; and
- The requirement of the CEQA *Guidelines* to consider a "No-Project" alternative, and to identify an "environmentally superior" alternative in addition to the no-project alternative (Section 15126.6[e]).

5.2.1 Specific Plan and Project CEQA Objectives

Per the first factor bulleted above, under 5.2, the selection of alternatives shall consider the basic objectives of the Specific Plan and Project.

Specific Plan CEQA Objectives

As previously presented in Chapter 3, *Project Description*, the City's basic CEQA project objectives of the Specific Plan are to:

1. **Revitalize South Shoreline Area.** Provide a framework for planning that will facilitate investment and productive evolution of underutilized and underserved land in the South Shoreline area, and redevelopment of brownfield sites consistent with Richmond General Plan Policy LU6.1.

2. **Develop Flexible Range of Land Uses.** Develop a Specific Plan that provides a flexible range of uses that could be developed to appropriately address future development of the Richmond Field Station site, that may include uses that will help UC manage enrollment growth and housing needs, and/or accommodate an anchor tenant.

3. **Create Complete Neighborhoods.** Facilitate the creation of complete neighborhoods with pedestrian and bicycle networks, accessible to transit (including the new Richmond Ferry Terminal) and regional transportation networks, and connected via the transportation network to other parts of the City.

4. **Develop Complementary Uses Adjacent to the Richmond Field Station.** Provide for development of the Plan Area that is complementary with the nature of development of the Richmond Field Station as described in the LRDP, as amended over time (transit- and alternative transportation-friendly, to accommodate visitors and workers).

5. **Create and Enhance Access to Shoreline.** Provide new and enhance existing access to waterfront open space for public use, including public recreation and parks areas and shoreline connections through the Plan Area.

6. **Generate Tax Revenues and Employment Opportunities.** Generate tax revenues and employment opportunities for the City of Richmond and the region.

7. **Reduce Greenhouse Gas Emissions.** Contribute to regional efforts to reduce greenhouse gas emission through transit-oriented development in the South Richmond PDA as provided for under Plan Bay Area.

Sub-Area 4 Project CEQA Objectives

The City's objectives for the Sub-Area 4 Project directly align with the Specific Plan goals that are relevant to the proposed Project. CEQA objectives for the Project include:

1. **Create and Enhance Access to Shoreline.** Promote incorporation of a variety of publicly-accessible parks, recreation facilities, and open spaces in areas near, adjacent to, or connecting to the shoreline, and support active and passive recreation facilities and open space in areas near the shoreline, which may include features that will help mitigate the future impacts of sea level rise.

2. **Establish a Vibrant Mixed-Use Neighborhood.** Redevelop vacant and/or underutilized sites within Sub-Area 4 consistent with the Specific Plan that present substantial potential due to proximity to the Richmond Field Station site, proximity to the shoreline, direct access from Interstate 580, and properties existing under single ownership, in order to create a vibrant, mixed-use neighborhood with a range of uses and building types to support commercial, residential, and other development that is responsive to market demand.

3. **Ensure Appropriate Remediation of Zeneca Site.** Work with the Department of Toxic Substances Control and other agencies as needed to ensure the remediation of contamination within the Zeneca site supports implementation of the land uses specified in the transect zone regulating plan and building types of the Specific Plan.

4. **Build New Housing in Complete Neighborhoods**. Generate new residential opportunities at a density consistent with the Specific Plan's General Plan land use designation and in complete neighborhoods, to address existing local and regional housing needs and anticipated housing needs associated with future development at the Richmond Field Station site and to reduce potential for displacement from other, existing residential neighborhoods within the City.

5. **Generate Tax Revenues and Employment Opportunities.** Generate substantial tax revenues and employment opportunities for the City of Richmond and the region and support the City's goal of improving its jobs-housing balance.

6. **Develop Complementary Uses Adjacent to Richmond Field Station Site.** Preserve flexibility to develop uses complementary to development of the Richmond Field Station as described in the LRDP, as amended over time based on demand for such uses.

5.2.2 Impacts Identified

As stated in the second factor bulleted above, under 5.2, the selection of alternatives shall consider the ability for each alternative to avoid or lessen significant, or less-than-significant with mitigation, environmental effects identified with the proposed project. This evaluation of alternatives focusses on assessing the extent to which the Specific Plan or Project alternatives would result in eliminating or reducing impacts identified as significant and unavoidable in Chapter 4. To a lesser extent, alternatives that would eliminate or reduce the less-than-significant impacts that have been identified in Chapter 4 are also considered, especially in regards to impacts that would require mitigation to be reduced to a less-than-significant level, and less-than-significant impacts that are triggered by characteristics of the Specific Plan or Sub-Area 4 Project (as opposed to their setting).

For each alternative, the degree (severity) of adverse impacts that would be caused by the alternative are identified and compared to the Specific Plan or Sub-Area 4 Project. At the conclusion of these comparisons, two Environmentally Superior Alternatives are identified among the Specific Plan, Sub-Area 4 Project and all alternatives, taking into consideration all impacts identified.

Table 5-1 summarizes the impacts of the Specific Plan and Sub-Area 4 Project that have been identified as significant and unavoidable; would be reduced to a less-than-significant level with the implementation of mitigation measures; or would be less-than-significant without mitigation measures, as identified in Chapter 4.

TABLE 5-1
SPECIFIC PLAN AND PROJECT IMPACTS THAT WOULD BE SIGNIFICANT AND UNAVOIDABLE OR LESS-THAN-SIGNIFICANT WITH MITIGATION

Impacts	Specific Plan	Sub-Area 4 Project
Significant and Unavoidable Impacts		
Air Quality		
• Impact AIR-2.SP: Construction associated with development under the Specific Plan would result in average daily emissions of 54 pounds per day of ROG, NO_X, or $PM_{2.5}$ or 82 pounds per day of PM_{10}. *(Mitigation Measure AIR-2a.SP; Mitigation Measure AIR-2b.SP; Mitigation Measure AIR-2c.SP)*	X	
• Impact AIR-3.SP: Adoption and development under the Specific Plan would result in operational average daily emissions that could violate any air quality standard, contribute substantially to an existing or projected air quality violation or result in a cumulatively significant net increase of any nonattainment pollutant. *(Mitigation Measures AIR-3a.SP, AIR-3b.SP, AIR-3c.SP, AIR-3d.SP, AIR-3e.SP, AIR-3f.SP, and Mitigation Measures TRF-9.SP through TRF-20.SP. Mitigation Measures AIR-3a.SP, AIR-3b.SP, AIR-3c.SP, AIR-3d.SP, AIR-3e.SP, AIR-3f.SP, and Mitigation Measures TRF-9.SP through TRF-20.SP)*	X	
• Impact AIR-4.SP: Adoption and development under the Specific Plan would result in new sources of toxic Air Contaminants (TACs) and could expose new receptors to existing sources of TACs. *(Mitigation Measures AIR-2b.SP, AIR-2c.SP, AIR-4a.SP, AIR-4b.SP, and AIR-4c.SP)*	X	
• Impact AIR-3.SA4: The Sub-Area 4 Project would result in emissions of criteria air pollutants at levels that could violate an air quality standard, or contribute to an existing or projected air quality violation. *(Mitigation Measure AIR-1.SP, AIR-3a.SP, AIR-3b.SP, AIR-3c.SP, AIR-3d.SP, AIR-3e.SP, and TRF-9.SP through TRF -20.SP)*		X
• Impact C-AIR-1.SP: The Specific Plan, in combination with past, present, and reasonably foreseeable future development would contribute to cumulative regional air quality impacts. (*Mitigation Measures AIR-3a.SP, AIR-3b.SP, AIR-3c.SP, AIR-3d.SP, AIR-3e.SP, and Mitigation Measures TRF-9.SP through TRF -20.SP)*	X	
• Impact C-AIR-2.SP: The Specific Plan, in combination with past, present, and reasonably foreseeable future development would contribute to cumulative health risk impacts on sensitive receptors. *(Mitigation Measure AIR.2b.SP, AIR.2c.SP, AIR-4a.SP, AIR-4b.SP, and 4c.SP)*	X	
• Impact C-AIR-1.SA4: The Sub-Area 4 Project, in combination with past, present, and reasonably foreseeable future development of cumulative projects would contribute to cumulative regional air quality impacts. (*Mitigation Measure AIR-3a.SP, AIR-3b.SP, AIR-3c.SP, AIR-3d.SP, AIR-3e.SP, and Mitigation Measure TRF-9.SP through TRF -20.SP)*		X
Cultural Resources		
• Impact CUL-1.SP: Implementation of the Specific Plan could cause a substantial adverse change in the significance of a historical resource. *(Mitigation Measure CUL-1.SP)*	X	
• Impact C-CUL-1.SP: Construction activity and development under the Specific Plan, in combination with past, present, existing, approved, pending and reasonably foreseeable future projects within and in the vicinity of the Plan Area, would contribute to an adverse cumulative impact to cultural resources, but the contribution would not be considerable. *(Mitigation Measures CUL-1.SP, CUL-2.SP, CUL-3.SP, and CUL-4.SP.)*	X	

TABLE 5-1
SPECIFIC PLAN AND PROJECT IMPACTS THAT WOULD BE SIGNIFICANT AND UNAVOIDABLE OR LESS-THAN-SIGNIFICANT WITH MITIGATION

Impacts	Specific Plan	Sub-Area 4 Project
Significant and Unavoidable Impacts		
Climate Change and Greenhouse Gases		
• Impact GHG-1.SP: Construction and operation of development under the Specific Plan would generate greenhouse gas emissions, that may have a significant impact on the environment. *(Mitigation Measure GHG-1.SP)*	X	
• Impact GHG-1.SA4: Development under the Sub-Area 4 Project would produce greenhouse gas emissions that could have a significant impact on the environment. *(Mitigation Measure GHG-1.SP)*		X
• Impact C-GHG-1.SP: Development under the Specific Plan, combined with cumulative development, including past, present, existing, approved, pending, and reasonably foreseeable future development in the Plan Area and its vicinity, would result in cumulative impacts regarding GHG emissions and climate change. *(Mitigation Measure GHG-1.SP)*	X	
• Impact C-GHG-1.SA4: Development under the Sub-Area 4 Project, combined with cumulative development, including past, present, existing, approved, pending, and reasonably foreseeable future development in the vicinity of the Sub-Area 4 Project site, would result in cumulative impacts regarding GHG emissions and climate change. *(Mitigation Measure GHG-1.SP)*		X
Noise		
• Impact NOI-4.SP: Traffic generated by development under the Specific Plan could substantially increase traffic noise levels in the Plan Area, along Marina Way. *(Mitigation Measure NOI-4.SP)*	X	
• Impact C-NOI-3.SP: Traffic generated by development under the Specific Plan and/or the Sub-Area 4 Project along Marina Way, in combination with traffic from cumulative development, including past, present, existing, approved, pending and reasonably foreseeable future development; and construction and operational noise levels in combination with traffic from cumulative development could contribute considerably to cumulative noise impacts. *(Mitigation Measure NOI-4.SP (traffic noise, Specific Plan only; significant and unavoidable); Mitigation Measure NOI-1a and Mitigation Measure NOI-1b (construction noise, Specific Plan and Project; significant and unavoidable); Mitigation Measure NOI-2.SP (construction vibration; less than significant)*	X	X
Transportation and Traffic		
• Impact TRF-3.SP: Traffic generated by the Specific Plan would cause the side-street stop-controlled Westbound I-580 Ramps/Juliga Woods Street intersection (#17) to operate at LOS F during both AM and PM peak hours under Existing Plus Specific Plan conditions. The intersection would meet the California MUTCD peak-hour volume signal warrant under Existing Plus Specific Plan conditions. *(Mitigation Measure TRF-3.SP)*	X	
• Impact TRF-4.SP: Traffic generated by the Specific Plan would cause the signalized Meade Street/Regatta Boulevard/Eastbound I-580 Ramps intersection (#18) to degrade from LOS A to LOS F during both AM and PM peak hours under Existing Plus Specific Plan conditions. *(Mitigation Measure TRF-4.SP)*	X	
• Impact TRF-6.SP: Traffic generated by the Specific Plan would cause the all-way stop-controlled Bayview Avenue/51st Street/Seaport Avenue/Eastbound I-580 Ramps intersection (#25) to degrade from LOS D during the AM peak hour and LOS C during the PM peak hour to LOS F during both AM and PM peak hours under Existing Plus Specific conditions. The intersection would meet the California MUTCD peak-hour volume signal warrant under Existing Plus Specific Plan conditions. *(Mitigation Measure TRF-6.SP)*	X	

TABLE 5-1
SPECIFIC PLAN AND PROJECT IMPACTS THAT WOULD BE SIGNIFICANT AND UNAVOIDABLE OR LESS-THAN-SIGNIFICANT WITH MITIGATION

Impacts	Specific Plan	Sub-Area 4 Project
Significant and Unavoidable Impacts (cont.)		
• Impact TRF-7.SP: Traffic generated by the Specific Plan would cause the all-way stop-controlled Central Avenue/Eastbound I-580 Ramps intersection (#36) to degrade from LOS C to LOS F during the PM peak hour under Existing Plus Specific Plan conditions. The intersection would meet the California MUTCD peak-hour volume signal warrant under Existing Plus Specific Plan conditions. *(Mitigation Measure TRF-7.SP)*	X	
• Impact TRF-8.SP: Traffic generated by the Specific Plan would cause the all-way stop-controlled Central Avenue/Westbound I-580 Ramps intersection (#37) to degrade from LOS D to LOS E during the PM peak hour under Existing Plus Specific Plan conditions. The intersection would meet the California MUTCD peak-hour volume signal warrant under Existing Plus Specific Plan conditions. *(Mitigation Measure TRF-8.SP)*	X	
• Impact TRF-9.SP: Traffic generated by the Specific Plan would cause the signalized Cutting Boulevard/Harbour Way South intersection (#5) to degrade from LOS D to LOS E during the AM peak hour and from LOS E to LOS F during the PM peak hour under 2040 conditions. *(Mitigation Measure TRF-9.SP)*	X	
• Impact TRF-12.SP: Traffic generated by the Specific Plan would cause the signalized Cutting Boulevard/23rd Street intersection (#11) to degrade from LOS C to LOS F during the AM peak hour and contribute to LOS F operations and increase the average control delay by more than five seconds during the PM peak hours under 2040 conditions. *(Mitigation Measure TRF-12.SP)*	X	
• Impact TRF-14.SP: Traffic generated by the Specific Plan would cause the side-street stop-controlled Westbound I-580 Ramps/Juliga Woods Street intersection (#17) to operate at LOS F during the AM peak hour and would contribute to LOS F operations during the PM peak hour under 2040 conditions. The intersection would meet the California MUTCD peak-hour volume signal warrant under 2040 Plus Specific Plan conditions. *(Mitigation Measure TRF-14.SP)*	X	
• Impact TRF-15.SP: Traffic generated by the Specific Plan would cause the signalized Meade Street/Regatta Boulevard/Eastbound I-580 Ramps intersection (#18) to degrade from LOS E to LOS F during the AM peak hour and from LOS B to LOS F during the PM peak hour under 2040 conditions. *(Mitigation Measure TRF-15.SP)*	X	
• Impact TRF-17.SP: Traffic generated by the Specific Plan would contribute to the LOS F operations during both AM and PM peak hours at the all-way stop-controlled Bayview Avenue/51st Street/Seaport Avenue/Eastbound I-580 Ramps intersection (#25) under 2040 conditions. The intersection would meet the California MUTCD peak-hour volume signal warrant under 2040 Plus Specific Plan conditions. *(Mitigation Measure TRF-17.SP)*	X	
• Impact TRF-18.SP: Traffic generated by the Specific Plan would cause the signalized Bayview Avenue/Carlson Boulevard intersection (#26) to degrade from LOS D to LOS F during the AM peak hour and LOS C to LOS F during the PM peak hour under 2040 conditions. *(Mitigation Measure TRF-18.SP)*	X	
• Impact TRF-19.SP: Traffic generated by the Specific Plan would contribute to the LOS F operations during both AM and PM peak hours at the signalized Carlson Boulevard/Westbound I-80 Ramps intersection (#28) under 2040 conditions. *(Mitigation Measure TRF-19.SP)*	X	
• Impact TRF-20.SP: Traffic generated by the Specific Plan would contribute to the LOS F operations during the PM peak hours at the signalized Carlson Boulevard/Eastbound I-80 Ramps intersection (#29) under 2040 conditions. *(Mitigation Measure TRF-20.SP)*	X	
• Impact TRF-22.SP: Traffic generated by the Specific Plan would cause a significant impact on the following freeway segments under 2040 conditions because they would operate at LOS F and the Specific Plan would increase the freeway segment volumes by more than five percent: Westbound I-580 between Central Avenue and I-80 during both AM and PM peak hours and Eastbound I-580 between I-80 and Central Avenue during the PM peak hour. *(No feasible mitigation measures)*	X	

TABLE 5-1
SPECIFIC PLAN AND PROJECT IMPACTS THAT WOULD BE SIGNIFICANT AND UNAVOIDABLE OR LESS-THAN-SIGNIFICANT WITH MITIGATION

Impacts	Specific Plan	Sub-Area 4 Project
Significant and Unavoidable Impacts (cont.)		
• Impact TRF-23.SP: Traffic generated by the Specific Plan combined with the implementation of the proposed SRTCP mitigation measures (specifically, eliminating one travel lane in both directions of both Cutting and Carlson Boulevards) would cause the signalized Cutting Boulevard/Carlson Boulevard intersection (#16) to degrade from LOS D during both AM and PM peak hours under 2040 Plus Specific Plan conditions to LOS E during the AM peak hour and LOS F during the PM peak hour under the 2040 Plus Specific Plan Mitigated conditions. *(No feasible mitigation measures)*	X	
• Impact TRF-24.SP: Traffic generated by the Specific Plan combined with the implementation of the proposed SRTCP mitigation measures (specifically, eliminating one travel lane in both directions of Cutting Boulevard) would cause the signalized Cutting Boulevard/I-80 Westbound Off-Ramp intersection (#20) to degrade from LOS D under 2040 Plus Specific Plan conditions to LOS F during under the 2040 Plus Specific Plan Mitigated conditions during both AM and PM peak hours. *(No feasible mitigation measures)*	X	
• Impact TRF-1.SA4: **(See Impact TRF-6.SP.)** Traffic generated by the Sub-Area 4 Project would cause the all-way stop-controlled Bayview Avenue/51st Street/Seaport Avenue/Eastbound I-580 Ramps intersection (#25) to degrade from LOS D during the AM peak hour and LOS C during the PM peak hour to LOS F during both AM and PM peak hours under Existing Plus Sub-Area 4 Project conditions. The intersection would meet the California MUTCD peak-hour volume signal warrant under Existing Plus Sub-Area 4 Project conditions.*(No feasible mitigation measures)*		X
• Impact TRF-4.SA4: Traffic generated by the Sub-Area 4 Project would contribute to LOS F operations during both AM and PM peak hours at the side-street stop-controlled Westbound I-580 Ramps/Juliga Woods Street intersection (#17) under 2040 conditions. The intersection would meet the California MUTCD peak-hour volume signal warrant under 2040 Plus Sub-Area 4 Project conditions. *(Mitigation Measure TRF-4.SA4)*		X
• Impact TRF-5.SA4: Traffic generated by the Sub-Area 4 Project would contribute to the LOS F operations during both AM and PM peak hours at the signalized Meade Street/Regatta Boulevard/Eastbound I-580 Ramps intersection (#18) and increase the average control delay by more than five seconds under 2040 conditions. *(Mitigation Measure TRF-5.SA4)*		X
• Impact TRF-7.SA4: **(See Impact TRF-17.SP.)** Traffic generated by the Sub-Area 4 Project would contribute to the LOS F operations during both AM and PM peak hours at the all-way stop-controlled Bayview Avenue/51st Street/Seaport Avenue/Eastbound I-580 Ramps intersection (#25) under 2040 conditions. The intersection would meet the California MUTCD peak-hour volume signal warrant under 2040 Plus Sub-Area 4 Project conditions. *(Mitigation Measure TRF-7.SA4)*		X
• Impact TRF-8.SA4: Traffic generated by the Sub-Area 4 Project would cause the signalized Bayview Avenue/Carlson Boulevard intersection (#26) to degrade from LOS D to LOS F during both the AM and PM peak hours under 2040 conditions. *(Mitigation Measure TRF-8SA4)*		X
• Impact TRF-9.SA4: Traffic generated by the Sub-Area 4 Project would contribute to the LOS F operations during both AM and PM peak hours at the signalized Carlson Boulevard/ Westbound I-80 Ramps intersection (#28) and increase the average control delay by more than five seconds under 2040 conditions. *(Mitigation Measure TRF-9.SA4)*		X
• Impact TRF-10.SA4: Traffic generated by the Sub-Area 4 Project would contribute to the LOS F operations during both AM and PM peak hours at the signalized Carlson Boulevard/ Eastbound I-80 Ramps intersection (#29) under 2040 conditions. *(Mitigation Measure TRF-10.SA4)*		X

TABLE 5-1
SPECIFIC PLAN AND PROJECT IMPACTS THAT WOULD BE SIGNIFICANT AND UNAVOIDABLE OR LESS-THAN-SIGNIFICANT WITH MITIGATION

