# CITY OF RICHMOND
# TERMINAL ONE PROJECT

## Draft Environmental Impact Report

Prepared for
City of Richmond

February 2016



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## Draft Environmental Impact Report


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# CHAPTER 1
# Introduction

## 1.1 Overview

This Environmental Impact Report (EIR) is an informational document intended to disclose to the public and decision-makers the environmental effects of the Terminal One project (the project or proposed project). This document assesses the direct, indirect, and cumulative environmental impacts that could result from implementation of the project. The analyses in this document are based upon information submitted by Terminal One Development LLC (the applicant) in an application to the City of Richmond for a rezoning, tentative subdivision maps, and project design review. This EIR is intended as an informational document that, in itself, does not determine whether the project should be approved, but informs local officials in the planning and decision-making process.

### 1.1.1 Background

The Terminal One project site (project site) is owned by the City of Richmond and was operated as a Port of Richmond terminal for more than 70 years, primarily for the storage of liquid products ranging from vegetable oils to petroleum. By the early 1990s, the site was no longer in operation as an active port terminal; since that time, all of the buildings and storage tanks on the site have been removed, with the exception of a 94,000-square-foot terminal warehouse building.

In 1999, the Richmond Redevelopment Agency (no longer in operation) added the project site to the Harbour 11-A Redevelopment Project Area, to encourage the redevelopment of the site. In 2003, the Richmond Redevelopment Agency issued a Request for Proposals (RFP) with the purpose of identifying a developer for a residential, commercial, or mixed use development on the project site. Through this competitive process, the Richmond Redevelopment Agency selected Toll Brothers, Inc., resulting in the approval, on November 18, 2003, of a Land Disposition Agreement whereby Toll Brothers, Inc. would acquire part of the project site for residential development, and the City would retain ownership of part of the project site for use as a public park.

The project originally proposed by Toll Brothers, Inc. for the site included the development of up to 330 residential units (condominium flats) and an approximately 3.65-acre public park and shoreline area. The Toll Brothers, Inc. project was evaluated in an EIR completed by the City in October, 2005 (State Clearinghouse [SCH] No. 2004092101).[1]

[1] Two other CEQA documents, the Richmond Redevelopment Agency Areas Merger and Amendments EIR [SCH No. 98072020] and a San Francisco Bay Regional Water Quality Control Board's CEQA assessment of a contamination and remediation program for the site, have also been prepared for the site. The redevelopment agency EIR contemplated the development of the project site with up to 192 townhomes and flats.

The Richmond City Council's certification of this project EIR on November 14, 2006 was challenged by the Coalition of Concerned Citizens of Point Richmond (CCCPR), which filed a lawsuit against the City on January 11, 2007 (CCCPR, 2016). On June 19, 2007, the Richmond City Council approved a smaller version of the Toll Brothers, Inc. project, which proposed 258 units rather than up to 330, and reduced the massing of the proposed project buildings nearest the shoreline. CCCPR withdrew its 2007 lawsuit in 2010, when a Settlement Agreement was established between CCCPR, the City, and Toll Brothers, Inc. Beginning in 2008 and continuing for several years thereafter, the effect of the U.S. recession on the housing market reduced or eliminated the viability of many planned Bay Area housing projects, including Toll Brothers. Inc.'s proposal for the Terminal One site, and the originally proposed project was not developed.

The City released a new RFP for development of the site in 2012. Terminal One Development, LLC (the applicant) responded to the RFP, and proposes the project evaluated in this EIR. The applicant has entered into a Land Disposition Agreement (LDA) with the City, as discussed further in Chapter 3, Project Description. A detailed project description, the project objectives, and further information about the project site can be found in Chapter 3, *Project Description*.

## 1.2 Environmental Review under the California Environmental Quality Act

The proposed Terminal One project approvals constitute a "project" as defined by, and are subject to the requirements of, the California Environmental Quality Act (CEQA) (Public Resources Code, Section 21000 et seq.) and the "CEQA Guidelines" (California Code of Regulations, Title 14, Section 15000 et seq.). For purposes of CEQA, the term "project" refers to the whole of an action which has the potential for resulting in a direct physical change or a reasonably foreseeable indirect physical change in the environment (CEQA *Guidelines* Section 15378). As the principal public agency responsible for approving the Terminal One project, the City of Richmond is the "lead agency" overseeing and administering the CEQA environmental review process.

As set forth in the provisions of CEQA *Guidelines* Section 15126.4, before deciding whether to approve a project, public agencies must consider the significant environmental impacts of the project and must identify feasible measures to minimize those impacts. Pursuant to CEQA *Guidelines* Section 15064, if any aspect of the proposed project, either individually or cumulatively, may cause a significant effect on the environment, regardless of whether the overall effect of the project is adverse or beneficial, an Environmental Impact Report (EIR) must be prepared. The City of Richmond has determined that the size, scale, and potential impacts resulting from the proposed project require the preparation of an EIR.

This EIR is a factual informational document, prepared in conformance with CEQA, and written for the purpose of making the public and decision-makers aware of the environmental consequences of the proposed project. For any consequence, or project impact, that is considered "significant," the EIR identifies mitigation measures, where feasible, to reduce or avoid the significant impact. The EIR also considers the objectives of the project and identifies whether there might be alternative ways of accomplishing those objectives while substantially reducing the project's impacts.

Before any action may be taken to approve the Terminal One project, the City of Richmond must certify that it has reviewed and considered the information in the EIR and that the EIR has been completed in conformity with the requirements of CEQA. Certification of the EIR does not approve or deny the proposed project.

## 1.2.1 Notice of Preparation

Per the requirements of CEQA for the initiation of environmental review, on November 21, 2014, the City sent a Notice of Preparation (NOP) to responsible and trustee government agencies, organizations, and individuals potentially interested in the project. The NOP is included in **Appendix A** of this EIR. The NOP requested that agencies with regulatory authority over any aspect of the project describe that authority and identify relevant environmental issues that should be addressed in the EIR. Interested members of the public were also invited to comment. Responses to the NOP are also included in **Appendix A**. As discussed in the NOP and per the provisions of CEQA, the City did not prepare a CEQA Initial Study prior to preparation of the EIR, because the City determined that it was clear at the time of the issuance of the NOP that an EIR was required (CEQA *Guidelines* Section 15060[d]).

A scoping meeting on the NOP was held on December 15, 2014. Materials from the meeting, including comment cards and a presentation given by City staff on the CEQA process, are also included in **Appendix A**.

### Project Modifications Since Publication of the NOP

Since publication of the NOP and public scoping period, the applicant has received input from both the Richmond community and the City's Design Review Board (DRB) regarding the project design. The applicant has presented the proposed project to the full DRB for formal study sessions on September 16, October 14, and October 28, 2015, and January 13, 2016. In response to comments received from the public and DRB, Figure 3 from the NOP (Conceptual Project Site Plan, 11/21/2014; see **Appendix A**) has been refined by the project applicant, as follows:

- The east-west internal roadway is no longer proposed;
- The restaurant is no longer proposed;
- Five detached condominium buildings are now proposed, instead of the initially proposed three paired condominium buildings, increasing the number of condominium flats from 306 to 308;
- Instead of four clusters of 19 single family residences and 9 townhomes, 26 townhomes configured as duplexes and situated along the southern reach of the new shoreline ring road (Shoreline Drive) are now proposed;
- Extension of the parking podiums to the south where they will serve as partial understories and provide off-street garage parking for the townhomes fronting on Shoreline Drive is now proposed; and
- Creation of an at-grade, ground-level, publicly accessible pedestrian and bicycle promenade (Terminal One Mews) that will bisect the site on a north-south axis and bifurcate the parking podium is now proposed.

The total number of residences that would be built with the project (334 units), the building heights (condominium buildings of four to five stories above podium and townhomes of two to three stories in height), and the other proposed project components presented in the NOP remain substantially the same.

## 1.2.2 Draft EIR

This document and all attachments hereto constitute the Draft EIR. The Draft EIR contains a description of the project, description of the environmental setting, identification of project impacts, identification of recommended mitigation measures to reduce impacts found to be potentially significant, identification of impacts after the implementation of recommended mitigation measures, identification of alternative ways of accomplishing the project's objectives while reducing the project's impacts, and a comparative analysis of those alternatives (see Section 1.3, below). The City has filed a Notice of Completion (NOC) for the Draft EIR with the Governor's Office of Planning and Research to begin the public review period (Public Resources Code, Section 21161).

### Public Notice and Public Review

This Draft EIR is available for public review for a 45-calendar-day period, during which time written comments on the Draft EIR may be submitted to the City of Richmond. A public hearing will also be held on the Draft EIR, during which public comments may also be submitted. The date of the public hearing will be posted on the City's website for the Terminal One Project (http://www.ci.richmond.ca.us/2939/Terminal-One-Project). Responses to all comments received on environmental issues regarding the Draft EIR and submitted within the specified review period will be prepared and included in the Final EIR.

All comments or questions regarding the Draft EIR should be addressed to:

Lina Velasco
Senior Planner
City of Richmond Planning Division
450 Civic Center Plaza
Richmond, CA 94804
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## 1.2.3 Final EIR and Certification

Following the public review period, a Final EIR will be prepared. The Final EIR will respond to written comments received during the public review period and to oral comments made at the public hearing.

### Certification of the EIR and Project Consideration

The City will review and consider the Final EIR. If the City finds that the Final EIR is adequate and complete, the City will certify the Final EIR. Upon review and consideration of the Final EIR, the Richmond City Council may take action to approve, conditionally approve, revise, or reject the

proposed project. A decision to approve the project would be accompanied by written findings in accordance with CEQA *Guidelines* Section 15091, and Section 15093, as applicable. A Mitigation Monitoring and Reporting Program, as described below, would also be adopted for project design features and mitigation measures that have been incorporated into the proposed project or adopted as conditions of approval to reduce or avoid significant effects on the environment.

### Mitigation Monitoring and Reporting Program

Throughout the EIR, mitigation measures have been clearly identified and presented in language that will facilitate establishment of a mitigation monitoring and reporting program. CEQA *Guidelines* Section 21081.6(a) requires lead agencies to adopt a mitigation monitoring and reporting program to describe measures that have been adopted or made a condition of project approval in order to mitigate or avoid significant effects on the environment. The Mitigation Monitoring and Reporting Program will be presented to the City Council for adoption at the time of project approval. This Mitigation Monitoring and Reporting Program will be designed to ensure that these measures are carried out during project implementation.

## 1.3 Range of Alternatives

CEQA requires that an EIR discuss a reasonable range of alternatives to the proposed project (see Chapter 5). This EIR describes and analyzes a reasonable range of alternatives, including a "No Project" alternative as required under CEQA (CEQA *Guidelines* Section 15126.6[e]); compares the environmental effects of each alternative with the effects of the proposed project; and addresses the relationship of each alternative to the project objectives. The determinations of the Lead Agency concerning the feasibility, acceptance, or rejection of each and all alternatives considered in this EIR will be addressed and resolved in the findings, when the City of Richmond considers approval of the project, as required by CEQA.

## 1.4 Organization of the Draft EIR

The ***Summary*** (Chapter 2) includes a brief project description and an overview table of the environmental impacts identified by this EIR. The summary table lists the environmental impacts, proposed mitigation measures (including standard conditions), and the level of significance after mitigation. Detailed analysis of these impacts and mitigations is provided in Chapter 4 (Environmental Setting, Impacts and Mitigation Measures).

The ***Project Description*** (Chapter 3) describes the project location and boundaries; lists the project objectives; and provides a general description of the characteristics of the proposed project. This chapter also includes a list of the City's required approvals and other agencies that may be responsible for approving aspects of the project.

***Environmental Setting, Impacts and Mitigation Measures*** (Chapter 4) contains a description of the environmental setting (existing physical environmental conditions), the regulatory framework, and the environmental impacts (including cumulative impacts, where relevant) that could result from the proposed project. It includes the thresholds of significance used to determine the

significance of adverse environmental effects. The chapter also identifies the mitigation measures and/or standard conditions of approval that would reduce or eliminate the adverse impacts that have been determined to be significant. The impact discussions disclose the significance of the impact both with and without implementation of mitigation measures and/or standard conditions.

***Alternatives*** (Chapter 5) evaluates a range of reasonable alternatives to the proposed project and identifies an environmentally superior alternative, consistent with the requirements of CEQA. The alternatives analyzed are the Reduced Project Alternative (Alternative 1), the Higher Intensity Project Alternative (Alternative 2), and the No Project/No Development Alternative (Alternative 3).

***Other Statutory Sections*** (Chapter 6) presents growth-inducing effects, significant irreversible changes, a summary of cumulative impacts, significant and unavoidable environmental impacts, and effects found to be less than significant.

***Report Preparation*** (Chapter 7) identifies the authors of the EIR. Persons and documents consulted during preparation of the EIR are listed at the end of each analysis section (Sections 4.1 through 4.14).

***Appendices.*** The NOP, comment letters received on the NOP, and comments from the scoping hearing, as well as supporting documents and technical information for the impact analyses are presented in **Appendices A** through **E**.

All reference documents listed at the end of each analysis section (Chapter 4) are available for review by the public. These documents are available at the City of Richmond Planning Division, at 450 Civic Center Plaza, Richmond, CA 94804, during normal business hours.

## 1.5 Intended Uses of the EIR

This EIR provides the CEQA compliance documentation upon which the City of Richmond's consideration of, and action on, all applicable land use permits and other approvals (collectively, "approvals") for the proposed project or an alternate may be based. These include all approvals listed in this EIR, as well as any additional approvals that may be necessary to implement the proposed project or alternative, including activities such as planning, construction, operation and maintenance (e.g., use permits, grading permits, building permits, certificates of occupancy and other development-related approvals).

## References – Introduction

Coalition of Concerned Citizens of Point Richmond (CCCPR), 2016. Organization website. "Toll Saga." Available at: cccpointrichmond.com/toll-saga. Accessed January 4, 2016.

# CHAPTER 2
# Summary

## 2.1 Introduction

As provided by Section 15123 of the California Environmental Quality Act (CEQA) Guidelines (CEQA *Guidelines*), this chapter provides a brief summary of the proposed Terminal One Project (project) and its consequences. This chapter is intended to summarize in a stand-alone section the proposed project described in Chapter 3 (Project Description), the impacts and mitigation measures discussed in Chapter 4 (Environmental Setting, Impacts, and Mitigation Measures), and the alternatives analysis presented in Chapter 5 (Alternatives to the Proposed Project).

This Draft Environmental Impact Report (Draft EIR) has been prepared to evaluate the anticipated environmental effects of the project in conformance with the provisions of CEQA and the CEQA *Guidelines*. The lead agency, the City of Richmond (City), is the public agency that has the principal responsibility for implementing the project, which includes rezoning of the parcels within the project site, and other approvals (referred to collectively hereafter as the project or proposed project).

## 2.2 Regional Location and Planning Area

The project site, commonly known as the Terminal One property, is located in the Point Richmond neighborhood of the city of Richmond. Richmond is located approximately 16 miles northeast of San Francisco, on a peninsula separating San Francisco Bay and San Pablo Bay, in western Contra Costa County. The City is adjacent to the San Francisco Bay, the cities of Albany, El Cerrito, Pinole, San Pablo, and the unincorporated area of El Sobrante. The City covers approximately 56 square miles, and includes approximately 32 linear feet of shoreline.

The project site is located on the San Francisco Bay within an area identified by the City of Richmond as the Southern Shoreline area, with views of San Francisco and the East Bay waterfront. **Figure 3-2** illustrates the project site's local context. The project site is owned by the City and consists of two parcels totaling approximately 13.3 acres in size, located southeast of the intersection of Dornan Drive and Brickyard Cove Road, at 1500 Dornan Drive.

The site is bounded by the San Francisco Bay on the south, the Richmond Yacht Club on the east, Brickyard Cove Road to the north, and Dornan Drive to the west. The site is generally flat and slopes gently from Brickyard Cove Road in the north to lower points along the shoreline.

The site includes approximately 12.6 acres of dry land and 0.7 acres of submerged tidelands, as well as approximately 1,100 linear feet of shoreline, some of which is armored with rock and concrete rip rap, and approximately 550 linear feet of which consists of a shoreline pier that extends along part of the southern site boundary. The pier consists of a concrete deck supported by pre-cast concrete piles. Other hardscape (as opposed to vegetated) surfaces on the site include former building foundations, storage tank pads, and asphalt paving, as well as disconnected sections of former railroad tracks. Vegetation on the site consists largely of grasses, shrubs, and few trees.

## 2.3 Project Description

The project would include the following components, which would be constructed on the approximately 13.3-acre Terminal One project site (project site):

1. Up to 334 residential units, including up to 26 attached townhomes and up to 308 multifamily condominium flats,
2. Park areas, paths, trails, and shoreline improvements, including:
    - A public, waterfront park, the largest feature of which would be a public pier (Terminal One Pier), re-purposed from a former industrial pier, and
    - An extension of the Bay Trail which would ring the project site ("Bay Trail Loop"),
3. Improvements to existing roads and the creation of new roads, including a shoreline road extending south from the intersection of Brickyard Cove Road and Dornan Drive, east along the shoreline and then north back to an intersection with Brickyard Cove Road, and
4. Other components, including:
    - The development of retail uses that would service neighborhood and visitor uses, and
    - The development of a pedestrian and bicycle-oriented promenade, extending north to south through the project site (Terminal One Mews).

The project site is owned by the City of Richmond and is subject to a Land Disposition Agreement (LDA) between the City and Terminal One Development LLC (the applicant), under which the City would sell the applicant an approximately 11.9-acre portion of the project site for residential uses. The City would retain ownership of approximately 1.9 acres of the project site for use as a public park.

The project may be developed in up to five phases. As provided in the LDA, the initial phase of development under any scenario would include the Bay Trail Loop, the new shoreline road, the public waterfront park, and the re-purposing of (referred to in the LDA as the "preservation" of) the Terminal One Pier (City of Richmond, 2014).

# 2.4 Project Objectives

The basic (primary) objectives, and more general objectives, of the project are listed below.

## Basic Project Objectives

The Terminal One project shall:

1. Transform a former industrial site into a new waterfront residential community compatible with surrounding development.
2. Fulfill the City of Richmond's planning goals and vision for the site and Brickyard Cove area, including preservation of Brickyard Cove as a water body of scenic interest.
3. Provide access to waterfront open space for public use, including public recreation and parks areas and a shoreline connection between the existing Bay Trail segments to the west and east of the site.
4. Generate tax revenues and employment opportunities for the City of Richmond.

## Applicant's General Project Objectives

The applicant's general project objectives include, but are not limited to, the following:

1. Bring to the Richmond housing market high-quality, for-sale homes that would be made available to a broad range of home buyers by providing a range of residential unit types and sizes, designed to maximize the satisfaction of market demand.
2. Bring to the Richmond housing market a type and character of housing:
    a. That is in very short supply; and
    b. That will be responsive to the demand resulting from the employment-generating land uses planned for the Richmond Bay Specific Plan area and other nearby new growth areas.
3. Reflect in the architecture of the residential buildings the Bay Area Regional style with its:
    a. Simplicity of line, form, and composition;
    b. Use of earth-tone colors and natural-looking materials;
    c. Site-oriented design tailored to the opportunities afforded by the bay front setting; and
    d. Integration of indoor and outdoor space.
4. Reflect in the design of the project sustainable site planning concepts that emphasize:
    a. The compact and efficient organization of privately-held built space;
    b. The preservation, reservation, and enhancement of open space for public use; and
    c. The substitution of common area open space for individually-held private outdoor living areas.

5. Create a residential neighborhood and waterfront park that will afford residents and visitors alike an opportunity:

    a. To access the panoramic views of the San Francisco Bay from the site's shoreline location;

    b. To engage physically as well as visually with the extraordinary waterfront and parkland environment that adjoins the project site on three of its four sides; and

    c. To connect with the natural order surrounding the site on a personal and intimate level.

6. Create a sense of place that is inspired by the ecological context in which the project site is located.

7. Incorporate a circulation system that is designed not only to provide safe and convenient access to the Terminal One residential neighborhood and waterfront park, but also to respect and complement the natural environment the project is designed to celebrate by:

    a. Deemphasizing the automobile and assigning priority to pedestrian and bicycle modes of travel;

    b. Featuring a new "destination-serving" road (Shoreline Drive) designed both to provide the public with direct access to the Terminal One Waterfront Park, with its re-purposed pier and public gardens, and to serve as a scenic entry to the Brickyard Cove neighborhoods to the east;

    c. Retaining the portion of Brickyard Cove Road directly north of the project site as a connector roadway that will enable commuter, commercial, and other through traffic to bypass the site;

    d. Creating a pedestrian and bicycle promenade through the center of the site that will tie together and integrate the public and private realms; and

    e. Establishing on-site pedestrian and bicycle pathways that will connect to and serve as extensions of both the City's existing trail network and the EBRPD's Bay Trail system.

8. Spur and support local economic growth through new capital investment and an expansion of the market for local goods and services.

9. Enhance the quality of life enjoyed by the surrounding community by converting an abandoned industrial warehouse, pier, and shoreline into a waterfront park and public gardens which will function as an extension of the Miller/Knox Regional Shoreline park.

10. Support and lift residential values in the surrounding community by building high-quality, high-amenity homes that will retain their character and appeal over time.

11. Develop a residential project that will have a positive fiscal impact on the City's annual budget by generating income to the City's general fund.

12. Make a significant contribution to the City's efforts to address its fair share of allocation of regional housing need, as projected by the Association of Bay Area Governments in its Regional Housing Need Plan.

13. Incorporate a parking program that is designed to accommodate all resident and guest parking in a podium garage where automobiles will be screened from view beneath a

landscaped podium deck and behind the entry stoops and street front facades of ground level residences.

14. Provide public on-street parking on the site's new Shoreline Drive to accommodate visitors to the Terminal One Waterfront Park and Entry Plaza.

15. Maximize off-street, dedicated parking for residents and their guests to the greatest extent possible in order to preserve on-street parking for use by visitors to the waterfront park and shoreline amenities and the general public.

16. Maximize new residential opportunities to accommodate forecasted population growth within the City of Richmond.

17. Provide compact development patterns as described in the General Land Use Element (page 3.3).

## 2.5 Proposed Project Impacts

As provided by the CEQA *Guidelines* Section 15123(b)(1), an EIR must provide a summary of the impacts, mitigation measures and significant impacts after mitigation for a proposed project. This information is presented in Chapter 4, Environmental Setting, Impacts, and Mitigation Measures, of this Draft EIR, and summarized in **Table 2-1** at the end of this chapter. The proposed project would not result in any significant and unavoidable impacts. Impacts from the project on aesthetics; air quality; biological resources; cultural resources; geology, soils, and mineral resources; hazards and hazardous materials; hydrology and water quality; land use and planning; noise; population and housing; public services and recreation; transportation and traffic; and utilities and service systems would be mitigated (when appropriate) to less than significant levels.

## 2.6 Alternatives to the Proposed Project

**Chapter 5, Alternatives**, analyzes a range of reasonable alternatives to the proposed project, including the Reduced Project Alternative (Alternative 1), the Higher Intensity Project Alternative (Alternative 2), and the No Project/No Development Alternative (Alternative 3).

The analysis of the alternatives is summarized and compared in **Chapter 5**, which provides a summary of impact levels within all environmental topic areas. Overall, the analysis shows that the Reduced Project alternative would reduce most of the project's impacts with one exception, and that the Higher Intensity alternative would increase the degree of most impacts identified with the proposed project, but would not result in a significant impact.

The No Project / No Development alternative would not have the ability to meet the objectives of the proposed project. The Reduced Project alternative would have the ability to meet all of the objectives of the proposed project, although to a lesser degree for objectives pertaining to local economic benefits and job creation. Lastly, the Higher Intensity Project alternative would meet all of the objectives of the proposed project.

Based on the evaluation described in **Chapter 5**, the No Project / No Development alternative and the Reduced Project alternative would both be environmentally superior to the proposed project.

The No Project / No Development alternative would be the most environmentally superior alternative with the fewest environmental impacts. However, the No Project / No Development alternative does not meet any of the basic objectives of the project.

CEQA requires that that a second alternative be identified when the "No Project" alternative is the environmentally superior alternative (CEQA *Guidelines*, Section 15126.6(e)). Therefore, the **Reduced Project** alternative would be the Environmentally Superior Alternative for the purpose of this analysis, even though it would result in a new significant impact to GHG emissions *per service population*, and consequently a new significant impact regarding consistency with regulatory plans adopted for the purpose of reducing GHG emissions, neither of which would occur under the proposed project. All other less-than-significant-with-mitigation impacts of the proposed project would either remain the same or be further reduced under this alternative. Further, the Reduced Project alterative would meet most of the objectives of the proposed project, but to a lesser degree in instances where the size of the project contributes to local economic factors (employment, tax revenues, etc.) or aims to align with the City's housing provision goals.

## 2.7 Comments on Notice of Preparation

In accordance with the CEQA *Guidelines*, the City distributed a Notice of Preparation of an EIR (NOP) for the EIR to affected agencies and the public for the required 30-day period. The NOP was posted on November 21, 2014, with a 30-day comment period running from November 21 to December 23, 2014. The NOP and comments on to the NOP are included in **Appendix A** of this Draft EIR.

## 2.8 Areas of Controversy

Section 15123(b)(2) of the CEQA *Guidelines* requires that an EIR summary identify areas of controversy known to the lead agency, including those issues raised by other agencies and the public. Issues raised by the public have included concerns regarding aesthetic impacts, hazards impacts, hydrology (sea level rise) impacts, traffic impacts, impacts related to recreation, and alternatives to the project. As a result, these issues are potential areas of controversy.

## 2.9 Issues to be Resolved

Section 15123(b)(3) of the CEQA *Guidelines* requires that an EIR present the issues to be resolved including the choice among alternatives and whether or how to mitigate the significant effects. The major issues to be resolved for the proposed project include decisions by the City of Richmond, as the Lead Agency, as to whether:

- This EIR adequately describes the environmental impacts of the proposed project;

- Recommended mitigation measures should be adopted or modified;
- Additional mitigation measures need to be applied to the proposed project;
- Feasible alternatives exist that would achieve the objectives of the project and reduce significant environmental impacts;
- Significant and unavoidable impacts would occur if the project is implemented; and
- The proposed project should or should not be approved.

**TABLE 2-1**
**SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR THE TERMINAL ONE PROJECT**

| Impacts | Project Design Features and Mitigation Measures | Significance Including after Project Design Features and Mitigation |
|---|---|---|
| 4.1. Aesthetics | | |
| **Impact AES-1:** The project would not have a substantial adverse effect on a scenic vista nor substantially damage scenic resources. (Criteria a and b) *(Less than Significant, No Mitigation Required)* | None required | Less Than Significant |
| **Impact AES-2:** The project would not substantially 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:** The proposed project would not create a new source of substantial light or glare which would adversely affect day or nighttime views in the area. (Criterion d) *(Less than Significant, No Mitigation Required)* | **PROJECT DESIGN FEATURE AES-1: Site Lighting Strategy.** The Site Lighting Strategy specifies lighting criteria for the Waterfront Park, podium gardens, and streetscapes, which the project would be required to implement. Per the Site Lighting Strategy, the applicant will ensure the following is included in project design:<br>• **Waterfront Park Lighting Criteria:** Illuminate paths of travel along the base of walls, decks, and trusses with integrated site lighting fixtures that provide low-level safety lighting without blocking nighttime views.<br>• **Podium Gardens Lighting Criteria:** Illuminate garden paths with low-level bollards. Light standards to be incorporated as needed for emergency egress lighting. Standards will have cut-off shields to control light trespass into units. Amenity pavilions will include accent and task lighting as needed. Up-lighting will be avoided in order to reduce light pollution.<br>• **Streetscape Lighting:** A combination of vehicle and pedestrian lighting standards will illuminate the streetscapes and Terminal One Mews to provide the required light levels on both roadways and pedestrian paths. Cutoff shields will be incorporated to control light trespass into residential units. All fixtures will be selected to minimize energy consumption and increase public safety. | Less Than Significant |
| *CUMULATIVE IMPACT:*<br>**Impact C-AES-1:** The proposed project would not result in a cumulative aesthetics impact when considering the combined effect of the project, and past, present, approved, pending, and reasonably foreseeable future projects. *(Less than Significant, No Mitigation Required)* | None required | Less Than Significant |
| 4.2. Air Quality | | |
| **Impact AIR-1:** The project could conflict with or obstruct implementation of the applicable air quality plan. (Criterion a.) *(Less than Significant, No Mitigation Required)* | None required | Less Than Significant |

**TABLE 2-1 (Continued)**
**SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR THE PROPOSED EDZ**

| Impacts | Project Design Features and Mitigation Measures | Significance Including after Project Design Features and Mitigation |
|---|---|---|
| **Impact AIR-2:** Project construction would result in increased emissions of criteria air pollutants. (Criterion b.) *(Less than Significant With Mitigation)* | **Mitigation Measure AIR-1: Best Management Practices for Controlling Particulate Emissions.** The following BAAQMD Best Management Practices for particulate control will be implemented 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<br>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.<br>2. All haul trucks transporting soil, sand, or other loose material off-site shall be covered.<br>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.<br>4. All vehicle speeds on unpaved roads shall be limited to 15 mph.<br>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.<br>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.<br>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. | Less Than Significant |
| **Impact AIR-3:** Operation of the project would result in increased emissions of criteria air pollutants. (Criterion b.) *(Less than Significant, No Mitigation Required)* | None required | Less Than Significant |
| **Impact AIR-4:** Construction of the project would increase emission of toxic air contaminants (TACs), and increase health risks for nearby residents. (Criterion d.) *(Less than Significant, No Mitigation Required)* | None required | Less Than Significant |
| **Impact AIR-5:** Project operations could expose sensitive receptors to substantial pollutant concentrations including toxic air contaminants and increase health risks for existing and proposed residents. (Criterion d.) *(Less than Significant, No Mitigation Required)* | None required | Less Than Significant |

**TABLE 2-1 (Continued)**
**SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR THE PROPOSED EDZ**

| Impacts | Project Design Features and Mitigation Measures | Significance Including after Project Design Features and Mitigation |
|---|---|---|
| **Impact AIR-6:** The project could create objectionable odors affecting a substantial number of people. (Criterion e.) *(Less than Significant, No Mitigation required)* | **PROJECT DESIGN FEATURE AIR-1: Ferry Point Pump Station.** As part of more detailed engineering and project planning, the applicant will evaluate the condition and capacity of the Ferry Point Pump Station, to ensure this facility has sufficient capacity to convey sanitary sewage from the project site to the RMSD Plant. The pump station may be required to be retrofitted or replaced in order to adequately convey project wastewater. If the pump station is not replaced, the applicant will confirm with the City that the recommended chemical treatment has been applied and the odor impact appropriately mitigated, prior to construction. | Less Than Significant |
| *CUMULATIVE IMPACT (as summarized in Chapter 6):*<br>**AIR QUALITY: The project, in conjunction with past, present and reasonably foreseeable future projects, would not result in significant cumulative impacts with respect to air quality. *(Less than Significant, No Mitigation Required)*** | None required | Less Than Significant |
| 4.3 Biological Resources | | |
| **Impact BIO-1:** Construction of the project could have a substantial adverse effect either directly or through habitat modifications, on migratory birds and/or on bird species identified as special-status in local or regional plans, policies, or regulations, or by the CDFW or USFWS. (Criterion a.) *(Less than Significant with Mitigation)* | **Mitigation Measure BIO-1: Nesting Bird Protection Measures**. If initial ground disturbance and site grading, building demolition, vegetation removal, tree removal, and other construction activities which may compromise breeding birds or the success of their nests cannot be fully avoided during nesting season (January 15 – August 31), nesting birds and their nests shall be protected during construction through the implementation of the following measures:<br>1. The applicant shall ensure that a qualified wildlife biologist conduct preconstruction nesting surveys within 7 days of the start of construction or after any construction breaks of 14 days or more. Surveys will be performed for the project site and suitable habitat within 250 feet of the project site in order to locate any active passerine (perching bird) nests and within 500 feet of the project site and off-site staging areas, or line of sight, to locate any active raptor (birds of prey) or double□crested cormorant nests. Distances may also be modified if obstacles such as topography, buildings, or trees obscure the construction area from active bird nests, or existing disturbances create an ambient background disturbance similar to the proposed disturbance.<br>2. If active nests are located during the preconstruction bird nesting survey, a no disturbance buffer shall be established. Typically, these buffer distances are 250 feet for passerines and 500 feet for raptors; however, they may be adjusted (for example, if an obstruction, such as a building or hill, is within line-of-sight between the nest and construction). Modifying nest buffers, prohibiting construction within the buffer, modifying construction, and removing or relocating active nests shall be coordinated with the CDFW as appropriate given the nests that are found on the site.<br>3. Any birds that begin nesting within the project site and survey buffers amid construction activities are assumed to be habituated to construction-related or similar | Less Than Significant |

**TABLE 2-1 (Continued)**
**SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR THE PROPOSED EDZ**

| Impacts | Project Design Features and Mitigation Measures | Significance Including after Project Design Features and Mitigation |
|---|---|---|
| | noise and disturbance levels and no work exclusion zones shall be established around active nests in these cases.<br><br>**Mitigation Measure NOI-1a: Construction Noise Control Measures.** 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:<br>• 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);<br>• 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;<br>• 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<br>• Noise-reducing pile-driving techniques as specified in Mitigation Measure NOI-1b.<br><br>**Mitigation Measure NOI-1b: Pile Driving Noise-Reducing Techniques and Muffling Devices.** Noise-reducing pile-driving techniques shall be employed during project construction. These techniques shall include:<br>• Limiting pile driving or other impact-related noise-generating activity to 9:00 a.m. to 5:00 p.m., Monday through Friday. No pile driving or other extreme noise-generating activity is permitted on Saturdays, Sundays, and holidays;<br>• Installing intake and exhaust mufflers on pile-driving equipment;<br>• Vibrating piles into place when feasible, and installing shrouds around the pile-driving hammer where feasible;<br>• Implementing "quiet" pile-driving technology (such as pre-drilling of piles and the use of more than one pile driver to shorten the total pile driving duration), where feasible, in consideration of geotechnical and structural requirements and conditions;<br>• 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. They consist of blocks of material placed atop a piling during installation to minimize | |