Impacts	Specific Plan	Sub-Area 4 Project
Significant and Unavoidable Impacts (cont.)		
• Impact TRF-11.SA4: Traffic generated by the Sub-Area 4 Project would cause a significant impact on the following freeway segments under 2040 conditions because they would operate at LOS F and the Sub-Area 4 Project would increase the freeway segment volumes by more than five percent: Westbound I-580 between Central Avenue and I-80 during both AM and PM peak hours and Eastbound I-580 between I-80 and Central Avenue during the PM peak hour. *(Mitigation Measure TRF-11.SA4)*		X
Less than Significant Impacts After Implementation of Mitigation Measures		
Air Quality		
• Impact AIR-2.SP: Adoption and development under the Specific Plan would result in new sources of toxic Air Contaminants (TACs) and could expose new receptors to existing sources of TACs. (*Mitigation Measure AIR-2a.SP; Mitigation Measure AIR-2b.SP; Mitigation Measure AIR-2c.SP)*	X	
• Impact AIR-4.SP: Adoption and development under the Specific Plan would result in new sources of Toxic Air Contaminants (TACs) and could expose new receptors to existing sources of TACs. (*Mitigation Measure AIR-2b.SP; Mitigation Measure AIR-2c.SP;)*	X	
• Impact AIR-4.SP: Adoption and development under the Specific Plan would result in new sources of Toxic Air Contaminants (TACs) and could expose new receptors to existing sources of TACs. (*Mitigation Measure AIR-4a.SP; Mitigation Measure AIR-4b.SP; Mitigation Measure AIR-2b.SP; Mitigation Measure AIR-2c.SP)*	X	
• Impact AIR-2.SA4: Construction activities associated with the Sub-Area 4 Project would generate fugitive dust and exceed construction criteria air pollutants emissions (NOx). *(Mitigation Measure AIR-2.SA4).*		X
• Impact AIR-4.SA4: The Sub-Area 4 Project would generate toxic air contaminants, including diesel particulate matter, but would not expose sensitive receptors to substantial air pollutant concentrations (*Mitigation Measure AIR-2a.SP; Mitigation Measure AIR-2b.SP; Mitigation Measure AIR-2c.SP)*		X
Biological Resources		
• Impact BIO-1.SP: Development facilitated by the Specific Plan would have a substantial adverse effect, either directly or through habitat modifications, on species identified as candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or the United States Fish and Wildlife Service. *(Mitigation Measure BIO-1a.SP, Mitigation Measure BIO-1b.SP, Mitigation Measure BIO-1c.SP, Mitigation Measure BIO-1d.SP, Mitigation Measure BIO-1e.SP, and Mitigation Measure BIO-1f.SP)*	X	
• Impact BIO-2.SP: Development under the Specific Plan could have an adverse effect on riparian habitat or other sensitive natural communities identified in local or regional plans, policies, regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service. *(Mitigation Measure BIO-2.SP and Mitigation Measure BIO-3.SP)*	X	
• Impact BIO-3.SP: Development proposed under the Specific Plan could have a substantial adverse effect on federally protected wetlands, as defined by Section 404 of the Clean Water Act and state protected wetlands. *(Mitigation Measure BIO-2.SP, Mitigation Measure BIO-3.SP, and Mitigation Measure HYD-1.SP)*	X	

TABLE 5-1
SPECIFIC PLAN AND PROJECT IMPACTS THAT WOULD BE SIGNIFICANT AND UNAVOIDABLE OR LESS-THAN-SIGNIFICANT WITH MITIGATION

Impacts	Specific Plan	Sub-Area 4 Project
Less than Significant Impacts After Implementation of Mitigation Measures (cont.)		
• Impact BIO-4.SP: Development under the Specific Plan would not likely 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. *(Mitigation Measure BIO-1d.SP, and Mitigation Measure BIO-2.SP)*	X	
• Impact BIO-5.SP: Implementation of the Specific Plan could conflict with existing plans, policies, or ordinances, including the City of Richmond's Tree Ordinance (City of Richmond Municipal Code Chapter 10.08). *(Mitigation Measure BIO-1a.SP, Mitigation Measure BIO-1b.SP, Mitigation Measure BIO-1c.SP, Mitigation Measure BIO-1d.SP, Mitigation Measure BIO-1e.SP, Mitigation Measure BIO-1f.SP, Mitigation Measure BIO-2.SP, and Mitigation Measure BIO-3.SP)*	X	
• Impact BIO-1.SA4: Development facilitated by the Sub-Area 4 project would have a substantial adverse effect, either directly or through habitat modifications, on species identified as candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or the United States Fish and Wildlife Service. *(Mitigation Measure BIO-1a.SP, Mitigation Measure BIO-1b.SP, Mitigation Measure BIO-1c.SP, Mitigation Measure BIO-1d.SP, Mitigation Measure BIO-1e.SP, and Mitigation Measure BIO-1f.SP)*		X
• Impact BIO-2.SA4: Development under the Sub-Area 4 project could have a substantial adverse effect on riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service. *(Mitigation Measure BIO-2.SP and Mitigation Measure BIO-3.SP)*		X
• Impact BIO-3.SA4: Development of the Sub-Area 4 project could have a substantial adverse effect on federally protected wetlands, as defined by Section 404 of the Clean Water Act and state protected wetlands. *(Mitigation Measure BIO-2.SP, Mitigation Measure BIO-3.SP, and Mitigation Measure HYD-1.SP)*		X
• Impact BIO-4.SA4: Development of the Sub-Area 4 project would not likely 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. *(Mitigation Measure BIO-1e.SP, Mitigation Measure BIO-2.SP)*		X
• Impact BIO-5.SA4: The project could conflict with existing plans, policies, or ordinances, including the City of Richmond's Tree Ordinance (City of Richmond Municipal Code Chapter 10.08). *(Mitigation Measure BIO-1a.SP, Mitigation Measure BIO-1b.SP, Mitigation Measure BIO-1c.SP, Mitigation Measure BIO-1d.SP, Mitigation Measure BIO-1e.SP, Mitigation Measure BIO-1f.SP, Mitigation Measure BIO-2.SP, and Mitigation Measure BIO-3.SP)*		X
• Impact C-BIO-1: The Specific Plan and the Sub-Area 4 project, in conjunction with other past, current, or foreseeable development in Richmond, could result in cumulative impacts on special-status species, habitats, wetlands and other waters of the U.S. *(Mitigation Measure BIO-1a.SP, Mitigation Measure BIO-1b.SP, Mitigation Measure BIO-1c.SP, Mitigation Measure BIO-1d.SP, Mitigation Measure BIO-1e.SP, Mitigation Measure BIO-1f.SP, Mitigation Measure BIO-3.SP, Mitigation Measure BIO-3b.SP, and Mitigation Measure HYD-1.SP)*	X	X

TABLE 5-1
SPECIFIC PLAN AND PROJECT IMPACTS THAT WOULD BE SIGNIFICANT AND UNAVOIDABLE OR LESS-THAN-SIGNIFICANT WITH MITIGATION

Impacts	Specific Plan	Sub-Area 4 Project
Less than Significant Impacts After Implementation of Mitigation Measures (cont.)		
Cultural Resources		
• Impact CUL-1.SP: Implementation of the Specific Plan could cause a substantial adverse change in the significance of a historical resource. *(Mitigation Measure CUL-1.SP)*	X	
• Impact CUL-2.SP: Implementation of the Specific Plan could cause a substantial adverse change in the significance of a unique archaeological resource. *(Mitigation Measure CUL-2.SP)*	X	
• Impact CUL-3.SP: Implementation of the Specific Plan could disturb human remains, including those interred outside of formal cemeteries. *(Mitigation Measure CUL-3.SP)*	X	
• Impact CUL-4.SP: Implementation of the Specific Plan could directly or indirectly destroy a unique paleontological resource or site or unique geologic feature. *(Mitigation Measure CUL-4.SP)*	X	
• Impact CUL-2.SA4: Implementation of the Sub-Area 4 project could cause a substantial adverse change in the significance of a unique archaeological resource. *(Mitigation Measure CUL-2.SA4)*		X
• Impact CUL-3.SA4: Implementation of the Sub-Area 4 project could disturb human remains, including those interred outside of formal cemeteries. *(Mitigation Measure CUL-3.SP)*		X
• Impact CUL-4.SA4: Implementation of the Sub-Area 4 project could directly or indirectly destroy a unique paleontological resource or site or unique geologic feature. *(Mitigation Measure CUL-4.SP)*		X
Hazards and Hazardous Materials		
• Impact HAZ-1.SP: Construction and demolition associated with development under the Specific Plan as well as operational land uses could create a significant hazard to the public or the environment through the routine transport, use or disposal of hazardous materials..(*Mitigation Measure HAZ-1a.SP, Mitigation Measure HAZ-1b.SP, Mitigation Measure HAZ-1c.SP, Mitigation Measure HAZ-1d.SP, Mitigation Measure HAZ-1e.SP, Mitigation Measure HAZ-1f.SP, Mitigation Measure HAZ-1g.SP)*	X	
• Impact HAZ-2.SP: Development under the Specific Plan could 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. *(Mitigation Measure HAZ-2.SP)*	X	
• Impact HAZ-4.SP: Development under the Specific Plan could be located on sites which are included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, create a significant hazard to the public or environment. *(Mitigation Measure HAZ1a.SP, Mitigation Measure HAZ-1b.SP, and Mitigation Measure HAZ-4.SP)*	X	
• Impact HAZ-1.SA4: Construction and operation of the Campus Bay Project could create a significant hazard to the public or the environment through the routine transport, use or disposal of hazardous materials. *(Mitigation Measure HAZ-1a, Mitigation Measure HAZ-1b, Mitigation Measure HAZ-1c, Mitigation Measure HAZ-1d, Mitigation Measure HAZ-1e, Mitigation Measure HAZ-1f, Mitigation Measure HAZ-1g, and Mitigation Measure HAZ-4)*		X

TABLE 5-1
SPECIFIC PLAN AND PROJECT IMPACTS THAT WOULD BE SIGNIFICANT AND UNAVOIDABLE OR LESS-THAN-SIGNIFICANT WITH MITIGATION

Impacts	Specific Plan	Sub-Area 4 Project
Less than Significant Impacts After Implementation of Mitigation Measures (cont.)		
• Impact HAZ-2.SA4: Development of the Campus Bay Project could 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. *(Mitigation Measure HAZ-2.SP)*		X
• Impact C-HAZ-1: Development under the Specific Plan and/or the Campus Bay Project, combined with cumulative development in the Plan Area and citywide, including past, present, existing, approved, pending, and reasonably foreseeable future development, could contribute considerably to cumulative impacts related to hazards and hazardous materials. *(Mitigation Measure HAZ-1a.SP, Mitigation Measure HAZ-1b.SP, Mitigation Measure HAZ-1c.SP, Mitigation Measure HAZ-1d.SP, Mitigation Measure HAZ-1e.SP, Mitigation Measure HAZ-1f.SP, Mitigation Measure HAZ-1g.SP, Mitigation Measure HAZ-2.SP, Mitigation Measure HAZ-4.SP)*	X	X
Hydrology and Water Quality		
• Impact HYD-1.SP: The Specific Plan could result in an increase of stormwater pollutants due to construction activities and/or the introduction of new impervious surfaces with development but would not violate any water quality standards or waste discharge requirements. (*Mitigation Measure HYD-1.SP)*	X	
• Impact HYD-7.SP: Development under the Specific Plan could expose people or structures to a significant risk of loss, injury or death involving flooding related to sea level rise. (*Mitigation Measure HYD-7a.SP; Mitigation Measure HYD-7b.SP)*	X	
• Impact HYD-1.SA4: The proposed Project could result in an increase of stormwater pollutants due to construction activities and/or the introduction of new impervious surfaces with development but would not violate any water quality standards or waste discharge requirements. (*Mitigation Measure HYD-1.SP)*		X
• Impact HYD-3.SA4: The project would not alter the drainage pattern of the site such that it would result in substantial erosion or siltation on or off the site. (*Mitigation Measure HYD-1.SP; Mitigation Measure HYD-3.SA4)*		X
• Impact HYD-5.SA4: The Project would not create or contribute runoff water which would exceed the capacity of existing drainage systems or provide additional sources of polluted runoff. (*Mitigation Measure HYD-1.SP)*		X
• Impact HYD-7.SA4: The Project could expose people or structures to a significant risk of loss, injury or death involving flooding related to sea level rise. (*Mitigation Measure HYD-7a.SP)*		X
Noise		
• Impact NOI-1.SP: Construction of development under the Specific Plan could result in substantial temporary or periodic increases in ambient noise levels in the Plan Area. *(Mitigation Measure NOI-1a.SP, Mitigation Measure NOI-1b.SP)*	X	
• Impact NOI-2.SP: Construction of development under the Specific Plan could result in temporary exposure of persons to or generation of, excessive groundborne vibration or groundborne noise levels in the Plan Area above existing levels without the Specific Plan. *(Mitigation Measures NOI-1a.SP, NOI-1b.SP, NOI-2a.SP)*	X	
• Impact NOI-1.SA4: Construction activities associated with the Sub-Area 4 Project would result in substantial temporary or periodic increases in ambient noise levels in the Project site vicinity. *(Mitigation Measures NOI-1a.SP and NOI-1b.SP)*		X

TABLE 5-1
SPECIFIC PLAN AND PROJECT IMPACTS THAT WOULD BE SIGNIFICANT AND UNAVOIDABLE OR LESS-THAN-SIGNIFICANT WITH MITIGATION

Impacts	Specific Plan	Sub-Area 4 Project
Less than Significant Impacts After Implementation of Mitigation Measures (cont.)		
• Impact NOI-2.SA4: Construction activities associated with the Sub-Area 4 Project would not result in exposure of persons to or generation of, excessive groundborne vibration or groundborne noise levels in the Project vicinity above levels existing without the project. *(Mitigation Measures NOI-1a.SP, NOI-1b-SP, and NOI-2a.SP)*		**X**
Transportation and Traffic		
• Impact TRF-1.SP: Traffic generated under the Specific Plan would cause the side-street stop-controlled Wright Avenue/Harbour Way South intersection (#7) to operate at LOS F during both AM and PM peak hours under Existing Plus Specific Plan conditions. The intersection would meet the California MUTCD peak-hour volume signal warrant under Existing Plus Specific Plan conditions. *(Mitigation Measure TRF-1.SP)*	**X**	
• Impact TRF-2.SP: Traffic generated by the Specific Plan would cause the signalized Wright Avenue/Marina Way South intersection (#9) to degrade from LOS A to LOS F during the PM peak hour under Existing Plus Specific Plan conditions. *(Mitigation Measure TRF-2.SP)*	**X**	
• Impact TRF-5.SP: Traffic generated by the Specific Plan would cause the side-street stop-controlled Regatta Boulevard/Meade Street intersection (#19) to operate at LOS F during both AM and PM peak hours under Existing Plus Specific Plan conditions. The intersection would meet the California MUTCD peak-hour volume signal warrant under Existing Plus Specific Plan conditions. *(Mitigation Measure TRF-5.SP)*	**X**	
• Impact TRF-10.SP: Traffic generated by the Specific Plan would cause the side-street stop-controlled Wright Avenue/Harbour Way South intersection (#7) to operate at LOS F during the AM peak hour and would contribute to LOS F operations during the PM peak hour under 2040 conditions. The intersection would meet the California MUTCD peak-hour volume signal warrant under 2040 Plus Specific Plan conditions. *(Mitigation Measure TRF-10.SP)*	**X**	
• Impact TRF-11.SP: Traffic generated by the Specific Plan would cause the signalized Wright Avenue/Marina Way South intersection (#9) to degrade from LOS A during both AM and PM peak hours to LOS E during the AM peak hour and LOS F during the PM peak hour under 2040 conditions. *(Mitigation Measure TRF-11.SP)*	**X**	
• Impact TRF-13.SP: Traffic generated by the Specific Plan would cause the signalized Meeker Avenue/Marina Bay Parkway intersection (#14) to degrade from LOS B to LOS F during both AM and PM peak hours under 2040 conditions. *(Mitigation Measure TRF-13.SP)*	**X**	
• Impact TRF-16.SP: Traffic generated by the Specific Plan would cause the side-street stop-controlled Regatta Boulevard/Meade Street intersection (#19) to operate at LOS F during both AM and PM peak hours under 2040 conditions. The intersection would meet the California MUTCD peak-hour volume signal warrant under 2040 Plus Specific Plan conditions. *(Mitigation Measure TRF-16.SP)*	**X**	
• Impact TRF-21.SP: Traffic generated by the Specific Plan would cause the signalized MacDonald Way/Harbour Way intersection (#34) to degrade from LOS D to LOS E during the AM peak hour and LOS D to LOS F during the PM peak hour under 2040 conditions. *(Mitigation Measure TRF-21.SP)*	**X**	
• Impact TRF-2.SA4: Traffic generated by the Sub-Area 4 Project would contribute to the LOS F operations during both AM and PM peak hours at the signalized Cutting Boulevard/23rd Street intersection (#11) and increase the average control delay by more than five seconds under 2040 conditions. *(Mitigation Measure TRF-2.SA4)*		**X**

TABLE 5-1
SPECIFIC PLAN AND PROJECT IMPACTS THAT WOULD BE SIGNIFICANT AND UNAVOIDABLE OR LESS-THAN-SIGNIFICANT WITH MITIGATION

Impacts	Specific Plan	Sub-Area 4 Project
Less than Significant Impacts After Implementation of Mitigation Measures (cont.)		
• Impact TRF-3.SA4: Traffic generated by the Sub-Area 4 Project would contribute to the LOS F operations during both AM and PM peak hours at the signalized Meeker Avenue/Marina Bay Parkway intersection (#14) and increase the average control delay by more than five seconds under 2040 conditions. *(Mitigation Measure TRF-3.SA4)*		X
• Impact TRANS-6.SA4: Traffic generated by the Sub-Area 4 Project would cause the side-street stop-controlled Regatta Boulevard/Meade Street intersection (#19) to operate at LOS F during both AM and PM peak hours under 2040 conditions. The intersection would meet the California MUTCD peak-hour volume signal warrant under 2040 Plus Sub-Area 4 Project conditions. *(Mitigation Measure TRF-6.SA4)*		X
Utilities and Service Systems		
• Impact UTL-2.SP: Development under the Specific Plan would not exceed the wastewater treatment requirements of the San Francisco Regional Water Quality Control Board (RWQCB) but could result in a determination that new or expanded wastewater treatment facilities would be required *(Mitigation Measure UTL-1.SP)*	X	
• Impact UTL-2.SA4: Development of the Sub-Area 4 project could exceed the wastewater treatment requirements of the San Francisco Regional Water Quality Control Board or result in a determination that new or expanded wastewater treatment facilities would be required. *(Mitigation Measure UTL-1.SP)*		X
• Impact UTL-1.CU: Construction activity and operations for the development under the Specific Plan and/or the Sub-Area 4 project site in combination with past, present, existing, approved, pending, and reasonably foreseeable future projects in the vicinity of the Plan Area and Sub-Area 4 project site, would not contribute considerably to cumulative impacts to utilities and service systems. *(Mitigation Measure UTL-1.SP)*	X	X

5.3 Alternatives Considered but Rejected for Further Evaluation

CEQA *Guidelines* Section 15126.6(c) requires an EIR to identify and briefly discuss any alternatives that were considered by the lead agency and rejected from further evaluation. In identifying alternatives to the Specific Plan and Sub-Area 4 Project, primary consideration was given to alternatives that would reduce impacts while still meeting most of the basic Specific Plan or Project objectives as well as the City's planning goals and objectives, such as those articulated in the Richmond General Plan 2030. Alternatives that would likely have the same or greater impacts as the Specific Plan or Project or that would not meet most of the basic objectives were rejected from further consideration. The alternative scenarios that the City considered but rejected are discussed briefly below, along with the specific reasons that they were not evaluated further in this document.

5.3.1 High Intensity Scenario

A "High Intensity" scenario was considered, whereby buildout under the Specific Plan would be more dense than presented in the Foreseeable Maximum Theoretical Buildout Scenario. The scenario considered was consistent with the High Intensity Consolidated Rail scenario described in the City's *South Shoreline Specific Plan: Community Workshop Summary* document (Community Workshop Summary document; City of Richmond, 2014). For this scenario, buildout would include up to 4,280,000 square feet of R&D/Business/Service uses, up to 1.87 million square feet of retail uses, and up to 7,880 residential units. Although this scenario would meet most of the basic CEQA objectives of the Specific Plan, this scenario would not reduce or avoid any of the Specific Plan's significant and unavoidable environmental impacts. In addition, this scenario may not be feasible: the City's evaluation of market demand for the uses proposed for the Plan Area indicates that demand may not exist for this level of density. For these reasons, this scenario was therefore not carried forward for detailed analysis or comparison.

5.3.2 Medium Density Sub-Area 4 Project Scenario

In reviewing appropriate alternatives to development within the Sub-Area 4 Project site, the City considered a scenario with a lower intensity of development than described for the Sub-Area 4 Project, partly based on a modification of the "Consolidated Rail – Medium Intensity" alternative presented in the Community Workshop Summary document.

In summary, this alternative would include approximately 2,060,000 square feet of R&D/Business/Service uses; approximately 120,000 square feet of retail uses; and up to 475 units of housing. This alternative would meet all of the CEQA objectives of the Sub-Area 4 Project. Analysis indicated that no impacts identified as significant for the Sub-Area 4 Project would be avoided or substantially lessened under this alternative; for this reason, this scenario was therefore not carried forward for detailed analysis or comparison.

5.3.3 Off-Site Location: Specific Plan

Regardless of Specific Plan objectives that are site-specific in character, the City considered several potential off-site Plan Area locations, with the goal of comparing the impacts of development of the same or a similar nature at a different location within the city.

To facilitate a reasonable and meaningful comparison of an off-site location with the Specific Plan, the City attempted to identify locations that would meet most of the characteristics of the Plan Area: that is, sites of a comparable size that could accommodate development of a scale and density comparable to the Specific Plan. The City also attempted to identify sites that would have a similar General Plan land use designation and similar access to adequate infrastructure, including transit. In addition, the City focused its analysis of potential alternative locations on sites that were within the City's control, or could feasibly be brought within the City's control.

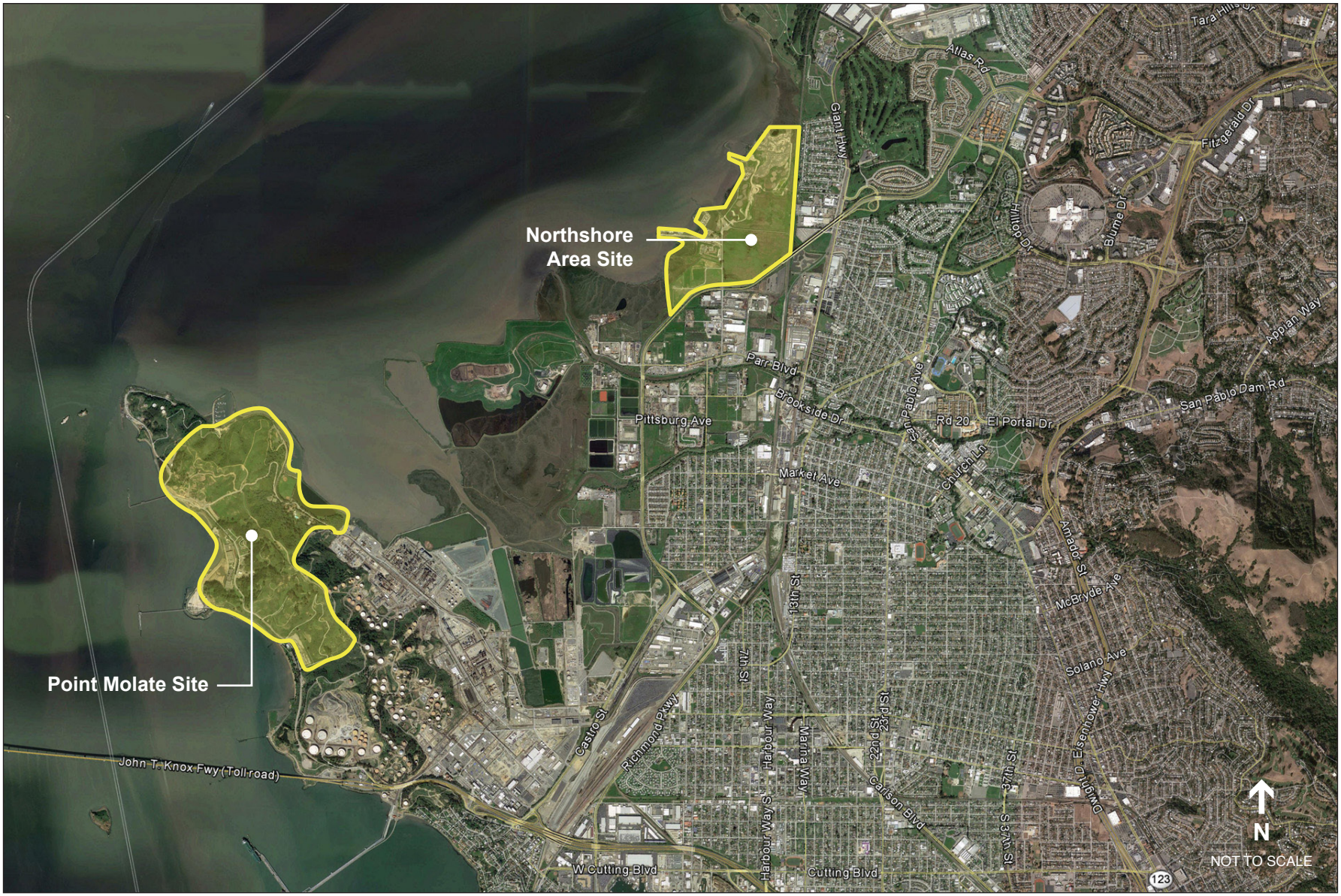
The following two potential off-site locations (also shown on **Figure 5-1**) were reviewed:

- *Northshore Area Specific Plan Site.* This site would be located entirely within the City's Northshore Change Area (CA-12), on a site on the San Francisco Bay shoreline bordered by the Richmond Parkway to the south and east, Collins Avenue/Giant Road to the east, and open space and wetlands to the north and south. The Northshore Area site would be up to 300 acres (although the total developable area is likely to be smaller due to the presence of wetlands and shoreline marshes), and, at a relatively high density of uses, could accommodate an area for a Specific Plan comparable in size and scope to the Richmond Bay Specific Plan.

  The City's land use planning goals for the Northshore Area emphasize the development of low-intensity office, light industrial, and open space uses, not high density uses or residential uses (City of Richmond, 2012); the site has General Plan designations of Low Intensity Business/Light Industrial and Open Space. In addition, this scenario does not fulfill most of the CEQA objectives of the Specific Plan: it would not provide for development that would revitalize the South Shoreline area, it would not develop a flexible range of land uses that could be developed to appropriately address future development of the Richmond Field Station, it would not develop complementary uses adjacent to the Berkeley Global Campus, and it would not reduce greenhouse gas emissions (GHGs) through transit-oriented development in the South Richmond PDA. Because this scenario would not meet most of the CEQA objectives of the Specific Plan, this scenario was not carried forward for detailed analysis as a reasonable alternative.

- *San Pablo Peninsula (Point Molate) Specific Plan Site.* This site would be located within the City's San Pablo Peninsula Change Area (CA-13), on a site occupying the majority of the change area. The site's General Plan land use designations are Business/Light Industrial, Medium Density Residential, Low Density Residential, Open Space, and Parks and Recreation. This site would be up to 500 acres in size, although the total developable area is likely to be smaller due to irregular terrain.

  The City's goals for the Point Molate change area include the development of residential and business/light industrial uses adjacent to parks and open space, as indicated by the underlying General Plan designations. The site, however, is isolated and includes very



SOURCE: Google Earth Pro, 2016; ESA, 2016

Richmond Bay Specific Plan EIR . 120834

Figure 5-1
Offsite Location Scenarios, Specific Plan

limited stormwater and sanitary sewer infrastructure and access, as well as access to transit such as the Richmond Ferry and BART. In order to develop this specific site, substantially more infrastructure, including new roads, may be required than would be required to develop the Richmond Bay Specific Plan, and the infrastructure required could prove to be too costly to support the types of development that would be established. In addition, the Point Molate site is subject of litigation between a developer (Upstream), the Guidiville Tribe, and the City of Richmond. While the City has prevailed in that litigation at the trial court level, the developer and the tribe have appealed that ruling to the United States Court of Appeals for the Ninth Circuit. Accordingly, the City is, as of the date of this EIR, unable to negotiate with a developer to develop or purchase the property.

Because this scenario is likely to result in extensive infrastructure development and therefore greater resulting environmental impacts than development of the Specific Plan, and because ongoing litigation renders development of the property infeasible, this scenario was not carried forward for detailed analysis as a reasonable alternative.

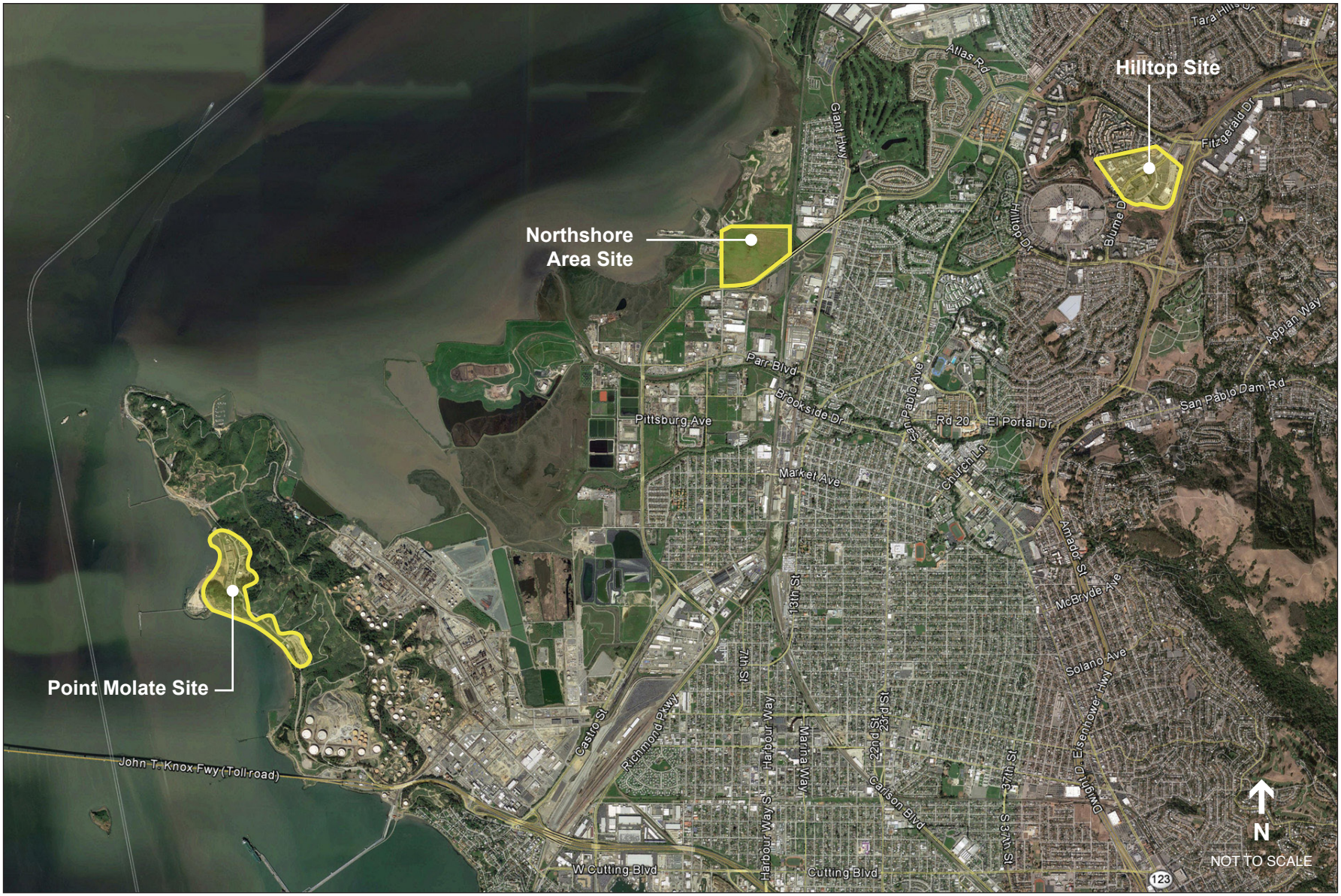
5.3.4 Off-Site Location: Sub-Area 4 Project

The City also considered several potential off-site locations relative to the Sub-Area 4 Project, with the goal of comparing the impacts of development of the same or a similar nature at a different location within the city.

Similar to the Specific Plan, to facilitate a reasonable and meaningful comparison of an off-site location with the Sub-Area 4 Project, the City attempted to identify locations that were reasonably similar to the Sub-Area 4 Project site and therefore likely to be feasible for development: that is, sites of a comparable size that could accommodate development of a scale and density comparable to the Sub-Area 4 Project. The City also attempted to identify sites that would have a similar General Plan land use designation and similar access to adequate infrastructure, including transit. In addition, the City focused its analysis of potential alternative locations on sites that were within the City's control, or could feasibly be brought within the City's control.

The following three potential off-site locations (also shown on **Figure 5-2**) were reviewed:

- *Northshore Area Project Site.* This approximately 70-acre site would be located entirely within the City's Northshore Change Area (CA-12), on a site on the San Francisco Bay shoreline bordered by the Richmond Parkway to the south and east, Collins Avenue/Giant Road to the east, open space and wetlands to the north and south, and existing industrial uses to the west.



SOURCE: Google Earth Pro, 2016; ESA, 2016

Richmond Bay Specific Plan EIR . 120834

Figure 5-2

Offsite Location Scenarios, Sub-Area 4 Project

As discussed above regarding an alternative location for the Specific Plan, the City's land use planning goals for the Northshore Area emphasize the development of low-intensity office, light industrial, and open space uses, not high density uses or residential uses (City of Richmond, 2012); the site has General Plan designations of Low Intensity Business/Light Industrial. In addition, this scenario does not fulfill most of the CEQA objectives of the Sub-Area 4 Project: it would not establish a vibrant mixed-use neighborhood in proximity to the Richmond Field Station, it would not ensure appropriate remediation of the Zeneca site, and it would not develop complementary uses adjacent to Richmond Field Station. Because this scenario would not meet most of the CEQA objectives of the Specific Plan, this scenario was not carried forward for detailed analysis as a reasonable alternative.

- *San Pablo Peninsula (Point Molate) Project Site.* This site would be located within the City's San Pablo Peninsula Change Area (CA-13), on a site occupying approximately 80 acres in the western portion of the change area. The site's General Plan land use designations are Medium Density Residential, Low Density Residential, Open Space, and Parks and Recreation.

  As discussed above regarding an alternative location for the Specific Plan, the City's goals for the Point Molate change area include the development of residential and business/light industrial uses adjacent to parks and open space, as indicated by the underlying General Plan designations. The site, however, is isolated and includes very limited stormwater and sanitary sewer infrastructure and access. In order to develop this specific site, substantially more infrastructure, including new roads, may be required than would be required to develop the Sub-Area 4 Project, and the infrastructure required could prove to be too costly to support the types of development that would be established. In addition, as discussed above, the Point Molate site is subject of litigation between a developer (Upstream), the Guidiville Tribe, and the City of Richmond. Accordingly, the City is, as of the date of this EIR, unable to negotiate with a developer to develop or purchase the property.

  Because this scenario is likely to result in extensive infrastructure development and therefore greater resulting environmental impacts than development of the Sub-Area 4 Project, and because ongoing litigation renders development of the property infeasible, this scenario was not carried forward for detailed analysis as a reasonable alternative.

- *Hilltop Project Site.* This site would be located within the City's Hilltop Change Area (CA-2), on a site occupying approximately 80 acres in the eastern portion of the change area, bordered by I-80 to the east and Blume Drive to the west. The site's General Plan land use designations are Regional Commercial Mixed Use and Parks and Recreation.

  As described in the General Plan, this change area is anticipated to grow as a regional district for retail, employment, and higher-density residential development. The area on either side of Blume Drive is anticipated to promote a mix of regional retail, office, and housing.

  Although the City's goals for this site align with uses proposed for the Sub-Area 4 Project, as well as some of the project objectives, most of the Sub-Area 4 Project objectives would not be met if a similar project were to be developed in this location: development in this location would not create and enhance access to the shoreline, ensure remediation of the Zeneca site, or establish complementary uses adjacent to the Berkeley Global Campus. In addition, initial analysis indicates that development of a project similar to the Sub-Area 4 Project at this location would not result in a reduction in the level of significant and

unavoidable Sub-Area 4 Project impacts (namely, traffic impacts). For these reasons, this scenario was not carried forward for detailed analysis as a reasonable alternative.

Table 5-2 provides a summary of the characteristics of the alternatives considered by the City and rejected for further analysis.

TABLE 5-2
DESCRIPTION OF SCENARIOS ELIMINATED FROM FURTHER CONSIDERATION

Scenarios	Specific Plan or Sub-Area 4 Project Scenario?	Meets Most Basic Objectives?	Substantially Avoids or Lessens Impacts?[a]
High Intensity Scenario	**Specific Plan**	**Yes**	**No**
Preserve Existing Business	**Specific Plan / Sub-Area 4 Project**	**No**	**Yes**
Medium Density Sub-Area 4 Project Scenario	**Sub-Area 4 Project**	**Yes**	**No**
Offsite Location, Specific Plan: Northshore Area	**Specific Plan**	**No**	**Unknown**
Offsite Location, Specific Plan: San Pablo Peninsula	**Specific Plan**	**No**	**Unlikely**
Offsite Location, Project: Northshore Area	**Sub-Area 4 Project**	**No**	**Unknown**
Offsite Location, Project: San Pablo Peninsula	**Sub-Area 4 Project**	**No**	**Unlikely**
Offsite Location, Project: Hilltop	**Sub-Area 4 Project**	**No**	**No**

NOTES:

[a] At least one SU impact, but not necessarily all SU impacts, would be eliminated under this alternative.

5.4 Description of Alternatives Selected for Analysis

The City has identified the following reasonable range of alternatives to be addressed in this EIR.

5.4.1 Specific Plan Alternatives

- **Specific Plan Alternative 1**: Lowest Intensity Alternative (Alternative SP-1)
- **Specific Plan Alternative 2:** Low Intensity Alternative (Alternative SP-2)
- **Specific Plan Alternative 3:** No Project / Existing Zoning Alternative (Alternative SP-3)

5.4.2 Sub-Area 4 Project Alternatives

- **Sub-Area 4 Project Alternative 1**: Low Intensity Alternative (Alternative SA4-1)
- **Sub-Area 4 Project Alternative 3:** No Project / Existing Zoning Alternative (Alternative SA4-3)

All alternatives listed above were developed based on the City's public process for the Specific Plan and the City's Community Workshop Summary document (City of Richmond, 2014).

5.4.3 Specific Plan Alternatives

Table 5-3 presents a comparison of alternatives (and a summary of the proposed project at full buildout) carried forward for consideration and evaluation.

Specific Plan Alternative 1: Lowest Intensity Alternative (Alternative SP-1)

Specific Plan Alternative 1: Lowest Intensity Alternative (Alternative SP-1) represents a modification of the "Existing Rail – Low Intensity" alternative presented in the Community Workshop Summary document. A conceptual sketch of this alternative is shown in **Figure 5-3**. For this alternative, rail and switching yards would remain in their current state.

In summary, this alternative would include:

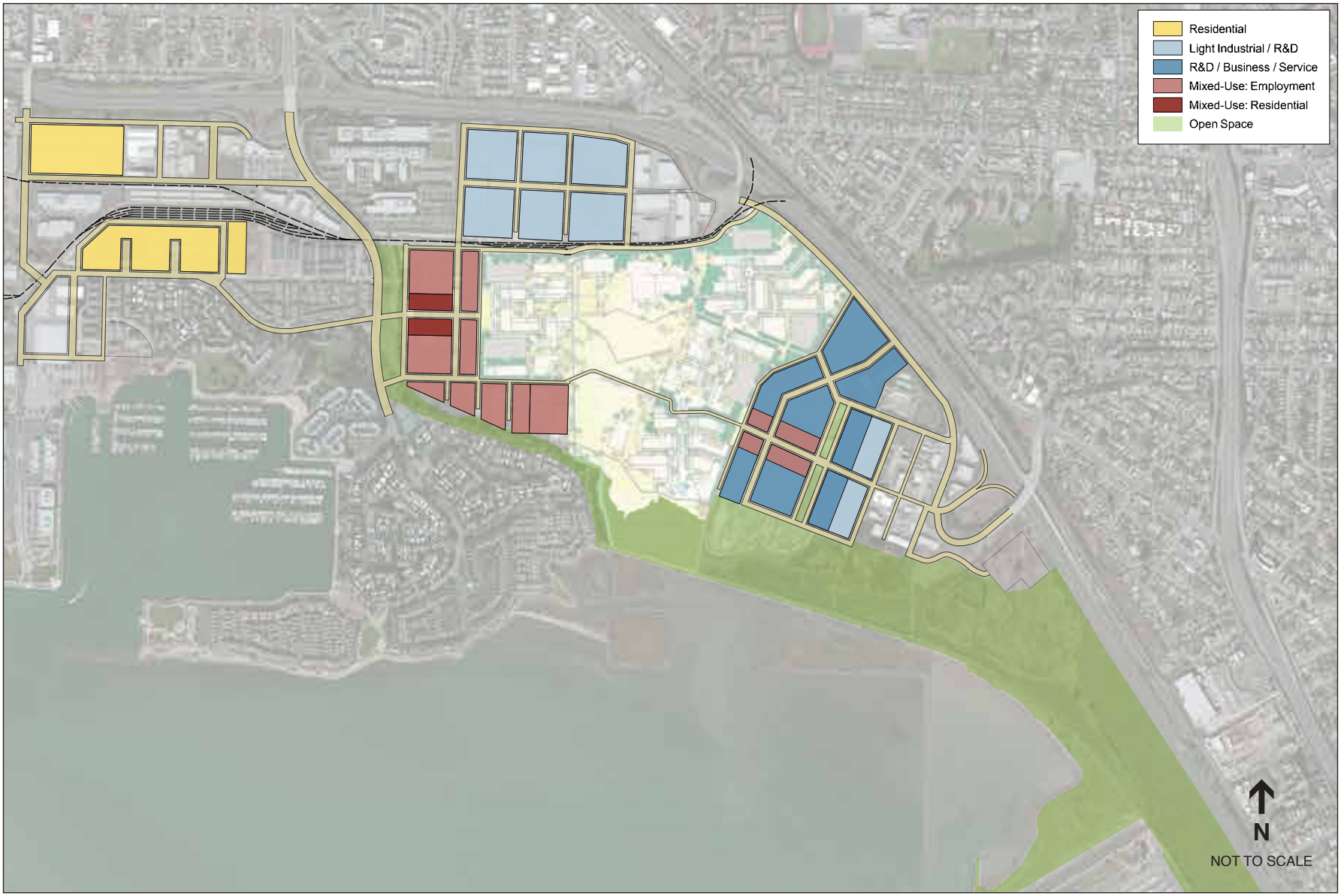
1. The following uses:
    - R&D/Business/Service: 4,520,000 square feet
    - Retail: 362,000 square feet
    - Residential: 850 units
2. The following assumptions:
    - Sub-Area 1:
        a. The development of the Baywalk Project (255 residential units) as well as some additional residential uses on vacant and underutilized sites;
        b. The development of some new R&D/Business/Service and retail uses on vacant and underutilized sites; and
        c. No changes to the existing railyards.
    - Sub-Area 2:
        a. The development of some new residential development on the vacant PG&E and other adjacent underutilized sites; and
        b. The development of some new R&D, retail, and service uses.
    - Sub-Area 3:
        a. The redevelopment of existing light industrial uses with R&D/Business/Service uses.
    - Sub-Area 4:
        a. The development of the vacant Zeneca site and some adjacent properties with very limited residential uses; and
        b. Few changes to existing development within the Harborfront Tract parcels.