**TABLE 2-1 (Continued)**
**SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR THE PROPOSED EDZ**

| Impacts | Project Design Features and Mitigation Measures | Significance Including after Project Design Features and Mitigation |
|---|---|---|
| | noise generated when driving the pile. Materials typically used for cushion blocks include wood, nylon and micarta (a composite material); and<br>• 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. | |
| **Impact BIO-2:** Construction of the project could have a substantial adverse effect either directly or through habitat modifications, on bats identified as special-status in local or regional plans, policies, or regulations, or by the CDFW or USFWS. (Criterion a.) *(Less than Significant with Mitigation)* | **Mitigation Measure BIO-2: Special-Status Bats Protection.** A preconstruction survey for special-status bats shall be conducted by a qualified biologist in advance of tree and structure removal within the project site to characterize potential bat habitat and identify active roost sites. Should the preconstruction survey find no bat habitat or bat roosting sites, 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:<br>1. If removal of trees and structures is to occur during the periods 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 the months of winter torpor (approximately October 15 – February 28)] and if 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/or 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. A 100-foot no disturbance buffer is a typical protective buffer distance; however, 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.<br>2. 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.<br>3. Removal of trees with potential bat roosting habitat or active bat roost sites shall follow a two-step removal process:<br>a) 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.<br>b) 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).<br>4. 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. | Less Than Significant |

**TABLE 2-1 (Continued)**
**SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR THE PROPOSED EDZ**

| Impacts | Project Design Features and Mitigation Measures | Significance Including after Project Design Features and Mitigation |
|---|---|---|
| **Impact BIO-3:** Noise generated during proposed project construction activities could have a substantial adverse impact on fish and marine mammals. (Criterion a.) *(Less than Significant, No Mitigation Required)* | None required | Less Than Significant |
| **Impact BIO-4:** Project construction activities, including re-surfacing of the Terminal One Pier, and any restoration of piles beneath the pier, could locally increase suspended contaminant levels and turbidity from re-suspended sediments, which could have indirect impacts on the marine environment, special-status and managed fish taxa, and spawning and foraging habitat for Pacific herring. (Criteria a., d.) *(Less than Significant with Mitigation)* | **Mitigation Measure HYD-1** | Less Than Significant |
| **Impact BIO-5:** Construction of the project could have a substantial adverse effect on Waters of the U.S. and the State (the San Francisco Bay). (Criterion c.) *(Less than Significant with Mitigation)* | **Mitigation Measure HYD-1** | Less Than Significant |
| **Impact BIO-6:** Project homes and other structures would result in an increased level of nighttime artificial illumination and building density in the project site, but would not substantially alter the behavior of fish, marine mammals, and birds. (Criterion d.) *(Less than Significant with Mitigation)* | **Mitigation Measure BIO-3: Building Design and Lighting Strategies to Address Biological Resources Impacts.** 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 to ensure that it sufficiently minimizes the potential for bird strikes. The City may also consult with resource agencies such as CDFW, USFWS, or others, as it determines to be appropriate during this review.<br><br>***Building Design.*** The project applicant shall provide to the City a written description of the measures and features of the building design that are intended to address potential impacts on birds. The building design may include, but are not limited to, some of the following measures:<br><br>1. 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;<br>2. Decrease continuity of reflective surfaces using "visual marker" design techniques, which may include:<br>- Patterned or fritted glass, with patterns at most 28 centimeters apart,<br>- 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,<br>- Geometric fenestration patterns that effectively divide a window into smaller panes of at most 28 centimeters, and/or<br>- Decals with patterned or abstract designs, with the maximum clear spaces at most 28 centimeters square. | Less Than Significant |

**TABLE 2-1 (Continued)**
**SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR THE PROPOSED EDZ**

| Impacts | Project Design Features and Mitigation Measures | Significance Including after Project Design Features and Mitigation |
|---|---|---|
| | 3. 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;<br>4. 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;<br>5. Mute reflections in glass using strategies such as angled glass, shades, internal screens, and overhangs; and<br>6. 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.<br>***Lighting.*** The project applicant shall ensure that the design and specifications for buildings implement design elements to reduce lighting usage, change light direction, and contain light. 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:<br>1. Avoid installation of lighting in areas where not required for public safety<br>2. 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:<br>- Installing motion-sensitive lighting<br>- Installing task lighting<br>- Installing programmable timers<br>- Installing fixtures that use lower-wattage, sodium, and yellow-red spectrum lighting.<br>3. Where exterior lights are to be left on at night, install fully shielded lights to contain and direct light away from the sky.<br>***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 shall review and approve the educational materials prior to building occupancy.<br>***Documentation.*** The project applicant and/or 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 | |

**TABLE 2-1 (Continued)**
**SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR THE PROPOSED EDZ**

| Impacts | Project Design Features and Mitigation Measures | Significance Including after Project Design Features and Mitigation |
|---|---|---|
| | 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. | |
| **Impact BIO-7:** The project could otherwise 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, due to an increase in light and glare. (Criterion d.) *(Less than Significant with Mitigation)* | **Mitigation Measure BIO-3** | Less than significant |
| **Impact BIO-8:** The project would not conflict with any local policies or ordinances protecting biological resources, such as an ordinance or tree preservation policy, or adopted local, regional, or State Habitat Conservation Plan. (Criteria e., f.) (*Less than Significant, No Mitigation Required)* | None required | Less than significant |
| *CUMULATIVE IMPACT:*<br>**Impact C-BIO-1:** The proposed project, in conjunction with other past, current, or forseeable development in Richmond, 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-1; Mitigation Measure BIO-2; Mitigation Measure BIO-3; Mitigation Measure HYD-1** | Less than significant |
| 4.4 Cultural and Paleontological Resources | | |
| **Impact CUL-1:** Project implementation would not cause a substantial adverse change in the significance of a historical resource as defined in CEQA Guidelines, Section 15064.5. (Criterion a.) (*Less than Significant, No Mitigation Required*) | None required | Less Than Significant |
| **Impact CUL-2:** Project construction could cause a substantial adverse change in the significance of an archaeological resource, including those determined to be a historical resource defined in Section 15064.5 or a unique archaeological resource defined in PRC 21083.2. (Criterion b.) (*Less than Significant with Mitigation*) | **Mitigation Measure CUL-1: Accidental Discovery of Archaeological Resources.** During project construction, if prehistoric or historic-era cultural materials are encountered, all construction activities within 100 feet of the find 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.<br>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, in | Less Than Significant |

**TABLE 2-1 (Continued)**
**SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR THE PROPOSED EDZ**

| Impacts | Project Design Features and Mitigation Measures | Significance Including after Project Design Features and Mitigation |
|---|---|---|
| | consultation with the City and the appropriate Native American representative 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 avoidance is not feasible, a qualified archaeologist, in consultation with the lead agency and the appropriate Native American representative, shall prepare and implement a detailed Archaeological Research Design and Treatment Plan (ARDTP). 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 to target 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 before being finalized, curation of artifacts and data at a local facility acceptable to the appropriate Native American representative, and dissemination of final confidential reports to the appropriate Native American representative, the Northwest Information Center of the California Historical Resources Information System, the City, and interested professionals. | |
| **Impact CUL-3:** Project construction could directly or indirectly destroy a unique paleontological resource or site or unique geologic feature. (Criterion c.) *(Less than Significant with Mitigation)* | **Mitigation Measure CUL-2: Accidental Discovery of Paleontological Resources.** If paleontological resources, such as fossilized bone, teeth, shell, tracks, trails, casts, molds, or impressions are discovered during ground-disturbing activities, work shall stop in that area and within 100 feet of the find until a qualified paleontologist can assess the nature and importance of the find and, if necessary, develop appropriate treatment measures in conformance with Society of Vertebrate Paleontology standards, and in consultation with the City of Richmond. | Less Than Significant |
| **Impact CUL-4:** Project construction could disturb any human remains, including those interred outside of formal cemeteries. (Criterion d.) *(Less than Significant with Mitigation)* | **Mitigation Measure CUL-3: Accidental 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, in the event of the discovery of human remains during construction, there shall be no further excavation or disturbance of the site or any nearby area reasonably suspected to overlie adjacent remains. 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 his authority, he 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 land owner shall re-inter the human remains and items associated with Native American burials on the property in a location not subject to further subsurface disturbance. | Less Than Significant |

**TABLE 2-1 (Continued)**
**SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR THE PROPOSED EDZ**

| Impacts | Project Design Features and Mitigation Measures | Significance Including after Project Design Features and Mitigation |
|---|---|---|
| *CUMULATIVE IMPACT (as summarized in Chapter 6):*<br>**CULTURAL AND PALEONTOLOGICAL RESOURCES: The project, in conjunction with past, present and reasonably foreseeable future projects, would not result in significant cumulative impacts with respect to cultural and paleontological resources. *(Less than Significant, No Mitigation Required)*** | None required | Less Than Significant |
| 4.5 Geology, Soils, and Minerals | | |
| **Impact GEO-1:** Project development could be damaged by seismically induced ground shaking and thereby expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death. (Criterion a.2) *(Less than Significant, No Mitigation Required)* | None required | Less Than Significant |
| **Impact GEO-2:** Project development could be damaged by seismically related ground failure including liquefaction and thereby expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death. (Criterion a.3) *(Less than Significant, No Mitigation Required)* | None required | Less Than Significant |
| **Impact GEO-3:** Project development could be damaged by seismically related landslides and thereby expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death. (Criterion a.4) *(Less than Significant, No Mitigation Required)* | None required | Less Than Significant |
| **Impact GEO-4:** The project 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-5:** The project could result in on- or off-site 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-6:** Project implementation could occur on expansive soils, creating risks to life and property. (Criterion d) *(Less than Significant, No Mitigation Required)* | None required | Less Than Significant |

**TABLE 2-1 (Continued)**
**SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR THE PROPOSED EDZ**

| Impacts | Project Design Features and Mitigation Measures | Significance Including after Project Design Features and Mitigation |
|---|---|---|
| *CUMULATIVE IMPACT:*<br>**Impact C-GEO-1:** The 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)* | None required | Less Than Significant |
| 4.6 Climate Change, Greenhouse Gases, and Energy | | |
| **Impact GHG-1:** The project would result in an increase in GHG emissions. (Criteria a.) *(Less than Significant, No Mitigation Required)* | **PROJECT DESIGN FEATURE GHG-1: Balanced Cut and Fill Grading.** The project applicant will ensure that the grading plan provides a near balance of cut and fill on-site, thereby minimizing the need to import or export soil; substantially reducing the truck trips to and from the site; and, in the process, substantially reducing the GHG emissions those truck trips would generate.<br>**PROJECT DESIGN FEATURE GHG-2: Recycling and Reuse of Demolition Materials.** The project applicant will ensure that demolition activities that take place on the project site will include the recycling, reprocessing, and reuse on-site of the bulk of the materials generated by demolition of the warehouse and remaining hardscape elements, thereby minimizing the need to export the demolition waste-materials off-site as well as the need to import materials to the project site in order to satisfy the project's requirements for road base, aggregate base for the foundations, engineered fill, and other on-site uses that will be addressed by reuse of the reprocessed demolition by-products. | Less Than Significant |
| **Impact GHG-2:** The project could conflict with the AB 32 Scoping Plan or City of Richmond's Energy and Climate Change Element Goals and Policies for reducing GHG emissions. (Criteria b.) *(Less than Significant, No Mitigation Required)* | **RECOMMENDED MEASURE GHG-1:** The City and applicant shall consider including the following design features in the proposed project, as part of the Planned Area Plan and Design Review processes:<br>• Provide an electric car charging station on the project site.<br>• Include centralized recycling collection areas within the common space in the condominium flats.<br>• Include water recycling and rainwater catchment in the condominium buildings to recycle water. | Less Than Significant |
| **Impact ENE-1**: The project would not result in wasteful, inefficient and unnecessary use of energy, and the project would not require substantial additional energy capacity. (Criteria c, d) *(Less than Significant, No Mitigation Required)* | None Required | Less Than Significant |
| *CUMULATIVE IMPACT (as summarized in Chapter 6):*<br>**CLIMATE CHANGE, GREENHOUSE GASES, AND ENERGY: The project, in conjunction with past, present and reasonably foreseeable future projects, would not result in significant cumulative impacts with respect to climate change, greenhouse gases, and energy. *(Less than Significant, No Mitigation Required)*** | None Required. | Less Than Significant |

**TABLE 2-1 (Continued)**
**SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR THE PROPOSED EDZ**

| Impacts | Project Design Features and Mitigation Measures | Significance Including after Project Design Features and Mitigation |
|---|---|---|
| 4.7 Hazards and Hazardous Materials | | |
| **Impact HAZ-1:** The project would include the routine transport, use and disposal of hazardous materials during construction and operation but would not create a significant hazard to the public or the environment. (Criterion a.) *(Less than Significant with Mitigation)* | **Mitigation Measure HAZ-1a:** Prior to issuance of any demolition permit, the project applicant shall submit to the Contra Costa Health Services Department a hazardous building material assessment prepared by qualified licensed contractors for any structure intended for demolition indicating whether LBP or lead-based coatings, and/or PCB-containing equipment, are present.<br><br>**Mitigation Measure HAZ-1b:** If the assessment required by Mitigation Measure HAZ-1a indicates the presence of LBP, and/or PCBs, the project applicant shall create and implement a health and safety 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.<br><br>**Mitigation Measure HAZ-1c:** If the assessment required by Mitigation Measure HAZ-1a finds presence of LBP, the project applicant shall develop and implement a LBP removal plan. The plan shall specify, but not be limited to, the following elements for implementation:<br>1. Develop a removal specification approved by a Certified Lead Project Designer.<br>2. Ensure that all removal workers are properly trained.<br>3. Contain all work areas to prohibit off-site migration of paint chip debris.<br>4. Remove all peeling and stratified LBP on building and non-building surfaces to the degree necessary to safely and properly complete demolition activities according to recommendations of the survey. The demolition contractor shall be responsible for the proper containment and disposal of intact LBP on all equipment to be cut and/or removed during the demolition.<br>5. Provide on-site personnel and area air monitoring during all removal activities to ensure that workers and the environment are adequately protected by the control measures used.<br>6. Clean up and/or vacuum paint chips with a high efficiency particulate air (HEPA) filter.<br>7. Collect, segregate, and profile waste for disposal determination.<br>8. Properly dispose of all waste.<br><br>**Mitigation Measure HAZ-1d:** If the assessment required by Mitigation Measure HAZ-1a finds presence of PCBs, the project applicant shall ensure that PCB abatement is conducted prior to building demolition or renovation. PCBs shall be removed by a qualified contractor and transported in accordance with Caltrans requirements. | Less Than Significant |

**TABLE 2-1 (Continued)**
**SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR THE PROPOSED EDZ**

| Impacts | Project Design Features and Mitigation Measures | Significance Including after Project Design Features and Mitigation |
|---|---|---|
| | **Mitigation Measure HAZ-1e:** Prior to issuance of any building permit, the project applicant shall submit to the City a soil vapor assessment prepared by a qualified licensed environmental consultant for any structure intended for human occupancy (i.e., occupied by a human for a minimum of 2,000 hours annually). The assessment shall consist of laboratory analysis of soil gas samples collected as part of remediation confirmation to document that soil gas concentrations will not adversely affect future occupants or visitors to proposed structures.<br><br>**Mitigation Measure HAZ-1f:** Prior to issuance of any building permit, the project applicant shall submit to the City confirmation that the site remedial action plan has been revised as necessary, and approved by the San Francisco Regional Water Quality Control Board (RWQCB), to address the construction of housing and other infrastructure (i.e., water utilities) in areas of the site not otherwise contemplated for housing or infrastructure in the 2005 Updated Proposed Remedial Action Plan, and that all remedial actions required to be completed per the revised remedial action plan prior to project construction have been approved as complete, and documented as such, by the RWQCB. | |
| **Impact HAZ-2:** The project would not create a significant hazard to the public or environment through an upset or accident involving the release of hazardous materials. (Criterion b.) *(Less than Significant, No Mitigation Required)* | None required | Less Than Significant |
| **Impact HAZ-3:** Development of the project would be located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and could result in a safety hazard to the public or environment through exposure to previous contamination of soil or groundwater. (Criterion d.) *(Less than Significant with Mitigation)* | **Mitigation Measure HAZ-2:** During construction, the applicant's construction contractor lead/foreperson shall ensure that all earthwork activities cease upon discovery of any suspect soils (e.g., petroleum odor and/or discoloration) during construction in accordance with an updated Soil Risk Management Plan prepared by a qualified environmental consultant and approved by the San Francisco Bay Regional Water Quality Control Board (RWQCB). Upon any such discovery, the applicant or their construction contractor shall notify the RWQCB and retain a qualified environmental firm to collect soil samples to confirm the level of contamination that may be present. If contamination is found to be present, any further proposed groundbreaking activities within areas of identified or suspected contamination shall be conducted according to a site specific health and safety plan, prepared by a licensed professional. The contractor shall follow all procedural direction given by the RWQCB and in accordance with the updated Soil Risk Management Plan prepared for the site to ensure that suspect soils are isolated, protected from runoff, and disposed of in accordance with transportation laws and the requirements of the licensed receiving facility. | Less Than Significant |
| **Impact HAZ -4:** The 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 |

**TABLE 2-1 (Continued)**
**SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR THE PROPOSED EDZ**

| Impacts | Project Design Features and Mitigation Measures | Significance Including after Project Design Features and Mitigation |
|---|---|---|
| **Impact HAZ -5:** The 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.) *(Less than Significant, No Mitigation Required)* | None required | Less Than Significant |
| *CUMULATIVE IMPACT (as summarized in Chapter 6):*<br>**HAZARDS AND HAZARDOUS MATERIALS: The project, in conjunction with past, present and reasonably foreseeable future projects, would not result in significant cumulative impacts with respect to hazards and hazardous materials.** ***(Less than Significant, No Mitigation Required)*** | None required | Less Than Significant |
| 4.8 Hydrology and Water Quality | | |
| **Impact HYD-1:** The project could result 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)* | **PROJECT DESIGN FEATURE HYD-1: Pre-project stormflow levels.** Prior to the start of project construction, the applicant will demonstrate, to the satisfaction of the Director of the Public Works Department, that, upon completion of such construction, 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.<br><br>**Mitigation Measure HYD-1: Water Quality Best Management Practices for All Construction Activities Over the Bay.** The project applicant shall ensure that the following best management practices are included in the SWPPP prepared in accordance with the Construction General Stormwater Permit:<br><br>1. The construction contractor shall minimize the production of debris when cutting or demolishing portions of the over-water pier components or constructing new over-water components, and shall utilize netting, containment vessels, work platforms, or the equivalent to catch any falling debris;<br>2. The construction contractor shall install a containment boom around the work area to contain floating debris, and shall provide a vessel to retrieve debris from the containment area at the end of each work day;<br>3. Straw bales, wattles, fiber rolls, gravel bags, or equivalent devices shall be installed around the perimeter of the pier and stockpiled materials that are exposed to the environment to prevent debris from being transported to the Bay via runoff;<br>4. The use of hazardous materials during construction shall be minimized to the extent practical, and the amount of hazardous materials stored on the piers or adjacent to the waterfront shall be limited to what is needed to immediately support construction activities. The quantities shall not exceed 55 gallons for a specific material. All hazardous materials shall be stored safely and securely in approved containers, under cover or in an approved storage shed or cabinet, and in adequate secondary | Less Than Significant |

**TABLE 2-1 (Continued)**
**SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR THE PROPOSED EDZ**

| Impacts | Project Design Features and Mitigation Measures | Significance Including after Project Design Features and Mitigation |
|---|---|---|
| | containment. Fueling of generators and other equipment shall be conducted away from the pier edge and other locations where a spill could easily enter the Bay, and adequate spill cleanup materials shall be provided during all fueling operations;<br>5. 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 will be properly disposed;<br>6. Inactive material stock piles must be covered at all times;<br>7. Construction material shall be covered every night and during any rainfall event;<br>8. Construction crews shall implement measures to prevent saw water and wash water from entering the Bay;<br>9. Active debris boxes shall be covered during rain events to prevent contact with rainwater;<br>10. No concrete shall be stored on-site. After trucks are finished placing concrete, they shall be washed out in a designated area, and the wash water shall be contained within plastic kid pools or similar containment. Once dried, the residual concrete shall be appropriately disposed of off-site;<br>11. At the end of each work day (at a minimum), the part of the Terminal One Pier deck upon which construction activities have taken place that day shall be cleaned of particulates, sediment, and debris, by manual or mechanical means such as vacuuming or sweeping. Power washing is not an acceptable method for cleaning;<br>12. Non-stormwater discharges to the Bay shall be prohibited unless specified in the SWPPP and approved by the City;<br>13. A Materials Management and Disposal Plan (MMDP) shall be prepared to prevent any debris from falling into the Bay during construction to the maximum extent practicable and also ensure the appropriate disposal of all construction-related materials. The measures identified in the MMDP shall be based on the Best Available Technology, and will include, but not be limited to, the following:<br>a. During construction, any barges performing the work shall be moored in a position to capture and contain the debris generated during any sub-structure or in-water work. In the event that debris does reach the Bay, personnel in workboats 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;<br>b. Construction waste shall be collected and transported to an authorized upland disposal area, and per federal, state, and local laws and regulations;<br>c. All construction material, wastes, debris, sediment, rubbish, trash, fencing, etc., shall be removed from the site once the proposed project is completed and transported to an authorized disposal area, in compliance with applicable federal, state, and local laws and regulations. | |

**TABLE 2-1 (Continued)**
**SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR THE PROPOSED EDZ**

| Impacts | Project Design Features and Mitigation Measures | Significance Including after Project Design Features and Mitigation |
|---|---|---|
| | The MMDP shall be submitted to the San Francisco Bay RWQCB for review and approval. | |
| **Impact HYD-2:** The project would 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:** 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)* | **Project Design Feature HYD-1** | Less Than Significant |
| **Impact HYD-4:** 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)* | **Project Design Feature HYD-1** | Less Than Significant |
| **Impact HYD-5:** 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, No Mitigation Required)* | **Project Design Feature HYD-1** | Less Than Significant |
| **Impact HYD-6:** 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 structured which would impede or redirect flood flows. (Criteria g, h) *(Less than Significant, No Mitigation Required)* | **Project Design Feature HYD-1** | Less Than Significant |
| **Impact HYD-7:** 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)* | **PROJECT DESIGN FEATURE HYD-2: Sea Level Rise Measures.** The applicant will ensure that the project design includes the following measures to address sea level rise of up to 3 feet:<br>1. Placement of finished floor elevations of residential structures above 14.5 feet NAVD88, an elevation greater than the current site BFE, or 11 feet NAVD88, plus 3 feet of sea level rise and a 0.5 feet additional margin; and<br>2. 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).<br>3. Placement of the finished elevation of the Bay Trail Loop at or above 14.1 feet NAVD88, an elevation greater than the current site BFE (11 feet NAVD88) plus 3 feet of sea level rise; | Less Than Significant |

**TABLE 2-1 (Continued)**
**SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR THE PROPOSED EDZ**

| Impacts | Project Design Features and Mitigation Measures | Significance Including after Project Design Features and Mitigation |
|---|---|---|
| | If feasible, design of the Bay Trail Loop to function as a flood mitigation embankment either as initially constructed or as retrofitted on an as needed basis. Because the project site's shoreline is a VE zone, indicating it is currently susceptible to wave overtopping, the Bay Trail Loop embankment may be subject to wave runup and overtopping. These processes shall be considered when setting the Bay Trail Loop's final design and evaluating its flood mitigation performance.<br>**PROJECT DESIGN FEATURE HYD-3: Sea Level Rise Adaptation Strategies:** The applicant shall include provisions in the project's Covenants, Conditions, and Restrictions that require the Homeowner's Association to engage a degreed coastal geomorphologist, a licensed engineer, or a comparably qualified expert in the management of flood risks associated with sea level rise to prepare an Adaptive Flood Risk Management Plan. The initial adaptive management plan shall be completed and submitted to the City for review and comment by January 1, 2035. The plan shall be updated every ten years, with the first plan update to be completed and submitted to the City for review and comment by January 1, 2045 and with subsequent updates to be completed and submitted to the City on January 1 every ten years thereafter.<br>The Adaptive Flood Risk Management Plan shall include:<br>1. A Monitoring and Reporting Program – to include:<br>a. A review of scientific literature including up-to-date estimates of local sea level rise and available data and studies from other shoreline sites in Richmond as well as neighboring/regional jurisdictions to estimate the actual increase in sea level at the site;<br>b. A review of federal, State, local, and regional law, regulations, and guidance that address sea level rise;<br>c. A report that addresses the following points:<br>i. A discussion of any estimated difference in sea level at the site since the previous 10-year report;<br>ii. A discussion of how the project complies with any new applicable statutory or regulatory requirements;<br>iii. A discussion of the observed characteristics and impacts, if any, related to flooding on the site, based on site observations and photos as well as conversations with site residents and City Public Works staff;<br>iv. A discussion of the monitoring triggers that will be used to determine the installation schedule for:<br>• Any backflow prevention devices that are required to address flood impacts associated with a 2 foot increase in sea level;<br>• Any protective features that will enable the Bay Trail Loop (and/or other protective features as needed) to serve as a flood protection measure to address flood impacts associated with a 3-foot increase in sea level; and/or | |

**TABLE 2-1 (Continued)**
**SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR THE PROPOSED EDZ**

| Impacts | Project Design Features and Mitigation Measures | Significance Including after Project Design Features and Mitigation |
|---|---|---|
| | • Any additional adaptive flood risk management measures that will be required to address flood impacts associated with a rise in sea level of greater than 3 feet.<br>v. A recommended schedule for implementing the adaptive flood risk management measures referenced in subsection iv. above and/or an update to a previously presented recommended schedule; and<br>vi. A report on the adaptation measures financing mechanism (see subsection 3. below), and an estimated projection of funds that would be available 10 years into the future.<br>2. An Adaptive Flood Risk Management Strategy to address 100-year flood impacts associated with a rise in sea level of greater than 3 feet. If the monitoring program and the updated monitoring report prepared every ten years results in a projection that the rise in sea level will exceed 3 feet during the subsequent 25-year period, the Adaptive Flood Risk Management Plan shall also include:<br>a. An analysis of adaptive measures which, if implemented, either on a stand-alone basis or in combination with other measures, would prevent or substantially reduce human health and safety impacts as well as property loss and damage related to 100-year flooding and an increase in sea level of greater than 3 feet;<br>b. The formulation of an adaptive measures strategy which reflects a best practices and cost-effective approach to addressing the 100-year flood risk associated with an increase in sea level greater than 3 feet; and<br>c. An estimate of the costs and timeframes involved in implementing the adaptive measures strategy formulated in accordance with subsection b. above.<br>The nature of the adaptation measure/s to be implemented will be reviewed and approved by the City Planning Division and Public Works Department and other regulatory agencies as necessary, and will be based on the results of monitoring and reporting.<br>3. A Financing Strategy which will be designed to:<br>a. Generate sufficient resources to cover the costs of:<br>vii. The backflow prevention devices as required to address flood impacts associated with a 2 foot increase in sea level (to the extent these devices were not already installed when the storm drain system was initially constructed);<br>viii. The protective features as required to enable the Bay Trail Loop to serve as an effective barrier to address flood impacts associated with a 3-foot increase in sea level (to the extent these protective features were not already incorporated in the Bay Trail Loop when it was originally constructed); and<br>ix. The adaptive measures strategy formulated to address flood impacts associated with an increase in sea level of greater than 3 feet; | |

**TABLE 2-1 (Continued)**
**SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR THE PROPOSED EDZ**

| Impacts | Project Design Features and Mitigation Measures | Significance Including after Project Design Features and Mitigation |
|---|---|---|
| | b. Generate such funds and to make such funds available within a timeframe to cover the flood improvement costs as they are incurred in accordance with the implementation schedule.<br>The financing strategy may include funding from the following private and public financing mechanisms:<br>a. Homeowner Association fees;<br>b. Mello Roos Community Services District special taxes;<br>c. Assessment District Assessments; and<br>d. Other public or private financing mechanisms as determined by the Homeowner Association and the City to be appropriate and feasible. | |
| **Impact HYD-8:** The project would not would not result in or cause inundation by seiche, tsunami, or mudflow. (Criterion j) *(Less than Significant, No Mitigation Required)* | None required | Less Than Significant |
| *CUMULATIVE IMPACT (as summarized in Chapter 6):*<br>**HYDROLOGY AND WATER QUALITY: The project, in conjunction with past, present and reasonably foreseeable future projects, would not result in significant cumulative impacts with respect to hydrology and water quality. *(Less than Significant, No Mitigation Required)*** | None required | Less Than Significant |
| 4.9 Land Use and Planning | | |
| **Impact LUP-1:** The proposed project would not divide an established community. *(Less than Significant, No Mitigation Required)* | None required | Less Than Significant |
| **Impact LUP-2:** The project would be in general conformance with applicable regional or local plans and policies adopted for the purpose of avoiding or mitigating environmental effects. *(Less than Significant, No Mitigation Required)* | None required | Less Than Significant |
| *CUMULATIVE IMPACT (as summarized in Chapter 6):*<br>**LAND USE AND PLANNING: The project, in conjunction with past, present and reasonably foreseeable future projects, would not result in significant cumulative impacts with respect to land use and planning. *(Less than Significant, No Mitigation Required)*** | None required. | Less Than Significant |

**TABLE 2-1 (Continued)**
**SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR THE PROPOSED EDZ**

| Impacts | Project Design Features and Mitigation Measures | Significance Including after Project Design Features and Mitigation |
|---|---|---|
| 4.10 Noise | | |
| **Impact NOI-1:** Construction of the project would result in a temporary increase in ambient noise levels. (Criteria a., c.) *(Less Than Significant with Mitigation)* | **Mitigation Measure NOI-1a: Construction Noise Control Measures.** 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:<br>• 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);<br>• 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;<br>• 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<br>• Noise-reducing pile-driving techniques as specified in Mitigation Measure NOI-1b.<br><br>**Mitigation Measure NOI-1b: Pile Driving Noise-Reducing Techniques and Muffling Devices.** Noise-reducing pile-driving techniques shall be employed during project construction. These techniques shall include:Limiting pile driving or other impact-related noise-generating activity to 9:00 a.m. to 5:00 p.m., Monday through Friday. No pile driving or other extreme noise-generating activity is permitted on Saturdays, Sundays, and holidays;<br>• Installing intake and exhaust mufflers on pile-driving equipment;<br>• Vibrating piles into place when feasible, and installing shrouds around the pile-driving hammer where feasible;<br>• Implementing "quiet" pile-driving technology (such as pre-drilling of piles and the use of more than one pile driver to shorten the total pile driving duration), where feasible, in consideration of geotechnical and structural requirements and conditions;<br>• 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. They consist of blocks of material placed atop a piling during installation to minimize | Less Than Significant |

**TABLE 2-1 (Continued)**
**SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR THE PROPOSED EDZ**

| Impacts | Project Design Features and Mitigation Measures | Significance Including after Project Design Features and Mitigation |
|---|---|---|
| | noise generated when driving the pile. Materials typically used for cushion blocks include wood, nylon and micarta (a composite material); and<br>• 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.<br>The above measures would reduce the severity of noise generated by construction and pile driving activities and reduce the potential annoyance to nearby residents and recreational users and others who could be disturbed by pile driving. | |
| **Impact NOI-2:** Occupants of the proposed new buildings could be exposed to high noise levels. (Criteria a., b.) *(Less than Significant, No Mitigation Required)* | None required | Less Than Significant |
| **Impact NOI-3:** Project operations could cause a long-term increase in ambient noise levels in the project vicinity. (Criteria b.) *(Less Than Significant, No Mitigation Required)* | None required | Less Than Significant |
| **Impact NOI-4:** Project construction could generate ground-borne vibration. (Criterion f.) *(Less Than Significant, No Mitigation Required)* | None required | Less Than Significant |
| *CUMULATIVE IMPACT:*<br>**Impact C-NOI-1:** Construction activities of the proposed project combined with cumulative construction noise in the project area could cause a substantial temporary or periodic increase in ambient noise levels in the project vicinity during construction. *(Less than Significant, No Mitigation Required)* | None required | Less Than Significant |
| *CUMULATIVE IMPACT:*<br>**Impact C-NOI-2:** Operation of the proposed project when considered with other cumulative development would not cause a substantial permanent increase in ambient noise levels in the project vicinity. *(Less Than Significant, No Mitigation Required)* | None required | Less Than Significant |
| 4.11 Population and Housing | | |
| **Impact POP-1:** The project would not directly or indirectly induce substantial population growth. *(Less than Significant, No Mitigation Required)* | None required | Less Than Significant |
| *CUMULATIVE IMPACT (as summarized in Chapter 6):*<br>**POPULATION AND HOUSING: The project, in conjunction with past, present and reasonably foreseeable future** | None required | Less Than Significant |

**TABLE 2-1 (Continued)**
**SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR THE PROPOSED EDZ**

| Impacts | Project Design Features and Mitigation Measures | Significance Including after Project Design Features and Mitigation |
|---|---|---|
| **projects, would not result in significant cumulative impacts with respect to population and housing. *(Less than Significant, No Mitigation Required)*** | | |
| 4.12 Public Services and Recreation | | |
| **Impact PUB-1:** The 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, No Mitigation Required)* | None required | Less Than Significant |
| *CUMULATIVE IMPACT (as summarized in Chapter 6):*<br>**PUBLIC SERVICES AND RECREATION: The project, in conjunction with past, present and reasonably foreseeable future projects, would not result in significant cumulative impacts with respect to public services and recreation. *(Less than Significant, No Mitigation Required)*** | None required | Less Than Significant |
| 4.13 Transportation and Traffic | | |
| **Impact TR-1:** The project would not 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. (Criterion a.) (Less than Significant) | None required | Less Than Significant |
| **Impact TR-2:** The project would not 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 or highways. (Criterion b.) (Less than Significant) | None required | Less Than Significant |
| **Impact TR-3:** The 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). (Criterion c.) (Less than Significant) | None required | Less Than Significant |

**TABLE 2-1 (Continued)**
**SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR THE PROPOSED EDZ**

| Impacts | Project Design Features and Mitigation Measures | Significance Including after Project Design Features and Mitigation |
|---|---|---|
| **Impact TR-4:** The project would not result in inadequate emergency access. (Criterion d.) (Less than Significant) | None required | Less Than Significant |
| **Impact TR-5:** The 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. (Criterion e.) (Less than Significant) | None required | Less Than Significant |
| **Impact TR-6:** Project construction would result in a substantial, though temporary, adverse effect on the circulation system during the project construction period. (Criterion f.) (Less than Significant, No Mitigation Required) | None required | Less Than Significant |
| *CUMULATIVE IMPACT (as summarized in Chapter 6):*<br>**TRANSPORTATION AND TRAFFIC: The project, in conjunction with past, present and reasonably foreseeable future projects, would not result in significant cumulative impacts with respect to transportation and traffic. *(Less than Significant, No Mitigation Required)*** | None required | Less Than Significant |
| 4.14 Utilities and Service Systems | | |
| **Impact UTL-1:** The project would not generate an increase in demand for water supply over existing entitlements or resources, or require or result in the construction of new water treatment facilities or expansion of existing facilities. (Criteria b. and d.) *(Less than Significant, No Mitigation Required)* | None required | Less Than Significant |
| **Impact UTL-2:** The proposed project would not require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, exceed wastewater treatment requirements of the San Francisco Regional Water Quality Control Board, or result in a determination by the wastewater treatment provider that it has inadequate capacity to serve the project's projected demand in addition to the provider's existing commitments. (Criteria a., b., and e.) *(Less than Significant, No Mitigation Required)* | None required | Less Than Significant |
| **Impact UTL-3:** The project would result in the construction of new stormwater drainage facilities or expansion of existing facilities, the construction of which would not cause significant environmental effects. *(Less than Significant, No Mitigation Required)* | None required | Less Than Significant |

**TABLE 2-1 (Continued)**
**SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR THE PROPOSED EDZ**

| Impacts | Project Design Features and Mitigation Measures | Significance Including after Project Design Features and Mitigation |
|---|---|---|
| **Impact UTL-4:** The project would be served by a landfill with sufficient permitted capacity to accommodate the project's waste disposal needs and would comply with federal, state and local statues and regulations related to solid waste. *(Less than Significant, No Mitigation Required)* | None required | Less Than Significant |
| *CUMULATIVE IMPACT (as summarized in Chapter 6):*<br>**UTILITIES AND SERVICE SYSTEMS: The project, in conjunction with past, present and reasonably foreseeable future projects, would not result in significant cumulative impacts with respect to utilities and service systems. *(Less than Significant, No Mitigation Required)*** | None required | Less Than Significant |

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# CHAPTER 3
# Project Description

## 3.1 Introduction

This EIR chapter describes the Terminal One project evaluated in this EIR. This chapter specifically describes the following characteristics of the project: location, general existing characteristics of the project site, the basic and general project objectives, the proposed project site development plan, and various development characteristics. Also described are the jurisdictional approvals anticipated to be required to implement the project, which will include associated amendments to the City's Zoning maps and text.