TABLE 5-3
SUMMARY OF ALTERNATIVES TO THE RICHMOND BAY SPECIFIC PLAN

	Proposed Specific Plan[a]	SP-1: Lowest Intensity Alternative	SP-2: Low Intensity Alternative	SP-3: No Project / Existing Zoning Alternative
R&D/Business/ Service (Thousand SF)	5,690	4,520	4,820	3,400
Retail (Thousand SF)	720	362	551	227
Residential (Dwelling Units)	5,700	850	1,480	270
Open Space (acres)	145[b]	131[b]	132[b]	118[b]
Service Population (Employees + Residents)				
Employees:	*12,800*	*9,800*	*10,700*	*7,250*
Residents:	*11,490*	*1,700*	*3,000*	*540*
Total Site Acreage (Developable Area)	370	100	110	56
Key Differences Compared to Specific Plan	NA	"Minimal Infrastructure": - Rail and switching yards remain in current state - Freeway on and off ramps remain in current state - No pedestrian/bicycle bridge - Development of Zeneca site with very limited residential uses - Few changes to existing development in Harborfront Tract	"Moderate Infrastructure": - Rail and western switching yards are reconfigured to eliminate spurs - Freeway on and off ramps remain in current state - No pedestrian/bicycle bridge - Development of Zeneca site, some adjacent properties with some new uses - Development of Harborfront Tract with some new uses	"Growth According to Zoning": - Rail and switching yards remain in current state - Freeway on and off ramps remain in current state - No pedestrian/bicycle bridge - Development of very limited residential uses - No changes to existing development in Harborfront Tract

NOTES:

a. Foreseeable Maximum Theoretical Buildout Under the Specific Plan (as described in Chapter 3, Project Description)
b. Includes areas of the Meeker Slough Wetlands, Stege Marsh, and Hoffman Marsh within the Plan Area (approximately 112.3 acres).



SOURCE: City of Richmond, 2014

Richmond Bay Specific Plan EIR . 120834

Figure 5-3

Specific Plan Alternative 1: Low Intensity Alternative A

Specific Plan Alternative 2: Low Intensity Alternative (Alternative SP-2)

Specific Plan Alternative 2: Low Intensity Alternative (Alternative SP-2) represents a modification of the "Consolidated Rail – Medium Intensity" alternative presented in the Community Workshop Summary document. A conceptual sketch of this alternative is shown in **Figure 5-3**. For this alternative, rail and switching yards would be reconfigured to eliminate spurs.

In summary, this alternative would include:

1. The following uses:
    - R&D/Business/Service: 4,820,000 square feet
    - Retail: 551,000 square feet
    - Residential: 1,480 units
2. The following assumptions:
    - Sub-Area 1:
        a. The development of the Baywalk Project (255 residential units) as well as some additional residential uses on vacant and underutilized sites;
        b. The development of some new R&D/Business/Service and retail uses on vacant and underutilized sites; and
        c. No changes to the existing railyards.
    - Sub-Area 2:
        a. The development of some new residential development on the vacant PG&E and other adjacent underutilized sites (at a more intense level than reflected by Specific Plan Alternative 1: Lowest Intensity Alternative); and
        b. The development of some new R&D, retail, and service uses.
    - Sub-Area 3:
        a. The redevelopment of existing light industrial uses with R&D/Business/Service uses.
    - Sub-Area 4:
        a. The development of the vacant Zeneca site and some adjacent properties with R&D/Business/Service, retail, and residential uses; and
        b. The development of the Harborfront Tract parcels with R&D/Business/Service uses.



SOURCE: City of Richmond, 2014

Richmond Bay Specific Plan EIR . 120834

Figure 5-4

Specific Plan Alternative 2: Low Intensity Alternative B

Specific Plan Alternative 3: No Project / Existing Zoning Alternative (Alternative SP-3)

The Specific Plan Alternative 3: No Project / Existing Zoning Alternative (Alternative SP-3) represents an alternative whereby development within the Specific Plan Area would proceed according to reasonable assumptions related to the existing zoning designations within the Plan Area.[1] For this alternative, rail and switching yards would remain in their current state.

In summary, this alternative would include:

1. The following uses:
    - R&D/Business/Service: 3,400,000 square feet
    - Retail: 227,000 square feet
    - Residential: 270 units
2. The following assumptions:
    - Sub-Area 1:
        a. The development of the Baywalk Project (255 residential units) as well as other limited residential uses;
        b. The development of some service and retail uses on vacant and underutilized sites; and
        c. No changes to the existing railyards.
    - Sub-Area 2:
        a. No new residential development (not allowed under the existing M1 zoning designation);
        b. The development of some new R&D, service, and retail uses on the vacant PG&E and adjacent underutilized sites.
    - Sub-Area 3:
        a. No new development.
    - Sub-Area 4:
        a. No new residential development (not allowed under the existing zoning designation);
        b. The development of the vacant Zeneca site, some adjacent properties, and the Harborfront Tract with some new R&D, service, and retail uses; and
        c. No changes to existing development within the Harborfront Tract.

[1] The No Project / Existing Zoning Alternative includes features that were added in response to a comment submitted in 2014 for the Notice of Preparation for the Draft EIR, to consider an alternative whereby the Specific Plan development program would preserve existing business.

5.4.4 Sub-Area 4 Project Alternatives

Table 5-4 presents a comparison of alternatives to the Sub-Area 4 Project (and a summary of the Sub-Area 4 Project at full buildout) carried forward for consideration and evaluation.

Sub-Area 4 Project Alternative 1: Low Intensity Project Alternative (Alternative SA4-1)

Sub-Area 4 Project Alternative 1: Low Intensity Project Alternative (Alternative SA4-1) represents a modification of the "Existing Rail – Low Intensity" alternative presented in the Community Workshop Summary document.

In summary, this alternative would include:

1. The following uses:
    - R&D/Business/Service: 1,330,000 square feet
    - Retail: 66,000 square feet
    - Residential: 115 units
2. The following assumptions:
    - The development of the vacant Zeneca site and some adjacent properties with very limited residential uses;
    - Few changes to existing development within the Harborfront Tract parcels;
    - Freeway on and off ramps would remain in current state; and
    - No pedestrian/bicycle bridge would be developed.

Sub-Area 4 Project Alternative 2: No Project / Existing Zoning Alternative (Alternative SA4-2)

Sub-Area 4 Project Alternative 2: No Project / Existing Zoning Alternative (Alternative SA4-2) represents an alternative whereby development within the Sub-Area 4 Project site would proceed according to reasonable assumptions related to the existing zoning designations within the Sub-Area 4 Project site.

In summary, this alternative would include:

1. The following uses:
    - R&D/Business/Service: 1,050,000 square feet
    - Retail: 36,000 square feet
    - No residential units

TABLE 5-4
SUMMARY OF ALTERNATIVES TO THE SUB-AREA 4 PROJECT

	Proposed Sub-Area 4 Project[a]	SA4-1: Low Intensity Alternative A	SA4-3: No Project / Existing Zoning Alternative
R&D/Business/ Service (Thousand SF)	1,270	1,330	1,050
Retail (Thousand SF)	190	66	36
Residential (Dwelling Units)	1,520	115	0
Open Space (acres)	119[b]	117[b]	113[b]
Service Population (Employees + Residents)			
Employees:	*2,900*	*2,800*	*2,200*
Residents:	*3,070*	*230*	*0*
Total Site Acreage	57	25	32
Key Differences Compared to Project	NA	"Minimal Infrastructure": - Freeway on and off ramps remain in current state - No pedestrian/bicycle bridge - Development of Zeneca site with very limited residential uses - Few changes to existing development in Harborfront Tract	"Growth According to Zoning": - Freeway on and off ramps remain in current state - No pedestrian/bicycle bridge - No development of residential uses - No changes to existing development in Harborfront Tract

NOTES:

a. Foreseeable Maximum Theoretical Buildout Under the Specific Plan (as described in Chapter 3, Project Description).

b. Includes areas of the Meeker Slough Wetlands, Stege Marsh, and Hoffman Marsh within the Plan Area (approximately 112.3 acres).

2. The following assumptions:

    - No new residential development (not allowed under the existing zoning designation);
    - The development of the vacant Zeneca site, some adjacent properties, and the Harborfront Tract with some new R&D, service, and retail uses; and
    - Freeway on and off ramps would remain in their current state;
    - No pedestrian/bicycle bridge would be developed; and
    - No changes to existing development within the Harborfront Tract.

5.5 Comparative Analysis of the Alternatives

5.5.1 General Assumptions and Approach

As permitted by CEQA, the effects of the alternatives are discussed in less detail than those discussed in Chapter 4, Environmental Setting, *Impacts and Mitigation Measures*, of this document. (CEQA *Guidelines* Section 15126.6[d]). However, the analyses are conducted at a sufficient level of detail to provide the public, other public agencies, and project decision-makers adequate information to fully evaluate the alternatives and approve any of the alternatives without further environmental review.

In most cases, the comparisons are qualitative and discussed in terms of whether the alternative would avoid a project impact or result in a new impact not identified with the Specific Plan or the Sub-Area 4 Project. If the impact determination of the alternative is the same (i.e., less-than-significant, less-than-significant after mitigation, or significant and unavoidable) as for the Specific Plan or the Sub-Area 4 Project, the comparison addresses the relative degree of the effect; "similar" indicates the impact determination is the same, but the degree of effect may be "greater than or increased" or "less than or reduced" than that identified with the Specific Plan or the Sub-Area 4 Project.

The impacts associated with the alternatives are described both in terms of ongoing buildout throughout the development period for the Specific Plan as well as reported for Year 2040 buildout conditions, largely the same as the analysis conducted in Chapter 4 for the Specific Plan and the Sub-Area 4 Project for most topics. Other relevant overarching development assumptions, such as infrastructure improvements or adherence to development standards identified in the Specific Plan, are generally the same as for the Specific Plan analyses in Chapter 4 of this EIR.

5.5.2 Traffic Assumptions and Approach

In order to determine relative impacts related to traffic, air quality, and noise, vehicle trip generation was estimated for each alternative. Similar to the Specific Plan analysis, several factors influence trip generation for the alternatives. These include built environment factors such as the density and diversity of land uses, design of the pedestrian and bicycling environment, demographics of the site, and distance to transit. Distribution of traffic trips is assumed to be generally the same as under development of the Specific Plan for all alternatives.

The design guidelines and circulation improvements proposed in the Specific Plan are not assumed to change as a part of the alternatives. Therefore, changes to the transit, pedestrian, bicycle, site access, emergency access, air traffic, construction, and parking impacts generally would not change for each of the alternatives.

Table 5-5 and **Table 5-6** present trip generation estimates for each of the Specific Plan and Sub-Area 4 Project alternatives assessed below.

TABLE 5-5
SPECIFIC PLAN VEHICLE TRIP GENERATION ESTIMATES ALTERNATIVES COMPARISON

Time Period	Specific Plan	SP-1: Lowest Intensity Alternative		SP-2: Low Intensity Alternative		SP-3: No Project / Existing Zoning Alternative	
		Trip Generation	% Difference	Trip Generation	% Difference	Trip Generation	% Difference
AM Peak Hour	6,400	4,150	-35%	4,570	-29%	3,210	-50%
PM Peak Hour	7,550	4,610	-39%	5,260	-30%	3,510	-54%
Daily	71,500	38,900	-46%	46,500	-35%	28,800	-60%

SOURCE: Fehr & Peers, 2016 (Appendix E).

TABLE 5-6
SUB-AREA 4 PROJECT AUTOMOBILE TRIP GENERATION ESTIMATES COMPARISON

Time Period	Sub-Area 4 Project	SA4-1: Low Intensity Alternative A		SA4-3: No Project / Existing Zoning Alternative	
		Trip Generation	% Difference	Trip Generation	% Difference
AM Peak Hour	1,920	1,600	-17%	1,240	-35%
PM Peak Hour	2,370	1,700	-28%	1,290	-46%
Daily	24,600	14,400	-42%	10,900	-56%

SOURCE: Fehr & Peers, 2016 (Appendix E).

5.5.3 Specific Plan Alternatives

Alternative SP-1: Lowest Intensity Alternative

Description

Alternative SP-1 (Lowest Intensity Alternative) would have development similar to the Specific Plan, but reduced by about 55 percent (in terms of area of buildout). As discussed in the analysis below, the 55 percent reduction in development substantially reduces the degree of many impacts identified for the Specific Plan. The development program for this alternative is shown in **Table 5-7**, and the land use plan for this alternative is shown in Figure 5-3.

TABLE 5-7
ALTERNATIVE SP-1 (LOW INTENSITY A)

Land Use	Conceptual Development Program	Unit
R&D/Business/Service	4,520,00	Square feet
Retail	362,000	Square feet
Residential	850	Dwelling unit
Open Space	131[a]	Acres

[a] Includes areas of the Meeker Slough Wetlands, Stege Marsh, and Hoffman Marsh within the Plan Area (approximately 112.3 acres).

Aesthetics

Alternative SP-1 would result in similar less-than-significant aesthetics impacts (no mitigation required) as those identified with the Specific Plan, although the alternative would have lower building heights and less mass. Beneficial effects would be similarly realized. Alternative SP-1 would result in the same character of development as the Specific Plan, simply less and lower-intensity. Maximum building heights would likely be reduced from that anticipated under the Specific Plan (as described in Section 4.1, *Aesthetics*). None of the development under this alternative would exceed the development intensity or building heights that would occur with the Specific Plan, therefore it would not result in greater effects regarding aesthetics.

Air Quality

Alternative SP-1 would reduce construction air quality impacts to less-than-significant (after mitigation), as compared to the significant and unavoidable construction air quality impacts (NOx emissions) that would result under buildout of the Specific Plan. This alternative would develop approximately 55 percent of the area that would be developed under the Specific Plan, therefore, it would result in substantially less construction activity, and construction air quality impacts would be reduced. Specifically, the significant and unavoidable impact from construction NOx emissions that would occur under development of the Specific Plan would not occur for this alternative.

Biological Resources

Alternative SP-1 would result in similar less-than-significant (after mitigation) biological resources impacts as those identified with the Specific Plan. Like the Specific Plan, Alternative SP-1 could involve development in and adjacent to areas of existing sensitive habitat and wetlands, and this impact would be slightly reduced because of the smaller area that would be developed. All mitigation measures described for the impacts to biological resources that would occur under development of the Specific Plan would apply to this alternative.

Cultural Resources

Alternative SP-1 would result in the same less-than-significant (after mitigation) and significant and unavoidable (historic resources) cultural resources impacts as those identified with the Specific Plan. Alternative SP-1 would involve construction and excavation activities in largely the same area as for the Specific Plan, and would require the same standard mitigation measures to address potential historic resources, potential human remains, and archaeological and paleontological resource discovery. This impact would be slightly reduced in magnitude because of the smaller area that would be developed under this alternative. Alternative SP-1 would, however, have the same potential to result in a significant and unavoidable impact to historic resources as the Specific Plan.

Geology and Soils

Alternative SP-1 would result in the same less-than-significant (no mitigation required) geology and soils impacts as those identified with the Specific Plan. Alternative SP-1 would involve construction and earthmoving activities which would require adherence to regulatory requirements to ensure less-than-significant impacts. The alternative would be subject to the same geologic hazard conditions as the Specific Plan. This impact would be slightly reduced in magnitude because of the smaller area that would be developed under this alternative.

Greenhouse Gases

Alternative SP-1 would result in similar significant and unavoidable GHG emissions impacts as with the Specific Plan. This determination is based on this alternative's total daily trips (38,900) compared to the Specific Plan's (71,500), since mobile emissions (vehicle trips) are the most substantial GHG emissions source. This determination also considers this alternative's service population (11,500) compared to the Specific Plan's (24,300), since the ratio of total emissions per persons onsite is reduced (improved) as service population increases. Taken together, compared to the Specific Plan, this alternative would have less total GHG emissions and would have slightly more total emissions per service population annually; however, the impact would remain significant and unavoidable.

Hazards and Hazardous Materials

Alternative SP-1 would result in the same less-than-significant (after mitigation) hazards and hazardous materials impacts as identified with the Specific Plan. Alternative SP-1 would involve similar construction and earthmoving activities as proposed under the Specific Plan, including on areas where there may be hazardous conditions. This alternative would be subject to the same potential hazards risks and conditions, and would implement the same mitigation measures identified for the Specific Plan.

Hydrology and Water Quality

Alternative SP-1 would result in the same less-than-significant (after mitigation) hydrology and water quality impacts as identified with the Specific Plan. Alternative SP-1 would involve

construction and earthmoving activities that could alter drainage patterns in the same areas as the Specific Plan, and be subject to the same flood hazard conditions. Adherence to the same regulatory requirements would ensure less-than-significant impacts. This impact would be slightly reduced in magnitude because of the smaller area that would be developed under this alternative.

Land Use and Planning

Alternative SP-1 would result in the same less-than-significant (no mitigation required) land use and planning impacts identified with the Specific Plan. The beneficial effects of the Specific Plan would be realized with this alternative. Alternative SP-1 would develop the same land use characteristics as the Specific Plan, although to a lesser amount and scale. Plan and policy consistency, the change in land uses, and the relationship of development to the surrounding uses and community, would be the same as for the Specific Plan, therefore the related land use and planning impacts would be the same as with the Specific Plan.

Noise

Alternative SP-1 would reduce operational (traffic) noise impacts to less-than-significant (after mitigation), as compared to the significant and unavoidable operational noise impacts that would occur with buildout of the Specific Plan. This determination largely considers that this alternative's peak hour trips are 65 percent (AM peak hour) and 61 percent (PM peak hour) of the Specific Plan's AM/PM peak hour trips, which would generate less traffic noise than with the Specific Plan. This alternative would also develop less area than would be developed under the Specific Plan, therefore it would also have slightly less construction activity, and construction noise impacts also would be reduced.

Population, Housing and Employment

Alternative SP-1 would result in similar less-than-significant (no mitigation required) impacts to population, housing, and employment as identified with the Specific Plan. Alternative SP-1 would generate substantially less overall population growth (1,700 compared to 11,490 residents) and non-residential development than the Specific Plan, and like the Plan, would not displace any people or housing or induce unanticipated growth to an extent that would result in additional impacts not otherwise addressed.

Public Services and Recreation

Alternative SP-1 would result in similar less-than-significant (no mitigation required) impacts to public services and recreation as identified with the Specific Plan. Due primarily to the smaller area of development and lower population growth that this alternative represents in comparison to the Specific Plan, this alternative would generate less overall demand for police, fire and emergency services, schools, and parks and recreation uses than would be generated with the Specific Plan. Less population would result with this alternative, and, correspondingly, less use of existing recreation facilities would occur.

Transportation and Circulation

Alternative SP-1 would reduce one traffic impact to less-than-significant (after mitigation), as compared to significant and unavoidable traffic impacts that would result under buildout of the Specific Plan. Alternative SP-1 includes about 55 percent of the development that would occur under buildout of the Specific Plan and would generate 46 percent fewer peak hour trips, but with similar trip assignment patterns. Based on an analysis of trip generation and resulting roadway volumes, this alternative is anticipated to reduce to less-than-significant one of the impacts identified as significant and unavoidable under buildout of the Specific Plan, as shown below in **Table 5-8**.

TABLE 5-8
SUMMARY OF SIGNIFICANT TRAFFIC IMPACTS THAT WOULD BE REDUCED TO LESS THAN SIGNIFICANT UNDER SPECIFIC PLAN ALTERNATIVES

Specific Plan Transportation Impacts	Does SP-1 Eliminate Significant Impacts?	Does SP-2 Eliminate Significant Impacts?	Does SP-3 Eliminate Significant Impacts?
TRANS-1.SP (LTS)	**Yes**	**Yes**	**Yes**
TRANS-2.SP (LTS)	No (LTS)	No (LTS)	No (LTS)
TRANS-3.SP (SU)	No (SU)	No (SU)	No (SU)
TRANS-4.SP (SU)	No (SU)	No (SU)	No (SU)
TRANS-5.SP (SU)	No (SU)	No (SU)	No (SU)
TRANS-6.SP (SU)	No (SU)	No (SU)	No (SU)
TRANS-7.SP (SU)	**Yes**	**Yes**	**Yes**
TRANS-8.SP (SU)	No (SU)	No (SU)	No (SU)
TRANS-9.SP (SU)	No (SU)	No (SU)	No (SU)
TRANS-10.SP (LTS)	**Yes**	**Yes**	**Yes**
TRANS-11.SP (LTS)	No (LTS)	No (LTS)	No (LTS)
TRANS-12.SP (SU)	No (SU)	No (SU)	No (SU)
TRANS-13.SP (LTS)	No (LTS)	No (LTS)	No (LTS)
TRANS-14.SP (SU)	No (SU)	No (SU)	No (SU)
TRANS-15.SP (SU)	No (SU)	No (SU)	No (SU)
TRANS-16.SP (LTS)	No (SU)	No (SU)	No (SU)
TRANS-17.SP (SU)	No (SU)	No (SU)	No (SU)
TRANS-18.SP (SU)	No (SU)	No (SU)	No (SU)
TRANS-19.SP (SU)	No (SU)	No (SU)	**Yes**
TRANS-20.SP (SU)	No (SU)	No (SU)	No (SU)
TRANS-21.SP (LTS)	No (LTS)	No (LTS)	**Yes**
TRANS-22.SP (SU)	No (SU)	No (SU)	No (SU)
TRANS-23.SP (SU)	No (SU)	No (SU)	No (SU)
TRANS-24.SP (SU)	No (SU)	No (SU)	No (SU)

NOtes:
a. Values in parenthesis specify impact significance after mitigation: SU = Significant and Unavoidable, LTS = Less than Significant.

SOURCE: Fehr & Peers, 2016

Utilities and Service Systems

Alternative SP-1 would result in similar less-than-significant (no mitigation required) impacts to utilities and service systems as identified with the Specific Plan. Due primarily to the smaller area of development and lower population growth that this alternative represents in comparison to the Specific Plan, this alternative would generate less overall demand for utilities and service systems than would occur with the Specific Plan.

Alternative SP-2: Low Intensity Alternative

Description

Alternative SP-2 (Low Intensity Alternative) would have development similar to the Specific Plan, but reduced by about 46 percent (in terms of area of buildout). As discussed in the analysis below, the reduction in development reduces the degree of many impacts identified for the Specific Plan. The development program for this alternative is shown in **Table 5-9**, and the land use plan for this alternative is shown in Figure 5-4.

TABLE 5-9
ALTERNATIVE SP-2 (LOW INTENSITY)

Land Use	Conceptual Development Program	Unit
R&D/Business/Service	4,820,000	Square feet
Retail	551,000	Square feet
Residential	1,480	Dwelling units
Open Space	132[a]	Acres

[a] Includes areas of the Meeker Slough Wetlands, Stege Marsh, and Hoffman Marsh within the Plan Area (approximately 112.3 acres).

Aesthetics

Alternative SP-2 would result in similar less-than-significant aesthetics impacts (no mitigation required) as those identified with the Specific Plan, although the alternative would have lower building heights and less mass. Beneficial effects would be similarly realized. Alternative SP-2 would result in the same character of development as the Specific Plan, simply less and lower-intensity. Maximum building heights would likely be reduced from that anticipated under the Specific Plan (as described in Section 4.1, *Aesthetics*). None of the development under this alternative would exceed the development intensity or building heights that would occur with the Specific Plan, therefore it would not result in greater effects regarding aesthetics.

Air Quality

Alternative SP-2 would have the same significant and unavoidable (after mitigation) construction air quality impacts as would occur with buildout of the Specific Plan. This

alternative would develop approximately 46 percent of the area that would be developed under the Specific Plan, therefore, it would result in substantially less construction activity, and construction air quality impacts would be reduced. However, the significant and unavoidable impact from construction NOx emissions that would occur under development of the Specific Plan would still occur for this alternative.

Biological Resources

Alternative SP-2 would result in similar less-than-significant (after mitigation) biological resources impacts as those identified with the Specific Plan. Like the Specific Plan, Alternative SP-2 could involve development in and adjacent to areas of existing sensitive habitat and wetlands; this impact would be slightly reduced under this alternative because of the smaller area that would be developed. All mitigation measures described for the impacts to biological resources that would occur under development of the Specific Plan would apply to this alternative.

Cultural Resources

Alternative SP-2 would result in the same less-than-significant (after mitigation) and significant and unavoidable (historic resources) cultural resources impacts as those identified with the Specific Plan. Alternative SP-2 would involve construction and excavation activities in largely the same area as for the Specific Plan, and would require the same standard mitigation measures to address potential historic resources, potential human remains, and archaeological and paleontological resource discovery. This impact would be slightly reduced in magnitude because of the smaller area that would be developed under this alternative. Alternative SP-2 would, however, have the same potential to result in a significant and unavoidable impact to historic resources as the Specific Plan.

Geology and Soils

Alternative SP-2 would result in the same less-than-significant (no mitigation required) geology and soils impacts as those identified with the Specific Plan. Alternative SP-2 would involve construction and earthmoving activities which would require adherence to regulatory requirements to ensure less-than-significant impacts. The alternative would be subject to the same geologic hazard conditions as the Specific Plan. This impact would be slightly reduced in magnitude because of the smaller area that would be developed under this alternative.

Greenhouse Gases

Alternative SP-2 would result in similar significant and unavoidable GHG emissions impacts as with the Specific Plan. This determination is based on this alternative's total daily trips (46,500) compared to the Specific Plan's (71,500), since mobile emissions (vehicle trips) are the most substantial GHG emissions source. This determination also considers this alternative's service population (13,700) compared to the Specific Plan's (24,300), since the ratio of total emissions per persons onsite is reduced (improved) as service population increases. Taken

together, compared to the Specific Plan, this alternative would have less total GHG emissions and would have slightly more total emissions per service population annually; however, the impact would remain significant and unavoidable.

Hazards and Hazardous Materials

Alternative SP-2 would result in the same less-than-significant (after mitigation) hazards and hazardous materials impacts as identified with the Specific Plan. Alternative SP-2 would involve similar construction and earthmoving activities as proposed under the Specific Plan, including on areas where there may be hazardous conditions. This alternative would be subject to the same potential hazards risks and conditions, and would implement the same mitigation measures identified for the Specific Plan.

Hydrology and Water Quality

Alternative SP-2 would result in the same less-than-significant (after mitigation) hydrology and water quality impacts as identified with the Specific Plan. Alternative SP-2 would involve construction and earthmoving activities that could alter drainage patterns in the same areas as the Specific Plan, and be subject to the same flood hazard conditions. Adherence to the same regulatory requirements would ensure less-than-significant impacts. This impact would be slightly reduced in magnitude because of the smaller area that would be developed under this alternative.

Land Use and Planning

Alternative SP-2 would result in the same less-than-significant (no mitigation required) land use and planning impacts identified with the Specific Plan. The beneficial effects of the Specific Plan would be realized with this alternative. Alternative SP-2 would develop the same land use characteristics as the Specific Plan, although to a lesser amount and scale. Plan and policy consistency, the change in land uses, and the relationship of development to the surrounding uses and community, would be the same as for the Specific Plan, therefore the related land use and planning impacts would be the same as with the Specific Plan.

Noise

Alternative SP-2 would have the same significant and unavoidable (after mitigation) operational (traffic) noise impacts as would occur with buildout of the Specific Plan. This determination largely considers that this alternative's peak hour trips are 71 percent (AM peak hour) and 70 percent (PM peak hour) of the Specific Plan's AM/PM peak hour trips, which would generate less traffic noise than with the Specific Plan, but would not reduce the significant and unavoidable traffic noise impacts that would occur along Marina Way to less than significant. This alternative would also develop less area than would be developed under the Specific Plan, therefore it would also have slightly less construction activity, and construction noise impacts also would be reduced.

Population, Housing and Employment

Alternative SP-2 would result in similar less-than-significant (no mitigation required) impacts to population, housing, and employment as identified with the Specific Plan. Alternative SP-2 would generate substantially less overall population growth (3,000 compared to 11,490 residents) and non-residential development than the Specific Plan, and like the Plan would not displace any people or housing or induce unanticipated growth to an extent that would result in additional impacts not otherwise addressed.

Public Services and Recreation

Alternative SP-2 would result in similar less-than-significant (no mitigation required) impacts to public services and recreation as identified with the Specific Plan. Due primarily to the smaller area of development and lower population growth that this alternative represents in comparison to the Specific Plan, this alternative would generate less overall demand for police, fire and emergency services, schools, and parks and recreation uses than would be generated with the Specific Plan. Less population would result with this alternative, and, correspondingly, less use of existing recreation facilities would occur.

Transportation and Circulation

Alternative SP-2 would reduce one traffic impact to less-than-significant (after mitigation), as compared to significant and unavoidable traffic impacts that would result under buildout of the Specific Plan. Alternative SP-2 includes about 46 percent of the development that would occur under buildout of the Specific Plan and would generate 35 percent fewer daily vehicle trips, but with similar trip assignment patterns. Based on an analysis of trip generation and resulting roadway volumes, this alternative is anticipated to reduce to less-than-significant one of the impacts identified as significant and unavoidable under buildout of the Specific Plan, as shown above in Table 5-8.

Utilities and Service Systems

Alternative SP-2 would result in similar less-than-significant (no mitigation required) impacts to utilities and service systems as identified with the Specific Plan. Due primarily to the smaller area of development and lower population growth that this alternative represents in comparison to the Specific Plan, this alternative would generate less overall demand for utilities and service systems than would occur with the Specific Plan.

Alternative SP-3: No Project / Existing Zoning

Description

Alternative SP-3 (No Project / Existing Zoning) considers development that could likely occur in the Plan Area through the natural course of growth under the existing zoning, to the extent that the growth is within allowances currently permitted by the General Plan. Uses envisioned in

Alternative SP-3 would be similar to existing uses, and would include light industrial, office, commercial, and limited residential uses. In comparison to buildout under the Specific Plan, Alternative SP-2 would be reduced by about 70 percent (in terms of area of buildout). As discussed in the analysis below, the reduction in development reduces the degree of many impacts identified for the Specific Plan. The development program for this alternative is shown in **Table 5-10**.

TABLE 5-10
ALTERNATIVE SP-3 (NO PROJECT / EXISTING ZONING ALTERNATIVE)

Land Use	Conceptual Development Program	Unit
R&D/Business/Service	3,400,000	Square feet
Retail	227,000	Square feet
Residential	270	Dwelling units
Open Space	118[a]	Acres

[a] Includes areas of the Meeker Slough Wetlands, Stege Marsh, and Hoffman Marsh within the Plan Area (approximately 112.3 acres).

Aesthetics

Alternative SP-3 would result in similar less-than-significant aesthetics impacts (no mitigation required) as those identified with the Specific Plan, although the alternative would have lower building heights and less mass, and the effects would be less. Alternative SP-3 would result in less and lower-intensity development than would be established under the Specific Plan. Under the alternative and within the constraints of existing height allowances, development is anticipated to be relatively low rise, and approximately 2-3 stories in height, similar to existing buildings within the Plan Area. This would reduce the Specific Plan's already less-than-significant impacts related to scenic vistas, light/glare, and shadow.

Air Quality

Alternative SP-3 would reduce construction air quality impacts to less-than-significant (after mitigation), as compared to the significant and unavoidable construction air quality impacts (NOx emissions) that would result under buildout of the Specific Plan. This alternative would develop approximately 30 percent of the area that would be developed under the Specific Plan, therefore, it would result in substantially less construction activity, and construction air quality impacts would be reduced. Specifically, the significant and unavoidable impact from construction NOx emissions that would occur under development of the Specific Plan would not occur for this alternative.

Biological Resources

Alternative SP-3 would result in similar less-than-significant (after mitigation) biological resources impacts as those identified with the Specific Plan. Like the Specific Plan, Alternative SP-3 could involve development in and adjacent to areas of existing sensitive habitat and

wetlands; this impact would be slightly reduced because of the smaller area that would be developed. All mitigation measures described for the impacts to biological resources that would occur under development of the Specific Plan would apply to this alternative.

Cultural Resources

Alternative SP-3 would result in the same less-than-significant (after mitigation) and significant and unavoidable (historic resources) cultural resources impacts as those identified with the Specific Plan. Alternative SP-3 would involve construction and excavation activities in largely the same area as for the Specific Plan, and would require the same standard mitigation measures to address potential historic resources, potential human remains, and archaeological and paleontological resource discovery. This impact would be slightly reduced in magnitude because of the smaller area that would be developed under this alternative. Alternative SP-3 would, however, have the same potential to result in a significant and unavoidable impact to historic resources as the Specific Plan.

Geology and Soils

Alternative SP-3 would result in the same less-than-significant (no mitigation required) geology and soils impacts as those identified with the Specific Plan. Alternative SP-3 would involve construction and earthmoving activities which would require adherence to regulatory requirements to ensure less-than-significant impacts. The alternative would be subject to the same geologic hazard conditions as the Specific Plan. This impact would be slightly reduced in magnitude because of the smaller area that would be developed under this alternative.

Greenhouse Gases

Alternative SP-3 would result in similar significant and unavoidable GHG emissions impacts as with the Specific Plan. This determination is based on this alternative's total daily trips (28,800) compared to the Specific Plan's (71,500), since mobile emissions (vehicle trips) are the most substantial GHG emissions source. This determination also considers this alternative's service population (7,800) compared to the Specific Plan's (24,300), since the ratio of total emissions per persons onsite is reduced (improved) as service population increases. Taken together, compared to the Specific Plan, this alternative would have less total GHG emissions and would have slightly more total emissions per service population annually; however, the impact would remain significant and unavoidable.

Hazards and Hazardous Materials

Alternative SP-3 would result in the same less-than-significant (after mitigation) hazards and hazardous materials impacts as identified with the Specific Plan. Alternative SP-3 would involve similar construction and earthmoving activities as proposed under the Specific Plan, including on areas where there may be hazardous conditions. This alternative would be subject to the same potential hazards risks and conditions, and would implement the same mitigation measures identified for the Specific Plan.

Hydrology and Water Quality

Alternative SP-3 would result in the same less-than-significant (after mitigation) hydrology and water quality impacts as identified with the Specific Plan. Alternative SP-3 would involve construction and earthmoving activities that could alter drainage patterns in the same areas as the Specific Plan, and be subject to the same flood hazard conditions. Adherence to the same regulatory requirements would ensure less-than-significant impacts. This impact would be slightly reduced in magnitude because of the smaller area that would be developed under this alternative.

Land Use and Planning

Alternative SP-3 would result in the same less-than-significant (no mitigation required) land use and planning impacts identified with the Specific Plan. The beneficial effects of the Specific Plan would not be realized with this alternative. Alternative SP-3 would develop uses consistent with existing zoning, which would include industrial, commercial, and office uses. Development under this alternative would be consistent with the intensity and heights permitted by the General Plan, and would not pose any substantial conflict with other existing land use plans or policies.

Noise

Alternative SP-3 would reduce operational (traffic) noise impacts to less-than-significant (after mitigation), as compared to the significant and unavoidable operational noise impacts that would occur with buildout of the Specific Plan. This determination largely considers that this alternative's peak hour trips are 50 percent (AM peak hour) and 46 percent (PM peak hour) of the Specific Plan's AM/PM peak hour trips, which would generate less traffic noise than with the Specific Plan, and would specifically generate noise levels along Marina Way that would be below the level of significance. This alternative would also develop less area than would be developed under the Specific Plan; therefore, it would also have slightly less construction activity, and construction noise impacts also would be reduced.

Population, Housing and Employment

Alternative SP-3 would result in similar less-than-significant (no mitigation required) impacts to population, housing, and employment as identified with the Specific Plan. Alternative SP-3 would generate substantially less overall population growth (540 compared to 11,490 residents)

and non-residential development than the Specific Plan, and like the Specific Plan, would not displace any people or housing or induce unanticipated growth.

Public Services and Recreation

Alternative SP-3 would result in similar less-than-significant (no mitigation required) impacts to public services and recreation as identified with the Specific Plan. Due primarily to the smaller area of development and lower population growth that this alternative represents in comparison to the Specific Plan, this alternative would generate less overall demand for police, fire and emergency services, schools, and parks and recreation uses than would be generated with the Specific Plan. Less population would result with this alternative, and, correspondingly, less use of existing recreation facilities would occur.

Transportation and Circulation

Alternative SP-3 would reduce two traffic impacts to less-than-significant (after mitigation), as compared to significant and unavoidable traffic impacts that would result under buildout of the Specific Plan. Alternative SP-3 includes about 30 percent of the development that would occur under buildout of the Specific Plan and would generate 60 percent fewer daily vehicle trips, but with similar trip assignment patterns. Based on an analysis of trip generation and resulting roadway volumes, this alternative is anticipated to reduce to less-than-significant two of the impacts identified as significant and unavoidable under buildout of the Specific Plan, as shown above in Table 5-8.

Utilities and Service Systems

Alternative SP-3 would result in similar less-than-significant (no mitigation required) impacts to utilities and service systems as identified with the Specific Plan. Due primarily to the smaller area of development and lower population growth that this alternative represents in comparison to the Specific Plan, this alternative would generate less overall demand for utilities and service systems than would occur with the Specific Plan.

5.5.4 Sub-Area 4 Project Alternatives

Alternative SA4-1: Low Intensity Project Alternative

Description

Alternative SA4-1 (Low Intensity Project Alternative) would have development similar to the Sub-Area 4 Project, but reduced by about 57 percent (in terms of area of buildout). As discussed in the analysis below, the 57 percent reduction in development substantially reduces the degree of many impacts identified for the Specific Plan. The development program for this alternative is shown in **Table 5-11**.

TABLE 5-11
ALTERNATIVE SA4-1 (LOW INTENSITY PROJECT ALTERNATIVE)

Land Use	Conceptual Development Program	Unit
R&D/Business/Service	1,330,000	Square feet
Retail	66,000	Square feet
Residential	115	Dwelling unit
Open Space	117[a]	Acres

[a] Includes areas of the Meeker Slough Wetlands, Stege Marsh, and Hoffman Marsh within the Plan Area (approximately 112.3 acres).

Aesthetics

Alternative SA4-1 would result in similar less-than-significant aesthetics impacts (no mitigation required) as those identified with the Sub-Area 4 Project, although the alternative would have lower building heights and less mass. Beneficial effects would be similarly realized. Alternative SA4-1 would result in the same character of development as the Sub-Area 4 Project, simply less and lower-intensity. Maximum building heights would likely be reduced from that anticipated under the Sub-Area 4 Project (as described in Section 4.1, *Aesthetics*). None of the development under this alternative would exceed the development intensity or building heights that would occur with the Sub-Area 4 Project, therefore it would not result in greater effects regarding aesthetics.

Air Quality

Alternative SA4-1 would result in similar less-than-significant (after mitigation) air quality impacts as those identified with the Sub-Area 4 Project. This alternative would develop approximately 57 percent of the area that would be developed under the Specific Plan; therefore, it would result in substantially less construction activity, and construction air quality impacts would be reduced. In addition, operational air emissions, primarily associated with vehicle use, would likewise be reduced.

Biological Resources

Alternative SA4-1 would result in similar less-than-significant (after mitigation) biological resources impacts as those identified with the Sub-Area 4 Project. Like the Sub-Area 4 Project, Alternative SA4-1 could involve development in and adjacent to areas of existing sensitive habitat and wetlands; this impact would be slightly reduced because of the smaller area that would be developed. All mitigation measures described for the impacts to biological resources that would occur under development of the Sub-Area 4 Project would apply to this alternative.

Cultural Resources

Alternative SA4-1 would result in the same less-than-significant (after mitigation) cultural resources impacts as those identified with the Sub-Area 4 Project. Alternative SA4-1 would

involve construction and excavation activities in largely the same area as for the Sub-Area 4 Project, and would require the same standard mitigation measures to address potential historic resources, potential human remains, and archaeological and paleontological resource discovery. This impact would be slightly reduced in magnitude because of the smaller area that would be developed under this alternative.

Geology and Soils

Alternative SA4-1 would result in the same less-than-significant (no mitigation required) geology and soils impacts as those identified with the Sub-Area 4 Project. Alternative SA4-1 would involve construction and earthmoving activities which would require adherence to regulatory requirements to ensure less-than-significant impacts. The alternative would be subject to the same geologic hazard conditions as the Sub-Area 4 Project. This impact would be slightly reduced in magnitude because of the smaller area that would be developed under this alternative.

Greenhouse Gases

Alternative SA4-1 would result in similar significant and unavoidable GHG emissions and as with the Sub-Area 4 Project. This determination is based on this alternative's total daily trips (14,400) compared to the Sub-Area 4 Project's (24,600), since mobile emissions (vehicle trips) are the most substantial GHG emissions source. This determination also considers this alternative's service population (3,030) compared to the Specific Plan's (5,970), since the ratio of total emissions per persons onsite is reduced (improved) as service population increases. Taken together, compared to the Specific Plan, this alternative would have less total GHG emissions and would have slightly more total emissions per service population annually; however, the impact would remain significant and unavoidable.

Hazards and Hazardous Materials

Alternative SA4-1 would result in the same less-than-significant (after mitigation) hazards and hazardous materials impacts as identified with the Sub-Area 4 Project. Alternative SA4-1 would involve similar construction and earthmoving activities as proposed under the Sub-Area 4 Project, including on areas where there may be hazardous conditions. This alternative would be subject to the same potential hazards risks and conditions, and would implement the same mitigation measures identified for the Sub-Area 4 Project. This impact would be slightly reduced in magnitude because of the smaller area that would be developed under this alternative.

Hydrology and Water Quality

Alternative SA4-1 would result in the same less-than-significant (after mitigation) hydrology and water quality impacts as identified with the Sub-Area 4 Project. Alternative SA4-1 would involve construction and earthmoving activities that could alter drainage patterns in the same areas as the Specific Plan, and be subject to the same flood hazard conditions. Adherence to the same regulatory requirements would ensure less-than-significant impacts. This impact would be

slightly reduced in magnitude because of the smaller area that would be developed under this alternative.

Land Use and Planning

Alternative SA4-1 would result in the same less-than-significant (no mitigation required) land use and planning impacts identified with the Sub-Area 4 Project. The beneficial effects of the Sub-Area 4 Project would be realized with this alternative. Alternative SA4-1 would develop the same land use characteristics as the Sub-Area 4 Project, although to a lesser amount and scale. Plan and policy consistency would be less for this alternative than the Sub-Area 4 Project – in other words, the alternative would be less consistent with plans and policies than the Project – though the change in land uses and the relationship of development to the surrounding uses and community would be similar to the Sub-Area 4 Project. Related land use and planning impacts would be similar to or the same as with the Sub-Area 4 Project, and would be less than significant.

Noise

Alternative SA4-1 would result in the same less-than-significant (with mitigation) construction and operations noise impacts as identified with the Sub-Area 4 Project, and the overall noise impact would be less than that for the Sub-Area 4 Project. This determination largely considers that this alternative's peak hour trips are 83 percent (AM peak hour) and 72 percent (PM peak hour) of the Sub-Area 4 Project's AM/PM peak hour trips, which would generate less traffic noise than with the Sub-Area 4 Project. This alternative would also develop less area than would be developed under the Specific Plan, therefore it would also have slightly less construction activity, and construction noise impacts also would be reduced.