## 3.2 Project Overview and Objectives

The project would include the following components, which would be constructed on the approximately 13.3-acre Terminal One project site (project site):

1. Up to 334 residential units, including approximately 26 attached townhomes and approximately 308 multifamily condominium flats,
2. Park areas, paths, trails, and shoreline improvements, including:
    - A public Waterfront Park, the largest feature of which would be a public pier (Terminal One Pier), re-purposed from a former industrial pier, and
    - An extension of the Bay Trail which would ring the project site (Bay Trail Loop),
3. Improvements to existing roads and the creation of a new shoreline road which the applicant proposes to call Shoreline Drive and which extends south from the intersection of Brickyard Cove Road and Dornan Drive, east along the shoreline and then north back to an intersection with Brickyard Cove Road, and
4. Other components, including:
    - The development of approximately 2,000 square feet (sf) of neighborhood- and visitor-serving retail uses, and
    - The development of a pedestrian and bicycle-oriented promenade, extending north to south through the project site (Terminal One Mews).

The project site is owned by the City of Richmond and is subject to a Land Disposition Agreement (LDA) between the City and Terminal One Development LLC (the applicant), under

which the City would sell the applicant an approximately 11.9-acre portion of the project site for residential uses. The City would retain ownership of approximately 1.9 acres of the project site for use as a public park.[1]

The project may be developed in up to five phases. As provided in the LDA, the initial phase of development under any scenario would include the Bay Trail Loop, the new shoreline road, the public Waterfront Park, and the re-purposing of (referred to in the LDA as the "preservation" of) the Terminal One Pier (City of Richmond, 2014).

## 3.2.1 Project Objectives

The basic (primary) objectives of the project, and the applicant's general project objectives, are listed below.

### Basic Project Objectives

The Terminal One project shall:

1. Transform a former industrial site into a new waterfront residential community compatible with surrounding development.
2. Fulfill the City of Richmond's planning goals and vision for the site and Brickyard Cove area, including preservation of Brickyard Cove as a water body of scenic interest.
3. Provide access to waterfront open space for public use, including public recreation and parks areas and a shoreline connection between the existing Bay Trail segments to the west and east of the site.
4. Generate tax revenues and employment opportunities for the City of Richmond.

### Applicant's General Project Objectives

The applicant's general project objectives include, but are not limited to, the following:

1. Bring to the Richmond housing market high-quality, for-sale homes that would be made available to a broad range of home buyers by providing a range of residential unit types and sizes, designed to maximize the satisfaction of market demand.
2. Bring to the Richmond housing market a type and character of housing:
    a. That is in very short supply; and
    b. That will be responsive to the demand resulting from the employment-generating land uses planned for the Richmond Bay Specific Plan area and other nearby new growth areas.

[1] The Terminal One LDA acreage calculations were based on the erroneous assumption that the project site is 13.8± acres in size. A subsequent survey of the property has determined the size of the site to be approximately 13.3 acres.

3. Reflect in the architecture of the residential buildings the Bay Area Regional style with its:

    a. Simplicity of line, form, and composition;

    b. Use of earth-tone colors and natural-looking materials;

    c. Site-oriented design tailored to the opportunities afforded by the bay front setting; and

    d. Integration of indoor and outdoor space.

4. Reflect in the design of the project sustainable site planning concepts that emphasize:

    a. The compact and efficient organization of privately-held built space;

    b. The preservation, reservation, and enhancement of open space for public use; and

    c. The substitution of common area open space for individually-held private outdoor living areas.

5. Create a residential neighborhood and waterfront park that will afford residents and visitors alike an opportunity:

    a. To access the panoramic views of the San Francisco Bay from the site's shoreline location;

    b. To engage physically as well as visually with the extraordinary waterfront and parkland environment that adjoins the project site on three of its four sides; and

    c. To connect with the natural order surrounding the site on a personal and intimate level.

6. Create a sense of place that is inspired by the ecological context in which the project site is located.

7. Incorporate a circulation system that is designed not only to provide safe and convenient access to the Terminal One residential neighborhood and waterfront park, but also to respect and complement the natural environment the project is designed to celebrate by:

    a. Deemphasizing the automobile and assigning priority to pedestrian and bicycle modes of travel;

    b. Featuring a new "destination-serving" road (Shoreline Drive) designed both to provide the public with direct access to the Terminal One Waterfront Park, with its re-purposed pier and public gardens, and to serve as a scenic entry to the Brickyard Cove neighborhoods to the east;

    c. Retaining the portion of Brickyard Cove Road directly north of the project site as a connector roadway that will enable commuter, commercial, and other through traffic to bypass the site;

    d. Creating a pedestrian and bicycle promenade through the center of the site that will tie together and integrate the public and private realms; and

    e. Establishing on-site pedestrian and bicycle pathways that will connect to and serve as extensions of both the City's existing trail network and the EBRPD's Bay Trail system.

8. Spur and support local economic growth through new capital investment and an expansion of the market for local goods and services.

9. Enhance the quality of life enjoyed by the surrounding community by converting an abandoned industrial warehouse, pier, and shoreline into a waterfront park and public gardens which will function as an extension of the Miller/Knox Regional Shoreline park.

10. Support and lift residential values in the surrounding community by building high-quality, high-amenity homes that will retain their character and appeal over time.

11. Develop a residential project that will have a positive fiscal impact on the City's annual budget by generating income to the City's general fund.

12. Make a significant contribution to the City's efforts to address its fair share of allocation of regional housing need, as projected by the Association of Bay Area Governments in its Regional Housing Need Plan.

13. Incorporate a parking program that is designed to accommodate all resident and guest parking in a podium garage where automobiles will be screened from view beneath a landscaped podium deck and behind the entry stoops and street front facades of ground level residences.

14. Provide public on-street parking on the site's new Shoreline Drive to accommodate visitors to the Terminal One Waterfront Park and Entry Plaza.

15. Maximize off-street, dedicated parking for residents and their guests to the greatest extent possible in order to preserve on-street parking for use by visitors to the waterfront park and shoreline amenities and the general public.

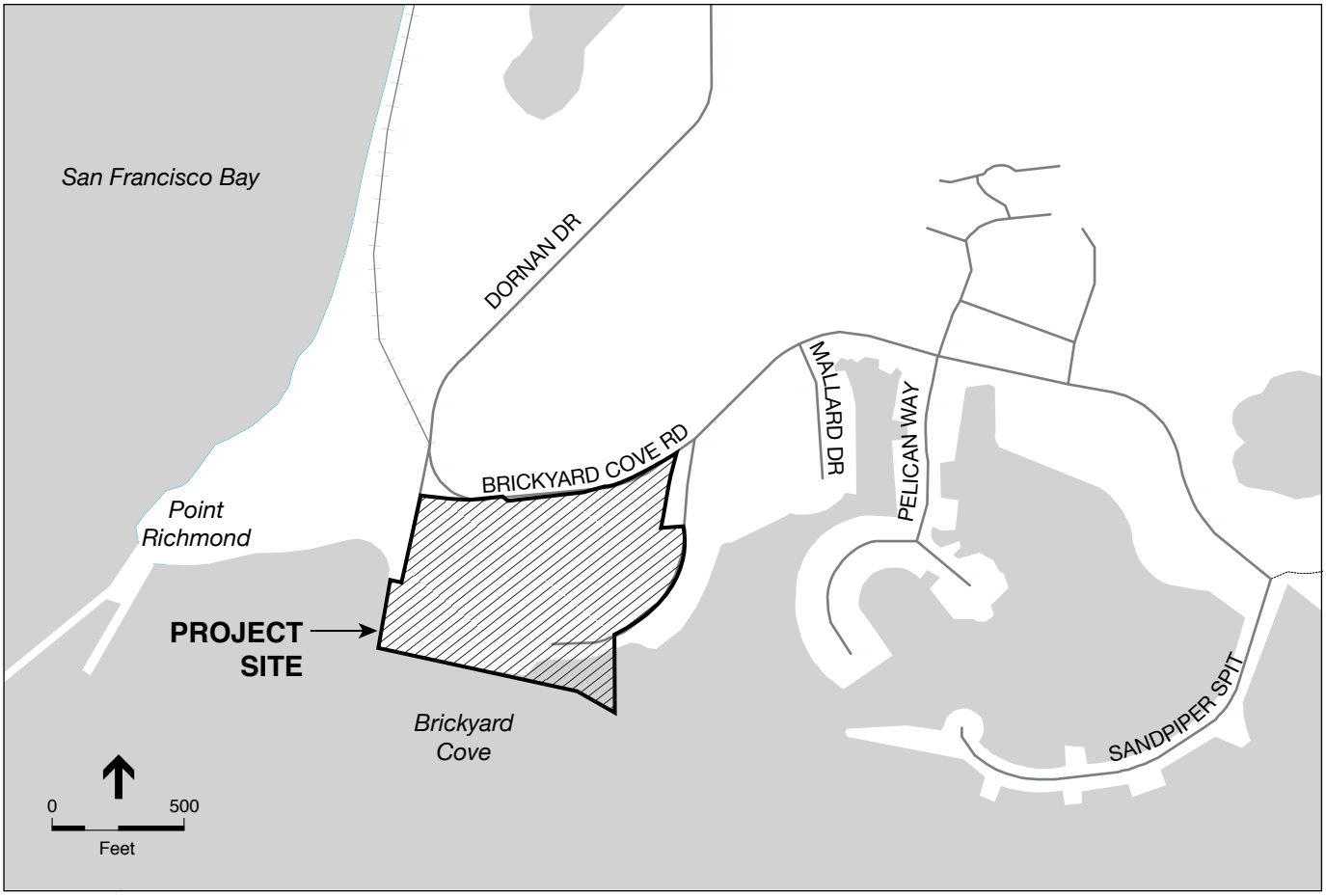
16. Maximize new residential opportunities to accommodate forecasted population growth within the City of Richmond.

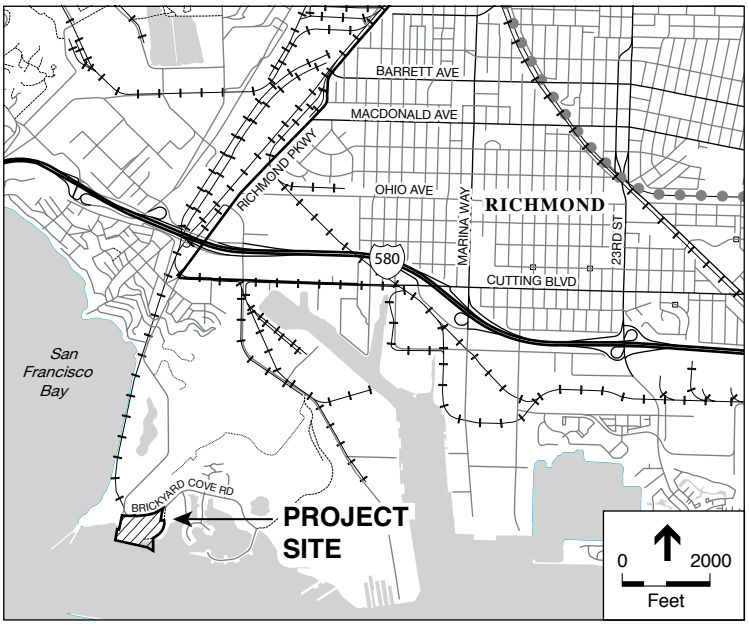
17. Provide compact development patterns as described in the General Land Use Element (page 3.3).

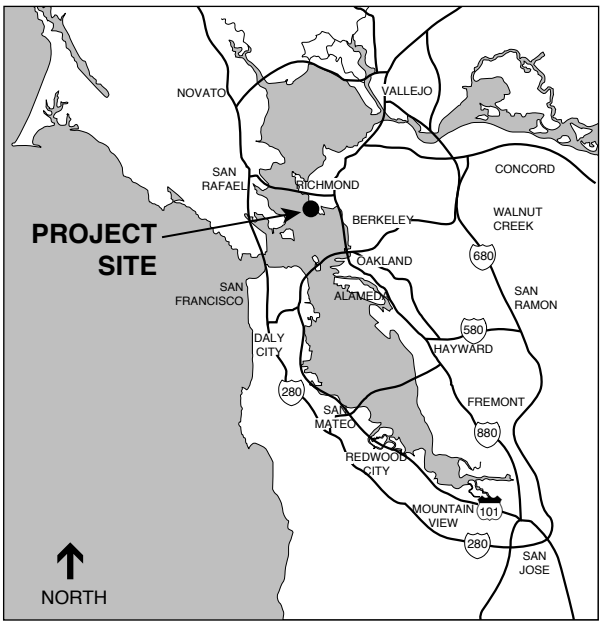
# 3.3 Project Location and Context

## 3.3.1 Regional and Local Setting

The project site, commonly known as the Terminal One property, is located in the Point Richmond neighborhood of the city of Richmond. Richmond is located approximately 16 miles northeast of San Francisco, on a peninsula separating San Francisco Bay and San Pablo Bay, in western Contra Costa County. The City is adjacent to the San Francisco Bay, the cities of Albany, El Cerrito, Pinole, San Pablo, and the unincorporated areas of El Sobrante and North Richmond, as shown in **Figure 3-1, Regional Context**. The City covers approximately 56 square miles, and includes approximately 32 linear miles of shoreline.




SOURCE: ESA

City of Richmond Terminal One Project EIR . 140325

**Figure 3-1**
Project Regional Location

## 3.3.2 Project Site

The project site is located on the San Francisco Bay within an area identified by the City of Richmond as the Southern Shoreline area, with panoramic views of San Francisco and the East Bay waterfront. **Figure 3-2** illustrates the project site's local context. The project site is owned by the City and consists of two parcels totaling approximately 13.3 acres in size located southeast of the intersection of Dornan Drive and Brickyard Cove Road, at 1500 Dornan Drive.

The site is bounded by the San Francisco Bay on the south, the Richmond Yacht Club on the east, Brickyard Cove Road to the north, and Dornan Drive to the west. The site is generally flat and slopes gently from Brickyard Cove Road in the north to lower points along the shoreline.

The site includes approximately 12.6 acres of dry land and 0.7 acres of submerged tidelands, as well as approximately 1,100 linear feet of shoreline, which is armored with rock and concrete rip rap, and approximately 550 linear feet of which consists of a shoreline pier that extends along part of the southern site boundary. The pier consists of a concrete deck supported by pre-cast concrete piles. Other hardscape (as opposed to vegetated) surfaces on the site include former building foundations, storage tank pads, and asphalt paving, as well as disconnected sections of former railroad tracks. Vegetation on the site consists largely of grasses, shrubs, and a few trees.

### Former and Existing Land Uses

Until the early 1990s, the project site was a port terminal, used by the Port of Richmond for shipping, transport, and related industrial activities. Most buildings and structures have been demolished and removed from the site, with the exception of an approximately 94,000 square-foot former port operations warehouse (Terminal One Warehouse) building that is partially supported by the existing pier along the southern portion of the site, and some building foundations, railroad tracks, and other concrete surfaces.

Land uses adjacent to and near (within approximately one mile of) the project site are shown on **Figure 3-3, Project Site and Surrounding Uses**. The Richmond Yacht Club is immediately east of the project site. The Miller/Knox Regional Shoreline park (Miller/Knox park), a parkland resource established and maintained by the East Bay Regional Parks District that includes 307 acres of open space and recreational areas, is located west, north, and northeast of the project site.

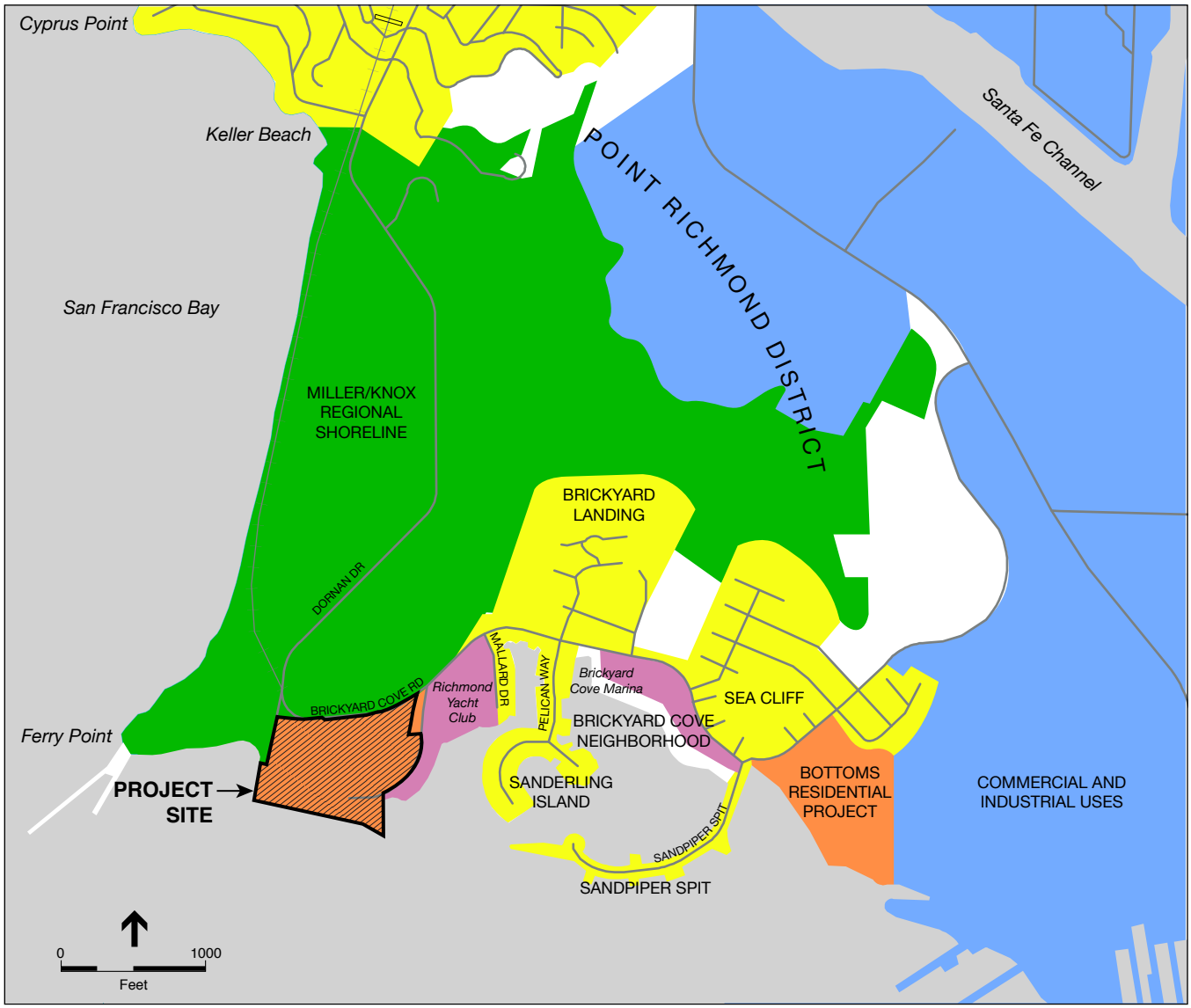
Lands east of the project site have transitioned from largely port-related heavy and light industrial uses to a mix of residential, marina, commercial and other non-industrial uses. The Brickyard Cove neighborhood located east of the project site includes marinas and residential developments established in the 1970s, 1980s, and 1990s. These developments include Brickyard Landing, which comprises condominium complex buildings and private recreation facilities, and Sea Cliff Estates, a single family residential subdivision, as well as waterfront (largely constructed of engineered fill and concrete pilings, and/or supported on platforms over water) single-family homes along South Mallard Drive, Sandpiper Spit, and Sanderling Island.




SOURCE: ESA; Google Maps

City of Richmond Terminal One Project EIR . 140325

**Figure 3-2**
Project Site Location




- Residential
- Private Recreational
- Public Park Land
- Commercial and Industrial
- Planned/Proposed Residential

SOURCE: Terminal One Development LLC, 2015



**Figure 3-3**
Project Site and Surrounding Uses

Shipping and other maritime industrial uses are located farther east, approximately 0.6 miles from the project site.

Existing land uses in the vicinity of the project site are described in greater detail in Section 4.9, Land Use and Planning, of this EIR.

## Existing General Plan and Zoning Designations

The City of Richmond General Plan land use and zoning designations for the project site are:

1. General Plan Designation: Medium Density Residential (10-40 du/acre)
2. Zoning Designation: CC (Coastline Commercial) with a Special Features Overlay (District No. 1, Brickyard Cove Area, as described in Section 15.04.520.060 of the City's Zoning Ordinance).

The existing zoning designation for the project site varies in its consistency with the General Plan land use designation. As discussed further in this chapter, the proposed project will include an application for rezoning that could resolve inconsistencies between designations.

## Tidelands Trust / State Lands

Part of the project site consists 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. The State Lands Commission (SLC) has oversight of all Tidelands Trust property in California. According to the California State Lands Commission, private residential use violates the terms of the City's granting statutes and is inconsistent with Public Trust Doctrine because private residential structures are neither necessary nor convenient for the promotion and accommodation of commerce or navigation.

Initial outreach to and conversations between the applicant and staff at the SLC indicate that State review and approval of the proposed project may be required to settle title issues involving tidelands and the Public Trust Doctrine.

## Existing Access and Circulation

Primary regional auto access to the project site is provided by Interstate 580, via the Canal Boulevard exit, Dornan Drive, and the Dornan-Garrard Tunnel. The site can also be accessed via Canal Boulevard, Seacliff Drive, and Brickyard Cove Road. A portion of the Bay Trail (extension of Ferry Point trail) extends along Brickyard Cove Road, and along the shoreline in the Miller/Knox park, to the west, north, and east of the project site. Public trails that afford views of the site also extend through the park along the bluffs to the north of the site. The Bay Trail does not currently extend along the shoreline at the location of the project site (City of Richmond, 2011b).

### Existing Utilities

Existing water and wastewater infrastructure information presented below is based on information from the City of Richmond and the East Bay Municipal Utilities District (EBMUD), as well as an engineering analysis of the site (BKF, 2015); further detail is presented in Section 4.15, Utilities and Service Systems.

#### *Domestic Potable Water and Recycled Water*

Existing 8-inch water mains are present in Brickyard Cove Road and Dornan Drive. The Brickyard Cove Road water main increases to 12 inches east of the project site, and the Dornan Drive main increases to 12 inches north of the intersection with Brickyard Cove Road. EBMUD records show 6-inch and 8-inch fire service pipes, and two 4-inch and one 6-inch domestic service pipes, to the project site from Dornan Drive.

#### *Existing Sanitary Sewer*

A 12-inch sewer main is present in Brickyard Cove Road, and an 8-inch sewer main is present in Dornan Drive. The two mains connect to a manhole at the intersection of the two streets. Another 12-inch main connects this manhole to the Ferry Point Pump Station, located northwest of the project site.

#### *Storm Water and Storm Water Quality Management*

The extent of storm water facilities and infrastructure at the project site is not fully known; most storm water runoff from the site drains directly into the Bay. Utility improvement plans from the City of Richmond indicate drainage infrastructure along Dornan Drive at the western side of the project site. A 54-inch storm water drainage line runs approximately 10 feet west of the centerline of this road, although records indicate that the line is abandoned. A12-inch storm drain exits the project site to Dornan Drive, and continues westerly toward the Bay. A third existing storm water line is also located in the site vicinity.

## 3.4 Project Components

The proposed project consists of two key components: the Terminal One residential neighborhood, and the Terminal One Waterfront Park. Specific project components are described in more detail, below, and are illustrated on **Figure 3-4, Project Annotated Conceptual Site and Landscape Plan**.

### 3.4.1 Terminal One Residential Neighborhood

The Terminal One residential neighborhood would consist of up to 334 units of varying types and densities, including approximately 26 attached townhomes and 308 multi-family condominium flats, and associated common area and retail amenities. The residential buildings would be built on, or next to, two single-story parking podium garages (the western parking podium and eastern parking podium) that would be sub-grade (located at least partly underground). As shown in figures in Section 4.1, Aesthetics, building heights would “step up” across the site, from the




SOURCE: Terminal One Development LLC, 2015

City of Richmond Terminal One Project EIR . 140325

**Figure 3-4**

Project Annotated Conceptual Site and Landscape Plan

low-rise 2- and 3-story townhomes which would be located on the southern part of the site, to the taller condominium buildings which extend 4- and 5-stories above the parking podium and which are located on the northern part of the site, at the foot of the Miller/Knox parkland bluffs. Flat roofs would be incorporated into project buildings, in order to reduce impacts of project buildings to views of the Bay from off-site location.

The multi-family condominium flats would be constructed in five buildings over the parking podiums on the northern part of the site, with building heights of 54 to 64 feet above the finished floor elevation of ground level units. The 26 attached townhomes would be configured as duplex units, with building heights of 15 to 25 feet above the top of the podium, and would be constructed along and on top of the southern edge of the parking podiums, north of and fronting the proposed Shoreline Drive. Landscaped gardens would be installed between the residential buildings, above the podiums. Other neighborhood amenities, as shown on **Figure 3-4**, would include a children's play space, a native grass meadow area, garden sculptures, and an off-leash dog park.

Approximately 2,000 square feet (sf) of neighborhood- and visitor-serving retail space would be constructed at the site's entry plaza, located in the northwest corner of the site, as part of the condominium buildings. **Table 3-1** summarizes the key components of the Terminal One residential neighborhood.

**TABLE 3-1**
**PROPOSED PROJECT LAND USE PROGRAM**

| Proposed Land Use | Number of Units | Size | | Building Heights[1] |
|---|---|---|---|---|
| **Residential** | | | | |
| | | ***Unit Size (Average)*** | ***Total Gross Floor Area*** | |
| *Condominium Flats (Multi-Family)* | 308 | 1,380 sf | 501,150 gsf | 4 - 5 stories/ 54 - 64 ft[2] |
| *Townhomes (attached, single family)* | 26 | 2,020 sf | 52,300 gsf | 2 - 3 stories / 15 - 25 ft[3] |
| *Fitness Center* | *NA* | | 2,000 gsf | |
| *Clubhouse* | *NA* | | 2,200 gsf | |
| ***SUBTOTAL:*** | **334** | | **558,000 sf** | |
| **Open Space, Parks, Recreation, and Stormwater Treatment**[4] | | | | |
| *Terminal One Mews* | *NA* | 0.5 ac | | *NA* |
| *Terminal One Pier* | *NA* | 1.1 ac | | *NA* |
| *Native Coastal Gardens (including Stormwater Treatment Wetlands)* | *NA* | 1.2 ac | | *NA* |
| *Other Open Space Improvements Within Property Line (picnic areas, playgrounds, etc.)* | *NA* | 3.1 ac | | *NA* |
| *Other Open Space Improvements Outside Property Line* | *NA* | 0.7 ac | | *NA* |
| **Roads** | | | | |
| *Shoreline Road* | *NA* | *NA* | | *NA* |
| ***TOTAL:*** | | | | |

NOTES:
ac = acres; sf = square feet; gsf = gross square feet; ft = feet; NA = Not Applicable or Not Available
1 Building height is measured from the top of the parapet wall. Building height calculations do not include elevator overruns, staircase penthouses, mechanical screening and associated mechanical equipment or other features that extend above the horizontal plane of the roof.
2 Number of stories above the podium / Building height above finished floor elevation of ground level units.
3 Number of stories above the podium / Building height above top of podium.
4 Does not include tideland habitat area east of Terminal One Pier (existing tie-off/viewing pier and marine ecology).

## 3.4.2 Terminal One Waterfront Park

The Terminal One Waterfront Park would extend the length of the site's shoreline on the west and south, and include public open space, parkland amenities, and related improvements. The primary feature of the Terminal One Waterfront Park would be the Terminal One Pier, which would be built by re-surfacing and re-purposing the existing pier after demolition of the Terminal One Warehouse. A preliminary survey and assessment of the existing pier performed in 2005 indicated that the pier retains the structural integrity required to sustain loads that would occur with recreational use of the pier (A.J. Miller & Associates, 2005); prior to re-purposing the pier, the project applicant would conduct an additional assessment to confirm the ability of the pier to support the intended recreational uses.

As shown on **Figure 3-5, Terminal One Pier Improvements**, the Terminal One pier would include boardwalk gardens, a play space, picnic pavilions, a small informal amphitheater, and a raised viewing deck. The applicant plans, where feasible, to incorporate a portion of the Terminal One Warehouse structure's steel truss work and redwood roof deck, as well as a small piece of the warehouse's concrete façade, in the design of the re-purposed pier to create pavilion canopies, raised viewing platforms, and historical points of reference.

The Waterfront Park would also include trails (the Bay Trail shoreline extension and a "rails-to-trails" feature, as described below), public gardens featuring native coastal plantings and seasonal wetland habitat/stormwater treatment bioswales, and a tidelands habitat and marine ecology area. The public gardens would serve as a transitional buffer between park-related uses to the south and residential uses to the north. The project site gateway and entry plaza is designed to function as a northern entry point to the park and open space areas on the site, as well as a scenic entry to the Point Richmond neighborhoods to the east.

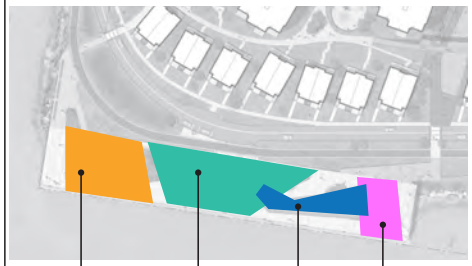
## 3.4.3 Paths, Trails, and Other Shoreline Improvements

Trails and paths established on the project site would include an extension of the Bay Trail, which would ring the project site ("Bay Trail Loop"); pedestrian paths including a "rails-to-trails" feature; and the Terminal One Mews, a pedestrian and bicycle promenade which would pass through the site from north to south.