Population, Housing and Employment

Alternative SA4-1 would result in similar less-than-significant (no mitigation required) impacts to population, housing, and employment as identified with the Sub-Area 4 Project. Alternative SA4-1 would generate substantially less overall population growth (230 compared to 3,070 residents) and non-residential development than the Sub-Area 4 Project, and like the Sub-Area 4 Project would not displace any people or housing or induce unanticipated growth to an extent that would result in additional impacts not otherwise addressed.

Public Services and Recreation

Alternative SA4-1 would result in similar less-than-significant (no mitigation required) impacts to public services and recreation as identified with the Sub-Area 4 Project. Due primarily to the smaller area of development and lower population growth that this alternative represents in comparison to the Sub-Area 4 Project, this alternative would generate less overall demand for police, fire and emergency services, schools, and parks and recreation uses than would be generated with the Sub-Area 4 Project. Less population would result with this alternative, and, correspondingly, less use of existing recreation facilities would occur.

Transportation and Circulation

Alternative SA4-1 would reduce some traffic impacts to less-than-significant (after mitigation), as compared to significant and unavoidable traffic impacts that would result under buildout of the Specific Plan. Alternative SA4-1 includes about 57 percent of the development that would occur under buildout of the Sub-Area 4 Project and would generate 42 percent fewer peak hour trips, but with similar trip assignment patterns. Based on an analysis of trip generation and resulting roadway volumes, this alternative is anticipated to reduce to less-than-significant three of the impacts identified as significant and unavoidable under buildout of the Specific Plan, as shown below in **Table 5-12**.

TABLE 5-12
SUMMARY OF SIGNIFICANT IMPACTS THAT WOULD BE REDUCED TO LESS THAN SIGNIFICANT BY SUB-AREA 4 PROJECT ALTERNATIVES

Sub-Area 4 Project Transportation Impacts	Does Alternative SA4-1 Eliminate Significant Impacts?	Does Alternative SA4-3 Eliminate Significant Impacts?
TRANS-1.SA4 (SU)	No (SU)	No (SU)
TRANS-2. SA4 (LTS)	**Yes**	**Yes**
TRANS-3. SA4 (LTS)	**Yes**	**Yes**
TRANS-4. SA4 (SU)	No (SU)	No (SU)
TRANS-5. SA4 (SU)	**Yes**	**Yes**
TRANS-6. SA4 (LTS)	No (LTS)	No (LTS)
TRANS-7. SA4 (SU)	No (SU)	No (SU)
TRANS-8.SA4 (SU)	No (SU)	No (SU)
TRANS-9.SA4 (SU)	**Yes**	**Yes**
TRANS-10.SA4 (SU)	**Yes**	**Yes**
TRANS-11.SA4 (SU)	No (SU)	No (SU)

NOTES:
a. Values in parenthesis specify impact significance after mitigation: SU = Significant and Unavoidable, LTS = Less than Significant.

SOURCE: Fehr & Peers, 2016

Utilities and Service Systems

Alternative SA4-1 would result in similar less-than-significant (no mitigation required) impacts to utilities and service systems as identified with the Sub-Area 4 Project. Due primarily to the smaller area of development and lower population growth that this alternative represents in comparison to the Sub-Area 4 Project, this alternative would generate less overall demand for utilities and service systems than would occur with the Sub-Area 4 Project.

Alternative SA4-2: No Project / Existing Zoning Alternative

Description

Alternative SA4-2 (No Project / Existing Zoning) considers development that could likely occur in the Sub-Area 4 Project site through the natural course of growth under the existing zoning, to

the extent that the growth is within allowances currently permitted by the General Plan. Uses envisioned in Alternative SA4-2 would be similar to existing allowed uses, and would include light industrial, office, commercial, limited retail uses, and no residential uses. In comparison to buildout under the Sub-Area 4 Project, Alternative SA4-2 would be reduced by about 67 percent (in terms of area of buildout). As discussed in the analysis below, the reduction in development reduces the degree of many impacts identified for the Specific Plan. The development program for this alternative is shown in **Table 5-13**.

TABLE 5-13
ALTERNATIVE SA4-2 (NO PROJECT / EXISTING ZONING ALTERNATIVE)

Land Use	Conceptual Development Program	Unit
R&D/Business/Service	1,050,000	Square feet
Retail	36,000	Square feet
Residential	0	Dwelling unit
Open Space	113[a]	Acres

NOTES:

a. Includes areas of the Meeker Slough Wetlands, Stege Marsh, and Hoffman Marsh within the Plan Area (approximately 112.3 acres).

Aesthetics

Alternative SA4-2 would result in similar less-than-significant aesthetics impacts (no mitigation required) as those identified with the Sub-Area 4 Project, although the alternative would have lower building heights and less mass, and the effects would be less. Under the alternative and within the constraints of existing height allowances, development is anticipated to be relatively low rise, and approximately 2-3 stories in height, similar to existing buildings within the Sub-Area 4 Project site. This would reduce the Sub-Area 4 Project's effects regarding scenic vistas, light/glare, and shadow.

Air Quality

Alternative SA4-2 would result in similar less-than-significant (after mitigation) air quality impacts as those identified with the Sub-Area 4 Project, although the effects would be less. This alternative would develop approximately 33 percent of the area that would be developed under the Specific Plan; therefore, it would result in substantially less construction activity, and construction air quality impacts would be reduced. In addition, operational air emissions, primarily associated with vehicle use, would likewise be reduced.

Biological Resources

Alternative SA4-2 would result in similar less-than-significant (after mitigation) biological resources impacts as those identified with the Sub-Area 4 Project. Like the Sub-Area 4 Project, Alternative SA4-2 could involve development in and adjacent to areas of existing sensitive habitat and wetlands; this impact would be reduced because of the smaller area that would be

developed. All mitigation measures described for the impacts to biological resources that would occur under development of the Sub-Area 4 Project would apply to this alternative.

Cultural Resources

Alternative SA4-2 would result in the same less-than-significant (after mitigation) cultural resources impacts as those identified with the Sub-Area 4 Project. Alternative SA4-1 would involve construction and excavation activities in some of the same areas as for the Sub-Area 4 Project, although the area of disturbance would be smaller, and would require the same standard mitigation measures to address potential historic resources, potential human remains, and archaeological and paleontological resource discovery. This impact would be reduced in magnitude because of the smaller area that would be developed under this alternative.

Geology and Soils

Alternative SA4-2 would result in the same less-than-significant (no mitigation required) geology and soils impacts as those identified with the Sub-Area 4 Project. Alternative SA4-2 would involve construction and earthmoving activities which would require adherence to regulatory requirements to ensure less-than-significant impacts. The alternative would be subject to the same geologic hazard conditions as the Sub-Area 4 Project. This impact would be reduced in magnitude because of the smaller area that would be developed under this alternative.

Greenhouse Gases

Alternative SA4-2 would result in similar significant and unavoidable GHG emissions impacts as with the Sub-Area 4 Project. This determination is based on this alternative's total daily trips (10,900) compared to the Sub-Area 4 Project's (24,600), since mobile emissions (vehicle trips) are the most substantial GHG emissions source. This determination also considers this alternative's service population (2,200) compared to the Sub-Area 4 Project's (5,970), since the ratio of total emissions per persons onsite is reduced (improved) as service population increases. Taken together, compared to the Sub-Area 4 Project, this alternative would have less total GHG emissions and would have slightly more total emissions per service population annually; however, the impact would remain significant and unavoidable.

Hazards and Hazardous Materials

Alternative SA4-2 would result in the same less-than-significant (after mitigation) hazards and hazardous materials impacts as identified with the Sub-Area 4 Project. Alternative SA4-2 would involve similar construction and earthmoving activities as proposed under the Sub-Area 4 Project, including on areas where there may be hazardous conditions. This alternative would be subject to the same potential hazards risks and conditions, and would implement the same mitigation measures identified for the Sub-Area 4 Project.

Hydrology and Water Quality

Alternative SA4-2 would result in the same less-than-significant (after mitigation) hydrology and water quality impacts as identified with the Sub-Area 4 Project. Alternative SA4-2 would involve construction and earthmoving activities that could alter drainage patterns in the same areas as the Sub-Area 4 Project, and be subject to the same flood hazard conditions. Adherence to the same regulatory requirements would ensure less-than-significant impacts. This impact would be slightly reduced in magnitude because of the smaller area that would be developed under this alternative.

Land Use and Planning

Alternative SA4-2 would result in the same less-than-significant (no mitigation required) land use and planning impacts identified with the Sub-Area 4 Project. The beneficial effects of the Sub-Area 4 Project would not be realized with this alternative. Alternative SA4-2 would develop uses consistent with existing zoning, which would include industrial, commercial, and office uses. Development under this alternative would be consistent with the intensity and heights permitted by the General Plan, and would not pose any substantial conflict with other existing land use plans or policies.

Noise

Alternative SA4-2 would result in the same less-than-significant (with mitigation) construction and operations noise impacts as identified with the Sub-Area 4 Project, and the overall noise impact would be less than that for the Sub-Area 4 Project. This determination largely considers that this alternative's peak hour trips are 65 percent (AM peak hour) and 54 percent (PM peak hour) of the Sub-Area 4 Project's AM/PM peak hour trips, which would generate less traffic noise than with the Sub-Area 4 Project. This alternative would also develop less area than would be developed under the Sub-Area 4 Project, therefore it would also have slightly less construction activity, and construction noise impacts also would be reduced.

Population, Housing and Employment

Alternative SA4-2 would result in similar less-than-significant (no mitigation required) impacts to population, housing, and employment as identified with the Sub-Area 4 Project. Alternative SA4-2 would generate no overall population growth, and substantially lower non-residential development than the Sub-Area 4 Project, and like the Sub-Area 4 Project would not displace any people or housing or induce unanticipated growth to an extent that would result in additional impacts not otherwise addressed.

Public Services and Recreation

Alternative SA4-2 would result in similar less-than-significant (no mitigation required) impacts to public services and recreation as identified with the Sub-Area 4 Project. Due primarily to the smaller area of development and lower population growth that this alternative represents in comparison to the Sub-Area 4 Project, this alternative would generate less overall demand for

police, fire and emergency services, schools, and parks and recreation uses than would be generated with the Sub-Area 4 Project. Less population would result with this alternative, and, correspondingly, less use of existing recreation facilities would occur.

Transportation and Circulation

Alternative SA4-2 would reduce some traffic impacts to less-than-significant (after mitigation), as compared to significant and unavoidable traffic impacts that would result under buildout of the Specific Plan. Alternative SA4-2 includes about 33 percent of the development that would occur under buildout of the Sub-Area 4 Project and would generate 56 percent fewer peak hour trips, but with similar trip assignment patterns. Based on an analysis of trip generation and resulting roadway volumes, this alternative is anticipated to reduce to less-than-significant three of the impacts identified as significant and unavoidable under buildout of the Sub-Area 4 Project, as shown in Table 5-12.

Utilities and Service Systems

Alternative SA4-2 would result in similar less-than-significant (no mitigation required) impacts to utilities and service systems as identified with the Sub-Area 4 Project. Due primarily to the smaller area of development and lower population growth that this alternative represents in comparison to the Sub-Area 4 Project, this alternative would generate less overall demand for utilities and service systems than would occur with the Sub-Area 4 Project.

5.6 Environmentally Superior Alternatives to the Specific Plan

CEQA *Guidelines* Section 15126.6 require that an EIR identify an environmentally superior alternatives, which is the CEQA alternative that reduces or avoids the identified significant environmental impacts to the greatest extent. The evaluation below first considers the extent to which each of the alternatives reduces or avoids the significant and unavoidable impacts identified with the Specific Plan. The extent to which an alternative reduces or avoids less-than-significant impacts identified with the Specific Plan is also considered, balanced by consideration of the extent to which the impacts affects the physical environment. The Specific Plan results in significant and unavoidable impacts to air quality, noise, and traffic only.

Table 5-14 shows the comparison of the impacts for the Specific Plan and Sub-Area 4 Project and each alternative.

FIGURE TABLE 5-14
IMPACT COMPARISON OF THE SPECIFIC PLAN ALTERNATIVES

CEQA Impact Topic [a]	Specific Plan [b]	SP-1: Specific Plan Lowest Intensity Alternative	SP-2: Specific Plan Low Intensity Alternative	SP-3: Specific Plan No Project / Existing Zoning Alternative	Sub-Area 4 Project [b]	SA4-1: Low Intensity Project Alternative	SA4-2: Low No Project / Existing Zoning Project Alternative
Aesthetics	LS	LS⇩	LS	LS⇩	LS	LS⇩	LS⇩
Air Quality							
Construction	SU	LSM	SU	LSM	LSM	LSM⇩	LSM⇩
Operations	SU	SU	SU	SU	SU	SU	SU
Biological Resources	LSM	LSM⇩	LSM⇩	LSM⇩	LSM	LSM⇩	LSM⇩
Cultural Resources	SU	SU	SU	SU	LSM	LSM⇩	LSM⇩
Geology and Soils	LS	LS	LS	LS	LS	LS	LS
Greenhouse Gases	SU	SU	SU	SU	LS	LS	LS
Hazards and Hazardous Materials	LSM	LSM⇩	LSM⇩	LSM⇩	LSM	LSM⇩	LSM⇩
Hydrology and Water Quality	LSM	LSM⇩	LSM⇩	LSM⇩	LSM	LSM⇩	LSM⇩
Land Use and Planning	LS	LS	LS	LS	LS	LS	LS
Noise							
Construction	LSM	LSM⇩	LSM⇩	LSM⇩	LSM	LSM⇩	LSM⇩
Operations (mobile)	SU	LSM	SU⇩	LSM	LSM	LSM	LSM
Population, Housing and Employment	LS	LS	LS	LS	LS	LS	LS
Public Services and Recreation	LS	LS⇩	LS⇩	LS⇩	LS	LS⇩	LS⇩
Utilities and Service Systems	LSM	LSM⇩	LSM⇩	LSM⇩	LSM	LSM⇩	LSM⇩
Transportation and Circulation	SU	SU⇩[c]	SU⇩[c]	SU⇩[c]	SU	SU⇩[c]	SU⇩[c]

[a] Subcategories of CEQA topics shown only where necessary to show substantial difference in impacts

[b] Impact shown for most severe impact under each environmental topic.

[c] Some SU impacted intersections/mainlines avoided, with others still remaining SU.

N No Impact
LS Less than significant; no mitigation required
LSM Less than significant impact after mitigation
SU Significant and Unavoidable after mitigation
⇧⇩ Impact is more severe or less severe than project impact, after mitigation
Shading indicates change from impact identified with the project.

5.6.1 Environmentally Superior Alternative to the Specific Plan

The environmentally superior alternative to the Specific Plan is evaluated and discussed below.

No Project Specific Plan Alternative

Alternative SP-3 (No Project / Existing Zoning) would have the least amount of total development relative to the Specific Plan (3.6 million square feet [msf] +270 residential dwelling units [du] compared to 6.4 msf + 5,700 du), with predominate land uses being industrial and related office, as is consistent with the existing zoning in the area. As a result, Alternative SP-3 would generate substantially fewer AM/PM peak hour and daily vehicle trips than the Specific Plan, and would generate less population and employment growth than the Specific Plan (and each of the other alternatives). As represented in Table 5-11, this would ***reduce*** the effects regarding most quantifiable topics (construction and operational air quality, GHG emissions, construction and operational noise, and the demand for public services, recreation, and utilities). In addition, significant and unavoidable impacts related to construction air quality (NOx emissions), noise (traffic along Marina Way) and traffic (impacts at three locations) would be reduced to less than significant. This alternative, however, would not meet the Specific Plan objectives to the same extent as other Specific Plan objectives: it would not create complete neighborhoods or revitalize the South Shoreline area to the same extent.

Environmentally Superior Specific Plan Alternative

The CEQA *Guidelines* (Section 15126[e][2]) stipulate "If the environmentally superior alternative is the 'no project' alternative, the EIR shall also identify an environmentally superior alternative among the other alternatives." **Alternative SP-1 (Lowest Intensity Alternative)** is the environmentally superior Specific Plan alternative that is not a "no project" scenario. As discussed above, Alternative SP-1 would reduce the Specific Plan's buildout by 55 percent (4.9 msf + 850 du compared to 6.4 msf + 5,700 du) and would generate less population and employment growth than the Specific Plan (and Alternative SP-2, the other development alternative). As represented in Table 5-11, Alternative SP-1 would thereby ***reduce*** the effect of most of the quantifiable topics mentioned above (for Alternative SP-3, No Project / Existing Zoning) compared to those identified for the Specific Plan. Alternative SP-1 would also, like Alternative SP-3, reduce significant and unavoidable impacts related to construction air quality (NOx emissions), noise (traffic along Marina Way), and traffic (impacts at three locations) to less than significant. In addition, this alternative would better meet the Specific Plan objectives than Alternative SP-3 (create complete neighborhoods and revitalize the South Shoreline area).

In summary, **Alternative SP-1, Lowest Intensity Alternative** is the environmentally superior alternative that would most ***reduce*** the degree of the effects that would occur under buildout of the Specific Plan. It would also reduce significant and unavoidable impacts related to construction air quality, noise, and traffic to less than significant, while attaining all of the Specific Plan's objectives (though to a lesser degree than would be achieved under the Specific Plan).

5.6.2 Environmentally Superior Alternative to the Sub-Area 4 Project

The environmentally superior alternative to the Sub-Area 4 Project is evaluated and discussed below.

No Project Sub-Area 4 Project Alternative

Alternative SA4-2 (No Project / Existing Zoning) would have the least amount of total development relative to the Sub-Area 4 Project (1.1 million square feet [msf] +0 residential dwelling units [du] compared to 1.5 msf + 1,520 du), with predominate land uses being industrial and related office, as is consistent with the existing zoning in the area. As a result, Alternative SA4-2 would generate substantially fewer AM/PM peak hour and daily vehicle trips than the Specific Plan, and would generate less population and employment growth than the Specific Plan (and each of the other alternatives). As represented in Table 5-11, this would ***reduce*** the effects regarding most quantifiable topics (construction and operational air quality, GHG emissions, construction and operational noise, and the demand for public services, recreation, and utilities). In addition, significant and unavoidable impacts related to traffic (impacts at three locations) would be reduced to less than significant. This alternative, however, would not meet the Specific Plan objectives to the same extent as other Specific Plan objectives: it would not establish a vibrant mixed-use neighborhood or generate tax revenues to the same extent.

Environmentally Superior Sub-Area 4 Project Alternative

The CEQA *Guidelines* (Section 15126[e][2]) stipulate "If the environmentally superior alternative is the 'no project' alternative, the EIR shall also identify an environmentally superior alternative among the other alternatives." **Alternative SA4-1 (Low Intensity Alternative)** is the environmentally superior Sub-Area 4 Project alternative that is not a "no project" scenario. As discussed above, Alternative SA4-1 would reduce the Specific Plan's buildout by 57 percent (1.4 msf + 115 du compared to 1.5 msf + 1,520 du) and would generate less population and employment growth than the Sub-Area 4 Project. As represented in Table 5-11, Alternative SA4-1 would thereby ***reduce*** the effect of most of the quantifiable topics mentioned above (for Alternative SA4-2, No Project / Existing Zoning) compared to those identified for the Sub-Area 4 Project. Alternative SA4-1 would also, like Alternative SA4-2, reduce significant and unavoidable impacts related to traffic (impacts at three locations) to less than significant.

In summary, **Alternative SA4-1, Low Intensity Alternative** is the environmentally superior Sub-Area 4 Project alternative that would most ***reduce*** the degree of the effects that would occur under buildout of the Sub-Area 4 Project. It would also reduce significant and unavoidable impacts related to traffic to less than significant, while attaining all of the Sub-Area 4 Project's objectives (though to a lesser degree than would be achieved by the Sub-Area 4 Project).

References – Alternatives

City of Richmond, 2011. Zoning Ordinance: City of Richmond, CA. Available at:www.ci.richmond.ca.us/index.aspx?NID=101. Accessed February 2016.

City of Richmond, 2012. *Richmond General Plan 2030: Land Use Element.* Adopted April 25, 2012.

City of Richmond, 2014. South Shoreline Specific Plan: Community Workshop Summary. March, 2014.

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CHAPTER 6
Other Statutory Sections

Consistent with the CEQA *Guidelines* Section 15126.2, this section summarizes the growth-inducing effects, significant irreversible environmental changes, significant unavoidable environmental effects, and effects found to be less than significant associated with development under the Specific Plan and development of the Sub-Area 4 Project. Cumulative impacts are separately discussed in Chapter 4, *Environmental Setting, Impacts, and Mitigation Measures*.

6.1 Growth-Inducing Impacts

This section addresses the ways that the adoption of and development under the Specific Plan and the Sub-Area 4 Project "could foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment" (Section 15126.2(d) of the CEQA *Guidelines*). This section summarizes topics and impacts also addressed in Section 4.11 *Population, Housing, and Employment*, which provides the context for evaluating growth-inducing impacts.

6.1.1 Growth in the Plan Area and Project Site

Specific Plan

Some level of population growth in the Plan Area was anticipated in the Richmond General Plan 2030 maximum growth assumptions and is supported and encouraged by numerous General Plan policies. Development under the Specific Plan would also increase intensity of development within a Priority Development Area designated under Plan Bay Area, consistent with the goals of that plan. Development under the Specific Plan would result in up to 11,490 new residents and 12,800 new employees in the Plan Area, directly as a result from up to 5,700 new housing units and approximately 6.41 million square feet of new space for businesses, as specified in the foreseeable maximum theoretical buildout scenario of the Specific Plan (see Table 3-3 in Chapter 3, *Project Description*).[1]

As described in Section 4.11, *Population, Housing and Employment*, of this EIR, estimated growth under the proposed Specific Plan would result in a greater degree of growth, especially job growth, than that envisioned under the General Plan for the Plan Area. The growth of households and population due to the adoption of and development under the Specific Plan would contribute to

[1] As detailed in Section 4.11, *Population, Housing and Employment*, conservatively, all population is considered new.

population growth expected in Richmond in the future. The amount of population growth anticipated from development under the Specific Plan would account for about 37 percent of total population growth projected for Richmond by ABAG, and presented in the General Plan EIR, for Richmond between 2015 and 2040. As projected under the General Plan and evaluated in the General Plan EIR, implementation of the Specific Plan would result in more than half (56 percent) of the total job growth in the city by 2030. When compared to *total* population anticipated in Richmond in 2040 per ABAG projections, development under the Specific Plan would contribute approximately 8.2 percent.

The City has prepared the Specific Plan as part of its implementation of the General Plan, which stipulates that the City prepare a specific plan for the Southern Gateway/Southern Shoreline area, as discussed in Section 4.9, *Land Use and Planning*, and Section 4.11, *Population and Housing*, of this EIR, which present and describe consistency of the Specific Plan with the goals of the General Plan and specific General Plan policies and actions. Growth in the Plan Area was anticipated in the General Plan's maximum growth assumptions, and is supported and encouraged by numerous General Plan policies. As part of the Specific Plan process, the City further refined the overall vision for the Plan Area, in conjunction with planning for the adjacent Berkeley Global Campus, and according to economic and real estate market feasibility analysis, resulting in a higher intensity of uses proposed for the Plan Area than identified in both the General Plan and Plan Bay Area.[2] The General Plan includes as a key finding and recommendation regarding the revitalization of Richmond's Southern Gateway area, that "[n]atural beauty, historic assets and convenient access to Interstate 580 present incredible potential to develop the southern shoreline area into a higher-intensity, mixed-use center." The actions and policies identified in the General Plan (e.g., Policy LU1.5, Policy LU4.1, Action LU3.E) envision significant redevelopment of the Southern Gateway area to include transit-oriented, mixed-use community uses including education, research and development, light industrial, residential and other sensitive uses. Further details are presented in Section 4.9, *Land Use and Planning*.

While the Specific Plan proposes a more intense level of development for the Plan Area than envisioned for the designated South Richmond PDA by the Plan Bay Area process, development of the higher-density and intensity mixed uses defined in the Specific Plan close to transit supports the overall goals of Plan Bay Area, by going farther in promoting Plan Bay Area policies intended to locate housing close to jobs and reduce GHG emissions than anticipated for this PDA. As discussed in Section 4.6, *Climate Change and Greenhouse Gases*, of this EIR, the density of uses proposed under the Specific Plan would result in GHG emissions that would not exceed the service population screening threshold of the BAAQMD, by a substantial margin, indicating the efficiency inherent in the Specific Plan and its success in reducing GHG emissions. In addition, as discussed in Section 4.11, *Population and Housing*, the jobs/housing ratio represented by the Specific Plan would be higher than the existing and projected jobs/housing ratio for the city overall (which is richer in housing than jobs). Implementation of the Specific Plan would

[2] As stated in the City's grant application to ABAG for the Priority Development Area: "While the 2030 General Plan provides a land use vision and related policies for Change Areas 15 (Regatta Marina Bay) and 16 (Southern Gateway), a more detailed plan is needed to integrate the proposed LBNL development with the surrounding community and where appropriate encourage more intense development patterns (City of Richmond, 2012)."

therefore increase the city's jobs/housing ratio to a level that would further promote the goals of Plan Bay Area to locate jobs close to housing.

Implementation of the Specific Plan would not create or increase pressure on other areas to develop or intensify: development surrounding the Plan Area includes established commercial and industrial uses, residential neighborhoods, as well as open space area designated as such in the General Plan and/or the Specific Plan. None of these established nearby areas would be directly induced to redevelop or intensify specifically as a result of Specific Plan growth.

Overall, population growth associated with adoption of and development under the Specific Plan would not result in population growth in a manner not anticipated in Richmond's General Plan 2030, and development under the Specific Plan would not induce substantial population growth beyond the other levels of growth evaluated in this EIR.

Sub-Area 4 Project

Development of the Sub-Area 4 Project would result in direct growth of up to 3,070 new residents and up to 2,900 new employees on the project site, based on the foreseeable maximum theoretical buildout scenario for the Project (see Table 3-5 of Chapter 3, *Project Description*). Growth under the Sub-Area 4 Project is consistent with the level of growth described for Sub-Area 4 of the Specific Plan; this growth would not likely induce substantial population growth beyond the other levels of growth evaluated in this EIR and discussed above with respect to the Specific Plan in its entirety. The Project would involve associated amendments to the General Plan and Zoning Ordinance to accommodate the proposed level of development that would generate its substantial increase in employment growth compared to that previously envisioned.

6.1.2 Growth Outside the Plan Area and Project Site

Specific Plan

Development under the Specific Plan would not induce population growth beyond the growth contemplated in the General Plan such that new or existing infrastructure would need to be extended into areas outside of the Plan Area. Much of the Plan Area is considered an infill site in an existing urban waterfront area. The Plan Area is also well-served by regional transportation (I-580 and I-80) and is close to employment centers in Richmond, El Cerrito, Albany, and Berkeley. Additional improvements to existing infrastructure that will take place as part of development under the Specific Plan will directly support development of the Plan Area.

As described in Chapter 3, *Project Description*, and in Section 4.14, *Utilities and Service Systems*, development under the Specific Plan would include installation of new water pipelines, new stormwater infrastructure, new sanitary sewer mains, and new gas and electrical installations. Also, future cumulative conditions include numerous potential future traffic improvements that would occur in and around the Plan Area and are part of the South Richmond Transportation Connectivity Plan (SRTCP) as described in Section 4.13, *Transportation and Traffic*. Together, these utility and transportation improvements would be required to support the types, densities, and intensities of redevelopment anticipated under the Specific Plan and as envisioned by the

General Plan. However, these improvements to support development under the Specific Plan would not induce substantial population growth indirectly. As described below in the discussion of potential secondary effects, the area outside the Plan Area is well-served by regional transportation and local roadways, and substantially preserved or developed (e.g., the Bay and protected open spaces, the Berkeley Global Campus site, established residential neighborhoods, large-scale industrial development, etc.). New infrastructure associated with the Specific Plan would not induce substantial additional growth not associated with the Plan.

Further, the Plan Area is geographically defined by the Bay and tributaries, I-580, and defined roadways (e.g., Marina Bay South, Regatta Way) that distinguish the Plan Area from adjacent, established areas and land uses, such as residential neighborhoods. There are numerous connections between the Plan Area to adjacent areas and I-580; therefore, there are no obstacles to future development that implementation of the Specific Plan would affect. In addition, one of the primary goals of the Specific Plan is the development of "complete neighborhoods," served by local and neighborhood retail and services, further reducing the possibility of inducement of growth of additional residential, retail, or service uses outside of the Plan Area.

Overall, implementation of the Specific Plan would result in substantial growth relative to that anticipated by the General Plan 2030 and Plan Bay Area. Although, as described in this EIR, this growth would not exceed existing physical or system capacities within the Plan Area, indirect effect could occur: more jobs would be developed than housing in the Plan Area, potentially causing an increased demand in housing in areas of Richmond outside of the Plan Area, or in other parts of the Bay Area. In addition, new residents in the Plan Area, while likely to seek services and amenities that would be developed within the complete neighborhoods within the Plan Area, could also increase demand for these services outside of the Plan Area, in other parts of Richmond and the East Bay. These indirect forces – increased demand for housing, services, and amenities – could induce growth in other parts of the city and the Bay Area. Some of this indirect growth may be dispersed throughout the Bay Area. Growth within the City of Richmond is also likely to be dispersed within existing developed areas, and take place as urban infill; however, some less developed areas and areas adjacent to open space could be subject to development pressure. Development in such areas will be subject to further CEQA review and is likely to be limited, based on the City's existing policies and practices for protection of open space. Regardless, development under the Specific Plan would facilitate the growth planned in the General Plan, which would cause environmental effects, as discussed in the 2030 General Plan EIR. A summary of the significant impacts identified for full buildout of the General Plan is presented in the 2030 General Plan EIR, and is hereby incorporated by reference.

Sub-Area 4 Project

For the reasons stated above for the Specific Plan, the Sub-Area 4 Project would also not induce substantial growth outside of the Project site boundary. The Sub-Area 4 Project would not induce substantial growth in other areas.

6.1.3 Secondary and Temporary Effects of Growth

Specific Plan

The major retail and mixed-use developments anticipated with adoption and development under the Specific Plan would bring visitors and shoppers to the Plan Area. Their spending would support the businesses and employees to be located in the new developments. There also could be some additional spending that would support businesses in the vicinity of the Plan Area. The additional spending is unlikely to result in the construction of new facilities because of the large amount of retail and commercial space to be developed as a result of the Specific Plan.

Construction of development under the Specific Plan would result in construction employment. The employment growth associated with construction work, however, would be limited and intermittent as the Specific Plan is realized over time, and, as discussed in Section 4.11, *Population and Housing*, the majority of construction workers are anticipated to originate from the local and regional labor pool, and would not relocate within the City, further reducing the potential for secondary effects.

Sub-Area 4 Project

Development of the Sub-Area 4 Project is not likely to induce secondary growth beyond the project site beyond that envisioned in the General Plan. Growth will occur within Sub-Area 4 of the Plan Area regardless of whether the Sub-Area 4 Project occurs. Other areas near the Project site, primarily across I-580, are already developed with a mix of largely residential uses as well as industrial uses, and are not likely to be subject to substantial secondary growth. Construction of the Sub-Area 4 Project would occur over approximately 13 years; construction workers are likely to originate from the regional labor pool, and any temporary construction employment that would be stimulated during this time would be minor, and for a relatively limited duration.

6.1.4 Effect on Growth Pressures Elsewhere in the Region

From a regional perspective, the adoption of and development under the Specific Plan and Sub-Area 4 Project would affect the distribution and location of growth within the East Bay and Bay Area region. It would result in more growth in Richmond and the Plan Area, and less growth in other areas. As a result of adoption and development under the Specific Plan, retail and service developments in the Plan Area would capture activity that would otherwise locate elsewhere in the East Bay and/or Bay Area. Development of retail in the Plan Area would increase shopping opportunities in Richmond and stem the leakage of retail spending to areas outside of Richmond in the East Bay and San Francisco. Thus, adoption of and development under the Specific Plan would facilitate retail and services development in a central, regional location with good transportation/transit accessibility from throughout the region. It would facilitate retail development in proximity to Richmond consumers thereby reducing their travel distances for shopping trips.

Adoption of and development under the Specific Plan would accommodate more population growth in a location with strong housing demand, thereby reducing demand for housing in more outlying locations. Higher-density housing in the Plan Area would likely result in a larger total regional housing supply than would a more dispersed, lower-density pattern of regional development. Further, it would likely result in more housing in proximity to public transportation and employment centers in the Central Bay Area.

6.1.5 Summary

Overall, the effects of adoption and development under the Specific Plan and/or the Sub-Area 4 Project on growth would be largely beneficial and consistent with the goals of both the General Plan and Plan Bay Area, and are not considered substantial and adverse.

6.2 Significant Irreversible Environmental Effects

An EIR must identify any significant irreversible environmental changes that could result from adoption and development under the Specific Plan. These may include current or future uses of non-renewable resources, and secondary or growth-inducing impacts that commit future generations to similar uses. CEQA dictates that irretrievable commitments of resources should be evaluated to assure that such current consumption is justified (CEQA *Guidelines* Section 15126.2(c)). The CEQA *Guidelines* identify three distinct categories of significant irreversible changes: (1) changes in land use that would commit future generations; (2) irreversible changes from environmental actions; and (3) consumption of non-renewable resources.

6.2.1 Changes in Land Use Which Would Commit Future Generations

Development under the Specific Plan and the Sub-Area 4 Project would result in growth and development within the Plan Area. Adoption and development under the Specific Plan and the Sub-Area 4 Project require amendments to the General Plan and Zoning Ordinance, but growth within the Plan Area and from development of the Project would be consistent with the land use designated by the Richmond General Plan 2030 and with Plan Bay Area. Further, development under the Specific Plan or Sub-Area 4 Project would occur within an urbanized area surrounded by similar or compatible uses and would not commit future generations to significant changes in land use that would be adverse.

6.2.2 Irreversible Changes from Environmental Accidents

As discussed in Section 4.7, *Hazards and Hazardous Materials*, of this EIR, no significant irreversible environmental damage, such as what could occur as a result of an accidental spill or explosion of hazardous materials, is anticipated due to the adoption and development under the Specific Plan, or development of the Sub-Area 4 Project. Furthermore, compliance with federal, State, and local regulations associated with hazards and hazardous materials identified in Section 4.7 would reduce to a less-than-significant level the possibility that hazardous substances

associated with development under the Specific Plan or the Project would result in irreversible environmental damage from accidental spill or explosion.

6.2.3 Consumption of Non-Renewable Resources

Consumption of non-renewable resources includes conversion of agricultural lands, loss of access to mining reserves, and use of non-renewable energy sources. The Plan Area and the Project site are located within an urban infill area of Richmond; as discussed below, no agricultural land would be converted to non-agricultural uses. As further discussed below, the Plan Area and Project site do not contain known mineral resources and do not serve as mining reserves.

Adoption and development under the Specific Plan or Sub-Area 4 Project would require the use of energy, including energy produced from non-renewable resources. Resources that would be permanently and continually consumed by projects developed under the Specific Plan or the Sub-Area 4 Project include water, electricity, natural gas, and fossil fuels; however, the amount and rate of consumption of these resources would not result in significant environmental impacts or the unnecessary, inefficient, or wasteful use of resources. In addition, as discussed in Section 4.6, *Climate Change and Greenhouse Gases*, of this EIR, the City of Richmond procures electricity from Marin Clean Energy, a provider that gives customers the choice of having 50 to 100 percent of their electricity supplied from renewable energy sources such as solar, wind, bioenergy, and hydroelectric sources (City of Richmond, 2016). As of 2015, over 80 percent of Richmond's electrical customers have enrolled in Marin Clean Energy. Projects developed under the Specific Plan are anticipated to be enrolled in Marin Clean Energy at a similar rate to City-wide enrollment, and implementation of the Specific Plan will support the City in its goal to provide 100 percent of its electricity from renewable sources by 2025. Construction activities related to projects developed under the Specific Plan or the Sub-Area 4 Project, though previously analyzed, would result in the irretrievable commitment of nonrenewable energy resources, primarily in the form of fossil fuels, natural gas, and gasoline for automobiles and construction equipment. With respect to the operational activities of projects developed under the Specific Plan or the Sub-Area 4 Project, compliance with all applicable building codes, as well as EIR mitigation measures, would ensure that all natural resources are conserved to the maximum extent practicable. In addition, the future development projects under the Specific Plan and the Sub-Area 4 Project would incorporate energy-conserving features, as required by the all applicable City Codes and General Plan programs and policies.

6.3 Cumulative Impacts

The approach used in this EIR for cumulative impact analysis is described in the introduction to Chapter 4 (Chapter 4.0), *Environmental Setting, Impacts, and Mitigation Measures*. The analysis of each environmental topic included in Chapter 4 evaluates possible cumulative impacts considering regional development in combination with the buildout of the proposed Specific Plan and Sub-Area 4 Project.

As noted below, under Section 6.4, *Significant and Unavoidable Environmental Impacts*, construction and operation of the proposed Specific Plan or Sub-Area 4 Project in combination with development in the surrounding area would result in significant and unavoidable impacts under cumulative conditions related to air quality, noise, and traffic.

6.4 Significant and Unavoidable Environmental Impacts

In accordance with CEQA *Guidelines* sections 15064 and 15065, an EIR must identify impacts that would not be eliminated or reduced to an insignificant level by mitigation measures included as part of the proposed project, or by other mitigation measures that would be implemented.

Development facilitated by the Specific Plan and Sub-Area 4 Project would result in the following significant and unavoidable impacts that cannot be mitigated to a less-than-significant level.

Significant and Unavoidable Air Quality Impacts:

- **Impact AIR-2.SP:** Development under the Specific Plan would result in average daily construction emissions over 54 pounds per day of NO_X (Criteria a., b.).

- **Impact AIR-3.SP:** Adoption and development under the Specific Plan would result in operational average daily emissions that could violate any air quality standard, contribute substantially to an existing or projected air quality violation or result in a cumulatively significant net increase of any nonattainment pollutant. (Criteria b., c.).

- **Impact AIR-4.SP:** Adoption and development under the Specific Plan would result in new sources of toxic Air Contaminants (TACs) and could expose new receptors to existing sources of TACs (Criterion d.).

- **Impact AIR-3.SA4:** The Sub-Area 4 Project would result in emissions of criteria air pollutants at levels that could violate an air quality standard, or contribute to an existing or projected air quality violation (Criterion b).

- **Impact C-AIR-1.SP:** The Specific Plan, in combination with past, present, and reasonably foreseeable future development would contribute to cumulative regional air quality impacts.

- **Impact C-AIR-2SP**: The Specific Plan, in combination with past, present, and reasonably foreseeable future development would contribute to cumulative health risk impacts on sensitive receptors.

- **Impact C-AIR-1.SA4:** The Sub-Area 4 Project, in combination with past, present, and reasonably foreseeable future development of cumulative projects would contribute to cumulative regional air quality impacts.

Significant and Unavoidable Impacts Related to Cultural Resources:

- **Impact CUL-1.SP:** Implementation of the Specific Plan could cause a substantial adverse change in the significance of a historical resource. (Criterion a.)

- **Impact C-CUL-1.SP:** Construction activity and development under the Specific Plan, in combination with past, present, existing, approved, pending and reasonably foreseeable future projects within and in the vicinity of the Plan Area, would contribute to an adverse cumulative impact to cultural resources, but the contribution would not be considerable.

Significant and Unavoidable Impacts Related to Climate Change and Greenhouse Gases:

- **Impact GHG-1.SP:** Construction and operation of development under the Specific Plan would generate greenhouse gas emissions, that may have a significant impact on the environment (Criterion a).

- **Impact GHG-1.SA4:** Development under the Sub-Area 4 Project would produce greenhouse gas emissions that could have a significant impact on the environment (Criterion a).

- **Impact C-GHG-1.SP:** Development under the Specific Plan, combined with cumulative development, including past, present, existing, approved, pending, and reasonably foreseeable future development in the Plan Area and its vicinity, would result in cumulative impacts regarding GHG emissions and climate change (Criteria a and b).

- **Impact C-GHG-1.SA4:** Development under the Sub-Area 4 Project, combined with cumulative development, including past, present, existing, approved, pending, and reasonably foreseeable future development in the vicinity of the Sub-Area 4 Project site, would result in cumulative impacts regarding GHG emissions and climate change (Criteria a and b).

Significant and Unavoidable Noise Impacts:

- **Impact NOI-4.SP:** Traffic generated by development under the Specific Plan could substantially increase traffic noise levels in the Plan Area (Criterion c.).

- **Impact C-NOI-3.SP:** Traffic generated by development under the Specific Plan in combination with traffic from cumulative development could contribute considerably to cumulative noise impacts (Criterion c.).

Significant and Unavoidable Transportation and Traffic Impacts:

- **Impact TRF-3.SP:** Traffic generated by the Specific Plan would cause the side-street stop-controlled Westbound I-580 Ramps/Juliga Woods Street intersection (#17) to operate at LOS F during both AM and PM peak hours under Existing Plus Project conditions. The intersection would meet the California MUTCD peak-hour volume signal warrant under Existing Plus Project conditions (Criterion a.).

- **Impact TRF-4.SP:** Traffic generated by the Specific Plan would cause the signalized Meade Street/Regatta Boulevard/Eastbound I-580 Ramps intersection (#18) to degrade from LOS A to LOS F during both AM and PM peak hours under Existing Plus Project conditions (Criterion a.).
- **Impact TRF-6.SP:** Traffic generated by the Specific Plan would cause the all-way stop-controlled Bayview Avenue/51st Street/Seaport Avenue/Eastbound I-580 Ramps intersection (#25) to degrade from LOS D during the AM peak hour and LOS C during the PM peak hour to LOS F during both AM and PM peak hours under Existing Plus Project conditions. The intersection would meet the California MUTCD peak-hour volume signal warrant under Existing Plus Project conditions (Criterion a.).
- **Impact TRF-7.SP:** Traffic generated by the Specific Plan would cause the all-way stop-controlled Central Avenue/Eastbound I-580 Ramps intersection (#36) to degrade from LOS C to LOS F during the PM peak hour under Existing Plus Project conditions. The intersection would meet the California MUTCD peak-hour volume signal warrant under Existing Plus Project conditions (Criterion a.).
- **Impact TRF-8.SP:** Traffic generated by the Specific Plan would cause the all-way stop-controlled Central Avenue/Westbound I-580 Ramps intersection (#37) to degrade from LOS D to LOS E during the PM peak hour under Existing Plus Project conditions. The intersection would meet the California MUTCD peak-hour volume signal warrant under Existing Plus Project conditions (Criterion a.).
- **Impact TRF-9.SP:** Traffic generated by the Specific Plan would cause a significant impact on the freeway segments under Existing Plus Project conditions (Criterion a.).
- **Impact TRF-10.SP:** Traffic generated by the Specific Plan would cause the signalized Cutting Boulevard/Harbour Way South intersection (#5) to degrade from LOS D to LOS E during the AM peak hour and from LOS E to LOS F during the PM peak hour under 2040 conditions (Criterion a.).
- **Impact TRF-13.SP:** Traffic generated by the Specific Plan would cause the signalized Cutting Boulevard/23rd Street intersection (#11) to degrade from LOS C to LOS F during the AM peak hour and contribute to LOS F operations and increase the average control delay by more than five seconds during the PM peak hours under 2040 conditions (Criterion a.).
- **Impact TRF-15.SP:** Traffic generated by the Specific Plan would cause the side-street stop-controlled Westbound I-580 Ramps/Juliga Woods Street intersection (#17) to operate at LOS F during the AM peak hour and would contribute to LOS F operations during the PM peak hour under 2040 conditions. The intersection would meet the California MUTCD peak-hour volume signal warrant under 2040 Plus Project conditions (Criterion a.).
- **Impact TRF-16.SP:** Traffic generated by the Specific Plan would cause the signalized Meade Street/Regatta Boulevard/Eastbound I-580 Ramps intersection (#18) to degrade from LOS E to LOS F during the AM peak hour and from LOS B to LOS F during the PM peak hour under 2040 conditions (Criterion a.).
- **Impact TRF-18.SP:** Traffic generated by the Specific Plan would contribute to the LOS F operations during both AM and PM peak hours at the all-way stop-controlled Bayview Avenue/51st Street/Seaport Avenue/Eastbound I-580 Ramps intersection (#25) under 2040

conditions. The intersection would meet the California MUTCD peak-hour volume signal warrant under 2040 Plus Project conditions (Criterion a.).