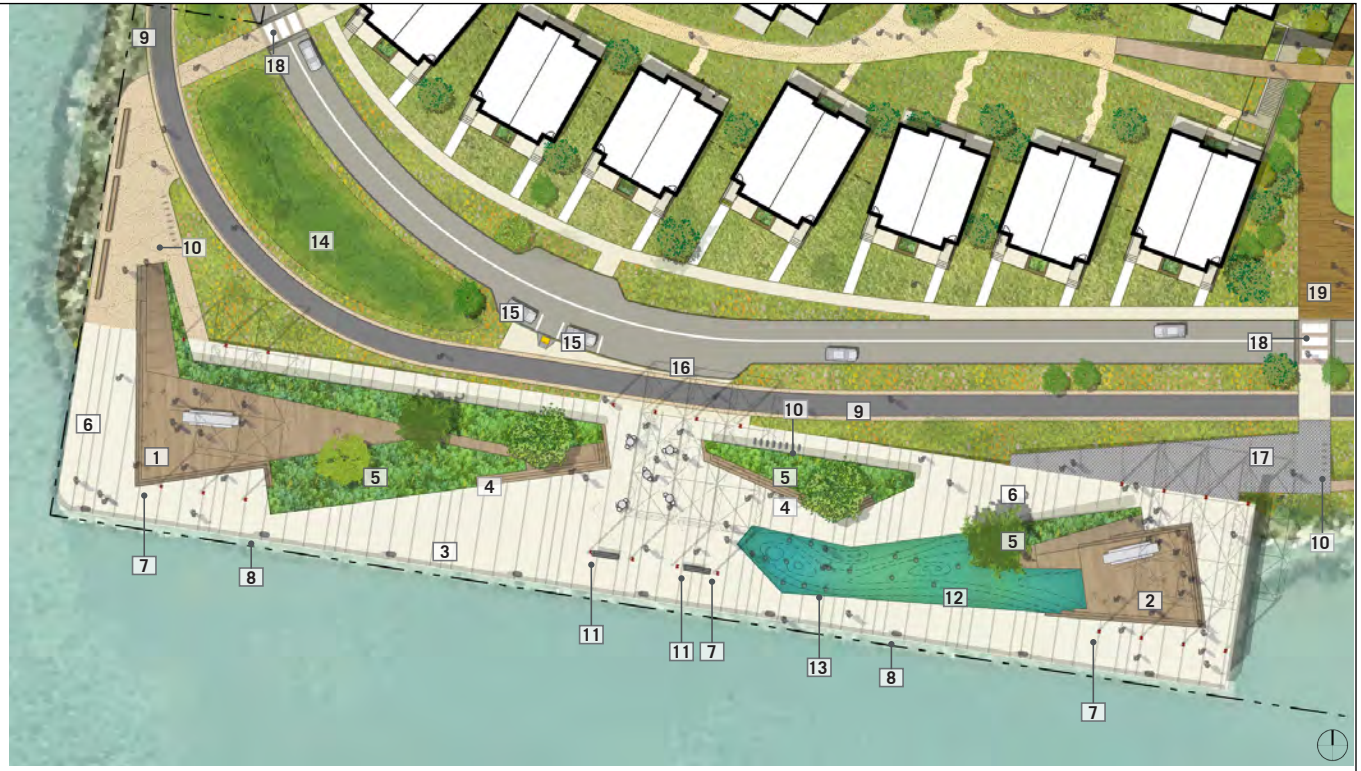
The Bay Trail Loop would connect existing Bay Trail segments that extend along Brickyard Cove Road to the east and through the Miller/Knox park to the west. The Bay Trail Loop would extend along the outside curve of the new shoreline road, providing bicycle and pedestrian access to the shoreline and Terminal One Waterfront Park area, and would also extend an existing trail segment north of Brickyard Cove Road, north of the site, to connect with the trail in the Miller/Knox park to the west. This part of the Bay Trail Loop north of Brickyard Cove Road is identified on Figure 3-4 as the "Commuter Extension," and would provide bicyclists and pedestrians with a more direct connection to the existing Bay Trail in the Miller/Knox park than the Bay Trail Loop that would extend along the shoreline. The Bay Trail Loop would consist of a 10-foot-wide paved section with 2-foot-wide shoulders.



TERMINAL ONE WHARF + BOARDWALK GARDENS
APPROX AREA: 1.13 ACRES



SUN DECK | EVENT SPACE & ENTRY PLAZA | PLAY SPACE | FAMILY PICNIC PAVILION




FEATURES:

1. Elevated Sun Deck
2. Elevated Family Picnic Decks
3. Wharf Promenade with Fishing Access
4. Informal Amphitheater
5. Boardwalk Gardens (Elevated Planters)
6. Resurfaced Pier Deck
7. Warehouse Truss Pavilion
8. Existing Dock Cleat-preserved in place
9. Bay Trail Extension
10. Bike Parking
11. Porch Swings attached to Warehouse Truss Pavilion
12. Play surface wave field
13. Wharf pile play element
14. Stormwater treatment wetland
15. ADA Parking
16. Wharf Park passenger drop-off, event loading, staging, and weekend food truck parking
17. Boardwalk Connector
18. Raised table-crossing
19. Terminal One Mews Entry Plaza

SOURCE: Terminal One Development LLC, 2015



**Figure 3-5**
Terminal One Pier Improvements

The Terminal One Waterfront Park would also include other walking trails that would provide pedestrian circulation throughout the project site, as well as direct access to the entire Terminal One shoreline and connect to Miller/Knox park at the western edge of the site. The trail design incorporates sections of existing abandoned rail lines that formerly served the Terminal One Warehouse and pier, as a "rails-to-trails" feature that would distinguish and transform the former rail corridor. A pedestrian walkway and bridge would connect the landscaped common area of the podium decks from east to west, crossing over the north/south Terminal One Mews between the condominium buildings and townhomes.

The Terminal One Mews would be a pedestrian and bicycle oriented promenade extending through the middle of the site from Brickyard Cove Road at the northern edge of the project site to the southern reach of the new shoreline road, as shown on **Figure 3-4**. This promenade would provide a north-south corridor through the site that would establish a visual and physical connection between the Miller/Knox park headlands and the shoreline. The Terminal One Mews would be flanked by garden and lawn areas, and is designed to connect the site's park and residential land uses, as well as provide emergency access to the interior of the site.

## 3.4.4 Proposed Vehicle Access, Circulation, and Parking

In general, the proposed project has been designed to emphasize pedestrian and bicycle circulation, rather than vehicle travel. The new shoreline road would be the main road developed as part of the project, and would extend south from the intersection of Dornan Drive and Brickyard Cove Road to the shoreline and waterfront park areas, and north back to a new intersection with Brickyard Cove Road at the northeastern project site boundary.

Parking provided on the site would include approximately 587 private spaces in the podium garages (518± spaces for residents and approximately 69± spaces for guests). Approximately 30 public, on-street parking spaces would also be provided along the new shoreline road and Brickyard Cove Road. A total of approximately 617 private and public spaces would be provided on the site.

On-site vehicle, bicycle, and pedestrian circulation is presented in **Figures 3-6**, **3-7**, and **3-8**.

## 3.4.5 Other Project Components

Several other components that would be part of the proposed project are described below.

### Provisions and Requirements of the LDA

Some of the provisions and requirements of the LDA between the City and the applicant include the following:

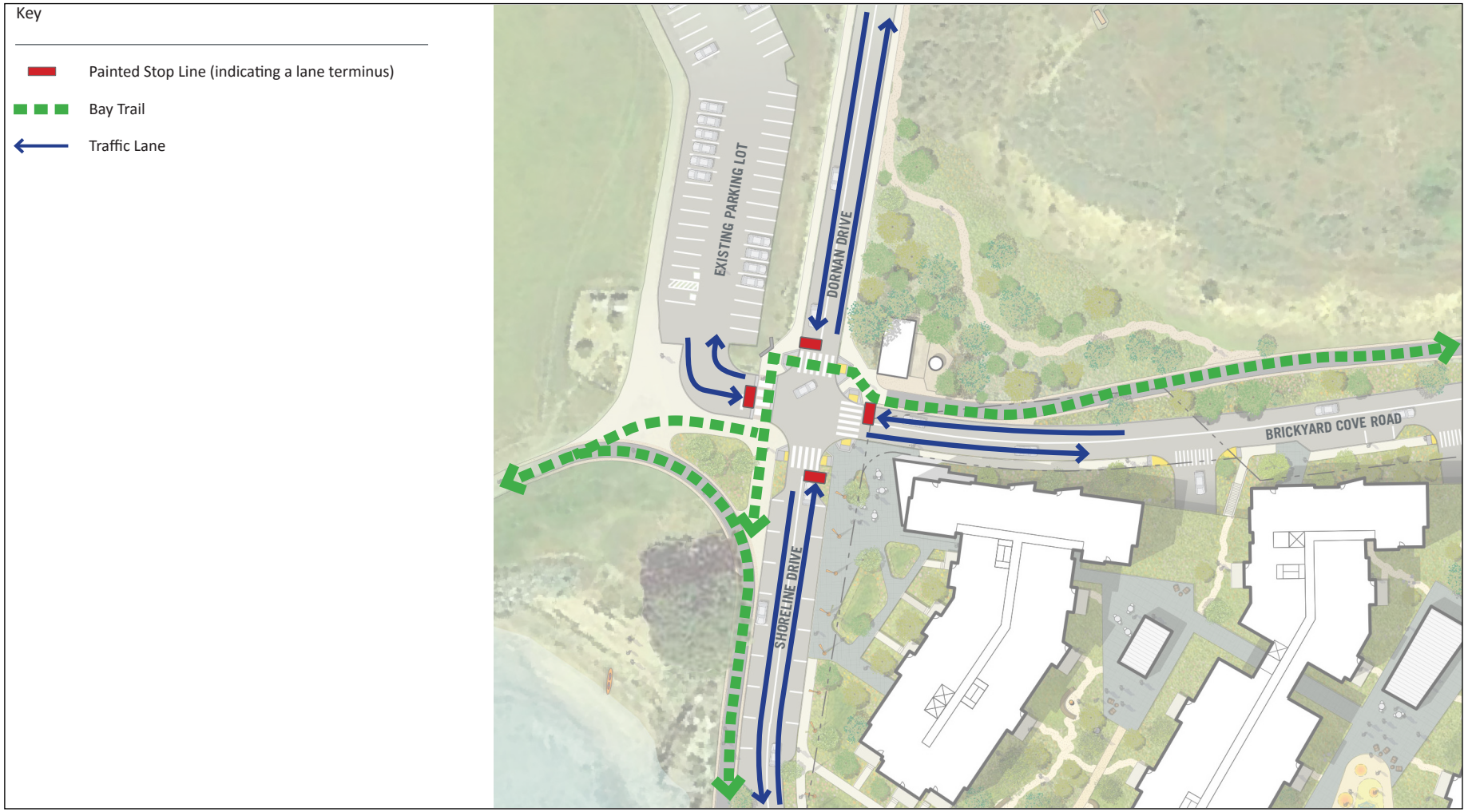
- The City would sell the applicant an approximately 11.9-acre portion of the project site for residential uses.
- The City would retain ownership of approximately 1.9 acres of the project site for use as a public park.




SOURCE: Terminal One Development LLC, 2015



**Figure 3-6a**
Vehicular Circulation Plan




SOURCE: Terminal One Development LLC, 2015

City of Richmond Terminal One Project EIR . 140325

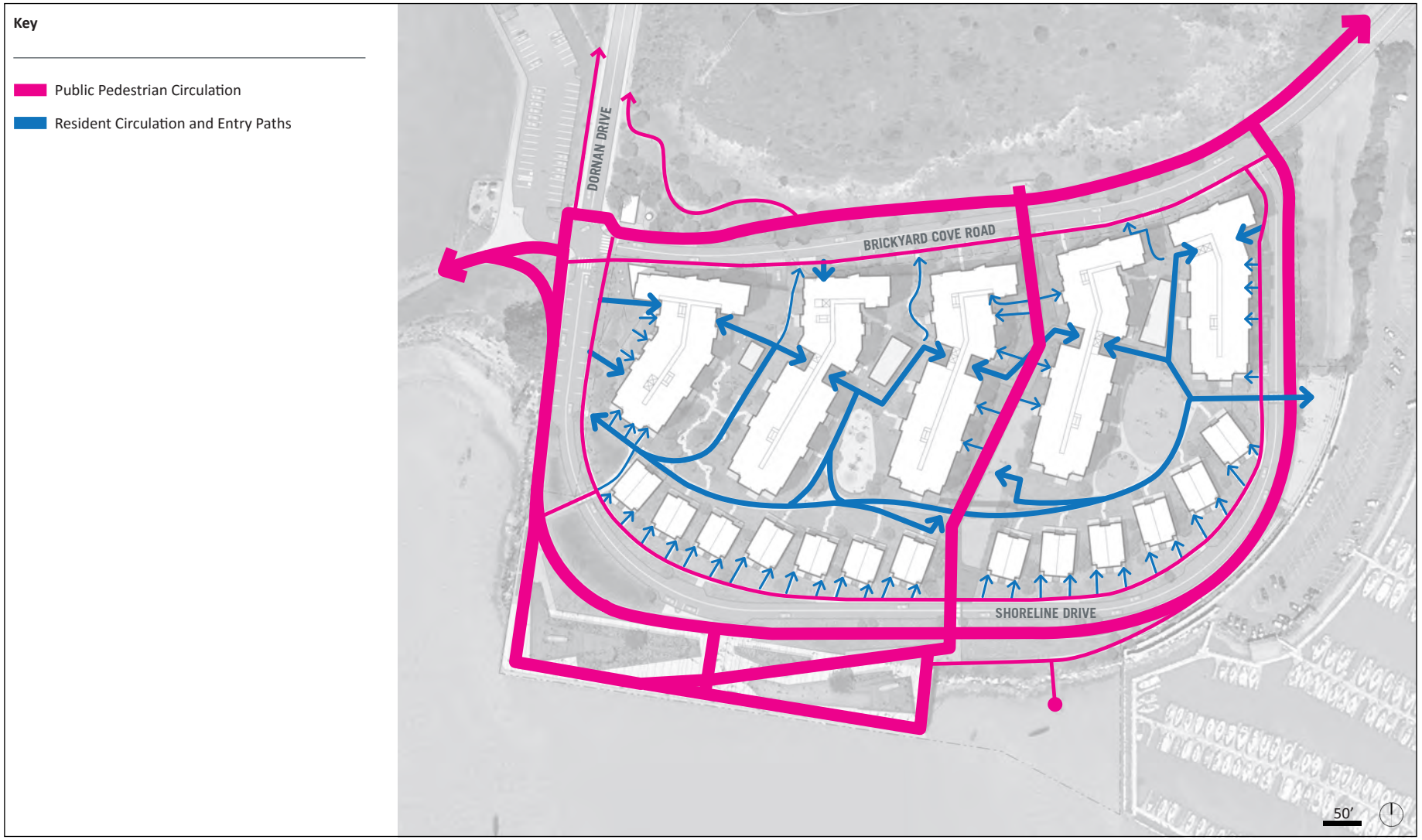
**Figure 3-6b**
Vehicular Circulation Plan




SOURCE: Terminal One Development LLC, 2015

City of Richmond Terminal One Project EIR . 140325

**Figure 3-7**
Bicycle Circulation Plan




SOURCE: Terminal One Development LLC, 2015

City of Richmond Terminal One Project EIR . 140325

**Figure 3-8**
Pedestrian Circulation Plan

- The applicant would prepare a plan for funding the operations and maintenance (Project O&M Plan) of the so-called "Off-Site Improvements" of the project, including: the proposed new shoreline road, the Terminal One Waterfront Park's amenities and open space improvements, the Bay Trail Loop, and the re-purposed Terminal One Pier. The Project O&M Plan would be funded by financing mechanisms that may include a Community Facilities District, an Assessment District, and/or Home Owners Association funding.
- The applicant would use its best efforts to purchase an approximately one-acre parcel from the BNSF Railway Company (BNSF property), located adjacent to the project site on the north side of Brickyard Cove Road. If the applicant is able to purchase the BNSF property, the property would be included in the project site plan as a landscaped corridor adjacent to the northern edge of the Brickyard Cove Road public street right-of-way.
- The applicant would satisfy the requirements of the City's Inclusionary Housing Ordinance by the payment of a fee to the City, in lieu of incorporating inclusionary housing into the proposed project.
- The applicant would give consideration to the option of closing Brickyard Cove Road to through traffic and re-purposing the roadway to accommodate the extension of the Bay Trail, private access to the Terminal One residential parking podium, emergency vehicle access, on-street parking, and garbage collection. (This option is discussed further in Chapter 5, Alternatives to the Proposed Project.)

## Grading and Site Preparation

Preparation of the site for construction of the proposed project would include the removal of all remnant hardscape elements, as well as extensive site grading. Warehouse demolition and site clearance is estimated to generate approximately 5,036 cubic yards (cy) of concrete, asphalt, and other waste materials, almost all of which will be reprocessed and reused on site as roadbase and fill, and approximately 1,500 cy of "clear and grub" related materials, almost all of which will also be recycled on site.

The preliminary conceptual grading plan for the project has been designed to balance cut (excavation) and fill (soil placement) on the site, by relocating soil from the northern part of the site to the southern part of the site, where it would be re-used. The applicant estimates a total volume of approximately 15,735 cy of cut, and approximately 14,850 cy of fill, for a total volume of cut and fill of approximately 30,585 cubic yards. The preliminary grading plan shows that the volume of cut could exceed the volume of fill by approximately 885 cy, although this discrepancy will be resolved in the final grading plan.

Some excavation of previously contaminated soil may also take place during site preparation, as described in Section 4.7, Hazards and Hazardous Materials, and according to the existing Remedial Action Plan (RAP) and Soil Management Plan (SMP) approved by the San Francisco Bay Regional Water Quality Control Board (RWQCB) for the site. The applicant is currently working with the RWQCB to process amendments to the RAP and SMP, as further discussed in Section 4.7.

## Conceptual Project Phasing

The project is anticipated to be developed in up to five phases, generally from west to east across the site, with an anticipated completion date in 2018. The initial phase of development under any scenario would include the Bay Trail Loop, the new shoreline road, the Waterfront Park, and the re-purposed Terminal One Pier. **Table 3-2** summarizes a conceptual project phasing scenarios.

**TABLE 3-2**
**CONCEPTUAL PROJECT PHASING SCENARIO**

| Phase | Timing | Project Components |
|---|---|---|
| 1 | TBD | • Bay Trail Loop<br>• Terminal One Waterfront Park<br>• New shoreline road<br>• Western parking podium<br>• Demolition of Terminal One warehouse and other site clearance<br>• Mass grading of entire project site<br>• Re-surfacing and re-purposing of Terminal One Pier<br>• First condominium building (Building #1, 62 units)<br>• 4 townhomes<br>• Common areas associated with residences<br>• Other improvements and infrastructure as needed |
| 2 | TBD | • Second condominium building (Building #2, 60 units)<br>• 6 townhomes<br>• Common areas associated with residences<br>• Other improvements and infrastructure as needed |
| 3 | TBD | • Third condominium building (Building #3, 70 units)<br>• 4 townhomes<br>• Internal Mews (north-south promenade) (portion)<br>• Common areas associated with residences<br>• Other improvements and infrastructure as needed |
| 4 | TBD | • Fourth condominium building (Building #4, 70 units)<br>• 6 townhomes<br>• Internal Mews (north-south promenade) (portion)<br>• Western parking podium<br>• Bridge connecting the two parking podium decks (pedestrian over-crossing)<br>• Common areas associated with residences<br>• Other improvements and infrastructure as needed |
| 5 | TBD | • Fifth condominium building (Building #5, 46 units)<br>• 6 townhomes<br>• Common areas associated with residences<br>• Other improvements and infrastructure as needed |

## Proposed Utilities

The proposed project would use existing and available water and wastewater treatment and off-site transmission/conveyance capacity. The applicant will also assume responsibility for constructing additional on-site water and wastewater lines, laterals, connections and other improvements as needed to tie into the existing backbone infrastructure and adequately serve the project.

Project site stormwater run-off would be retained and treated within a system of bioswales and other natural treatment measures on the site. The applicant would also recondition and reuse existing storm drain lines and outfalls, or, if reuse of the existing lines is determined to be

infeasible, construct new stormwater conveyance facilities for the purpose of collecting and discharging the stormwater run-off into the Bay after it has been treated on-site.

The applicant has received will-serve letters from the following utility service providers, indicating that service to the project site will be available, contingent on the project's compliance with pertinent regulations governing such services:

- Richmond Municipal Sewer District – for sanitary sewer collection and treatment services and stormwater and surface drainage collection services;
- East Bay Municipal Utility District – for water service;
- Pacific Gas and Electric Company – for gas and electric services; and
- AT&T – for telephone services.

### Design Elements to Address Sea Level Rise

The project design incorporates elements to address the potential for sea level rise to affect the site. The proposed project is designed to accommodate approximately 3 feet inches of sea level rise without flooding. Section 4.8, Hydrology and Water Quality, of this EIR includes an analysis and summary of impacts related to 2 and 3 feet of sea level rise at the site, and **Project Design Features HYD-2** and **HYD-3**, presented in this Chapter in **Table 3-3**, describe the features of the project design that will address sea level rise. As shown in Figures **4.8-2** and **4.8-3**, with 2 feet of sea level rise, the new shoreline road and Bay Trail would experience flooding; at 3 feet of sea level rise, the front yards of the ground level residential units and pedestrian areas between the podiums would also experience flooding.

### Proposed Zoning Designation and Other City Approvals

The applicant is proposing to rezone the project site from Coastal Commercial (CC) to PA-Planned Area District. The applicant is not requesting a change in the Special Features Overlay (SFO) zoning district (Brickyard Cove Area #1) currently applicable to the site.

The project would be subject to the City's Inclusionary Housing Ordinance, which is part of a broader strategy to ensure that affordable housing is built in the City. The applicant would satisfy the requirements of the ordinance by the payment of a fee to the City of Richmond in lieu of adding inclusionary housing to the project, per the provisions of the LDA.

## 3.5 Plans and Project Design Features

The following plans would be developed as part of the proposed project and implemented during construction and/or operations:

- *Master Plan Design Framework and Terminal One PA Plan* (first part of Terminal One PA Plan; includes the proposed Land Use Program, Site Plan, Architectural Plan, Landscape Plan, and Preliminary Grading and Drainage Plan);

- *Terminal One PA Rezoning* (second part of Terminal One PA Plan);
- Construction Safety and Emergency Response Plan (construction and operation);
- Hazardous Materials Management Plan (construction and operation);
- Health and Safety Plan (construction);
- LBP removal Plan (construction);
- Remedial Action Plan (construction);
- Soil Risk Management Plan (construction);
- Storm Water Pollution Prevention Plan (construction and operation);
- Noise Control Plan (construction);
- Traffic Control Plan (construction)
- Archaeological Research Design and Treatment Plan (ARDTP) (construction);
- Erosion Control Plan (construction);
- Materials Management and Disposal Plan (construction);
- Adaptive Flood Risk Management Plan (operation; also PDF HYD-3);
- Transit Access Plan (operation; requirement of LDA);
- Construction Waste Management Plan (construction);

In addition, the applicant has incorporated the following measures into the design of the proposed project (**Table 3-3**).

**TABLE 3-3**
**TERMINAL ONE PROJECT DESIGN FEATURES**

| PDF Number | Project Design Feature | Relevant Environmental Topic/s |
|---|---|---|
| **AES-1** | **Site Lighting Strategy.** The Site Lighting Strategy specifies lighting criteria for the Waterfront Park, podium gardens, and streetscapes, which the project would be required to implement. Per the Site Lighting Strategy, the applicant will ensure the following is included in project design:<br>• **Waterfront Park Lighting Criteria:** Illuminate paths of travel along the base of walls, decks, and trusses with integrated site lighting fixtures that provide low-level safety lighting without blocking nighttime views.<br>• **Podium Gardens Lighting Criteria:** Illuminate garden paths with low-level bollards. Light standards to be incorporated as needed for emergency egress lighting. Standards will have cut-off shields to control light trespass into units. Amenity pavilions will include accent and task lighting as needed. Up-lighting will be avoided in order to reduce light pollution.<br>• **Streetscape Lighting:** A combination of vehicle and pedestrian lighting standards will illuminate the streetscapes and Terminal One Mews to provide the required light levels on both roadways and pedestrian paths. Cutoff shields will be incorporated to control light trespass into residential units. All fixtures will be selected to minimize energy consumption and increase public safety. | Aesthetics<br>(part of Terminal One Master Plan Design Framework) |
| **AIR-1** | **Ferry Point Pump Station.** As part of more detailed engineering and project planning, the applicant will evaluate the condition and capacity of the Ferry Point Pump Station, to ensure this facility has sufficient capacity to convey sanitary sewage from the project site to the RMSD Plant. The pump station may be required to be retrofitted or replaced in order to adequately convey project wastewater. If the pump station is not replaced, the applicant will confirm with the City that the recommended chemical treatment has been applied and the odor impact appropriately mitigated, prior to construction. | Air Quality, Utilities and Service Systems |

**TABLE 3-3 (Continued)**
**TERMINAL ONE PROJECT DESIGN FEATURES**

| PDF Number | Project Design Feature | Relevant Environmental Topic/s |
|---|---|---|
| **GHG-1** | **Balanced Cut and Fill Grading.** The project applicant will ensure that the grading plan provides a near balance of cut and fill on-site, thereby minimizing the need to import or export soil; substantially reducing the truck trips to and from the site; and, in the process, substantially reducing the GHG emissions those truck trips would generate. | GHG emissions |
| **GHG-2** | **Recycling and Reuse of Demolition Materials.** The project applicant will ensure that demolition activities that take place on the project site will include the recycling, reprocessing, and reuse on-site of the bulk of the materials generated by demolition of the warehouse and remaining hardscape elements, thereby minimizing the need to export the demolition waste-materials off-site as well as the need to import materials to the project site in order to satisfy the project's requirements for road base, aggregate base for the foundations, engineered fill, and other on-site uses that will be addressed by reuse of the reprocessed demolition by-products. | GHG emissions |
| **HYD-1** | **Pre-project stormflow levels.** Prior to the start of project construction, the applicant will demonstrate, to the satisfaction of the Director of the Public Works Department, that, upon completion of such construction, 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. | Hydrology |
| **HYD-2** | **Sea Level Rise Measures.** The applicant will ensure that the project design includes the following measures to address sea level rise of up to 3 feet:<br>1. Placement of finished floor elevations of residential structures above 14.5 feet NAVD88, an elevation greater than the current site BFE, or 11 feet NAVD88, plus 3 feet of sea level rise and a 0.5 feet additional margin; and<br>2. 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).<br>3. Placement of the finished elevation of the Bay Trail Loop at or above 14.1 feet NAVD88, an elevation greater than the current site BFE (11 feet NAVD88) plus 3 feet of sea level rise;<br>4. If feasible, design of the Bay Trail Loop to function as a flood mitigation embankment either as initially constructed or as retrofitted on an as needed basis. Because the project site's shoreline is a VE zone, indicating it is currently susceptible to wave overtopping, the Bay Trail Loop embankment may be subject to wave runup and overtopping. These processes shall be considered when setting the Bay Trail Loop's final design and evaluating its flood mitigation performance. | Hydrology |
| **HYD-3** | **Sea Level Rise Adaptation Strategies:** The applicant shall include provisions in the project's Covenants, Conditions, and Restrictions that require the Homeowner's Association to engage a degreed coastal geomorphologist, a licensed engineer, or a comparably qualified expert in the management of flood risks associated with sea level rise to prepare an Adaptive Flood Risk Management Plan. The initial adaptive management plan shall be completed and submitted to the City for review and comment by January 1, 2035. The plan shall be updated every ten years, with the first plan update to be completed and submitted to the City for review and comment by January 1, 2045 and with subsequent updates to be completed and submitted to the City on January 1 every ten years thereafter.<br>The Adaptive Flood Risk Management Plan shall include:<br>1. A Monitoring and Reporting Program – to include:<br>a. A review of scientific literature including up-to-date estimates of local sea level rise and available data and studies from other shoreline sites in Richmond as well as neighboring/regional jurisdictions to estimate the actual increase in sea level at the site; | Hydrology |

**TABLE 3-3 (Continued)**
**TERMINAL ONE PROJECT DESIGN FEATURES**

| PDF Number | Project Design Feature | Relevant Environmental Topic/s |
|---|---|---|
| | b. A review of federal, State, local, and regional law, regulations, and guidance that address sea level rise;<br>c. A report that addresses the following points:<br>i. A discussion of any estimated difference in sea level at the site since the previous 10-year report;<br>ii. A discussion of how the project complies with any new applicable statutory or regulatory requirements;<br>iii. A discussion of the observed characteristics and impacts, if any, related to flooding on the site, based on site observations and photos as well as conversations with site residents and City Public Works staff;<br>iv. A discussion of the monitoring triggers that will be used to determine the installation schedule for:<br>• Any backflow prevention devices that are required to address flood impacts associated with a 2 foot increase in sea level;<br>• Any protective features that will enable the Bay Trail Loop (and/or other protective features as needed) to serve as a flood protection measure to address flood impacts associated with a 3-foot increase in sea level; and/or<br>• Any additional adaptive flood risk management measures that will be required to address flood impacts associated with a rise in sea level of greater than 3 feet.<br>v. A recommended schedule for implementing the adaptive flood risk management measures referenced in subsection iv. above and/or an update to a previously presented recommended schedule; and<br>vi. A report on the adaptation measures financing mechanism (see subsection 3. below), and an estimated projection of funds that would be available 10 years into the future.<br>2. An Adaptive Flood Risk Management Strategy to address 100-year flood impacts associated with a rise in sea level of greater than 3 feet. If the monitoring program and the updated monitoring report prepared every ten years results in a projection that the rise in sea level will exceed 3 feet during the subsequent 25-year period, the Adaptive Flood Risk Management Plan shall also include:<br>a. An analysis of adaptive measures which, if implemented, either on a stand-alone basis or in combination with other measures, would prevent or substantially reduce human health and safety impacts as well as property loss and damage related to 100-year flooding and an increase in sea level of greater than 3 feet;<br>b. The formulation of an adaptive measures strategy which reflects a best practices and cost-effective approach to addressing the 100-year flood risk associated with an increase in sea level greater than 3 feet; and<br>c. An estimate of the costs and timeframes involved in implementing the adaptive measures strategy formulated in accordance with subsection b. above.<br>The nature of the adaptation measure/s to be implemented will be reviewed and approved by the City Planning Division and Public Works Department and other regulatory agencies as necessary, and will be based on the results of monitoring and reporting.<br>3. A Financing Strategy which will be designed to:<br>a. Generate sufficient resources to cover the costs of: | |

**TABLE 3-3 (Continued)**
**TERMINAL ONE PROJECT DESIGN FEATURES**

| PDF Number | Project Design Feature | Relevant Environmental Topic/s |
|---|---|---|
| | i. The backflow prevention devices as required to address flood impacts associated with a 2 foot increase in sea level (to the extent these devices were not already installed when the storm drain system was initially constructed);<br>ii. The protective features as required to enable the Bay Trail Loop to serve as an effective barrier to address flood impacts associated with a 3-foot increase in sea level (to the extent these protective features were not already incorporated in the Bay Trail Loop when it was originally constructed); and<br>iii. The adaptive measures strategy formulated to address flood impacts associated with an increase in sea level of greater than 3 feet;<br>b. Generate such funds and to make such funds available within a timeframe to cover the flood improvement costs as they are incurred in accordance with the implementation schedule.<br>The financing strategy may include funding from the following private and public financing mechanisms:<br>a. Homeowner Association fees;<br>b. Mello Roos Community Services District special taxes;<br>c. Assessment District Assessments; and<br>d. Other public or private financing mechanisms as determined by the Homeowner Association and the City to be appropriate and feasible. | |

# 3.6 Required Jurisdictional Approvals

## 3.6.1 City of Richmond

Project implementation would require a series of interrelated planning and regulatory approvals by the City of Richmond, as Lead Agency. Specifically, the City is considering taking the following approval actions:

1. **Certification of the Terminal One Project EIR** pursuant to CEQA;
2. **Approval of associated amendments to the City's Zoning Ordinance and map** to reflect and implement zoning districts, development standards, and design criteria specified for the proposed project. The applicant will apply for a re-zoning of the project site from Coastline Commercial to PA-Planned Area District;
3. **Approval of Phased Large Lot Vesting Tentative Subdivision Map.** The applicant will apply for a Phased Large Lot Vesting Tentative Subdivision Map (the "Large Lot Map") to create large lot legal parcels for the purpose of subdividing the property based on land use and to accommodate the proposed project phasing discussed above;
4. **Approval of Phased Small Lot Vesting Tentative Subdivision Map(s).** The applicant will apply for Phased Small Lot Vesting Tentative Subdivision Maps (the "Small Lot Maps") to further subdivide the large lot residential parcels created by the Large Lot Map into individual townhome lots or condominium units;

5. **Approval of Design Review Permits** for the design of the residential structures, common areas, and Waterfront Park; and

6. **Other local approvals that may be required**, such as:

   – *Construction Waste Management Plan* (for construction waste),

   – *Grading permits,*

   – *Demolition permits,*

   – *Encroachment permits,*

   – *Building permits, and*

   – *Other City approvals as necessary to develop the project.*

The project and associated 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 approve the project.

## 3.6.2 Other Governmental Agency Approvals

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 this project by other Responsible Agencies and Trustee Agencies which may have limited discretionary authority over development proposals associated with the project. 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 (Section 15381); and 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 (Section 15386).

Responsible Agencies and Trustee Agency approvals for the project may 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 the project 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.

### Regional and State Agencies

- East Bay Municipal Utility District (EBMUD) approvals will be required for water hookups and water lines. EBMUD review of the project's water needs assessment will also 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.
- 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
  - Lead agency review and oversight over remaining remediation of contaminated soils or groundwater impacting the project site, including approvals related to Remedial Action Plans, Remedial Action Completion Certifications, and No Further Action Letters.
- 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 project plans may be required.
- 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 project 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 project impacts to California-listed special status species. In addition, DDFW approval of a Section 1603 Streambed Alteration Agreement may be required if the proposed project involves alterations to the bed, bank, or channel of a stream or drainage.

### Federal Agencies

- USACE approval of a Section 404 Permit may be required under the Federal Clean Water Act for project 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 project impacts to federally-listed special status species or their habitat.

- NOAA Fisheries approval involving a Section 7 Consultation/Biological Opinion may be required under the Federal Endangered Species Act for project 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.

# References – Project Description

A.J. Miller and Associates, 2005. Richmond Municipal Wharf Condition Survey and Assessment, Point Richmond, CA. Prepared for Toll Brothers Development. January 12.

BKF Engineers (BKF), 2015. Memorandum, from Jason White to J. Cleve Livingston, Subject: Terminal One, City of Richmond – Existing and Proposed Utilities, January 15.

City of Richmond, 2014. Terminal One Land Disposition Agreement. Effective August 6, 2014.

City of Richmond, 2011a. *City of Richmond Bicycle Master Plan.* Prepared by Fehr & Peers, in association with Eisen-Letunic. October.

City of Richmond, 2011b. *City of Richmond Pedestrian Plan.* Prepared by Local Government Commission, in association with Fehr & Peers, Moore Iacofano Goltsman, Walkable and Livable Communities Institute, and Contra Costa County Health Services. October.

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# CHAPTER 4
# Environmental Setting, Impacts, and Mitigation Measures

## 4.0 Introduction to the Environmental Analysis

Organized by the environmental resource area, this chapter provides an integrated discussion of the environmental setting (including the regional, local and/or project setting and regulatory setting) and environmental consequences (including environmental impacts and mitigation measures for potentially significant impacts) associated with the dismantling of existing facilities and construction, operation, and maintenance of the project.