- **Impact TRF-19.SP:** Traffic generated by the Specific Plan would cause the signalized Bayview Avenue/Carlson Boulevard intersection (#26) to degrade from LOS D to LOS F during the AM peak hour and LOS C to LOS F during the PM peak hour under 2040 conditions (Criterion a.).
- **Impact TRF-20.SP:** Traffic generated by the Specific Plan would contribute to the LOS F operations during both AM and PM peak hours at the signalized Carlson Boulevard/Westbound I-80 Ramps intersection (#28) under 2040 conditions (Criterion a.).
- **Impact TRF-21.SP:** Traffic generated by the Specific Plan would contribute to the LOS F operations during both AM and PM peak hours at the signalized Carlson Boulevard/Eastbound I-80 Ramps intersection (#29) under 2040 conditions (Criterion a.).
- **Impact TRF-23.SP:** Traffic generated by the Specific Plan would cause a significant impact on the freeway segments under 2040 conditions (Criterion a.).
- **Impact TRF-24.SP:** Traffic generated by the Specific Plan combined with the implementation of the proposed mitigation measures (specifically, eliminating one travel lane in both directions of both Cutting and Carlson Boulevards) would cause the signalized Cutting Boulevard/Carlson Boulevard intersection (#16) to degrade from LOS D during both AM and PM peak hours under 2040 Plus Project conditions to LOS E during the AM peak hour and LOS F during the PM peak hour under the 2040 Plus Project Mitigated conditions (Criterion a.).
- **Impact TRF-25.SP:** Traffic generated by the Specific Plan combined with the implementation of the proposed mitigation measures (specifically, eliminating one travel lane in both directions of Cutting Boulevard) would cause the signalized Cutting Boulevard/I-80 Westbound Off-Ramp intersection (#20) to degrade from LOS D under 2040 Plus Project conditions to LOS F during under the 2040 Plus Project Mitigated conditions during both AM and PM peak hours (Criterion a.).
- **Impact TRF-26.SP:** Buildout of the proposed Specific Plan would generate substantial multi-modal traffic traveling across at-grade railroad crossings that cause or expose roadway users (e.g., motorists, pedestrians, bicyclists) to a permanent and substantial transportation hazard (Criterion c.).
- **Impact TRF-27.SP:** Buildout of the proposed Specific Plan would generate automobile traffic that would result in automobile queues on off-ramps extending to the I-580 freeway mainline at the Regatta Boulevard/Meade Street and Bayview Avenue interchanges. (Criterion c.).
- **Impact TRF-1.SA4:** Unsignalized intersection operations at Bayview Avenue/51st Street/Seaport Avenue/Eastbound I-580 Ramps (#25) would deteriorate to an unacceptable LOS due to traffic generated by the Sub-Area 4 Project and would warrant the installation of a traffic signal under Existing Plus Sub-Area 4 Project conditions. (Criterion a.).
- **Impact TRF-4.SA4:** Unsignalized intersection operations at Westbound I-580 Ramps/Juliga Woods Street (#17) would worsen the already unacceptable LOS F conditions due to traffic generated by the Sub-Area 4 Project and would warrant the installation of a traffic signal under 2040 Plus Sub-Area 4 Project conditions. (Criterion a.).

- **Impact TRF-5.SA4:** Signalized intersection operations at Meade Street/Regatta Boulevard/ Eastbound I-580 Ramps (#18) would worsen the already unacceptable LOS F conditions due to traffic generated by the Sub-Area 4 Project under 2040 Plus Sub-Area 4 Project conditions. (Criterion a.).
- **Impact TRF-7.SA4:** Unsignalized intersection operations at Bayview Avenue/51st Street/ Seaport Avenue/Eastbound I-580 Ramps (#25) would worsen the already unacceptable LOS F conditions due to traffic generated by the Sub-Area 4 Project and would warrant the installation of a traffic signal under 2040 Plus Sub-Area 4 Project conditions. (Criterion a.).
- **Impact TRF-8.SA4:** Signalized intersection operations at Bayview Avenue/Carlson Boulevard (#26) would deteriorate to an unacceptable LOS due to traffic generated by the Sub-Area 4 Project under 2040 Plus Sub-Area 4 Project conditions. (Criterion a.).
- **Impact TRF-9.SA4:** Signalized intersection operations at Carlson Boulevard/ Westbound I-80 Ramps (#28) would worsen the already unacceptable LOS F conditions due to traffic generated by the Sub-Area 4 Project under 2040 Plus Sub-Area 4 Project conditions. (Criterion a.).
- **Impact TRF-10.SA4:** Signalized intersection operations at Carlson Boulevard/ Eastbound I-80 Ramps (#29) would worsen the already unacceptable LOS F conditions due to traffic generated by the Sub-Area 4 Project under 2040 Plus Sub-Area 4 Project conditions. (Criterion a.).
- **Impact TRF-11.SA4:** Traffic generated by the Sub-Area 4 Project would cause a significant impact on the following freeway segments under 2040 Plus Sub-Area 4 Project conditions because they would operate at LOS F and the Sub-Area 4 Project would increase the freeway segment volumes by more than five percent: Westbound I-580 between Central Avenue and I-80 during both AM and PM peak hours and Eastbound I-580 between I-80 and Central Avenue during the PM peak hour. (Criterion a.).

6.5 Effects Found Not To Be Significant

As required by CEQA, this EIR focuses on expected significant environmental effects (CEQA *Guidelines* Section 15143). In accordance with Section 15128 of the CEQA *Guidelines*, an EIR shall contain a statement briefly indicating the reasons that various possible significant effects of a project were determined not to be significant and were therefore not discussed in detail in the EIR.

A Notice of Preparation (NOP) was circulated on September 30, 2014 to request comments from the public and agencies about the scope of this EIR. Written comments received on the NOP were considered in the preparation of the final scope for this document and in the evaluation of the proposed Specific Plan. An Initial Study was not prepared.

Because this EIR did not include the preparation of an Initial Study, all environmental topics in the CEQA Environmental Checklist (Appendix G of the CEQA *Guidelines*), except for the two exceptions listed below, have been fully analyzed in this document (Chapter 4).

The following two topics were excluded from detailed discussion in Chapter 4 of this EIR because it was determined during the EIR scoping phase that there would be no impacts associated with these topics.

6.5.1 Agricultural and Forestry Resources

As discussed in Section 4.0, *Environmental Setting, Impacts, and Mitigation Measures*, the majority of developed land in Richmond, including the Plan Area, is designated by the California Department of Conservation's Important Farmland in California Map as urban and built-up land and other land (Department of Conservation, 2016). Property surrounding the Plan Area is also designated as urban and built-up land, or "other land" (not important farmland). Therefore, the Specific Plan and Sub-Area 4 Project would not directly or indirectly convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance to non-agricultural use; would not conflict with existing zoning for agricultural use, or a Williamson Act contract; and would not involve other changes in the existing environment which, due to their location or nature, could result in conversion of farmland to non-agricultural use. The proposed Specific Plan and Sub-Area 4 Project would have no impact on agricultural resources.

Likewise, the Plan Area is not zoned as forest land or timberland, and there are no forests within the Plan Area, and therefore the Specific Plan and Sub-Area 4 Project would not cause rezoning of forest land, timberland, or timberland-zoned Timberland Production. Development facilitated by the proposed Specific Plan and Sub-Area 4 Project would not result in the loss of forest land or convert forest land to non-forest use.

6.5.2 Mineral Resources

As discussed in Section 4.0, *Environmental Setting, Impacts, and Mitigation Measures*, there are no known mineral resources within the Plan Area. Much of the City, including the Plan Area, is in the MRZ-1 category with no significant mineral deposits (Department of Conservation, 1996). Therefore, development facilitated by the Specific Plan or Sub-Area 4 Project would not 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; and would not result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan. Development facilitated by the Specific Plan or Project would have no impact on mineral resources.

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CHAPTER 7
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CHAPTER 8
Acronyms

8.1 Acronyms and Abbreviations Used in This EIR

2010 CAP	Bay Area 2010 Clean Air Plan
3-D	three-dimensional
AADT	average annual daily traffic
AB	Assembly Bill
ABAG	Association of Bay Area Governments
ACHP	Advisory Council on Historic Preservation
ACM	Asbestos Containing Materials
AERMOD	American Meteorological Society/ U.S. Environmental Protection Agency Regulatory Model
AISC	American Institute of Steel Construction
AM	weekday morning
AQI	Air Quality Index
ARDTP	Archaeological Research Design and Treatment Plan
ASCE	American Society of Civil Engineers
ASF	age sensitivity factors
ARS	alternative release scenario
BAAQMD	Bay Area Air Quality Management District
BACT	Best Available Control Technology
BART	Bay Area Rapid Transit
BAU	business-as-usual
Bay Plan	San Francisco Bay Plan
BCC	Birds of Conservation Concern
BCDC	San Francisco Bay Conservation and Development Commission
BFE	Base Flood Elevation
BMP	best management practice
BNSF	Burlington-Northern-Santa Fe
B.P.	before present time
Btu	British Thermal Unit
C	General Commercial
CA-12	Northshore Change Area
CA-13	San Pablo Peninsula Change Area

CA-15	Regatta/Marina Bay Change Area
CA-16	Southern Gateway Change Area
CAA	Clean Air Act
CAAQS	California Ambient Air Quality Standard
CAER	Community Awareness and Emergency Response
CAD	computer-assisted drafting
CalARP	California Accidental Release Prevention
CalEEMod	California Emissions Estimator Model
CAL FIRE	California Department of Forestry and Fire Protection
CALGreen	California Green Building Code
Cal OSHA	California Occupational Safety and Health Administration
CalRecycle	California Department of Resources Recycling and Recovery
Caltrans	California Department of Transportation
CAO	Cleanup and Abatement Orders
CAPCOA	California Air Pollution Control Officers Association
CAP/RCPS	Clean Air Plan/Regional Climate Protection Strategy
CARB	California Air Resources Board
CASQA	California Stormwater Quality Association
CBC	California Building Code
CCAT	California Climate Action Team
CCCMA	Contra Costa County Congestion Management Agency
CCCPR	Coalition of Concerned Citizens of Point Richmond
CCCSD	Central Contra Costa Sanitary District
CCCSWA	Central Contra Costa Solid Waste Authority
CCEHD	Contra Costa Environmental Health Department
CCHS	Contra Costa Health Services
CCMP	Comprehensive Conservation and Management Plan
CCR	California Code of Regulations
CCTA	Contra Costa Transportation Authority
CCWG	Climate Change Working Group
CDFG	California Department of Fish and Game
CDS	Continuous Deflection System
CCFPD	Contra Costa County Fire Protection District
CCMP	Comprehensive Conservation and Management Plan
CDFW	California Department of Fish and Wildlife
CDMG	California Division of Mines and Geology
CDO	cease and desist orders
CEC	California Energy Commission
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CFC	California Fire Code

CFR	Code of Federal Regulations
CGS	California Geological Survey
CH_4	methane
CHP	California Highway Patrol
City	City of Richmond
CMA	Congestion Management Agency
CMP	Congestion Management Program
CNDDB	California National Diversity Data Base
CNEL	Community Noise Equivalent Level
CNPPA	California Native Plant Protection Act
CNPR	California Rare Plant Ranking
CNPS	California Native Plant Society
CO	Commercial
CO	Carbon Monoxide
CO_2	carbon dioxide
CO_2e	carbon dioxide equivalents
CPUC	California Public Utilities Commission
CRHP	California Register of Historic Places
CRHR	California Register of Historical Resources
CRPR	California Rare Plant Ranks
CTR	California Toxics Rule
CUPA	Certified Unified Program Agency
CWA	Clean Water Act
cy	cubic yards
CZMA	Coastal Zone Management Act
C-C	Coastline Commercial
dB	decibels
dBA	A-weighted decibels
DLRP	Division of Land Resource Protection
DMMO	Dredged Material Management Office
DNL	day-night noise level
DOF	Department of Finance
DOT	Department of Transportation
DPM	diesel particulate matter
DPF	diesel particulate filters
DPR	California Department of Parks and Recreation
DRB	Design Review Board
DSOD	Division of Safety of Dams
DTSC	Department of Toxic Substances Control
EBMUD	East Bay Municipal Utility District
EBRPD	East Bay Regional Park District

EDD	Employment Development Department
EFH	Essential Fish Habitat
EIR	Environmental Impact Report
ESA	Environmental Science Associates
ESA	Endangered Species Act
ESU	evolutionary significant unit
°F	Fahrenheit
FAR	floor area ratio
FEMA	Federal Emergency Management Agency
FESA	Federal Endangered Species Act
FHWA	Federal Highway Administration
FIP	Federal Implementation Plan
FIRM	Flood Insurance Rate Map
FMP	Fisheries Management Plans
FMMP	Farmland Mapping and Monitoring Program
FTA	Federal Transit Administration
ft^2	square feet
GB	green building
GHG	greenhouse gas
GHG Rx	Greenhouse Gas Reduction Exchange
GIS	geographic information system
GLA	gross leasable area
GMP	Growth Management Program
Goals Project	Baylands Ecosystem Habitat Goals Project
gpd	gallons per day
GWh	gigawatt hour
HABS	Historic American Building Survey
HAP	Hazardous Air Pollutant
HAPC	habitat area of particular concern
HASP	Health and Safety Plan
HCM	Highway Capacity Manual
HCP	Habitat Conservation Plan
HEG	Hall Equities Group
HEPA	High efficiency particulate air (filter)
HFC	hydrofluorocarbons
HHRA	Human Health Risk Assessment
HI	Hazard Index
HMBP	Hazardous Materials Business Plan
HUD	Department of Housing and Urban Development
HWCL	Hazardous Waste Control Law
HWMP	Hazardous Waste Management Plan

HVAC	Heating, Ventilation, and Air Conditioning
Hz	hertz
I-80	Interstate 80
I-580	Interstate 580
I-680	Interstate 680
IBC	International Building Code
IESNA	Illuminating Engineering Society of North America
in/sec	inches per second
IPaC	Information Planning and Conservation System
IPCC	International Panel on Climate Change
IPM	Integrated Pest Management
JPA	Joint Powers Attorney
kW	kilowatt
L_{dn}	day-night average sound level
L_{eq}	equivalent sound level
L_{max}	instantaneous maximum noise level
lbs/day	pounds per day
LAFCO	Local Agency Formation Commission
LBP	lead-based paint
LBNL	Lawrence Berkeley National Laboratory
LCFS	low carbon fuel standard
LDA	Land Disposition Agreement
LID	Low Impact Development
LOS	level of service
LRDP	Long Range Development Plan
LTMS	Long Term Management Strategy Management Plan
LUPA	Land Use Plan Agreement
LUST	leaking underground storage tank
LUFT	leaking underground fuel tank
LVW	loaded vehicle weight
MBTA	Migratory Bird Treaty Act
mcy	million cubic yards
MEISR	maximally exposed individual sensitive receptor
MFR-2	multi-family medium density residential
MH	multiple family residential, high density
MHW	mean higher water
mgd	million gallons per day
MLLW	mean lower low water
MM	Modified Mercalli Intensity Scale
MM	multiple family residential, medium density
MMRP	mitigation monitoring and reporting program

MMDP	materials management and disposal plan
MMLOS	multi-modal level of service
MMPA	Marine Mammals Protection Act
mpg	miles per gallon
mph	miles per hour
MPOs	metropolitan planning organizations
MRP	Municipal Regional Permit
MRZ	Mineral Resources Zone
MSDS	Material Safety Data Sheets
MSA	Magnuson-Stevens Fisheries Act
MSF	million square feet
MSL	mean sea level
MS4	Municipal Separate Storm Sewer System
MT	metric tons
MTC	Metropolitan Transportation Commission
MTSOs	Multi-modal Traffic Service Objectives
MUTCD	Manual on Uniform Traffic Control Devices
Mw	moment magnitude
MW	megawatt
MWh	megawatt hour
M-29	Multiple Family Residential, allowing up to 29 units per acre
N_2O	nitrous oxide
NAAQS	National Ambient Air Quality Standards
NAHC	Native American Heritage Commission
NB	neighborhood business
NCCP	Natural Community Conservation Plan
NEHRP	National Earthquake Hazards Reduction Program
NHPA	National Historic Preservation Act
NHTSA	National Highway Safety Administration
NMFS	National Marine Fisheries Service
NO	nitric oxide
NO_x	nitrogen oxides
NO_2	nitrogen dioxide
NOA	Notice of Availability
NOAA	National Oceanographic and Atmospheric Administration
NOAA Fisheries	U.S. National Marine Fisheries Service
NOC	Notice of Completion
NOI	Notice of Intent
NOP	Notice of Preparation
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service

NRHP	National Register of Historic Places
NSR	New Source Review
NTR	National Toxics Rules
NWIC	Northwest Information Center
O_3	ozone
OEHHA	Office of Environmental Health Hazard Assessment
OES	Office of Emergency Services
OHP	California Office of Historic Preservation
OHWM	ordinary high water mark
OPR	Governor's Office of Planning and Research
OSHA	Occupational Safety and Health Administration (Federal)P photograph
PA	Planned Area
PAHS	polynuclear aromatic hydrocarbons
PCB	polychlorinated biphenyls
PCE	tetrachloroethylene
PCN	preconstruction notification
PDA	South Richmond Priority Development Area
PFC	perfluorocarbons
PG&E	Pacific Gas & Electric Company
PHC	petroleum hydrocarbon
PM	afternoon
PM	particulate matter
PM_{10}	PM less than 10 microns in size
$PM_{2.5}$	PM less than 2.5 microns in size
POU	publicly owned utilities
PPD	pounds per person per day
pph	persons per household
ppm	parts per million
PPV	peak particle velocity
PV	photovoltaic
PRC	Public Resources Code
PSM	Process Safety Management
PUD	Planned Unit Development
P-1	Planned Development
R-B	Retail Business
RAP	Remedial Action Plan
RCRA	Resource Conservation and Recovery Act
REL	Reference Exposure Level
RFG	Refinery Fuel Gas
RFP	Request for Proposals
RFS	Richmond Field Station

RHA	Rivers and Harbors Act
RHNA	Regional House Needs Allocation
RHNP	Regional Housing Need Plan
RMP	Risk Management Plan or Regional Monitoring Program
RMS	root mean square
RMSD	Richmond Municipal Sewer District
RMSD Plant	Richmond Municipal Sewer District Water Pollution Control Plant
ROG	reactive organic gases
RPS	California's Renewables Portfolio Standard
RPG	Registered Professional Geologist
RTPs	Regional Transportation Plan
RWQCB	Regional Water Quality Control Board
SAR	Second Assessment Report
SB	Senate Bill
SCH	State Clearinghouse
SCS	Sustainable Communities Strategy
SDC	Seismic Design Category
SDWA	U.S. Safe Drinking Water Act
sf	square feet
SF_6	sulfur hexafluoride
SFBAAB	San Francisco Bay Area Air Basin
SFEP	San Francisco Estuary Project
SFO	Special Features Overlay
SHPO	State Historic Preservation Officer
SIP	State Implementation Plan
SLC	State Lands Commission
SLIC	spills, leaks, investigation, and cleanup
SLR	single-lens reflex
SMARA	California Surface Mining and Reclamation Act
SMP	Soil Management Plan
SO_2	sulfur dioxide
SOV	single occupancy vehicle
SRTCP	South Richmond Transportation Connectivity Plan
SRPDA	South Richmond Priority Development Area
SRRE	Source Reduction and Recycling Element
SSOs	sewer system overflows
SVP	Society of Vertebrate Paleontology
SWCP	Storm Water Control Plan
SWRCB	State Water Resources Control Board (State Board)
SWPPP	Storm Water Pollution Prevention Plan
TAC	toxic air contaminants

TCP	Traffic Control Plan
TDM	Transportation Demand Management
TMDL	total maximum daily loads
TPY	tons per year
TSCA	Toxic Substances Control Act
UC	University of California
UCRF2	Second Uniform California Earthquake Rupture Forecast
UFT	underground fuel tank
ULL	urban limit line
UPAAG	Unified Program Administration and Advisory Group
USACE	U.S. Army Corps of Engineers
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Service
USPS	U.S. Postal Service
UST	underground storage tank
UWMP	Urban Water Management Plan
VMT	vehicle miles traveled
VOC	volatile organic compound
WCCCIWA	West Contra Costa County Integrated Waste Management Authority
WCCTAC	West Contra Costa County Transportation Advisory Committee
WCCUSD	West Contra Costa Unified School District
WCRS	worst-case release scenario
WCWD	West County Wastewater District
WCWTP	Walnut Creek Wastewater Treatment Plant
WEAP	Worker Environmental Awareness Program
WETA	Water Emergency Transportation Authority
WDRs	Waste Discharge Requirements
WHO	World Health Organization
WSA	Water Supply Assessment
WSMP	Water Supply Management Program
WQC	Water Quality Certification
YMB	Young Bay Mud
$\mu g/m^3$	microgram per cubic meter

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