### 4.0.1 CEQA Requirements

The California Environmental Quality Act (CEQA) and the CEQA *Guidelines* require that the environmental analysis for an Environmental Impact Report (EIR) must evaluate impacts associated with a project and identify mitigation measures for any potentially significant impacts. All phases of a project are evaluated in the analysis. The CEQA *Guidelines* state:

- An EIR shall identify and focus on the significant environmental effects of the project. In assessing the impact of a project on the environment, the lead agency should normally limit its examination to changes in the existing physical conditions in the affected area as they exist at the time the Notice of Preparation (NOP) is published, or where no NOP is published, at the time environmental analysis is commenced. Direct and indirect significant effects of the project on the environment shall be clearly identified and described, giving due consideration to both the short-term and long-term effects. The discussion should include relevant specifics of the area, the resources involved, physical changes, alterations to ecological systems, and changes induced in population distribution, population concentration, the human use of the land (including commercial and residential development), health and safety problems caused by the physical changes, and other aspects of the resource base such as water, historical resources, scenic quality, and public services. The EIR shall also analyze any significant environmental effects the project might cause by bringing development and people into the area affected (CEQA *Guidelines* Section 15126.2[a]).

- An EIR must discuss any inconsistencies between the project and applicable general plans and regional plans, including, without limitation, the applicable air quality attainment or maintenance plan or State Implementation Plan, area-wide waste treatment and water quality control plans, regional transportation plans, regional housing allocation plans,

habitat conservation plans, natural community conservation plans and regional land use plans (CEQA *Guidelines* Section 15125[d]).

- An EIR must describe feasible measures that could minimize significant adverse impacts; such measures must be fully enforceable through permit conditions, agreements, or other legally-binding instruments. Mitigation measures are not required for effects that are found to be less than significant (CEQA *Guidelines* Section 15126.4[a]).

## 4.0.2 Project Baseline

The environmental baseline identifies the existing physical conditions on, around, and affecting the project site. The baseline is established to provide a point of comparison between pre-project conditions (the baseline) and post-project conditions to determine whether the change to the existing environment caused by the project is significant under CEQA. While stable regarding its point in time, the baseline condition is tailored to each environmental topic area and is established by the significance criteria (discussed below). For most topics or resource areas (such as hazards and hazardous materials; utilities and service systems; noise environment; and other aspects of the physical environment), the baseline is the same as the "environmental setting," *i.e.*, the physical environmental conditions in the vicinity of the project as they existed in the winter of 2014[1] when the City published the NOP for the project (CEQA *Guidelines* Sections 15125(a), 15126.2(a)). Because no uses currently operate at the site, the air quality and greenhouse gas baseline emissions at the project site are assumed to be zero. Similarly, no vehicle trips are currently generated from the project site. For traffic, potential project impacts are evaluated in the context of scenarios referred to as "Existing Conditions" (existing conditions with volumes obtained from recent traffic counts and the existing roadway system), as well as future "Cumulative (2040) No Project Conditions" (future conditions with planned population and employment growth, and planned transportation system improvements, for the year 2040. Traffic volume forecasts were developed using the Contra Costa County Transportation Authority [CCTA] Countywide Travel Demand Model).

## 4.0.3 Environmental Impacts

This EIR addresses impacts of the project on the existing environment pursuant to CEQA. Potential effects of the environment on a project may not be legally required to be analyzed or mitigated under CEQA, although the CEQA *Guidelines* include certain significance criteria that pertain to the effect of the environment on a project. A growing number of court cases have supported the position that CEQA is solely, or largely, concerned with the effects of a project on the environment and not the effects of the environment on a project; that latter may include thresholds related to air quality (e.g., locating a new residential project near an existing source of air pollution), geology (e.g., locating a new structure in a seismic hazard zone), and noise (e.g., locating a new residential project on a loud street).

[1] The City issued the NOP for the project on November 21, 2014.

Most recently, 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 required to be considered in a CEQA evaluation, except when the project may exacerbate existing hazards or existing conditions.

Consistent with previous City practice and CEQA guidance, this EIR continues to address impacts of the environment on the project caused by the existing environment. Such impacts are considered under the City's regulatory authority to protect public health safety and welfare. These impacts are also addressed to provide information to the public and decision-makers of the project.

## 4.0.4 Mitigation Measures

Project-specific mitigation measures are identified throughout this EIR where feasible and necessary to avoid, minimize, rectify, reduce, or compensate for potential significant, adverse impacts of the project in accordance with CEQA *Guidelines* Section 15126.4. All mitigation measures will be 1) included as part of the design, construction, and operations of the proposed project; 2) adopted as conditions of approval for the proposed project; and 3) subject to monitoring and reporting requirements of CEQA and the terms of the discretionary approvals for the project.

## 4.0.5 Project Design Features

As part of the proposed project, the applicant has committed to a series of project design features (PDFs) that are listed and detailed in **Table 3-3**. Like the project-specific mitigation measures, the project PDFs would avoid, minimize, rectify, reduce, or compensate for potential significant, adverse impacts of the project. All PDFs are included as part of the design, construction, and operations of the proposed project, and will be subject to monitoring and reporting requirements of CEQA and the terms of the discretionary approvals for the project.

The format for PDF designations is similar as described above for mitigation measures (e.g., Project Design Feature HYD-1).

## 4.0.6 Section Contents and Definition of Terms

### Chapter Organization

Chapter 4 is organized into the following 14 environmental resource or issue areas (also sometimes referred to as environmental topics):

[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.) In the decision, the Court held 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. But when a proposed project risks exacerbating those environmental hazards or conditions that already exist, an agency must analyze the potential impact of such hazards on future residents or users. In those specific instances, it is the project's impact on the environment – and not the environment's impact on the project – that compels an evaluation of how future residents or users could be affected by exacerbated conditions."

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

## Section Contents

Sections 4.1 through 4.14 follow this format:

- **Environmental, Regional, Local, and/or Project Site Setting:** Provides an overview of the physical environmental conditions in the area at the time of, or prior to, the publication of the NOP, that could be affected by implementation of the project in accordance with State CEQA *Guidelines* Section 15125.

- **Regulatory Setting:** Identifies the laws, regulations, ordinances, plans, and policies that are relevant to each resource area.

- **Significance Criteria:** Provides the criteria used in this document to define the level at which an impact would be considered significant in accordance with CEQA. Significance criteria are based on CEQA *Guidelines* Section 15064.5, Appendix F, and the checklist presented in Appendix G; factual or scientific information and data; and regulatory standards of the City of Richmond and federal, State, and local agencies. This section also discusses, where applicable, the *Approach to Analysis*, and, where applicable, a summary of *Topics with No Impact or Otherwise Not Addressed in this EIR*.

- **Impacts:** Each section lists impacts numerically and sequentially. An impact statement (always in bold text) precedes the discussion of each impact analysis and summarizes the potential for the project to have an impact. Impact statements use an alphanumeric designation that corresponds to the environmental topic (e.g., "AES-1" for aesthetic impacts). A number follows the alpha designation to indicate the order in which that impact is identified within that particular analysis. For example, "Impact CUL-3" is the third cultural resources impact identified in the cultural resources analysis. The impact statement culminates with the level of impact that exists prior to the consideration of mitigation measures, if any are required. The impact determination after the incorporation of mitigation measures is stated at the close of the impact analysis discussion. An impact is categorized as one of the following:

  - ***No Impact (N)*:** The project would not cause a noticeable effect on the environment as measured by the applicable significance criterion and threshold; therefore, no mitigation would be required.

- ***Less than Significant (LTS)*:** The impact of the project, either before or after implementation of feasible mitigation measures, does not reach or exceed the defined threshold of significance. The impact would not cause a substantial adverse change in the environment as measured by the applicable significance criterion and threshold; therefore, no mitigation would be required.
- ***Less than Significant with Mitigation (LTSM)*:** The project would cause a substantial adverse change in the physical conditions of the environment; one or more feasible mitigation measures would reduce the environmental effects to a less-than-significant level.
- ***Significant and Unavoidable (SU)*:** The impact of the project reaches or exceeds the defined threshold of significance. The project would cause a substantial adverse change in the physical conditions of the environment; there is either no feasible mitigation available or, even with implementation of feasible mitigation measures, the project would cause a significant adverse effect on the environment.

- **Mitigation Measures:** Mitigation measures are designated in the same manner described above for impact statements. Where multiple mitigation measures are identified for a particular impact, each is numbered sequentially. Generally, all mitigation measures are indented, and titles are in bold text.

# 4.0.7 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.

## Cumulative Context

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 the City's list of all development projects under review as of the fourth quarter, 2015. 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. Projects in the immediate vicinity of the proposed project site include Miller/Knox Regional Shoreline park and residential development in the Brickyard Cove neighborhoods. Projects in the larger vicinity, defined as the City-designated Southern Shoreline area (City of Richmond, 2012) which includes

all of Point Richmond and the Richmond Bay Specific Plan area and is bounded by Interstate 580 (I-580), have also been reviewed.

Cumulative projects considered in the analysis are presented in **Table 4.0-1**. The table does not include all projects that would contribute to cumulative impacts along with the proposed project; rather, it includes a number of concurrent projects in the area to demonstrate the scope and nature of development in the cumulative vicinity. For some environmental topic areas, the cumulative context includes more development than listed **Table 4.0-1**; for example, modeling for traffic impacts includes traffic and projects located north and east of I-580. Cumulative impacts are discussed throughout Chapter 4 as necessary, and discussed further and summarized in Chapter 6.

**TABLE 4.0-1**
**TERMINAL ONE EIR CUMULATIVE PROJECTS**

| Project Name | Description of Project | Location Within Richmond | Environmental Review and Construction Schedule |
|---|---|---|---|
| ***Past Projects:*** | | | |
| 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 that were 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; EIR prepared for Brickyard Cove commercial buildings in 1998. |
| Brickyard Landing Neighborhood | Brickyard Landing 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. |
| 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. | EIR certified in 2001. |
| 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, north of the Terminal One project site, as well as large picnic and barbecue areas, a model railroad museum, Ferry Point pier, and parking. | Open space adjacent to the Terminal One project site to the north, west, and northeast. | Last EBRPD approval of park improvements granted in 1995; construction within the park completed in 1997. |
| Honda Port of Entry at the Point Potrero Marine Terminal | Expansion of Auto Warehousing Company (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 EIR certified in 2008; construction completed in 2010. |
| Rosie the Riveter Park | The Rosie the Riveter/World War II Home Front National Historical Park General Management Plan was established in 2009. | 1414 Harbour Way South | FONSI signed in 2009. |
| Ford Building Rehabilitation Project | The Ford Building Rehabilitation Project is redeveloping the former Ford Assembly Plant at the foot of Harbor Way into a mixed-use facility. The mixture of uses includes offices, retail centers, industrial/research and development sites, restaurants, residential areas, the Rosie the Riveter Visitor Center, and the Craneway Pavilion event center. The building size is approximately 460,000 square feet. | 1414 Harbor Way South | Ongoing. |
| Chevron Modernization Project PLN11-089 | Conditional use permit and revised EIR application for the revised Chevron Modernization Project | 100 Chevron Way | Approved June 9, 2014. |

**TABLE 4.0-1 (Continued)**
**TERMINAL ONE EIR CUMULATIVE PROJECTS**

| Project Name | Description of Project | Location Within Richmond | Environmental Review and Construction Schedule |
|---|---|---|---|
| ***Past Projects (cont.)*** | | | |
| 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 in 2012 (CEQA Categorical Exemption filed). Construction completed in 2015. |
| 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 MND January 2014 approval; construction completed in 2015. |
| 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 7/11/2013; CEQA Exemption filed. Construction completed 2015; occupancy planned for 2016. |
| ***Approved Projects/Projects Under Construction:*** | | | |
| 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 EIR certified on December 16, 2014. Construction began in 2015. |
| Miraflores Housing Development Plan | Remediation and redevelopment of an approximately 14-acre site with up to 336 affordable and market-rate homes. Includes the daylighting of a portion of Baxter Creek. | Wall Avenue and South 47th Street; Florida Avenue and South 45th Street | EIR certified 2009; site cleanup and pre-development planning underway. |
| Anchorage at Marina Bay PLN14-098 | Conditional use permit, re-zoning, and EIR for a modification of the previously approved Anchorage at Marina Bay residential development | 3400 Jetty Drive | Approved 10/7/2014. |
| Baywalk Mixed-Use Project ISMND | The 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 MND approved October 2015. |
| ***Projects Under Review/Foreseeable:*** | | | |
| Miller/Knox Regional Shoreline Land Use Plan Amendment (LUPA) | As part of the Land Use Plan Amendment, the EBRPD is considering whether to refurbish one or both of the buildings at Ferry Point for commercial or passive interpretive use or to demolish one or both buildings; as well as whether to breach the lower levee of the Lagoon to San Francisco Bay, which would create 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. | Both studies are expected to be completed in 2016 |

**TABLE 4.0-1 (Continued)**
**TERMINAL ONE EIR CUMULATIVE PROJECTS**

| Project Name | Description of Project | Location Within Richmond | Environmental Review and Construction Schedule |
|---|---|---|---|
| ***Projects Under Review/Foreseeable (cont.)*** | | | |
| BP Neat Ethanol Upgrade<br>PLN14-118 | Design review permit and environmental initial study 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 |
| ***Studies, Plans, Transportation Projects, and Other Projects:*** | | | |
| South Richmond Linkage Study<br>PLN14-101 | Affordable housing and commercial linkage study for the South Richmond Priority Development Area. | South Richmond Priority Development Area | Under review (Categorical Exemption) |
| South Richmond Connectivity Plan<br>PLN13-207 | Transportation and connectivity plan for the South Richmond shoreline and outlying areas. | Southern Shoreline Area | Draft plan and community workshops underway. |
| South Shoreline Specific Plan/Richmond Bay Specific Plan<br>PLN15-104 | The Specific Plan will establish planning policies, land use controls, development standards, and urban design guidelines that will guide the Plan Area's transformation into a sustainable waterfront community anchored by the planned Berkeley Global Campus at Richmond Bay. Under the Specific Plan, the Plan Area would be developed into several compact, walkable neighborhoods characterized by mixed-use commercial and medium-density residential development near public transit, jobs, schools, shopping, parks, recreation, and other amenities, consistent with the goals and policies in Richmond's General Plan 2030. | Regatta Boulevard and Marina Way Parkway | NOP filed 10/29/2014; draft Specific Plan released September 30, 2015. EIR in progress. |

# References – Environmental Setting, Impacts, and Mitigation Measures

City of Richmond, 2012. *Richmond General Plan 2030: Land Use Element.* Adopted April 25, 2012.

# 4.1 Aesthetics

## 4.1.1 Introduction

This section evaluates the potential for the project to result in significant adverse impacts to aesthetics. The evaluation considers existing visual conditions (generally as of December, 2015) and assesses the effects of the project on scenic vistas and scenic resources, visual quality and visual character, as well as its potential to have adverse light and glare effects. This section incorporates photographs and computer-generated visual simulations illustrating the "before" and "after" conditions of the project site and its surroundings.

## 4.1.2 Environmental Setting

### Existing Visual Conditions

#### *Regional and Local Setting*

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. Long range views within the City are generally expansive because of the flat terrain throughout the City.

#### *Project Site*

The 13.3-acre Terminal One project site is located within the Point Richmond neighborhood and sits at the southwestern-most tip of the city. The dry land portion of the site consists of approximately 12.6 acres reclaimed as part of the development of the Port of Richmond during the early 1900s. The remaining approximate 0.7-acre portion of the project site consists of submerged tidelands. The site includes about 1,100 lineal feet of San Francisco Bay shoreline, all of which is armored with rip rap consisting primarily of large pieces of concrete and asphalt.

**Figure 4.1-1** presents a location key to several photographs (P) of the existing visual conditions of the project site and its surroundings, which are shown in **Figure 4.1-2 (P1)** from a birds-eye view.




SOURCE: ESA; Google Maps

City of Richmond Terminal One Project EIR . 140325

**Figure 4.1-1**
Photograph Locations Key




City of Richmond Terminal One Project EIR . 140325

SOURCE: Kwan Henmi Architecture & Planning, Environmental Vision

**Figure 4.1-2**

Vicinity Birds Eye View - Looking North (P1)

The project site is a former waterfront industrial site with no active uses. The site was originally used for shipping and transport, warehouse utilities, storage, and other port-related industrial activities. Most buildings and structures have been demolished and removed from the project site; an approximately 94,000-square-foot former port operations warehouse building (the Terminal One Warehouse) that is partially supported by a shoreline pier (the Terminal One Pier) remains.

Generally, the site is flat with highly disturbed land from which most natural vegetation was previously removed by grading, paving, filling, compaction, or other past land uses. The property is in disrepair and exhibits extensive graffiti as evidence of unauthorized access. Disconnected sections of railroad tracks, building foundations, storage tank pads, asphalt paving and other remnant hardscape surfaces are also present on the site. Much of the site consists of vegetation (primary grass and low scrub) encroaching onto and through paved areas. In addition to the Terminal One Pier, the shoreline includes a small tie-off/viewing pier.

**Figure 4.1-3** includes a series of photographs (P2 through P5) that present the visual conditions of the project site.

### Areas Surrounding the Project Site

The project site is bounded on the east by the Richmond Yacht Club, on the north by Brickyard Cove Road and the uplands of the Miller/Knox Regional Shoreline park (Miller/Knox park, which is maintained by the East Bay Regional Parks District [EBRPD]), on the west by Dornan Drive and Miller/Knox park (Ferry Point), and on the south by the San Francisco Bay. Views of areas adjacent to the site are described below and reflected in the series of photographs (P6 through P9) that follow and show the visual conditions of surrounding areas as viewed from the project site.

- **Looking North/Northwest from Project Site – Figure 4.1-4a (P6).** Brickyard Cove Road borders the north side of the project site. A steep, vegetated bluff in Miller/Knox park that rises to approximately 200 feet in elevation above Brickyard Cove Road (with West Ridge Point approximately 180 feet above the elevation of the road and the project site) dominates the view to the north of the site. The Richmond-San Rafael Bridge is visible from the site looking to the northwest.

- **Looking East/Northeast from Project Site - Figure 4.1-4b (P7).** Land uses to the east/northeast of project site have transitioned from port-related heavy and light industrial uses to a mix of residential, marina, commercial, and other non-industrial uses. Specifically, the Richmond Yacht Club is located east of the project site and includes wet berths and a large parking lot with boat trailer spaces that borders the eastern boundary of the site. Residential areas east of the Yacht Club visible from the site include single-family homes built on platforms over the water extending along Pelican Way, Sanderling Island, and Sandpiper Spit. Northeast of the project site is Brickyard Landing, comprising approximately 240 hillside condominium units in four shingled buildings, four to five stories in height over podium parking garages. Seacliff Estates, a development of single-family homes, is east of Brickyard Landing.













SOURCE: Kwan Henmi Architecture & Planning, Environmental Vision



**Figure 4.1-3**
Existing Project Site Visual Conditions



Figure 4.1-4a: View Looking North from Project Site (P6)



Figure 4.1-4b: View East/Northeast from Project Site (P7)

- **Looking South from Project Site - Figure 4.1-4c (P8).** The San Francisco Bay Richmond Inner Harbor channel is south of the project site. The channel is primarily used for recreational boating; however, auto warehouse ships also travel through to access the Port of Richmond. Views of the Bay south of the project site include a breakwater (a narrow barrier composed of stones and with the appearance of a sea wall, approximately one mile long, that acts to protect the deepwater channel to the Richmond Inner Harbor) connected to Brooks Island. Angel Island and the northern shore of San Francisco can be seen from this view.

- **Looking West from Project Site - Figure 4.1-4d (P9).** Ferry Point, a peninsula that was once the western terminus of the transcontinental railroad, is located across the water approximately 0.2 miles west of the project site. Views west of the project site are generally characterized by the flat open space shoreline area of Miller/Knox park, and include trails and a fishing pier and beach at Ferry Point at the southern tip of the park.

### Views Toward the Project Site

The following describes selected views toward the project site from various public locations. Each is described below and reflected in a series of photographs in **Figures 4.1-5a** through **4.1-8b** (P10 through P19) (see photographs key, **Figure 4.1-1**). [1]

- **Project Site from Ferry Point Beach (from the west) - Figure 4.1-5a (P10)**. This view shows the rip-rap shoreline at the site and a view of the Terminal One Warehouse. The project site sits at a higher elevation than the beach, as this view conveys. Views to the southeast beyond the site are largely obstructed by the warehouse structure.

- **Project Site from Ferry Point Fishing Pier (from the west) - Figure 4.1-5b (P11)**. This view location is nearly 500 feet west of the site and provides a slightly more northerly view toward the project site compared to the Ferry Point Beach view (P10). This view centers on the west end of the Terminal One Warehouse and its pier and rip-rap shoreline. In the mid-ground, the view includes the San Francisco Bay, Ferry Point Beach, and the shoreline. The view also shows the wet berths of the Richmond Yacht Club east of the warehouse building and residential areas further east. This view also captures two large white industrial (petroleum product) tanks on the hillside just east of Seacliff Drive. The eastern ridge and hillsides remain visible in the distance, as do the uplands of Miller/Knox park. (This view was selected for visual simulations of the project, presented in the *Impacts and Mitigation Measures* analysis portion of this section as **Figure 4.1-14**.)

[1] EBRPD requested inclusion of views from Miller/Knox Shoreline / Ferry Point (P10 through P12) in this EIR.



Figure 4.1-4c: View South from Project Site (P8)



Figure 4.1-4d: View West from Project Site (P9)



Figure 4.1-5a: Project Site from Ferry Point Beach (from the west) (P10)



Figure 4.1-5b: Project Site from Ferry Point Fishing Pier (from the west) (P11)

- **Project Site from Miller/Knox Park (from the west) - Figure 4.1-6a (P12).** This view is from about 800 feet north of the Ferry Point fishing pier (P11), along the shoreline in Miller/Knox park. From this viewpoint, Miller/Knox park is most evident in the near- and mid-ground; in the mid-ground, the length of the Terminal One Warehouse, several trees, and the Miller/Knox park bluffs are also visible. In the distance, the roof of the Richmond Yacht Club and some homes east of the yacht club are visible.

- **Project Site from Dornan Drive (from the north) - Figure 4.1-6b (P13)**. In this view, the road and Miller/Knox park hillside curve to the east, with the project site central to the view. This view is largely transitory (as it is a roadway corridor) and from this particular location the view captures mature trees on the site as well as the Terminal One Warehouse beyond the trees. Distant views across the Bay are largely blocked by the warehouse structure, except for a narrow area to the west of the warehouse (right side of the photo). (This view was selected for visual simulations of the project, presented in the *Impacts and Mitigation Measures* analysis portion of this section as **Figure 4.1-13**.)

- **Project Site from Miller/Knox Uplands Bench (from the north) - Figure 4.1-7a (P14)**. This view location sits nearly 90 feet above the project site at the location of a bench next to a trail, and provides expansive views across the site and of the breakwater south of the site, as well as across the Bay to San Francisco, Treasure Island, the Bay Bridge, Mount Tamalpais, and the Marin Hills (hills in the southern part of Marin County). The bench faces towards the west/southwest. The foreground view includes part of the bluff below the bench. The existing Terminal One Warehouse blocks most of the shoreline from this view. (This view was selected for visual simulations of the project, presented in the *Impacts and Mitigation Measures* analysis portion of this section as **Figure 4.1-12**.)

- **Project Site from Miller/Knox Ridge (from the north) – Figure 4.1-7b (P15)** This panoramic view is from an elevation of about 180 feet above the project site – slightly higher and to the east of the Miller/Knox uplands bench location (P14). Similar to that view, this view captures distant cross-Bay views to San Francisco and the Bay Bridge, as well as closer views of Angel Island and the Marin Hills. This location is at an elevated perspective that provides a panoramic and relatively unobstructed view, extending from the East Bay Hills (hills east of I-580, located in communities such as Richmond, El Cerrito, Kensington, and Berkeley) to the east to the Marin Hills to the west. Even at this higher elevation, this view does not fully capture the shoreline, due to the obstruction of the Terminal One Warehouse. Most of the project site can be seen from this view. This view also captures the open area east of the Terminal One Warehouse and the wet berths of the Richmond Yacht Club. (This view was selected for visual simulations of the project, presented in the *Impacts and Mitigation Measures* analysis portion of this section as **Figure 4.1-11**.)

- **Project Site from Brickyard Cove Road (from the northeast) - Figure 4.1-8a (P16).** Similar to view P13, this view is largely transitory (as it is a roadway corridor) and as the motorist approaches the project site at this particular location, the view towards the Bay and Mount Tamalpais is largely blocked by the Terminal One Warehouse. The upper part of Mount Tamalpais and the Marin Hills are visible above the roofline of the warehouse. Vegetation along the roadway blocks views to the Bay. (This view was selected for visual simulations of the project, presented in the *Impacts and Mitigation Measures* analysis portion of this section as **Figure 4.1-10**.)

- **Project Site from East Miller/Knox Uplands, Crest Trail Near Sea Cliff Drive (from the northeast) - Figure 4.1-8b (P17)**. This distant view captures the project site in a broad context, within the range of development and land uses in the area, including the Miller/ Knox park, the Richmond Yacht Club and wet berths, and a range of varying housing development types. The Terminal One Warehouse is visible along the shoreline.



Figure 4.1-6a: Project Site from Miller/Knox Shoreline park (from the west) (P12)



Figure 4.1-6b: Project Site from Dornan Drive (from the north) (P13)



Figure 4.1-7a: Project Site from Miller/Knox Uplands Bench (from the north) (P14)



Figure 4.1-7b: Project Site from Miller/Knox Ridge (from the north) (P15)



Figure 4.1-8a: Project Site from Brickyard Cove Road (from the northeast) (P16)



Figure 4.1-8b: Project Site from Miller/Knox Uplands, Crest Trail Near Sea Cliff Drive (from the northeast) (P17)

### Existing Buildings

The 94,000-square-foot Terminal One Warehouse is the only structure remaining onsite. The warehouse is partially supported by the Terminal One Pier and is situated within the southwestern quadrant of the site, extending over the shoreline. The Terminal One Warehouse building is approximately 49 feet high (measured at the peak of the roof) and extends about two-thirds of the length of the site's waterfront edge.

### Existing Lighting

Existing nighttime lighting in the vicinity primarily consists of security lighting on the project site and lighting within the adjacent Ferry Point Park and parking lot, street lighting along Brickyard Cove Road and Dornan Drive, and security lighting for the Richmond Yacht Club.

## Scenic Vistas/Corridors and Scenic Resources

According to the City of Richmond General Plan EIR, various points throughout the City of Richmond have views of the shoreline or the hillside that would constitute a locally recognized "scenic vista" or "scenic corridor." The project site is located along the San Francisco Bay, south of Brickyard Cove Road, at the south terminus of Dornan Drive, and adjacent to and below the Miller/Knox park and uplands. The main public scenic vista in the vicinity of the project site is the expansive view of the San Francisco Bay from the Miller/Knox bluff, which affords at least 270-degree panoramic views across the Bay and encompasses the Marin Hills and the East Bay Hills. The Miller/Knox park uplands provide expansive scenic views of the Bay across the site, with the Terminal One Warehouse obstructing views of the shoreline and partially obstructing views of the breakwater south of the site. The South Garrard Boulevard-Dornan Drive-Brickyard Cove Road corridor, which includes a portion of Brickyard Cove Road and Dornan Drive north of the project site, has been identified in the City of Richmond General Plan EIR as a scenic corridor. Both Brickyard Cove Road and Dornan Drive afford partial views of the San Francisco Bay and skyline, as well as the Marin Hills and Mount Tamalpais.

The City of Richmond General Plan EIR identifies numerous "scenic resources" that are captured within views from the aforementioned scenic vistas or corridors. Relevant to the project site and in addition to the San Francisco Bay and cityscape and Marin Hills/Mount Tamalpais are the scenic resources of San Pablo Bay, Angel Island, the Berkeley Hills, San Pablo Ridge, Potrero/San Pablo Hills, Albany Hills, the Richmond San Rafael Bridge, Chevron Refinery, and Point Richmond.

As depicted in the series of photographs presented in **Figures 4.1-5a** through **4.1-8b** (P10 through P17), the project site and Terminal One Warehouse are visible within several public view corridors. View corridors include public roadways and publicly-accessible spaces, such as recreational and open space areas. The chief public view corridors from which the project site can be seen are nearby streets, primarily Brickyard Cove Road and Dornan Drive, which afford partial views of the San Francisco Bay as well as the San Francisco skyline and Marin Hills. Most views across the project site are partially obscured by the existing Terminal One Warehouse and do not capture the Bay shoreline or breakwaters.

# 4.1.3 Regulatory Setting

## City of Richmond General Plan Land Use Designation

The project site's General Plan land use designation is Medium-Density Residential, which allows for single and multi-family housing types such as one to three-story garden apartments, townhouses, and stacked flats. The project will include buildings of up to five stories over a single story parking podium. The proposed maximum building height is consistent with the Medium Density Residential allowance for heights to exceed 35 feet with approval of a Planned Area (PA) District. (See *Planned Area District* discussed under *City of Richmond Zoning Ordinance / Municipal Code*.)

## Relevant General Plan Policies

The Richmond General Plan 2030 contains several policies related to views, scenic vistas, and visual character. As discussed above, several scenic routes, scenic corridors (including the South Garrard Boulevard-Dornan Drive-Brickyard Cove Road corridor), 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.

The City of Richmond Conservation, Natural Resources and Open Space Element contains the following policies related to views, scenic vistas, and visual character:

- **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.

  - 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 [sic] protect natural and built environments from adverse potential impacts of sea level rise due to climate change.

  *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.

*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.

## 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 the City in its development practices and protects views. The Municipal Code guidelines aim to create 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.

### Zoning Designations and Regulations

The project site is designated C-C, Coastline Commercial zone, with a Special Features Overlay (SFO), District No. 1, Brickyard Cove Area.

**C-C Coastline Commercial Zone.** The C-C zone (RMC 15.04.250) is intended to "create, preserve and enhance areas with a selective range of retail establishments serving both short and long-term needs of water oriented uses, most often marinas and the needs of shoreline residents and visitors." The City recognizes that the C-C zoning district is no longer consistent with the General Plan (discussed above). Certain C-C zone development standards that are particularly relevant to this assessment of aesthetics include the following:

- Minimum Lot Area: None
- Floor Area Ratio (FAR): 0.6 FAR maximum
- Building Height: 35 feet maximum
- Setbacks: None, except when adjacent to a residential lot or zone.

**Other Performance Standards.** The Richmond Zoning Ordinance also includes the following performance standards particularly related to aesthetics:

- Lighting and Glare: This provision requires that lighting, reflective surfaces and other sources of illumination are designed to prevent glare on the public street or adjacent parcels. Lights shall be shielded at lot lines so as not to be directly visible from an adjoining residential district. (Section 15.04.840.040)
- Design Review: This provision requires compliance with Design Review permit site development and review procedures, with emphasis placed on project design, site planning, building elevations, and neighborhood compatibility. (Section 15.04.840.070). (Also see *Planned Area District, PA Design Review,* below.)

**Special Features Overlay (SFO), District No. 1, Brickyard Cove Area.** The SFO, District No.1 (RMC 15.04.520.060) includes additional regulations that pertain to the Brickyard Cove Area. The regulations address conditions of development on sloped sites and pertaining to Brickyard Cove. Specific finding for development in this area is that the " removal of earth material from the hill slopes, possible lowering of the ridge crest, and diking or filling within Brickyard Cove without appropriate city control can result in irreparable injury to the public peace, health, safety and general welfare and to the orderly growth of this area." The regulations include the following, for which the specific controls and findings are prescribed:

- Regulation #1. Preservation of the Ridge Crests.
- Regulation #2. Preservation of Natural Hill Slopes, Rectification of Scarred Areas, and Enhancement of the Environment.
- Regulation #3. Preservation of Brickyard Cove as a Water Body of Scenic Interest.

Although the Terminal One project site is within the District No. 1 SFO, it is relatively flat and not directly adjacent to Brickyard Cove.

The project proposes to re-zone the project site to Planned Area District.

**Planned Area District.** The purpose of the Planned Area (PA) district is to promote development of large areas in substantial compliance with the principles and standards of the Richmond 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. (RMC 15.04.600) The specific purposes of the PA district are as follows:

A. Establish a procedure for the development of large parcels of land (2 acres or more) in order to reduce or eliminate the rigidity, delays and conflicts that otherwise may result from application of zoning standards and procedures designed primarily for small parcels;

B. Ensure orderly and thorough planning review procedures that will result in quality urban design;

C. Establish a review procedure for large residential developments including condominium developments;

D. Provide the allocation and improvement of common open space in residential areas, and provide the mechanisms for the maintenance of open space by those who will most directly benefit from it;

E. Permit the development of commercial and industrial developments in appropriate locations to obtain a coherent design, increased public amenities, and protection and buffering for adjacent land uses;

F. Establish review procedures for any project utilizing atypical design concepts, and/or not conforming with the standards of the base zoning district;

G. To facilitate implementation of the City's affordable housing policies.

*Basic Development Standards.* As part of the rezoning to PA, a Planned Area Plan (PA Plan) is required to be prepared describing the project and the zoning standards and procedures applicable to the project (discussed below). In considering a PA district rezone application, the City must review and approve specific key project design details prior to approval of a project, including development standards specific to the development project under the PA.

- Minimum Area: 2.0 acres of contiguous land
- Density/Units/FAR: Generally, as allowed for the applicable General Plan designation
- Other Standards and Regulations[2]: As modified from the base zoning districts per the approved PA district, and general standards per Section 15.04.800 of the Zoning Ordinance. (See *Height*, below.)

*Height*. Of particular note, the City recently amended its General Plan to allow an exceedance of building height for projects within a certain land use designation, with approval of a PA. Specifically:

- Pursuant to the Medium Density Residential General Plan land use designation, a project may exceed the 35-feet height limit as part of an approved PA-Planned Area District for the site and adequate environmental analysis. (RMC Section 15.04.610.020(D)): (City of Richmond, 2015).

*PA Design Review.* The PA Plan is subject to a PA design review process (PA Design Review). The City's Design Review Board (discussed below) shall review and make a recommendation to the Planning Commission. The PA Design Review application shall include a comprehensive set of specific elements (graphic and narrative) specified in RMC Section 15.04.610.030.[3] The PA Design Review process examines and evaluates each element, which generally address aspects of land use, site planning, architecture, landscaping, and grading and drainage.

*Findings.* Approval of rezone to a PA district shall be made upon the following findings:

1) The PA plan is consistent with the Richmond General Plan and other applicable policies and is compatible with surrounding development;

2) The PA plan will result in superior urban design in comparison with the development under the base zoning district regulations that would apply if the plan were not approved; and

3) The PA plan includes adequate provision for utilities, public services, emergency vehicle access that will not exceed the capacity of existing and planned public services and infrastructure.

2 Minimum lot areas, setbacks, building height limits, other development standards and similar regulations of the base zoning districts.

3 Discussion of the Terminal One Project's adherence to the PA application and design review process is discussed under *Impacts and Mitigation Measures* further in this section.

## 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, as well as an advisory body to the Planning Commission. As described in the discussion of the PA Design Review process, the City's zoning ordinance assigns the DRB responsibility for reviewing the elements of project design addressed in a PA district rezone application (RMC Section 15.04.610.030E). The zoning ordinance also assigns to the DRB responsibility for reviewing design review permit applications (RMC Section 15.04.930.020A). While the DRB provides recommendations to the Planning Commission with respect to the elements of design addressed in a PA Plan, 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 Richmond General Plan, the specific provisions of the base or overlay zoning district (proposed PA zoning/ District 1 SFO overlay) in which the project is located, and the provisions of design review guidelines.

The applicable findings to be considered by the DRB in its review of a design review permit application include: whether the proposed design is suitable for its purpose; is harmonious with and relates properly to the surrounding neighborhood, contiguous parcels, and the site itself; whether the location, size, design, and characteristics of the proposed project will be compatible with, and will not be detrimental to, the public health, safety, or welfare of persons residing in or working in or adjacent to the proposed project; whether the overall design will be of a quality that will preserve the integrity of, and upgrade, the existing neighborhood; and whether the design of the proposed project is in accordance with the general plan of the City of Richmond and all applicable provisions of the zoning ordinance. Where appropriate, the DRB may also impose conditions related to design impacts of the project. (Also see *Planned Area / PA Design Review* discussion, above.) (RMC Section 15.04.930.110)

## Point Richmond Shores Design Principles Report

The 2010 Coalition of Concerned Citizens of Point Richmond (CCCPR) Settlement Agreement[4] required that the Point Richmond Shores project (previously proposed for the Terminal One project site) be developed in accordance with certain design principles, restrictions and requirements, as feasible.[5] These principles, restrictions, and requirements are included in the Point Richmond Shores Design Principles Report ("MIG Report;" MIG, 2007). The MIG Report is a vision and framework document that was developed through a series of three Community Design Workshops that took place in 2006 and 2007, the input from which resulted in the articulation of the principles in the MIG Report. In order to address community concerns

4 The CCCPR Terminal One Project Settlement and Release Agreement, to which the City is a party, is dated April 23, 2010.

5 As defined in Section 15364 of the CEQA *Guidelines* ("'Feasible' means capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, legal, social, and technological factors.").

previously raised regarding proposed development on the project site, the LDA includes reference to the "design principles set forth in the MIG report" and requires that, "where feasible," the design of the project "shall be substantially consistent with these principles" (City of Richmond, 2014).[6] The MIG Report addressed concepts for community design (including views and development character); site layout and design; circulation and road design, and other design elements, including those related to the Terminal One Warehouse, the San Francisco Bay Trail, and the Richmond Yacht Club.

## San Francisco Bay Conservation and Development Commission (BCDC) and Bay Plan

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 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 project site.

### The Bay Plan

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. Per the Bay Plan, important Bay overlook points, and historic areas and structures that may be located in water-related industrial and port areas, should be preserved and incorporated into site design for new projects, if feasible.

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 project site 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.

[6] Discussion of the Terminal One project's adherence to the MIG Report is discussed under *Impacts and Mitigation Measures* further in this section.

- 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 laws governing the Scenic Highway Program are found in the Streets and Highways Code, Sections 260 through 263. A highway may be designated scenic depending upon how much of the natural landscape can be seen by travelers, the scenic quality of the landscape, and the extent to which development intrudes upon the traveler's enjoyment of the view. The State Scenic Highway System includes a list of highways that are either eligible for designation as scenic highways or have been officially designated. The status of a proposed state scenic highway changes from eligible to officially designated when the local governing body applies to Caltrans for scenic

highway approval, adopts a Corridor Protection Program, and receives notification that the highway has been officially designated a Scenic Highway. Interstate 80 (I-80) and I-580 are not designated as Scenic Highways within the City of Richmond.

### East Bay Regional Park District Master Plan

The EBRPD administers and manages regional parks for Alameda and Contra Costa counties. The primary goal of the 2013 EBRPD Master Plan is to uphold a balance between the need to protect and conserve resources and the need to provide opportunities for recreational use of parklands, currently and in the future. The EBRPD Master Plan highlights opportunities afforded to the public such as participation in planning, development, operation, interpretation and stewardship of the District. The priorities of the plan are as follows: Affirming the Role and Identity of Regional Parks; Responding to Changes in Demographics; Providing a Variety of "Trails for All"; Leading the Movement for Healthy Parks Healthy People; Supporting the Shift to Green Communities; Creating Conservation and Management Standards for Cultural and Historic Resources; Balancing Funding Priorities, Meeting Expectations and Sound Fiscal Practices; and Developing Productive Partnerships.

### 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 project site is defined as an urban area and is therefore designated as LZ3 per the CEC classification standards.

## 4.1.4 Significance Criteria

Based on California Environmental Quality Act (CEQA) *Guidelines* Appendix G, the project would cause significant adverse impacts to aesthetic resources if it were to:

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.

# 4.1.5 Impact Analysis

## Methodology

### Overall Approach

The methodology of the aesthetics analysis presented below considers several factors that affect the proposed project's physical appearance compared to existing visual conditions as observed from public locations. Existing visual conditions relevant to the project and the site and surroundings are conveyed in the *Environmental Setting* and the analysis below through site photography taken in 2015 (primarily, December 2015).

### Nature and Scope of Visual Assessment

This analysis recognizes that aspects of physical appearance are subjective and dependent on individual preferences. Therefore, the analysis represents the City's determinations based on its assessment of the project effects and appearance, as illustrated in the comparative exhibits in this section, as well as actual observations of the site and surrounding context.

Generally, while a project's interference with scenic views from public vantage points would be considered an adverse aesthetic effect on the environment, the obstruction of individual landowners' views from private property is not considered a significant environmental impact under CEQA. The purpose of CEQA is to evaluate the impacts of a project on the environment in general, not the impacts of a project on particular individuals. As a result, this EIR does not consider or evaluate the project's impact on views from private residences or other private vantage points.

### Approach to Determining Impacts to Scenic Vistas and Scenic Resources

#### *Definitions*

"Scenic vistas" (also referred to as *viewsheds*) are view corridors that capture the total field of vision from a specific viewpoint; they generally encompass a large geographic area for which the field of view can be quite wide and extend into the distance. Scenic vistas are formed by built and natural physical elements that guide lines of sight and control view directions available to pedestrians and motorists. The expanse of a scenic vista or viewshed can be limited by the framing of a photograph or illustration.

As discussed in *Environmental Setting* (Scenic Vistas/Corridors and Scenic Resources), the main public scenic vista in the vicinity of the project site is the expansive view of the San Francisco Bay from the Miller/Knox park bluff. The General Plan EIR also identifies the South Garrard Boulevard-Dornan Drive-Brickyard Cove Road corridor, part of which is directly north and west of the project site, as a "scenic corridor." This vista and corridor are especially addressed in this analysis as they directly pertain to the Terminal One project site.

"Scenic resources" (also referred to as *features*) are elements of high scenic value or visual prominence that appear within a scenic vista or scenic corridor. This analysis does not limit the definition of "scenic resources" to those located within a state scenic highway. The General Plan EIR identifies several scenic resources; those resources that pertain to the project site and that are especially addressed in this analysis include the San Francisco Bay and San Francisco cityscape, the Marin Hills/Mount Tamalpais, the Richmond San Rafael Bridge, San Pablo Bay, Angel Island, the Berkeley Hills, San Pablo Ridge, the Potrero/San Pablo Hills, and the Albany Hills.[7]

A significance determination for criteria "a" and "b" above considers if the project would prominently obstruct, or block the majority of the expanse, of a scenic vista or scenic resource, as seen by most viewers from public locations, taking into account the view as a whole, and the land use policies adopted by the City of Richmond. This analysis considers the sensitivity of the affected resource based on the prominence of its visibility and/or the viewpoint location, as well as the characteristics of the view, such as whether it is widely unobstructed; fleeting or intermittent; or transitory, viewed by viewers traveling along roadways. Moreover, the significance is measured in light of the context in which the effect occurs. The CEQA *Guidelines* state "the significance of an activity may vary with the setting. For example, an activity which may not be significant in an urban area may be significant in a rural area" (CEQA *Guidelines* Section 15064(b)).

### *Photos and Photosimulations*

A series of existing conditions photographs and three dimensional, computer-generated photosimulations (simulations) depicting the proposed project accurately set within those photographs has been prepared. The simulations were prepared by the project applicant's architect, Kwan Hemni (KH), and were peer-reviewed for technical accuracy by the City's visual resources consultants, Environmental Vision (EV), which also produced the existing conditions photography for the simulations.

*Site Photography*. EV photographed the project site from a set of viewpoint locations requested by the City and EIR project team for use in preparing the simulations. Photographs were taken using a Canon full-frame single-lens reflex (SLR) digital camera, model 5D. A standard 50-millimeter lens, which represents an approximately 40-degree horizontal view angle, was used for the photographs of the project site from Brickyard Cove Road (P16/S1) and the Ferry Point Fishing Pier (P11/S5). A "wide angle" 28-millimeter lens, which represents an approximately 65-degree horizontal view angle, was used for photographs of the project site from Ferry Point Beach (P10), Miller/Knox Shoreline (P12), Dornan Drive (P13/S4), Miller/Knox Uplands Bench (P14/S3), and Miller/Knox Ridge (P15/S2). Photography viewpoint locations were documented systematically in the field using photo log sheet notation, Global Positioning System (GPS) recording, and basemap annotation.

[7] The Chevron Refinery and Point Richmond, north of the Dornan Drive/Garrard Boulevard Tunnel, are mentioned in the General Plan EIR, but do not have shared notable viewsheds with the project site from public locations.

The height-to-width proportion (aspect ratio) of these two types of images are presented differently: the wide-angle views that have been taken with a wide-angle lens are presented as a wider image than views shot with a standard or "normal" lens.

*Limitations*. As indicated above, it is not possible to accurately represent an observer's total field of vision within a photograph. This analysis factors in the fact that the observer's field of vision extends vertically and horizontally beyond the photographic exhibits presented herein. Some of the most prominent vistas from open space locations near the project site capture at least 270-degree panoramic views, horizontally.

*Computer Photo-simulations*. Three-dimensional (3-D) computer modeling for the proposed project was developed by the architect, KH. Input data included a survey (included in **Appendix D**), and project information including the site plan, architecture, existing site contours, grading, and a landscape plan. The 3-D project model was combined with computer-assisted drafting (CAD) files, geographic information system (GIS) data and digital aerial photographs of the existing site (described above), viewpoint locations (described below), and other site features such as the Terminal One Warehouse, to produce digital modeling for simulation of the project.

For the simulation viewpoints, photographs from the viewpoint locations were incorporated into the 3-D model based on GPS field data and base maps, using 5 feet above ground as the assumed eye level. The photographs were overlaid on the digital model to accurately place the camera at the original viewpoint and camera angle. Digital visual simulation images were then produced based on computer renderings of the 3-D modeling combined with digital photographs from each viewpoint.

*Technical Peer Review*. EV conducted a peer review focused on determining whether the simulation images prepared by KH were generally accurate. The following materials were reviewed in conjunction with evaluating the simulations:

- A set of digital visual simulation images prepared by KH;
- CAD files with the site survey base drawing, proposed site plan, and preliminary grading by BKF Engineers;
- A 3-D digital architectural model by KH;
- Architecture plan and elevation drawings;
- Landscape conceptual plans and renderings; and
- Aerial photography.

For the technical peer review, EV prepared a 3-D digital project model by combining the site plan, grading, and 3-D architectural model. Perspective views were set up to match the five selected digital photographs for simulation based upon camera and lens data, and simulation viewpoint locations. EV compared the scaled plots from the 3-D model with the simulation images prepared by KH.

The results of a comparison between EV's 3-D computer modeling and the simulations found that the simulation images are generally accurate with respect to showing proposed building locations and structure heights. Overall, the visual simulation images also were found to appear to accurately convey the appearance of the proposed project architecture and site grading.

*Selected Viewpoints*. The City selected five (5) public viewpoints from which the simulations were prepared. The simulations support the analysis of scenic vistas and scenic resources (Impact AES-1), and are also referenced in the analysis of visual character and visual quality (Impact AES-2). The photographs and simulations depict viewpoints at typical eye level (5 feet) above ground level, as seen by pedestrians or motorists from publicly-accessible locations, and are formatted for easy comparison of "existing" and "existing plus project" conditions.

#### *Simulated Terminal One Project*

The simulations reflect development of the proposed project, factoring in each of the project elements relevant to aesthetic effects and considerations. These elements include all components of (1) the *Terminal One Master Plan and Design Framework* ("Master Plan Design Framework"), which includes the proposed Land Use Program, Site Plan, Architectural Plan, Landscape Plan, and Preliminary Grading and Drainage Plan; and (2) *the Terminal One PA Rezoning*, which together are the Terminal One PA Plan.

The proposed Master Plan Design Framework establishes the basic design elements and architectural tenets which define the essential underlying characteristics of the project's building form and aesthetic composition. While the actual development that would occur over time in phases may not appear exactly as shown in the photosimulations given variations in design detail, what is depicted is consistent with all aspects of the Terminal One PA Plan and is suitable for conveying (for CEQA purposes) the degree and nature of the potential aesthetics effects.

Further, the design detail involved in transforming the Master Plan Design Framework into a final set of architectural and landscaping plans ("Final Plan Set") shall be the subject of the design review process. Per the Terminal One PA Plan, the second stage of design review will be undertaken when the applicant submits its application for a design review permit application during the project's schematic design phase, following approval of the Terminal One PA Rezoning and related entitlements.

### Approach to Determining Impacts to Visual Character and Visual Quality

The analysis of impacts on visual character and quality focuses on whether the project would substantially degrade the existing visual character and quality (collectively, "visual conditions") of the project site and vicinity (Criterion "c"). The significance determination considers whether the extent of change in the appearance of the project site would be substantially adverse, damaging, or degrading when compared to existing conditions. Considerations include the project's visual contrast with existing conditions, and/or the compatibility of the project's physical appearance with existing conditions, based on all aspects of the project. These aspects include (but are not limited to) overall design and architectural quality, building massing, facade articulation, relative building heights, project scale, and site plan layout, as presented in the

Master Plan Design Framework. This assessment of visual character and quality also considers the project's consistency with applicable design principles in the MIG Report.[8]

## Impacts and Mitigation Measures

### Scenic Vistas and Resources

**Impact AES-1: The project would not have a substantial adverse effect on a scenic vista nor substantially damage scenic resources. (Criteria a and b)** ***(Less than Significant, No Mitigation Required)***

This analysis considers the potential impacts of the proposed project on public scenic vistas and scenic corridors that would result in an adverse effect on scenic resources. The discussion of potential effects considers the simulations prepared specifically for this evaluation. (See *Methodology*, above, for a detailed description of the approach to selecting viewpoints and developing the simulations.)

*Evaluation of Photosimulations*

Overall, this evaluation considers views from five (5) public viewpoints that would include the proposed project in the context of views of the San Francisco Bay, San Francisco cityscape, Bay Bridge, Angel Island, Marin Hills/Mount Tamalpais, and the East Bay Hills.

Potential effects are gauged by considering changes from existing conditions. The Terminal One Warehouse currently obstructs direct views of the shoreline. This existing condition is shown in the "before" photograph from each viewpoint.

The locations of each simulation viewpoint are shown in **Figure 4.1-9**. Each simulation (S) is described below, and the figures that include the existing photograph with the simulation follow the descriptions.

- **Simulation from Brickyard Cove Road - Figure 4.1-10 (S1).** As previously discussed (for **Figure 4.1-8a**), this view along part of Brickyard Cove Road directly north of the project site (presumably part of the South Garrard Boulevard-Dornan Drive-Brickyard Cove Road scenic corridor identified in the General Plan EIR) is largely transitory for the motorist, as the view changes as the motorist (or bicyclist or pedestrian) travels through the corridor. Approaching the project site, the Terminal One Warehouse dominates the center of the view. The uppermost peak and ridge of Mount Tamalpais appears above the warehouse, and a glimpse of Bay water is apparent. The view is framed by the upland bluff in Miller/Knox park north of the site (right side of photo) and landscaping along the south

8 This CEQA analysis is not the design review of the project. The City's DRB is evaluating the basic design elements and architectural tenets described in the Master Plan Design Framework, which establishes the essential underlying characteristics of the project's building form and aesthetic composition. The applicant has presented the proposed project to the DRB on September 16, October 14, and October 28, 2015; as well as January 13, and January 27, 2016, and has made modifications to the project based on DRB input. The applicant will subsequently submit an application to the City for a design review permit which will entail the DRB's review of the detailed project design with the design elements and architectural tenets in the approved Master Plan Design Framework of the PA Plan.




**S#** ● Simulation Viewpoint

SOURCE: Kwan Henmi Archiecture & Planning, Environmental Vision

City of Richmond Terminal One Project EIR . 140325

**Figure 4.1-9**
Simulations Viewpoint Key



Viewpoint S1: Existing view from view from Brickyard Cove Road



Viewpoint S1: Visual Simulation of Proposed Project



SOURCE: Kwan Henmi Architecture & Planning, Environmental Vision

**Figure 4.1-10**
Simulation from Brickyard Cove Road - Looking West (S1)

side of the road (left side of photo). As the viewer proceeds along Brickyard Cove Road and approaches the curve in the road, a partial and temporary view of the Bay and distant San Francisco cityscape opens to the south, across the east end of the project site, and then is quickly obscured again by the warehouse. Views of the Marin Hills across Miller/Knox park (Ferry Point) also open to the west as the viewer travels and passes the curve in the road, at a location approximately 200 feet west of this viewpoint.

The simulation for this location shows that the project's condominium buildings would feature prominently in this view. Although the project buildings (at a maximum height of approximately 62 feet) would be approximately 12 feet taller than the warehouse (at a maximum height of approximately 50 feet), they appear more than double the height of the warehouse as it is shown in the existing conditions photo, in large part because they are closer to the vantage point of the photograph. In addition, because the project buildings would be developed close to the road and the eastern part of the site, they would fill more of the view than the warehouse currently does. As a result, neither the uppermost peak and ridge of Mount Tamalpais nor the temporary partial view of Bay waters would remain visible from this location along the road. While the project buildings would block the limited and transitory view across the project site toward the Marin Hills before the curve in the road, they would not alter the existing open views west toward the Marin Hills that the viewer would regain as they pass the curve in the road and approach the project site. Except for the view corridor provided by the project's internal mews, open views to the south toward San Francisco from this point on Brickyard Cove Road would become largely obstructed after the construction of the project's parking podiums. The site plan for the project does include a mews (pedestrian and bicycle promenade) that would connect the project's Brickyard Cove Road frontage to the north with Shoreline Drive to the south and create a view corridor through the site. This view corridor would primarily be taken advantage of by pedestrians, since a motorist or bicyclist would not be likely to safely sustain views that would be 90 degrees from the roadway.

Overall, while the project buildings would obstruct this view and affect this scenic vista, this impact would be fleeting as a motorist or bicyclist travels along Brickyard Cove Road, and visual linkages to the Bay would be provided for pedestrians. The project buildings would not substantially alter the existing direct view of the Marin Hills that opens along this scenic corridor at the roadway bend approximately 200 feet west of this viewpoint. The visual appearance of the project buildings would therefore not block the view of the majority of the expanse of this scenic vista.

- **Simulation from Miller/Knox Ridge – Figure 4.1-11 (S2).** As previously discussed (for **Figure 4.1-7b**), this view is from an elevation of about 180 feet above the project site and captures distant cross-Bay views to San Francisco and the Bay Bridge, as well as closer (but still distant) views of Angel Island and the Marin Hills. The Bay dominates this view, the breakwater is visible, and the Terminal One Warehouse is central. Even at this higher elevation, this view does not show the shoreline, which is obstructed by the warehouse building. This view does capture the open area of the site east of the Terminal One Warehouse, as well as some of the wet berths of the Richmond Yacht Club.

  The simulation shows that the project buildings would not alter views of the expansive scenic vista across the Bay from this viewpoint. Because the project buildings would be at a substantially lower elevation than the Miller/Knox park ridgeline, they would not obstruct views of the Bay or the shoreline to an extent that would be greater than the existing view obstruction provided by the Terminal One Warehouse.



Viewpoint S2: Existing view from Miller/Knox ridge



Viewpoint S2: Visual Simulation of Proposed Project



SOURCE: Kwan Henmi Architecture & Planning, Environmental Vision

**Figure 4.1-11**
Simulation from Miller Knox Park Ridge - Looking Southwest (S2)

- **Simulation from Miller/Knox Uplands Bench - Figure 4.1-12 (S3)**. This viewpoint is located approximately 700 feet southwest of the Miller/Knox Ridge (S2) location, and is at a lower elevation than that viewpoint. This is a primary scenic vista, providing one of the most expansive views available across the Bay to San Francisco, Treasure Island, and the Bay Bridge. This view is dominated by the Terminal One Warehouse; small portions of the site to the east, west, and north of the warehouse are also visible, as are some of the wet berths at the Richmond Yacht Club. As with the Miller/Knox Ridge view (S2), the warehouse blocks the view of the shoreline, but uninterrupted views of the San Francisco cityscape, Treasure Island, and the Bay Bridge can be seen from this viewpoint.

  The simulation shows that the new project development would be central within this view. The rooflines of the new buildings that could be as tall as 62 feet (per the Terminal One PA Rezoning) would appear in the foreground of this view. The view of the new buildings would replace the existing view of the warehouse. The project condominium buildings would be taller than the existing warehouse, but from this view the condominium buildings would appear only slightly higher than the warehouse, given the elevated perspective. The appearance of the breakwater, a horizontal element in the Bay south of the project site and in the middle of this view, may be used to gauge the change in the view from this location. The project condominium buildings would appear at or slightly above this horizontal element in the view, whereas the existing warehouse appears below this element. Regardless, much of the existing view of the Bay and other key scenic resources would not change: the San Francisco cityscape, Treasure Island, and the Bay Bridge would remain visible. Moreover, the expanded, panoramic view from this location that extends to encompass the Marin Hills and East Bay Hills would not be affected. The project would not substantially block any part of the scenic vista from this viewpoint.

- **Simulation from Dornan Drive - Figure 4.1-13 (S4)**. This view toward the south end of Dornan Drive is largely transitory; the view changes as the motorist (or bicyclist or pedestrian) travels along this road and through this corridor. Like the view from Brickyard Cove Road (**Figure 4.1-10**, S1), this location is presumably part of the South Garrard Boulevard-Dornan Drive-Brickyard Cove Road scenic corridor identified in the General Plan EIR. Distant views across the Bay are largely blocked by the existing warehouse, except for a narrow area to the west of the warehouse (right side of the photo).

  The simulation shows how, with the project, this view toward the Bay would become more open with removal of the warehouse (which would be replaced by an open, framework element inspired by the warehouse structure that would be part of the waterfront park), and with the new development located further east than the existing warehouse. Because the project buildings would be located in closer proximity to the vantage point of the photograph, they would appear substantially taller than the warehouse, filling more of the view of the sky beyond and immediately to the west of the Miller/Knox park bluff. Not apparent in the photograph or the simulation are the uninterrupted views west across Miller/Knox park (Ferry Point) that are afforded from this segment of Dornan Drive. The project would not block any part of the scenic vista from this viewpoint.



Viewpoint S3: Existing view from Miller/Knox park bench



Viewpoint S3: Visual Simulation of Proposed Project



SOURCE: Kwan Henmi Architecture & Planning, Environmental Vision

**Figure 4.1-12**
Simulation from Miller Knox Park Bench -
Looking Southwest (S3)



Viewpoint S4: Existing view from Dornan Drive at Brickyard Cove Road



Viewpoint S4: Visual Simulation of Proposed Project



SOURCE: Kwan Henmi Architecture & Planning, Environmental Vision

**Figure 4.1-13**
Simulation from Dornan Drive - Looking South (S4)

- **Simulation from Ferry Point Fishing Pier - Figure 4.1-14 (S5)**. As previously discussed (for **Figure 4.1-5a**), this view centers on the west end of the Terminal One Warehouse, the Terminal One Pier, and part of the rip-rap shoreline. The warehouse partially blocks views of the East Bay Hills in the distance. While not a scenic resource, the wet berths at the Richmond Yacht Club are an identifiable element in this view. In the simulation, with removal of the warehouse, the view of the East Bay Hills opens up, as does a direct view of the boats in the wet berths at the Richmond Yacht Club that create a backdrop for the proposed Terminal One Waterfront Park and new Bay Trail Loop, as depicted in the simulation. Stepping up from the Bay side of the project site, the new project buildings would feature most prominently in the northern portion of the site, appearing well-integrated, visually, with the natural character of the adjacent Miller/Knox bluffs and hillside. The project buildings would block existing distant views of homes along Pelican Way, Sanderling Island, and Sandpiper Spit Landing; these homes are not considered scenic resources. The project would not obstruct views of an existing scenic vista from this viewpoint, and would actually allow for a more expansive view of the East Bay Hills.

This evaluation of the simulations recognizes that each of the views analyzed are unique, especially given that Richmond is a predominately built-out, urban environment, with the majority of natural open space areas limited to the City edges and shorelines. However, numerous opportunities exist in the vicinity of the project site to view sweeping vistas of San Francisco Bay and other scenic resources identified in this section. As shown in simulations S2 through S5 (**Figures 4.1-11** through **4.1-14**), existing distant views of the Bay and other resources – such as hills to the east and west, Treasure Island, and the Bay Bridge – would not be obstructed by the project.

Further, the change that would result from the project would affect a relatively small portion of the viewer's nearly 270-degree panoramic view. Where the project would affect existing views from some of the selected public viewpoints, the effects are not substantial, taking into account the factors established for this analysis. Specifically, with regards to the project's obstruction of the view of the uppermost part of Mount Tamalpais and part of the Marin Hills ridgeline in simulation S1 (Brickyard Cove Road), the effect is not substantial given its transitory nature and considering that this view is reasonably considered a limited and lesser value view compared to the direct view of these Marin County resources that the viewer gains at a location slightly further along the Brickyard Cove Road scenic corridor. Also, where the obstruction that would be caused by the project buildings would reduce the scope of the existing cross-Bay view southward from the bench in Miller/Knox park (S3), the change would not substantially affect key scenic resources. Lastly, because the existing Terminal One Warehouse extends along approximately two-thirds of the southern site boundary and waterfront edge and views of the shoreline edge in this location are currently obstructed, the addition of the project buildings would not substantially contribute to further obstruction of views of the project site shoreline.

From a view impact perspective, it is also important to note that the project includes a new shoreline roadway (Shoreline Drive), a new waterfront segment at the Bay Trail (the Bay Trail Loop), and a new waterfront park (the Terminal One Waterfront Park) which extends much of the length of the project's shoreline and includes the Terminal One Pier which would be re-purposed for public use as a park amenity. These publicly accessible features of the project would provide



Viewpoint S5: Existing view from Ferry Point Fishing pier



Viewpoint S5: Visual Simulation of Proposed Project



SOURCE: Kwan Henmi Architecture & Planning, Environmental Vision

**Figure 4.1-14**
Simulation from Ferry Point
Fishing Pier -Looking East (S5)

motorists, bicyclists, and pedestrians alike with unobstructed, panoramic (more than 270 degrees) views of San Francisco Bay, from the East Bay Hills in the northeast to the Marin Hills in the northwest. These views would be substantially superior to the existing views afforded by either Brickyard Cove Road or Dornan Drive and could warrant recognition as scenic vistas providing the public with access to valuable Richmond scenic resources.

*Terminal One Design Components Relevant to Scenic Vistas and Resources*

Fundamental to consideration of the proposed project's effect on scenic vistas and resources is the proposed Master Plan and Design Framework that is part of the Terminal One PA Plan. Also relevant to a review of view impacts is the project's adherence to the design principles in the MIG Plan.

*Master Plan Design Framework and Terminal One PA Plan.* Following approval of the PA Plan, the applicant will submit for a final design review permit. The Master Plan Design Framework establishes the basic design elements and architectural tenets for the project.[9] The following components of the project are considered integral to its potential effect on scenic vistas or resources and are factored into this analysis:

- **Site Design Framework –** Key view-related components:
  - Building layout, including building separation and setbacks, distribution of building mass, volumes and height over the site
  - Organization of open space
  - Location and configuration of view corridors
  - Layout of podium terrace
  - Brickyard Cove Road corridor layout
  - Shoreline Drive corridor

- **Landscape Design Framework –** Key view-related components:
  - The Plant Palette
  - The Lighting Strategy

- **Building Design** - Key view-related components:
  - Exterior appearance of project architecture
  - Composition and form of principal building components
  - Building height, scale and proportion
  - Building sections showing heights relative to Brickyard Cove Road, Terminal One Mews, and top of podium
  - Increase in building heights across the site from south to north, with two- to three-story townhomes along the southern portion of the site, increasing to four- to five-story condominium buildings above a single-story podium in the northern portion of the site.

[9] At the time this analysis was prepared, the project applicant formally modified these draft documents multiple times in response to public and DRB review and comments received, and has submitted project documents for review by the DRB on September 16, October 14, and October 28, 2015; and January 13 and 27, 2016.

*PA Rezoning and Development Standards.* The proposed rezoning from the C-C zoning to the PA district will change the allowable regulations for development on the project site. The project would not alter the SFO overlay zoning at the site. The following **Table 4.1-1** summarizes the changes that would be relevant to potential effects on scenic vistas and resources.

The proposed PA zoning would effectively increase allowable building height on the project site from 35 feet, as allowed by the C-C zoning district (as well as the applicable Medium Density Residential General Plan land use classification), to up to 62 feet (with only flat roofs allowed). The rezoning would also establish building setbacks from Brickyard Cove Road and the proposed Shoreline Drive, as well as minimum distances between residential buildings along the proposed Terminal One Mews.

*Design Principles (MIG Report).* The proposed project incorporates or aligns with the objectives and concepts in the MIG Report. Those that particularly pertain to the potential effects to scenic vistas and scenic resources include the following, which are reflected in the Master Plan and Design Framework:

- Terraced building design;
- Building heights and density appropriate to local community;
- Minimized heights along prominent public edges;
- Buildings should be situated as far north as possible;
- Height should not obscure shoreline views from Point Richmond or hillside observation bench;
- "Fingers" building configuration to maximize views; and
- Maximum usable waterfront area.

### Summary of Impacts to Scenic Vistas and Resources

The evaluation of the simulations described in this analysis, coupled with consideration of the proposed changes that would result with the project (as detailed in the Terminal One PA Plan), indicates the project would not have a substantial adverse effect on a scenic vista nor substantially damage scenic resources. Overall, the primary views of San Francisco Bay that currently exist from selected viewpoints in Miller/Knox park would not be substantially affected by the proposed project. Further, the project would not substantially and adversely affect views from selected public locations along scenic corridors that include Brickyard Cove Road and Dornan Drive.

**Significance:** Less Than Significant.

**Project Design Features / Mitigation:** None required.

**TABLE 4.1-1**
**CERTAIN PROPOSED ZONING STANDARD CHANGES PERTINENT IN DETERMINING AESTHETICS IMPACTS**

| Designation | Zoning Standard | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | **Density/ FAR** | **Lot Area (min.)** | **Open Space** | **Primary Building Height / Roof Type** | **Setbacks [a]** | | | | **Mews Widths between Building Facades** |
| Existing | | | | | Front | Rear | Side | Side Corner | |
| C-C Zone / SFO | Density N/A<br>0.6 FAR | None | - | 35 ft | 0<br>(same as R zone when abutting) | 0<br>(3-5 ft when abutting R zone) | 0<br>(10 ft next to R lot or zoning) | | NA |
| Proposed | | | | | Front<br>Western N-S Proposed Shoreline Dr. (Dornan Dr. extension) | Rear<br>Eastern N-S Proposed Shoreline Dr. (adj. to Yacht Club) | Side<br>E-W Proposed Shoreline Dr. (Bay/Park facing) | Side Corner<br>Brickyard Cove Rd. | |
| Planned Area (PA) / SFO | 34 du / acre | - | 32 sf / unit | Condo Buildings<br>52 to 62 ft / Flat Roofs | 28 – 51 ft | 15 – 19.5 ft | NA | 15.5 – 46 ft | 50 ft (at Brickyard Cove Rd.)<br>90 ft (at central area of the site) |
| | | | | Townhouses<br>25 to 35 ft / Flat Roofs | 28 – 51 ft | 15 – 19.5 ft | 22.8 – 55 ft | NA | 73 ft (at proposed Shoreline Dr./Park) |

NOTE: Standards and regulations shown are summarized from the Richmond Zoning Ordinance and the proposed Terminal One PA Plan; see both documents for detailed exceptions and notes.

[a] Section 15.04.020 (Definitions) of the Richmond Zoning Ordinance defines the yard designations for the proposed project site lot. However, the City has considered the Terminal One project site, as proposed with the new public Shoreline Drive, is considered a "Corner Lot," even though the lot will have its front and rear yard each abutting on a street. The "Front Yard" of a corner lot is defined as the narrowest width of the lot. The "Rear Yard" of the corner lot is opposite the front yard. Building setbacks are generally measured perpendicular from the property line of al building lot. Per the proposed PA Plan, PA Rezoning, and subsequent Vesting Tentative Map that will establish the new public roadways and City-owned parcels (proposed Shoreline Park and Shoreline Dr.), setbacks will be measured from the rear of the newly established curbs for Shoreline Dr. and Brickyard Cove Rd. to the proposed buildings.)

### Visual Character and Quality

**Impact AES-2: The project would not substantially degrade the existing visual character or quality of the site and its surroundings. (Criterion c)** ***(Less than Significant, No Mitigation Required)***

The project would change the visual character and visual quality (collectively, "visual conditions") of the project site and its surroundings. The project proposes to develop 334 residential units, including approximately 26 attached townhomes and approximately 308 multi-family condominium flats. As described above, the buildings would be situated so that heights increase from south to north, ranging from two to five stories above a single-story podium garage. The project would demolish the existing Terminal One Warehouse and preserve and reuse the Terminal One Pier wharf. The major components of the project also include a new Waterfront Park extending the length of the project site; a new Shoreline Drive that would ring the project from Brickyard Cove Road to Dornan Drive, providing direct vehicular access to the Waterfront Park; an extension of the Bay Trail loop along the Waterfront Park; and an open corridor along the north-south axis of the project site, referred to as the Terminal One Mews, which would be oriented for use by bicycles and pedestrians and create a visual and physical connection between the Miller/Knox park headlands and the Bay shoreline.

As previously discussed, the project site has no significant natural features. The shoreline is armored with rip rap consisting of large pieces of concrete and asphalt and the existing pier is in disrepair. The site has been altered by prior industrial uses and is highly disturbed, and includes expanses of pavement and previous building foundations, disconnected sections of railroad tracks, storage tank pads, asphalt paving and other remnant hardscape surfaces overgrown with ruderal vegetation. The existing site conditions are depicted in the series of photos in **Figure 4.1-3**. The visual appearance of the fenced, former industrial site contrasts highly with its surroundings, which include regional open space and recreational facilities (trails, beach, fishing pier, etc.) to the west and north and the marina neighborhood to the east which includes the Richmond Yacht Club and residential developments.

As depicted in the simulations in this section (**Figures 4.1-10** through **4.1-14**) and other exhibits in Chapter 3 (Project Description) of this EIR, the project would wholly transform the project site from a former waterfront industrial use to a new residential neighborhood and a public waterfront park that offers new panoramic views. This change would result in a substantial effect on the existing visual conditions of the project site (shown in the collective set of photographs in this section). **Figures 4.1-15** through **4.1-17** show exhibits excerpted from the Master Plan Design Framework document and are provided here to convey additional aspects of the project's visual character and quality not captured in the simulations (which were prepared specifically to illustrate a conceptual version of the project compared to existing scenic vistas and resources). The images that follow exemplify the visual character of the proposed architecture, building massing and scale, landscaping, public improvements, street, trails, parking treatments, and retail uses, as well as the Waterfront Park.

As shown in **Figures 4.1-15** through **4.1-17**, the proposed project design incorporates many of the MIG Plan's design principles related to visual conditions:

- Building skin and material palette that blend with existing neighborhood materials and natural features;
- Terraced building massing increasing in height from south to north;
- Multiple product-type character;
- Minimized appearance of Brickyard Cove Road between Dornan Drive and Ferry Point Way (near Richmond Yacht Club);
- Reuse Terminal One Warehouse material in Waterfront Park;
- Increase usable waterfront area; and
- Residential parking that does not detract from the waterfront experience.

No existing structures immediately abut the project site. Miller/Knox park, including the Ferry Point beach, park, and pier are located adjacent to the site to the west and north, and the wet berths of the Yacht Club are located adjacent to the site to the east. The proposed project's improvements to the existing shoreline and pier conditions, and replacement of the existing warehouse with a new, open-air Waterfront Park would be highly visually compatible with these immediately adjacent uses.

Although the development of the project would result in a substantial change in the visual conditions of the project site, the project as proposed would achieve a high-quality design that would be visually compatible with immediate and broader surrounding land uses, including the existing residential developments east of the Richmond Yacht Club (i.e., homes along Pelican Way, Sanderling Island, Sandpiper Spit, and South Mallard Drive), and at Brickyard Landing.

Pursuant to the specifications in the Terminal One Master Plan and Design Framework, which align with MIG Report design principles for the site, the project would incorporate high-quality design, materials, and landscaping specifically tailored to the conditions and natural context of the site and its adjacent uses. Based on a comparison to the existing visual conditions of the project site, the effect on visual conditions resulting with the project would be beneficial.

As previously discussed, the review of the PA Plan (including the Master Plan Design Framework) by the DRB, the Planning Commission, and ultimately the City Council will fully assess all aspects of the project's design and compatibility pursuant to the applicable design review permit criteria. The PA Plan review process involves consideration of project design elements and the imposition of conditions as needed to address and reduce aesthetic project impacts and ensure adverse impact regarding height, massing, scale, and overall aesthetic appearance (apart from view considerations) will be less than significant.





SOURCE: Kwan Henmi Architecture & Planning, Environmental Vision

**Figure 4.1-15**
Visual Character - Townhomes with Native Coastal Gardens and Shoreline Drive (South End)



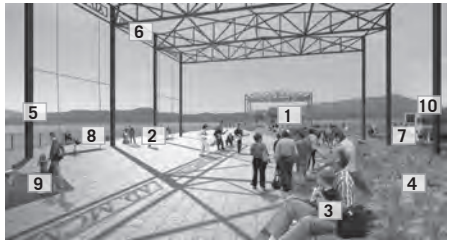


SOURCE: Kwan Henmi Architecture & Planning, Environmental Vision

**Figure 4.1-16**
Visual Character - Condominium Buildings and Shoreline Drive (West End)






FEATURES:

1. Elevated deck
2. Wharf promenade with fishing access
3. Informal amphitheater
4. Boardwalk gardens (Elevated Planters)
5. Warehouse truss pavilion
6. Pediment sign
7. Bay Trail extension
8. Porch swings attached to warehouse truss pavilion
9. Wave field & piles play element
10. Wharf Park passenger drop-off, event loading, staging, and weekend food truck parking

View B is from the center entry plaza, looking southwest. This space connects to the Bay Trail and visitor drop-off parking. In addition to passenger drop-off, the parking area also provides space for loading, staging, and weekend food truck use. The ghost of the pediment sign will cast a shadow of "Wharf No. 1 Richmond A.D. MCMXV" onto the plaza paving.

SOURCE: Kwan Henmi Architecture & Planning, Environmental Vision



**Figure 4.1-17**
Visual Character - Proposed Waterfront Park
(Terminal One Pier)

In summary, the project would alter the visual conditions of the project site. However, this change in itself is not considered significant unless visual character or quality is substantially degraded, which would not occur with the project. The impact is less than significant.

**Significance:** Less Than Significant.

**Project Design Features / Mitigation:** None required.

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### Light and Glare

**Impact AES-3: The proposed project would not create a new source of substantial light or glare which would adversely affect day or nighttime views in the area. (Criterion d)** ***(Less than Significant, No Mitigation Required)***

The project site is situated in an area typified by regional park and open space uses. As indicated in the *Environmental Setting* discussion, existing nighttime lighting in the area consists primarily of security lighting on the project site, security lighting of the adjacent Ferry Point park area and parking lot, and security lighting of the Richmond Yacht Club parking lot and wet berths. The project would introduce various forms of new lighting and glare (such as that caused by glazing on windows) associated with new buildings, roadways, and outdoor use spaces, as well as from new vehicular activity associated with the project residents and visitors.

As a residential development, the project would result in similar levels of light and glare as typical condominium developments of this scale, such as the nearby Brickyard Landing multifamily residential neighborhood. The public open spaces would also create a new and different level of lighting at the project site and along the shoreline. The Terminal One Master Plan and Design Framework includes a **Site Lighting Strategy** (also listed as **Project Design Feature AES-1** in Chapter 3, Project Description) that specifies lighting criteria for the Waterfront Park, podium gardens, and streetscapes, which the project would be required to implement. Requirements of the Site Lighting Strategy include the following:

- **Waterfront Park Lighting Criteria:** Illuminate paths of travel along the base of walls, decks, and trusses with integrated site lighting fixtures that provide low-level safety lighting without blocking nighttime views.
- **Podium Gardens Lighting Criteria:** Illuminate garden paths with low-level bollards. Light standards to be incorporated as needed for emergency egress lighting. Standards will have cut-off shields to control light trespass into units. Amenity pavilions will include accent and task lighting as needed. Up-lighting will be avoided in order to reduce light pollution.
- **Streetscape Lighting:** A combination of vehicle and pedestrian lighting standards will illuminate the streetscapes and Terminal One Mews to provide the required light levels on both roadways and pedestrian paths. Cutoff shields will be incorporated to control light trespass into residential units. All fixtures will be selected to minimize energy consumption and increase public safety.

Additionally, the Master Plan Design Framework also specifies a materials palette to be used in the architectural elements of the project. The application of natural earth tone colors with black, gray, or neutral accents and trims would minimize any effects related to glare.

Further, as discussed in the *Regulatory Setting*, proposed development within the project site would be subject to the City's development standards set forth in Zoning Ordinance Section 15.04.840, which establish standards for light and glare. These standards require that lighting, reflective surfaces, and other sources of illumination are designed to prevent glare on public streets or adjacent parcels; lights are required to be shielded at lot lines so as not to be directly visible from an adjoining residential district.

Overall, the project's compliance with the requirements presented above will ensure that project lighting is appropriately tailored for particular uses and locations, and is low to the ground and incorporates techniques to minimize or avoid light spill. The project would not create a new source of substantial light or glare that would adversely affect day or nighttime views in the area. The impact would be less than significant.

**Significance:** Less Than Significant.

**Project Design Features / Mitigation:** Project Design Feature AES-1.

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### Cumulative Impacts

**Impact C-AES-1: The proposed project would not result in a cumulative aesthetics impact when considering the combined effect of the project, and past, present, approved, pending, and reasonably foreseeable future projects.** ***(Less than Significant, No Mitigation Required)***

The analysis area for evaluation of cumulative impacts on aesthetics is primarily the southern part of the Point Richmond area (south of the Dornan Drive/Garrard Boulevard Tunnel) within the City of Richmond, because this area is physically separated from the rest of the City. Conceivably, a view from shoreline locations further south along Richmond's southern shoreline or even further south (Point Isabel or the Albany Bulb) could include the proposed project; however, these views would appear distant and disconnected.

Surrounding hills to the east (East Bay Hills) and west (Marin Hills) and the San Francisco Bay are prominent scenic resources. The proposed project, in conjunction with other cumulative past, present or reasonably foreseeable future development in the area, could result in changes to scenic vistas, views of scenic resources (the surrounding hills and the Bay), visual conditions (visual character and quality), and light and glare. However, the combined effect that would occur relative to existing conditions would not be significant primarily because the effects related to aesthetics would be localized and would not combine with other sources to contribute to view obstructions, light or glare.

### Cumulative Setting

Section 4.0 of this EIR includes a list of cumulative projects and plans. From that list, the projects or plans that could have impacts that combine with the effects of the proposed project to jointly cause a cumulative aesthetics impact are the following:

- **Bottoms Property Residential Project (Bottoms project).** This approved project will develop 60 condominium units on approximately 26 acres fronting the shoreline, approximately 0.6 miles east of the project site.

- **Miller/Knox Regional Shoreline Land Use Plan Amendment (LUPA).** The update to the park's LUPA considers upgrades to existing buildings at Ferry Point and breaching of the levees surrounding the Miller/Knox lagoon.

Given the distance and visual separation between the Bottoms project and the project site, these projects would not likely combine to create significant adverse aesthetics effects. The update to the Miller/Knox LUPA could result in changes to the buildings at Ferry Point, but such changes would either improve the appearance of the buildings, or eliminate them altogether which would result in a beneficial impact to views of scenic vistas and resources in the area; for this reason, impacts from the LUPA update are not likely to result in adverse aesthetics impacts. Moreover, as with past projects, all current and future projects would be subject to the policies and actions in the City's General Plan, as well as the requirements of relevant City ordinances, discretionary permits, and the Design Review process, each of which has components designed to protect and enhance visual character. Evaluations of proposed projects according to these requirements take into account cumulative conditions, and consistency with existing surroundings. Where applicable, individual projects would adhere to conditions and/or mitigation measures, applicable design guidelines, and development standards to address potential adverse impacts related to aesthetic appearance.

### General Plan Aesthetics Analysis and Findings

In the process of certifying the EIR for the Richmond General Plan 2030, the City found that development activities associated with the proposed General Plan would not result in significant adverse aesthetic impacts for CEQA purposes, and that, with mitigation, impacts to scenic vistas and the visual character and quality of the City at the programmatic level of the General Plan process would be mitigated to a less-than-significant level. Specifically, the City found that the Richmond Municipal Code provides development standards that guide the City in its development practices, and protects valued scenic corridors and views. The Municipal Code guidelines aim to create standards for the development of new structures that allow for the maintenance of established natural and man-made views that help define the City of Richmond. General Plan Policies and Actions LU1.1, LU1.2, LU1.4, LU1.B, LU1.D, LU1.H, LU2.2, LU2.B, LU3.4, LU3.E, LU3.G, LU4.1, LU4.2, LU5.2, LU5.3, LU5.B, CN2.3, and AC2.2 were found to reduce the potential for impacts on scenic resources and visual character (City of Richmond, 2012b).

Regarding new sources of light and glare, the City Richmond is primarily built out, and a significant amount of ambient light and glare from urban uses already exists. However, the

General Plan EIR acknowledged that changing urbanized conditions throughout implementation of the General Plan could result in different distributions of potential light and nighttime glare impacts. The City's General Plan, ordinances, and discretionary permit and Design Review process each have components designed to protect and enhance the visual character of the City while embracing the changes that will normally take place in an urbanized area. Accordingly, the City found that the visual quality of the City will improve and will not be the subject of "substantial degradation" as the General Plan is implemented over time, with implementation of the following mitigation measures:

- **General Plan EIR Mitigation Measures 3.15-2(a):** All street lighting shall be directed downward and shielded to prevent light spill onto surrounding properties, sky glow, and glare.

- **General Plan EIR Mitigation Measures 3.15-2(b):** The City shall restrict the use of high level outdoor lighting for new homes, particularly along the hillside ridges.

- **General Plan EIR Mitigation Measures 3.15-2(c):** Landscaping shall be incorporated along internal roads and near off-site homes to reduce spill light emanating from vehicles and buildings.

- **General Plan EIR Mitigation Measure 3.15-2(d):** The City shall require design review of any project containing reflective glass or metal building materials that exceed 50 percent of any building surface or the first three floors.

The CEQA findings for the General Plan EIR also stated that General Plan Policies and Actions LU5.3 and LU5.B would reduce the potential for impact on light and glare.

In summary, the CEQA findings for the General Plan EIR concluded that aesthetic impacts at the General Plan and cumulative levels would be less than significant (City of Richmond, 2011).

### Summary

The CEQA findings for the General Plan EIR and the potential for other cumulative development to combine with the proposed project to create a significant adverse aesthetic impact, are largely factored into the impact determination for aesthetics. The project, combined with other cumulative development in the area, would not result in cumulative adverse changes that would substantially degrade the existing aesthetic conditions of the project site or its surroundings. The impact is less than significant.

**Significance:** Less Than Significant.

**Project Design Features / Mitigation:** None required.

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# References – Aesthetics

California Department of Transportation, 2016. Scenic Highways Program. Available at: www.dot.ca.gov/hq/LandArch/16_livability/scenic_highways/scenic_hwy.htm. Accessed January 15, 2016.

City of Richmond, 2011. *General Plan 2030 EIR*. August 2011.

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

City of Richmond, 2012b. City of Richmond Resolution No. 51-12. Pages 83-88. Adopted April 24, 2012.

City of Richmond, 2014. Terminal One Land Disposition Agreement. Effective August 6, 2014.

City of Richmond, 2015. Bottoms Property Project Proposed General Plan Amendment, Exhibit 1D, General Plan Amendment Text Revision Table. Richmond City Council Staff Report. Item #H2. December 16.

City of Richmond Municipal Code. Article XV Zoning and Subdivisions. Available at: www.municode.com/library/ca/richmond/codes/code_of_ordinances?nodeId=ARTXVZOSU. Accessed February 1, 2015.

East Bay Regional Park District (EBRPD), 2013. Master Plan 2013, Final Draft; July 16, 2013. Available at: www.ebparks.org/about/planning/mp. Accessed December 29, 2014.

EBRPD, 2014. *Land Use Plans in Progress: Miller Knox Regional Shoreline*, Available at: www.ebparks.org/about/planning#miller-knox. Accessed December 29, 2014.

Moore, Iacofano, Goltzman, Inc. (MIG), 2007. Point Richmond Shores Design Principles Report. April, 2007.

San Francisco Bay Conservation and Development Commission (SFBCDC), 1968. *San Francisco Bay Plan*. Adopted 1968, Selections Amended in 1979, Republished in 2008.

SFBCDC, 2005. Shoreline Space, Public Access Design Guidelines for the San Francisco Bay. April 2005.

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# 4.2 Air Quality

## 4.2.1 Introduction

This section addresses the impacts of the project on ambient air quality and the exposure of people, especially sensitive individuals, to unhealthful pollutant concentrations. The analysis of project-related emissions focuses on whether the project would cause an exceedance of a State or national ambient air quality standard, a health-based standard for exposure to toxic air contaminants, or a CEQA threshold considered by the Bay Area Air Quality Management District (BAAQMD). Potential impacts from greenhouse gas emissions on climate change are evaluated in Section 4.6, *Greenhouse Gas Emissions and Energy*.

## 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 project site is located in western Contra Costa County and is within the boundaries of the San Francisco Bay Area Air Basin (Bay Area Air Basin). The Bay Area Air Basin 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 Bay Area Air Basin 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 Bay Area Air Basin, the project site 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 meteorological station (San Pablo) is 7.3 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.

### *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 at the project site can generally be inferred from ambient air quality measurements conducted by the BAAQMD at its nearest monitoring station. The monitoring station closest to the project site is located at 1865 Rumrill Boulevard in San Pablo, which is located approximately 4 miles northeast of the project site.[2] 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 (2011 through 2013) for these pollutants. The table also compares these measured concentrations with State and federal ambient air quality standards (shown in parenthesis) with values in excess of standards indicated in bold. Air quality measurements gathered at regional air monitoring stations are considered representative of conditions at the project site for ozone, which is a regional pollutant. Localized pollutants such as particulate matter are likely lower at the project site than at the San Pablo monitoring site because the project site has direct exposure to prevailing winds from San Francisco Bay.

### *Criteria Air Pollutants*

**Ozone ($O_3$).** 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 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.

1 The Golden Gate, 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.

2 The Point Richmond air quality monitoring station is also located approximately one mile from the project site; however, this location only monitors hydrogen sulfide.

**TABLE 4.2-1**
**SAN PABLO STATION AIR QUALITY DATA SUMMARY (2011-2013)**

| | Monitoring Data by Year | | |
|---|---|---|---|
| **Pollutant** | **2011** | **2012** | **2013** |
| Ozone | | | |
| Highest 1 Hour Average (ppm)[b] | 0.078 | 0.086 | 0.074 |
| Days over State Standard (0.09 ppm)[a] | 0 | 0 | 0 |
| Highest 8 Hour Average (ppm)[b] | 0.058 | 0.059 | 0.065 |
| Days over National Standard (0.075 ppm)[a] | 0 | 0 | 0 |
| Days over State Standard (0.07 ppm)[a] | 0 | 0 | 0 |
| Carbon Monoxide | | | |
| Highest 1 Hour Average (ppm)[b] | 1.9 | 1.6 | 2.2 |
| Days over State Standard (20 ppm)[a] | 0 | 0 | 0 |
| Highest 8 Hour Average (ppm)[b] | 1.0 | 0.9 | 1.0 |
| 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] | **73** | 47 | 48 |
| 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] | 1 | 0 | 0 |
| State Annual Average (State Standard 20 $\mu g/m^3$)[a,b] | 19.7 | 15.6 | 18.4 |
| Particulate Matter ($PM_{2.5}$) | | | |
| Highest 24 Hour Average ($\mu g/m3$)[b] – National Measurement | NA | NA | **41.2** |
| Estimated Days over National Standard (35 $\mu g/m^3$)[a,c] | NA | NA | 2 |
| State Annual Average (12 $\mu g/m3$)[b] | NA | NA | 12 |
| Nitrogen Dioxide | | | |
| Highest 1 Hour Average (ppm)[b] | 0.051 | 0.055 | 0.047 |
| 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 | 0.010 |
| Sulfur Dioxide | | | |
| Highest 1 Hour Average (ppm)[b] | 0.014 | 0.015 | 0.011 |
| Days over National Standard (0.075 ppm)[a] | 0 | 0 | 0 |
| Highest 24 Hour Average (ppm)[b] | 0.006 | 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.

SOURCE: BAAQMD, 2013.

**Carbon Monoxide (CO).** 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,[3] 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 project site, 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 clear success in reducing CO levels is evident in the first paragraph of the executive summary of the CARB *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."

**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.

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

**Sulfur Dioxide ($SO_2$).** $SO_2$ is a combustion product of sulfur or sulfur-containing fuels such as coal and diesel. $SO_2$ 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 $PM_{2.5}$ 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 Bay Area Air Basin. 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. The project 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 California Air

[4] A micron is one-millionth of a meter

Resources Board (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.

## 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 2007. The most recent source is its Google Earth-based inventory of stationary source risks and hazards. This latter source indicates one permitted TAC source within 1,000 feet of the project site boundary. This source is a former soil/groundwater remediation system that was operated on the project site. This source is no longer operational and no longer represents an active source of emissions or health risk (BAAQMD, 2014).

The project site is distant (more than 0.5 miles) from freeways, high volume roadways and active rail lines. A shipping channel for vessels accessing active Port of Richmond terminals and the Richmond Inner Harbor exists in the Bay approximately 1,000 feet south of the project site. Diesel-powered maritime vessels using this channel emit DPM. Currently, ships approaching the Port of Richmond are required to slow down to 15 knots from the Golden Gate to the Port of Richmond (City of Richmond, 2010). When ships slow down, the load on the main engines decreases considerably compared to transiting at higher speeds, leading to a decrease in the total energy required to move the ship through the water and significantly reducing all pollutants including DPM emissions.

## Sensitive Land Uses

Some persons are considered more sensitive than others to air pollutants. The reasons for heightened sensitivity may include age, health problems, proximity to the emissions source, and

duration of exposure to air pollutants. Land uses such as schools, hospitals, and convalescent homes are considered to be relatively 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.

While formerly a port/industrial land use, the project site is located amidst open space/recreational and residential land uses. The closest existing residences are located approximately 575 feet east of the project site on South Mallard Drive and Sanderling Island. The Brickyard Cove residential community is 1,000 feet northeast of the project site.

# 4.2.3 Regulatory Setting

## Regulatory Setting for 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 United States Environmental Protection Agency (US EPA) 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 U.S. EPA has delegated the authority to implement many of the federal programs to the states 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 U.S. EPA, 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*

The Federal Clean Air Act requires the U.S. EPA 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 4.2-2** 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 U.S. EPA 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 4.2-2** shows the current attainment status for the State and the Bay Area Air Basin.

**TABLE 4.2-2**
**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 | 0.075 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 | 15 μg/m3 | Attainment | 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, 2012b.

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 U.S. EPA 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 U.S. EPA 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 air basin.

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 U.S. EPA 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 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 4.2-2** 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) Hazardous Air Pollutants 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. In the vicinity of the project site, there are several TAC sources. Most of these are associated with commercial uses, including gasoline dispensing facilities and dry cleaning operations.

## *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 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, but also TACs emissions sources subject to these rules are 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 the project 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 project development, applicable BAAQMD regulations would relate to portable equipment (e.g., concrete batch plants, and gasoline- or diesel-powered 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); BAAQMD Regulation 8 (Organic Compounds), Rule 3 (Architectural Coatings); and BAAQMD 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).

BAAQMD adopted updated *CEQA Air Quality Guidelines*, including new thresholds of significance in June 2010, and revised them in May 2011 (BAAQMD, 2012a). The Air Quality 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 [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, particularly, 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 of 2012, BAAQMD updated its CEQA Air Quality 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 Ass'n v. Bay Area Air Quality Mgmt. Dist*., Case No. A135335 & A136212 (Court of Appeal, First District, August 13, 2013). BAAQMD has not formally re-instated the thresholds or otherwise responded to this Appellate Court reversal at this time. (Further discussion of *California Building Industry Ass'n v. Bay Area Air Quality Mgmt. Dist.* decision is presented in Section 4.0, Approach to the Analysis of Impacts.)

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. 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.

### City of Richmond General Plan

The Conservation, Natural Resources, and Open Space Element of the Richmond General Plan 2030 (City of Richmond, 2012) 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 project on air quality would be considered significant if it 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.

## 4.2.5 Discussion of Impacts and Mitigation Measures

### Approach to Analysis

Potential impacts are assessed by modeling the estimated daily emissions generated by project construction and project operations using the CalEEMod land use emissions model version 2013.2. Project emissions are then compared to the significance criteria in the BAAQMD 2011 *CEQA Air Quality Guidelines,* which include the following:

- Result in total construction emissions of ROG, NOx, or $PM_{2.5}$ (exhaust) of 10 tons per year or greater or 54 pounds per day or greater.
- Exceed a construction emission threshold for $PM_{10}$ (exhaust) of 15 tons per year or greater, or 82 pounds per day or greater.

- 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.

- Result in total operational emissions of ROG, NOx, or $PM_{2.5}$ of 10 tons per year or greater or 54 pounds per day or greater.

- Exceed an operational emission threshold for $PM_{10}$ of 15 tons per year or greater or 82 pounds per day.

- Result in CO concentrations of 9.0 ppm (8-hour average) and 20.0 ppm (1-hour average) as estimated by roadway vehicle volumes exceeding 44,000 vehicles per hour at any intersection.

A project's contribution to cumulative impacts for criteria pollutants is considered significant if the project's impact individually would be significant (i.e., if it exceeds the BAAQMD's quantitative thresholds).

## Impact Analysis

**Impact AIR-1: The project could conflict with or obstruct implementation of the applicable air quality plan. (Criterion a.) (*Less than Significant, No Mitigation Required*)**

The most recently adopted air quality plan in the San Francisco Bay Area Air Basin is the BAAQMD's 2010 Clean Air Plan (2010 CAP) (BAAQMD, 2010a). The 2010 CAP is a roadmap showing how the San Francisco Bay Area will achieve compliance with the State one-hour ozone standard as expeditiously as practicable, and how the region will reduce transport of ozone and ozone precursors to neighboring air basins. The control strategy includes stationary source control measures to be implemented through BAAQMD regulations; mobile source control measures to be implemented through incentive programs and other activities; and transportation control measures to be implemented through transportation programs in cooperation with the MTC, local governments, transit agencies, and others. The 2010 CAP also represents the Bay Area's most recent triennial assessment of the region's strategy to attain the State one-hour ozone standard.

BAAQMD guidance states that "if approval of a project would not result in significant and unavoidable air quality impacts, after the application of all feasible mitigation, the project would be considered consistent with the 2010 CAP." As indicated in the discussion below (**Impact AIR-2**), the project would not result in significant and unavoidable air quality impacts, because the project would have a less-than-significant operational impact on air quality after implementation of a feasible mitigation measure. Consequently, based on BAAQMD guidance, the project may also be considered consistent with the 2010 CAP (the applicable air quality plan). This would be a less-than-significant impact.

**Significance:** Less Than Significant.

**Project Design Features / Mitigation:** None required.

**Impact AIR-2: Project construction would result in increased emissions of criteria air pollutants. (Criterion b.) (*Less than Significant With Mitigation*)**

Construction of the project would result in emissions of criteria pollutants from the use of heavy-duty construction equipment, haul truck trips, and vehicle trips generated from construction workers traveling to and from the site. In addition, fugitive dust $PM_{10}$ emissions would result from remediation, demolition, excavation, trenching, and other construction activities.

Construction-related emissions from the project were calculated using the California Emissions Estimator Model (CalEEMod), assuming 334 townhomes and condominium units as well as 2,000 square feet of restaurant, over an approximately 13.3-acre site. Demolition of the existing 94,000 square foot structure was assumed to occur over a one month period as well as excavation of contaminated soil. Construction was assumed to occur over approximately a 18-month period beginning in 2017. The conceptual grading plan estimates with 885 cubic yards of export. Off-haul of this material was accounted for in the CalEEMod model run, consistent with the project description. Although construction could be divided into five phases, it was conservatively assumed for the purposes of air quality analysis that construction of all project elements will occur in a single phase. All model inputs and outputs are provided in **Appendix B**.

As can be seen in **Table 4.2-3**, estimated peak-day construction-related exhaust emissions would not exceed the thresholds for ROG, NOx, $PM_{10}$ or $PM_{2.5}$. Because estimated average daily construction emissions are less than the thresholds for NOx, ROG, $PM_{10}$ and $PM_{2.5}$ the impact of exhaust emissions is less than significant.

**TABLE 4.2-3**
**AVERAGE DAILY CONSTRUCTION-RELATED POLLUTANT EMISSIONS**
**(pounds per day) WITHOUT MITIGATION**

| | ROG | $NO_x$ | Exhaust $PM_{10}$ | Exhaust $PM_{2.5}$ |
|---|---|---|---|---|
| Project Construction Emissions | 16.6 | 33.6 | 1.9 | 1.8 |
| *BAAQMD Considered Construction Threshold* | 54 | 54 | 82 | 54 |
| Potential Significant Impact? | No | No | No | No |

Note: **Bolded** figures indicate values exceed significance threshold.

SOURCE: ESA (Appendix B)

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 a mitigation measure.

> **Mitigation Measure AIR-1: Best Management Practices for Controlling Particulate Emissions.** The following BAAQMD Best Management Practices for particulate control will be implemented 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.

**Significance After Mitigation:** Less Than Significant.

**Project Design Features / Mitigation:** Mitigation Measure AIR-1.

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**Impact AIR-3: Operation of the project would result in increased emissions of criteria air pollutants. (Criterion b.) (*Less than Significant, No Mitigation Required*)**

Operational emissions of criteria pollutants were estimated using the CalEEMod version 2013.2.2 emissions inventory model (**Table 4.2-4**). All model inputs and outputs are provided in Appendix B.

Vehicle emissions from residential traffic associated with commuting and other daily travel would be one of the major sources of project operational emissions. Traffic volumes used to estimate vehicle-related emissions were derived from the traffic study prepared for the project (as discussed and presented in Section 4.13, *Transportation and Traffic*). Project operations would generate an estimated 3,704 daily vehicle trips. In addition to exhaust emissions, vehicles would also generate $PM_{10}$ and $PM_{2.5}$ from entrained road dust and tire and brake wear.

Emissions would also be generated by on-site natural gas combustion, operation of landscape maintenance equipment, maintenance application of paint and other architectural coatings.

**TABLE 4.2-4**
**UNMITIGATED OPERATIONAL CRITERIA POLLUTANT EMISSIONS**

| Air Pollutant | Estimated Emissions (lbs/day) | | | |
|---|---|---|---|---|
| | ROG | $NO_X$ | $PM_{10}$ | $PM_{2.5}$ |
| Mobile Sources[a] | 7.92 | 16.0 | 12.9 | 4.05 |
| Area Sources[a] | 9.85 | 0.32 | 0.51 | 0.51 |
| Natural gas combustion[a] | 0.19 | 1.68 | 0.14 | 0.14 |
| **Total** | 18.0 | 18.0 | 12.9 | 4.05 |
| Regional Significance Threshold | 54 | 54 | 82 | 54 |
| Significant Impact? | No | No | No | No |

[a] Mobile sources are motor vehicles and trucks. Area sources include landscape maintenance (equipment used for these activities such as gasoline-powered lawnmowers and blowers), maintenance application of paints and other interior and exterior surface coatings, and increased use of consumer products that result in emissions of ROG. Natural gas combustion is for space and water heating.

SOURCE: ESA (see Appendix B).

As shown in **Table 4.2-4**, estimated operational emissions would not exceed the thresholds for ROG, NOx, $PM_{10}$ or $PM_{2.5}$. Because average daily operational emissions are less than the thresholds for NOx, ROG, $PM_{10}$ and $PM_{2.5}$ this impact is less than significant.

**Significance:** Less Than Significant.

**Project Design Features / Mitigation:** None required.

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**Impact AIR-4: Construction of the project could increase emission of toxic air contaminants (TACs), and increase health risks for nearby residents. (Criterion d.) (*Less than Significant, No Mitigation Required*)**

As discussed in the Environmental Setting section, above, sensitive residential receptors within 1,000 feet of the project boundaries are located approximately 575 feet east of the project site on South Mallard Drive and Sanderling Island. The Brickyard Cove residential community is 1,000 feet northeast of the project site. While diesel-powered construction equipment would generate DPM, which has been identified by the State of California as a TAC, these sensitive receptors are located sufficiently far enough from the project site that this would not be a significant health risk. A construction health risk screening table developed by the BAAQMD (BAAQMD, 2010b) indicates that for residential development of a 16-acre site, a distance of 150 meters (482 feet) is sufficient to ensure that construction-related impacts from increased cancer risk and localized $PM_{2.5}$ concentrations would be less than significant. Furthermore, construction-related $PM_{2.5}$ exhaust emissions, as presented in **Table 4.2-3**, which would represent the daily emissions of both DPM and $PM_{2.5}$, total approximately 3 percent of the threshold for $PM_{2.5}$, indicating a relatively modest emission rate. Moreover, the construction period is relatively short (estimated to be 18 months; most of the heavy equipment use would be during the first year), which would limit long-term (i.e., cancer) health risks, which are a function of pollutant concentration and

duration of exposure. Consequently the project would be expected to have a less-than-significant impact with regard to exposing sensitive receptors to increased health risk from construction activities.

**Significance:** Less Than Significant.

**Project Design Features / Mitigation:** None required.

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**Impact AIR-5: Project operations could expose sensitive receptors to substantial pollutant concentrations including toxic air contaminants and increase health risks for existing and proposed residents. (Criterion d.) (*Less than Significant, No Mitigation Required*)**

### Impact of Existing TAC Sources on the Proposed Project Receptors

The proposed residential development would locate new sensitive receptors at a former port Terminal. As discussed in the setting section, there is one BAAQMD-permitted TAC source within the 1,000 feet of the project site boundary. This source is a former soil/groundwater remediation system that was operated on the project site. This source is no longer operational and no longer represents an active source of emissions or health risk (BAAQMD, 2014). There are no freeways, high-volume roadways, or railways within 1,000 feet of the project site.

The project site is distant from freeways, high volume roadways and active rail lines, and the closest shipping channel is located approximately 1,000 feet to the south. Therefore, there would be a less than significant impact with regard to the proposed project exposing new receptors to substantial emissions of TACs or $PM_{2.5}$.

**Significance:** Less Than Significant.

**Project Design Features / Mitigation:** None required.

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**Impact AIR-6: The project could create objectionable odors affecting a substantial number of people. (Criterion e.) *(Less than Significant, No Mitigation Required)***

The City completed an odor evaluation of its water pollution control plant and collection system in 2013 (City of Richmond, 2013). This study concluded that the Ferry Point and Keller Beach sanitary sewer pump station system, one part of which is located adjacent to the northwestern corner of the project site, has significant hydrogen sulfide-related odor emissions. The study concluded that effective chemical treatment would address odors and corrosion within the system. Per **Project Design Feature AIR-1**, as part of more detailed engineering and project planning, the applicant will evaluate the condition and capacity of the pump station, to ensure this facility has sufficient capacity to convey sanitary sewage from the project site to the RMSD Plant. The pump station may be required to be retrofitted or replaced in order to adequately convey project

wastewater; potential odor impacts would be addressed by such a retrofit or replacement. Impacts of replacing the pump station are included and addressed throughout this EIR in the description of the total soil excavation volume that would be required for the project, as well as in the description of potential project impacts, such as impacts to noise (Section 4.10), air quality (Section 4.2), and traffic and transportation (Section 4.13), and impacts associated with the retrofit or replacement of the pump station would be less than significant. If the pump station is not replaced, the applicant will confirm with the City that the recommended chemical treatment has been applied and the odor impact appropriately mitigated, prior to construction.

The project would not otherwise involve the development of the types of land uses typically associated with odor issues, such as wastewater treatment plants, landfills, composting facilities, refineries, or chemical plants, and the impact would be less than significant.

**Significance:** Less Than Significant.

**Project Design Features / Mitigation:** Project Design Feature AIR-1.

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## Cumulative Impacts

A summary of cumulative Air Quality impacts is presented in Chapter 6, Other Statutory Sections, of this EIR.

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# References – Air Quality

Bay Area Air Quality Management District (BAAQMD), 2009. Revised Draft Options and Justification Report, CEQA Thresholds of Significance Air Quality Guidelines, October 2009. Available at: www.baaqmd.gov.

Bay Area Air Quality Management District (BAAQMD), 2010a. Bay Area 2010 Clean Air Plan, September 15, 2010.

Bay Area Air Quality Management District (BAAQMD), 2010b. Screening Tables for Air Toxics Evaluation During Construction. May 2010.

Bay Area Air Quality Management District (BAAQMD), 2012a. CEQA Air Quality Guidelines. Adopted June 2011, updated May 2012. Available at: www.baaqmd.gov.

Bay Area Air Quality Management District (BAAQMD), 2012b. Air Quality Standards and Attainment Status. Available at: hank.baaqmd.gov/pln/air_quality/ambient_air_quality.htm.

Bay Area Air Quality Management District (BAAQMD), 2013. Bay Area Air Pollution Summary, 2011-2013. Available at: www.baaqmd.gov/Divisions/Communications-and-

Outreach/Air-Quality-in-the-Bay-Area/Air-Quality-Summaries.aspx. Accessed January 2016.

Bay Area Air Quality Management District (BAAQMD), 2014. E-mail response to Stationary Source Inquiry Form from Alison Kirk, Air Quality Planner. November 25, 2014.

California Air Resource Board (CARB), 1984. California Surface Wind Climatology, June 1984, Updated through 1994. Available at: www.arb.ca.gov/research/apr/reports/l013.pdf. Accessed February 24, 2016.

California Air Resource Board (CARB), 2000. Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel-Fueled Engines and Vehicles. October 2000.

California Air Resources Board (CARB), 2004. 2004 Revisions to the California State Implementation Plan for Carbon Monoxide. July 22, 2004.

California Air Resources Board (CARB), 2005. Air Quality and Land Use Handbook: A Community Health Perspective. April 2005.

City of Richmond, 2010. *Clean Air Action Plan for the Port of Richmond*. Available at: www.ci.richmond.ca.us/DocumentCenter/Home/View/5917. Accessed February 24, 2016.

City of Richmond, 2012. City of Richmond General Plan 2030. Available at www.ci.richmond.ca.us/index.aspx?nid=2608. Accessed February 24, 2016.

City of Richmond, 2013. City of Richmond, *CA Richmond Water Pollution Control Plant and Collection System Odor Evaluation Report*. Prepared for Veolia Water North America – West, LLC. Prepared by Webster Environmental Associates, Inc. June 2013. Available at: www.ci.richmond.ca.us/DocumentCenter/Home/View/27276. Accessed February 24, 2016.

Dockery, D. W., and Pope, C.A., III. 2006. “Health Effects of Fine Particulate Air Pollution: Lines that Connect.” Journal Air & Waste Management Association, pp. 30-37. June 2006.

State of California, Office of Environmental Health Hazard Assessment (OEHHA), 2009. Technical Support Document for Cancer Potency Factors. May 2009. Available at oehha.ca.gov/air/hot_spots/2009/TSDCancerPotency.pdf. Accessed February 24, 2016.

# 4.3 Biological Resources

## 4.3.1 Introduction

This section assesses the potential for the proposed project to result in significant adverse environmental impacts to both terrestrial and marine biological resources. The Environmental Setting discussion describes existing conditions in two separate subsections, terrestrial and marine resources, while the regulatory setting, significance criteria, approach to analysis, and impact evaluation integrate the discussion for both terrestrial and marine resources.

For the purposes of this EIR, terrestrial resources include terrestrial habitats and species as well as waterfowl and seabirds, which require terrestrial habitat for reproduction, while marine resources consist of marine habitats, marine mammals, fish, and other marine species. Habitat quality and species distribution are considered in evaluating the likelihood of special-status species occurrence in the project site.

This section identifies the project components that may generate significant impacts on these biological resources, and when necessary identifies specific regulations, guidelines, and mitigation measures to avoid, minimize, or mitigate impacts. The following discussion describes biological resources within the project site and immediate vicinity (generally, within 2,000 feet of the project site) which could potentially be exposed to adverse effects from the project. The "project site" is defined in terms of both terrestrial (12.6 acres of dry land) and marine (0.7 acres of submerged tidelands) areas.

## 4.3.2 Environmental Setting

Existing project site characteristics, such as habitat types and plant and animal species present or potentially present, are described based on site-specific information, relevant published information, technical articles, and agency reports as indicated in source citations. In addition, Environmental Science Associates (ESA) conducted a biological reconnaissance survey of the project site on November 3, 2014; the results of this survey are incorporated into the discussion below.

### Setting – Terrestrial Biological Resources

The primary sources of information referenced in this section regarding terrestrial biological resources are:

- California Department of Fish and Wildlife (CDFW) January 2015 "Special Animals" 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, January 2015

- United States Fish and Wildlife Service (USFWS), Federally Endangered and Threatened Species List for the 7.5-minute topographic quadrangles *Richmond, Briones Valley, San Francisco North, Oakland West, Oakland East, Petaluma Point, Mare Island, Benicia, San Quentin*, January 2015

- 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*, January 2015

### *Regional Setting*

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 Department of Fish and Wildlife's Natural Community Conservation Program.[1] This bioregion consists of a variety of natural communities, including 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.[2] This, in combination with a long history of uses that have altered the natural environment and the increasingly rapid pace of development, has resulted in some flora and fauna becoming threatened or endangered.

Major streams in the Central Bay include Codornices, Corte Madera, Temescal, and Wildcat creeks. Lands within this subregion are in Alameda, Contra Costa, Marin, San Francisco, and San Mateo counties. The regional setting also comprises the waters of the bay itself and its islands, including Angel Island, Brooks Island, and Red Rock, all of which are located near the project site.

### *Project Site and Vicinity*

Land uses surrounding the project site primarily include recreational park land and open space, areas of residential, marina, and commercial development, and maritime and industrial uses. The project site is bounded by Brickyard Cove Road and Miller/Knox Regional Shoreline park (Miller/Knox park) to the north, Richmond Yacht Club parking lot and marina to the east, the San Francisco Bay to the south, and Dorman Drive to the west. The southern portion of the project site is lined with riprap and pier pilings, on which the existing Terminal One Pier and Warehouse are located. Ferry Point Loop trail is located directly northwest of the project site.

[1] 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-Delta 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.

[2] *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.

## *Vegetation Communities and Habitat Types*

Natural communities are assemblages of plant and wildlife species that occur together in the same area. These communities are defined by species composition and relative abundance. Vegetation communities and habitat types identified during the November 3, 2014 reconnaissance site visit and occurring in the project vicinity are described below.

### Ruderal and Non-Native Grassland

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. The project site is considered ruderal with vegetation dominated by non-native annual grasses and opportunistic weedy species that include foxtail brome (*Bromus madritensis*), rattail sixweeks grass (*Festuca myuros*), fennel (*Foeniculum vulgare*), pampas grass (*Cortaderia jubata*), kikuyugrass (*Pennisetum clandestinum*), black mustard (*Brassica nigra*), ice plant (*Carpobrotus edulis*), Himalayan blackberry (*Rubus armeniacus*), willow (*Salix* sp.), and poison oak (*Toxicodendron diversilobum*).

Ruderal areas provide limited foraging or nesting habitat for a few birds and small mammals. Birds commonly found in such areas are seed-eating and include non-native species such as English sparrow (*Passer domesticus*) and European starling (*Sturnus vulgaris*), as well as birds native to the area, such as 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*). Other common wildlife which might forage or inhabit the ruderal vegetation at the project site would be urban in nature and tolerant to human activity and disturbance, including species such as striped skunk (*Mephitis mephitis*), raccoon (*Procyon lotor*), Virginia opossum (*Didelphis virginiana*), Botta's pocket gopher (*Thomomys bottae*) and other small rodents. Within the project vicinity, wildlife utilizing adjacent higher quality habitats may forage and occasionally nest within ruderal areas.

### Developed

A developed community includes areas occupied by buildings, roads, parking lots, paved areas, and other developed facilities, as well as adjacent landscaped or heavily disturbed areas. Vegetation in these areas consists mostly of non-native species as described in ruderal and non-native grassland type, above. Urban and developed areas tend to be landscaped with non-native plant species, displacing native plants which may have previously occurred. Much of the project site is developed, although a limited number of native species, such as coyote bush (*Baccharis pilularis*) and California poppy (*Eschscholzia californica*), were observed. Other developed communities around the project site include the Richmond Yacht Club and Brickyard Cove residential developments.

Wildlife species in 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. Areas of rock fill and riprap along the Brickyard Cove shoreline are used by small mammals (EBRPD, 1995). Urban wildlife species found in such a community include common raven (*Corvus corax*), northern mockingbird (*Mimus polyglottos*), raccoon, striped skunk, Virginia opossum, Norway rat (*Rattus norvegicus*), and feral cats. Bats may also colonize the existing Terminal One Warehouse located onsite.

### Grassland and Woodland

Many grassland areas are dominated by native species, as are some brush patches, while areas of greater disturbance are characterized by exotic grass species and pioneering shrubs. In addition, woodland areas often contain patches of brush, in addition to stands of poison oak (*Toxicodendron diversilobum*), elderberry (*Sambucus nigra* subs. *caerulea*), toyon (*Heteromeles arbutifolia*), and coffee berry (*Rhamnus californica*) mixed with coast live oak (*Quercus agrifolia*), and buckeye (*Aesculus californica*).

Directly north of the project site, Miller/Knox park consists of both grassland and woodland consistent with the above description. The total parkland comprises approximately 307 acres, including nearly 60 acres of Bay mud (mudflats). Higher elevations within the park (ridgelands) consist of open-space grassland intermixed with patches of brush in drainage swales and north-facing slopes, and scattered planted pine and eucalyptus trees. Non-native grassland, including barren soil and reseeded areas, is the most extensive plant community in the park. Generally found in areas of former or current disturbance (road cuts, excavated sites, off-road vehicle areas, etc.) and dry, exposed slopes, this grassland community is dominated by introduced annual grasses and herbs, wild oats, red brome, ryegrass, mustard, and Italian thistle (EBRPD, 1983).

Historically, wildlife species inhabiting the park include California quail, band-tailed pigeon, and mourning dove, while the grasslands provide suitable foraging habitat for turkey vulture, Cooper's hawk, and red tailed hawk. Other wildlife species recorded in the park include: gopher snake (*Pituophis catenifer*) and Western fence lizard (*Sceloporus occidentalis*) among reptiles; several species of swallow (*Hirundinidae* spp.), starling (*Sturnus vulgaris*), logger-head shrike (*Lanius ludovicianus*), Western meadow lark (*Sturnella neglecta*) and dark-eyed junco (*Junco hyemalis*) among birds; and California ground squirrel (*Otospermophilus beecheyi*), California vole (*Microtus californicus*), and black-tailed jackrabbit (*Lepus californicus*) among mammals.

### Open Water Avian Habitat

The project site is situated within and adjacent to open water habitat of the Central Bay. The San Francisco Bay-Delta is an important wintering and stop-over site for the Pacific Flyway. More than 300,000 wintering waterfowl use the region and associated ponds. Bird types that use the open waters of the Central Bay include 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).

Typical marine birds regularly inhabiting or found in the project vicinity include Caspian tern (*Sterna caspia*), California least tern (*Sternula antillarum browni*), cormorants (*Phalacrocorax* spp.), herring gull (*Larus argentatus*), mew gull (*L. canus*), and western grebe (*Aechmophorus occidentalis*). Among the diving benthivores, canvasback (*Aythya valisineria*), greater scaup (*A. marila*), lesser scaup (*A. affinis*), and surf scoter (*Melanitta perspicillata*) are common in bay waters (SFPD, 2011). Brooks Island, a 75-acre island in the Bay less than a mile south of the project site, provides nesting habitat for over 18 species of shorebirds, including Caspian terns, black-crowned night-heron, gulls and ducks (EBRPD, 2015).

Please refer to Setting – Marine Resources below, for further discussion of open water, aquatic, and subtidal habitats in the project vicinity.

## Setting – Marine Resources

The primary information sources used to prepare this section on the marine biological resources setting include federal, State, and local reports and published scientific studies pertaining to marine resources in San Francisco Bay, as well as data collected in support of similar Richmond shoreline waterfront projects recently analyzed. These primary sources were augmented by information recorded during the November 3, 2014 biological reconnaissance survey of the project site and vicinity.[3] Primary sources of information referenced include:

- National Oceanographic and Atmospheric Administration (NOAA), National Marine Fisheries Service (NMFS)'s *Report on the Subtidal Habitats and Associated Biological Taxa in San Francisco Bay* (June 2007)
- CDFW's Special Animals List (January 2015)
- California State Coastal Conservancy and the Ocean Protection Council's *San Francisco Bay Subtidal Habitat Goals Report, Conservation Planning for the Submerged Areas of the Bay; 50-Year Conservation Plan* (2010)

### *Regional Setting*

The San Francisco Bay-Delta is the second largest estuary in the United States and supports numerous aquatic habitats and biological communities. The estuary's fish and wildlife populations have changed noticeably in the past 150 years, with losses due to over-harvest, habitat loss and degradation, introduced species, pollutants, and the modification of freshwater flows. The estuary encompasses 479 square miles, including shallow mudflats. San Francisco Bay is divided into four main basins: South Bay, Central Bay, San Pablo or North Bay, and Suisun Bay.

The project site analysis is focused on an area of the waterfront within the southern part of Point Richmond, in an area known as Brickyard Cove, in the eastern portion of the Point Potrero Reach of the Central Bay subregion. The regional setting for purposes of this evaluation includes both

[3] The 2014 ESA biological reconnaissance survey included open water observations; detailed observations of aquatic or subtidal habitat were not conducted.

"baylands" (as defined by the San Francisco Bay Area Wetlands Ecosystem Goals Project [Goals Project, 1999]); artificial habitat in waterfront infrastructure (primarily piles, docks and piers); the open waters of the bay; and subtidal and intertidal habitats associated with the Richmond waterfront.

## *Project Site and Vicinity*

The project site and vicity includes the site itself as well as adjacent open water portions of Central San Francisco Bay to the south and west of the site. The Central Bay contains the deepest parts of the estuary as well as the greatest amount of natural and man-made hard bottom substrate in the Bay-Delta (Goals Project, 1999). Marine habitats and associated marine communities present in this area include natural (rock) and artificial (concrete, rock riprap, wood and concrete pilings) hard intertidal area, soft and hard substrate subtidal habitat, and open water. As discussed in Section 4. 5, *Geology, Soils, and Minerals* much of the shoreline within proximity of the project site consists of alluvial deposits overlain by a soft to very stiff marine clay deposits (Bay Mud). The marine biota found in the Central Bay includes invertebrate infauna and mobile 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 Bay-Delta. Each of these habitats and associated biological communities are presented in more detail below.

### Intertidal and Subtidal Habitats

Intertidal habitats are areas of the Bay that lie between low and high tides. Intertidal habitats within the project site include pier pilings. 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 project site to the Golden Gate (the strait that connects the San Francisco Bay with the ocean) and the Pacific Ocean has resulted in an intertidal zone inhabited by many coastal as well as estuarine species, as discussed below. Subtidal habitats include areas that are submerged most of the time, except during extreme low tides. The predominant seafloor habitat in the project site and vicinity is unconsolidated soft sediment composed of a combination of mud/silt/clay, sand, and pebble/cobble, with varying amounts of intermixed shell fragments.

Benthic, or bottom-dwelling, fauna in the 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 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 animals provide a prey base for marine mammals and birds (SFBANPSL, 2015).

Subtidal habitat along the Richmond waterfront includes both soft sediment and hard substrate. 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, under wharfs, and behind breakwalls and groins, similar to that found within the project vicinity.

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 the 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.

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 (Tasto,1979).

**Submerged Aquatic Vegetation.** Subtidal plants and submerged aquatic vegetation occur throughout the Central Bay on both soft and hard substrate. 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 five miles north of the project site. The well-defined westerly facing shallow coves along the Richmond shoreline, such as those near Keller Beach north of the project site, also support extensive eelgrass beds that contribute significantly to regional eelgrass habitat and are generally some of the more stable eelgrass beds in the Bay (Merkel & Associates, Inc. 2010). Eelgrass provides habitat and food for many marine species, including critical spawning habitat for Pacific herring (*Clupea pallasii*) and waterfowl such as black brant (*Branta bernicla nigricans*) (Richardson Bay Audubon Center & Sanctuary, 2015).

Aquatic vegetation within the area of the project site and immediate vicinity also may include the green algae, *Ulva/Enteromorpha*, *Gracillaria verrucosa*, *Ruppia maritime,* and *Potamogeton pectinatus,* which are common in subtidal habitats (NOAA, 2007). All submerged aquatic vegetation in the Central Bay is considered critical essential fish spawning habitat for Pacific herring.[4]

### Open Water (Pelagic) Habitat

Open water (pelagic) habitat is the predominant marine habitat in the Central Bay and includes the area between the water's surface and the seafloor. The open waters adjacent to the project site are typical of San Francisco Bay waters in general and primarily include silty mud and sand

[4] The Magnuson-Stevens Act defines "essential fish habitat" as those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity.

substrates. The pelagic environment is affected by tidal flow and season, and the open waters in the Bay vary in temperature, salinity, dissolved oxygen, and turbidity within the water column depending on water depth, location, and season. The pelagic water column habitat is predominantly inhabited by planktonic organisms that either float or swim in the water, fish, marine birds, and marine mammals. Open water habitat is found along the western boundary of the project site.

**Pelagic Fish.** The Bay supports a wide variety of pelagic fishes, including special-status species such as steelhead (*Oncorhynchus mykiss irideus*), Chinook salmon (*Oncorhynchus tshawytscha*), and green sturgeon (*Acipenser medirostris*). These species are discussed in detail below (Special Status Species).

In recent years, 33 species of fish have been documented inhabiting Central Bay pelagic waters, of which 3 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 overwhelmingly 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 the fish sampled on an annual basis. The remaining 30 species collectively account for less than 1 percent of fish species present annually. Important managed fish species or sensitive species of concern that are present in Central Bay pelagic waters include Northern anchovy (*E. mordax*), longfin smelt (*S. thaleichthys*), Chinook salmon (*Oncorhynchus tshawytscha*), Pacific sardine, (*Sardinops sagax*), and English sole (*Parophrys vetulus*).

**Demersal Fish.** As opposed to pelagic fish, demersal 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 (*S. sagax*), English sole (*P. vetulus*), 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*), Pacific herring (*C. pallasii*), and longfin smelt (*Spirinchus thaleichthys*).

**Marine Mammals.** Seven species of marine mammals are currently known to 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*). Additionally, the humpback whale (*Megaptera novaengliae*), California gray whale (*Eschrichtius robustus*), stellar sea lion (*Eumetopias jubatus*), and California sea otter (*Enhydra lutra*) occasionally enter the Bay.

In general, the presence of marine mammals in the Bay is related to 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-Delta harbor seal population is estimated at between 500 and 700

individuals, with the permanent colony nearest to the project site occurring at Castro Rocks, 2.5 miles north of the project site. Harbor seals and harbor porpoises are the only year-round residents of the Bay-Delta, although California sea lions can be observed most of the year.

## Special-Status Species

A number of species known to occur on the project site or in the vicinity are protected pursuant to federal and State endangered species laws, or have been designated species of special concern by the CDFW. 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."[5] 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 or are candidate species for listing as threatened or endangered by the USFWS the 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 as rare, threatened, or endangered by the CDFW 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 species of special concern;[6]

5. Species designated by the State as "special animals;"[7]

6. Species designated by the State as "fully protected" (there are about 35 species designated by the State as fully protected, most of which are also listed as either endangered or threatened);[8]

7. Raptors (birds of prey), which are specifically protected by California Fish and Game Code Section 3503.5, thus prohibiting the take, possession, or killing of raptors and owls, their nests, and their eggs;

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[5] 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.

[6] A California species of special concern 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.

[7] Species listed on the current CDFW "special animals" list (CDFW, 2015c)

[8] The "fully protected" designation can be found in the Fish and Game Code.

8. Non-listed fish species included in federally-identified Essential Fish Habitat (EFH, defined below) and of regional importance for harvest;

9. Species managed and regulated under the federal Magnuson-Stevens Fisheries Act (Magnuson-Stevens Act or MSA);

10. Species protected under the federal Marine Mammals Protection Act (MMPA);

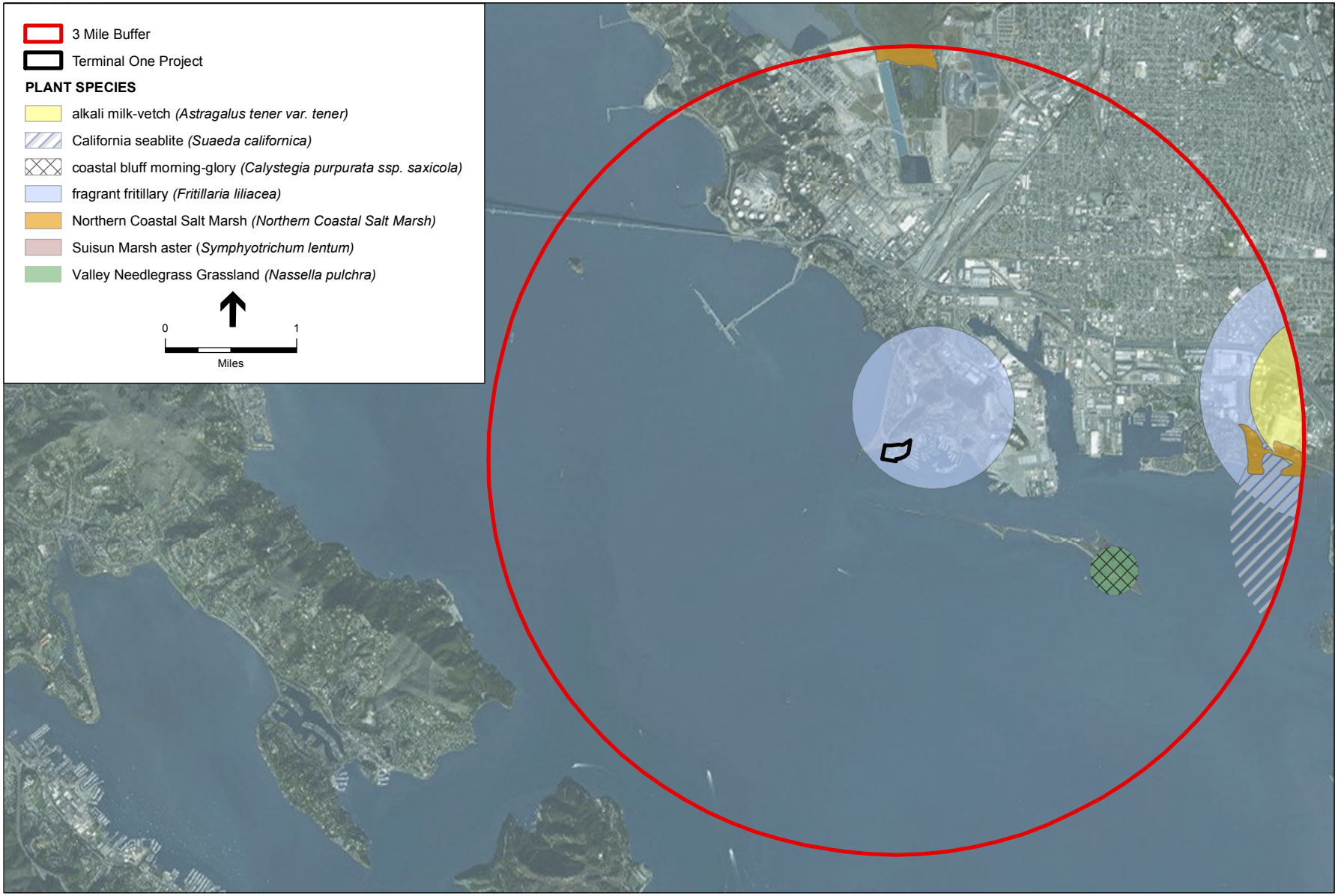
11. Plants listed as rare or endangered under the California Native Plant Protection Act (California Fish and Game Code, Section 1900 et seq.);

12. Species that meet the definitions of rare and endangered under CEQA. CEQA *Guidelines* Section 15380 provides that a plant or animal species may be treated as rare, threatened, or endangered even if not on one of the official lists (CEQA *Guidelines*, Section 15380); and,

13. Plants considered by the CNPS to be "rare, threatened or endangered in California" under the California Rare Plant Ranking system (CNPR) which include Rank 1A, 1B, 2A, and 2B as well as Rank 3 and 4 plant species.[9]

The list of special-status plant and animal species that have the potential to occur within the project site and vicinity were compiled based on data contained in the California Natural Diversity Database (CNDDB) (CDFW, 2015a); the USFWS list of Federal Endangered and Threatened Species that occur within the project site or may be affected by the proposed project (USFWS, 2015a); the CNPS Inventory of Rare and Endangered Plants (CNPS, 2015) for the 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; the Baylands Ecosystem Habitat Goals Report (Goals Report, 1999); and biological literature of the region. **Appendix C** presents and describes special-status species, their status and habitat requirements, and plant blooming periods, and considers the potential for each species to occur within the project site and vicinity. The habitat preferences for each special-status species were reviewed and considered with regards to their potential to occur in the context of the project site and vicinity; therefore, **Appendix C** represents a list of species observed in the *San Quentin*, *Richmond*, and *Oakland West* CNDDB 7.5-minute topographic quadrangles. Species having potential for occurrence are expected to occur based on the known elevation or distribution range of the species and presence of suitable habitat. **Figure 4.3-1** and **Figure 4.3-2** identify the locations of regional special-status species occurrences as reported in the CNDDB.

[9] 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 plants 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 (CDFW, 2015b).

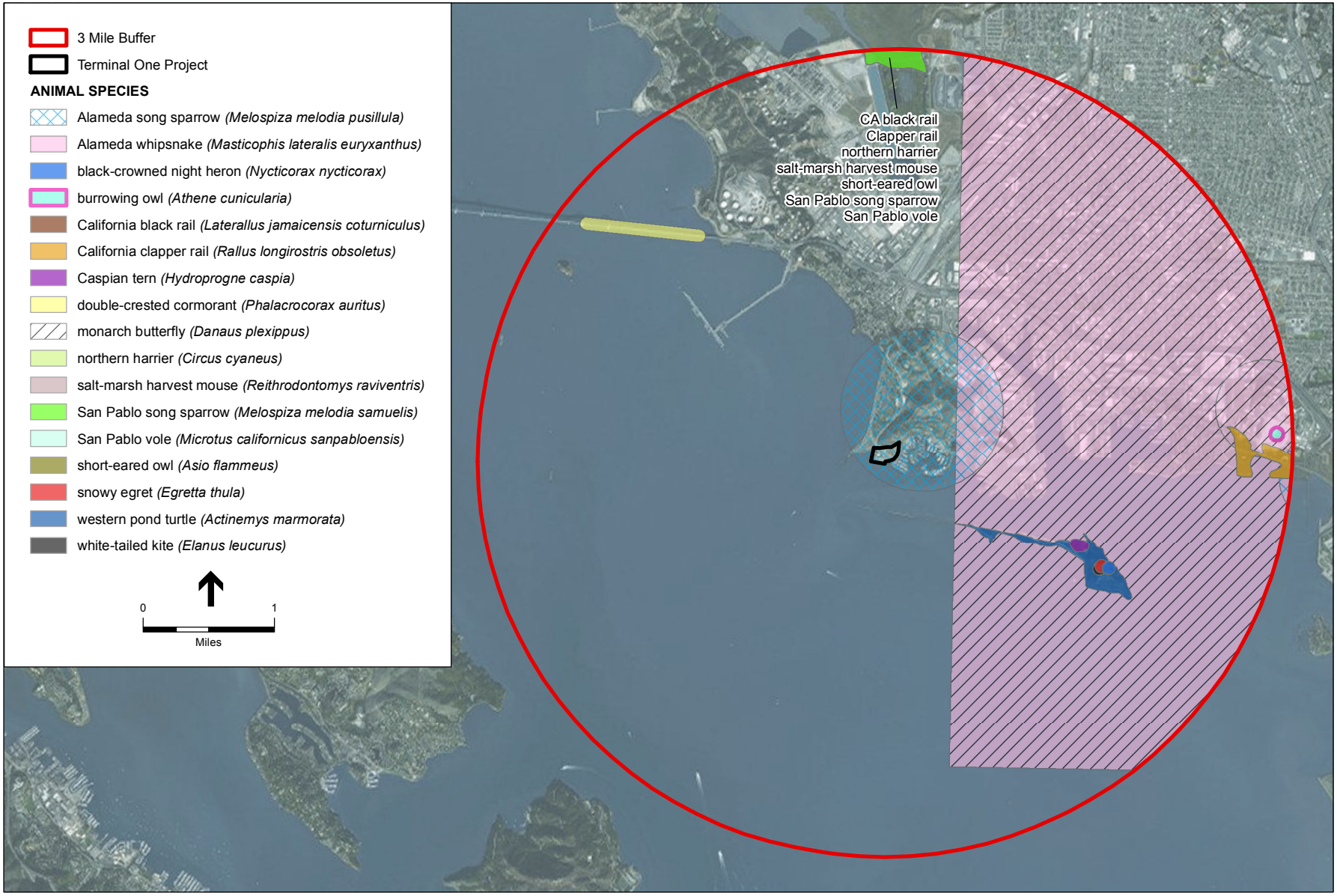





SOURCE: CDFW, 2015a

**Figure 4.3-1**

CNDDB Occurrences within 3 Miles of the Plan Area-Plants




City of Richmond Terminal One Project EIR. 140325

SOURCE: CDFW, 2015a

**Figure 4.3-2**

CNDDB Occurrences within 3 Miles of the Plan Area-Animals

Based on a review of the biological literature of the region, information presented in previously prepared environmental documentation, and an evaluation of the habitat conditions of the project site and vicinity, a species was designated as "absent" if: (1) the species' specific habitat requirements (e.g., 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 project site or region. A species was designated as having a "low potential" for occurrence if: (1) its known current distribution or range is outside of the project site and vicinity or (2) only limited or marginally suitable habitat is present within the project site and vicinity. A species was designated as having a "moderate potential" for occurrence if: (1) there is low to moderate quality habitat present within the project site or immediately adjacent areas or (2) the project site 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 project site, and (2) the project site is within the known range of the species.

### *Special-Status Plants*

Most of the special-status plant species listed in **Appendix C** are considered to have a low potential to occur on the project site or in the vicinity due to the absence of suitable habitat, and were eliminated from further evaluation. The project site is primarily a ruderal landscape previously disturbed by former industrial activities, with patches of concrete and asphalt, and supports little in the way of intact natural communities. Natural communities that do occur in the vicinity (coastal prairie for example) are generally disturbed by human influence, include a low diversity of plants, and are dominated by non-native species. In addition, these communities are isolated from documented special-status plant populations. No special-status plants have been observed on the project site or in adjacent Miller/Knox park. Although fragrant fritillary (*Fritillaria liliacea*), rare plant rank 1B.2, was observed in 2007 near Point Richmond (CDFW, 2015a), the previously graded and highly disturbed ruderal uplands in the project site do not provide suitable habitat, resulting in a low potential for this species, or any other special status plant species, to occur.

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 project site.

### *Special Status Animals*

Of the special-status animals listed in **Appendix C**, only species known to be present within the project site or classified as having a moderate or high potential for occurrence in the project site or vicinity were considered in the impact analysis and described in further detail, below. Species such as salt marsh wandering shrew, Suisun shrew, salt-marsh harvest mouse, and San Pablo vole are restricted to salt marsh habitat, absent from the project site and vicinity; therefore, no special status terrestrial mammal species associated with salt marsh habitat are likely to occur on the project site or vicinity and no further impact analysis for special status mammals is warranted. Similarly, Ridgway's rail and San Pablo song sparrow may occasionally visit the densely vegetated marshes in the region, but are unlikely to be found on the project site and in the vicinity

due to unsuitable habitat. The foraging value of the upland habitat historically present in the vicinity has been substantially diminished by the high levels of disturbance.

The special-status species list presented in **Appendix C** includes marine animal species taxa for which potential habitat (i.e., general habitat types for breeding or foraging) occurs in the general vicinity of the project or can reasonably be expected to be affected by project activities. Species for which generally suitable habitat occurs but that were nonetheless determined to have low potential to occur within the project site and vicinity are also listed in **Appendix C**. This appendix also provides the rationale for each "potential-to-occur" determination. No special-status animal species were observed during the biological resources reconnaissance survey. Species with a moderate to high potential to occur within the project site and vicinity are discussed in further detail below.

### Birds

**White tailed kite** (*Elanus leucurus*). A CDFW fully-protected species, the white-tailed kite inhabits rolling foothills with scattered oaks or marshes near deciduous woodland. Successful nests are typically surrounded by more natural, fallow and riparian vegetation, as well as non-urban human development (PRBO, 2000). White-tailed kites are found nesting in tree tops, usually 20-50 feet above ground and commonly in coast live oak. Although the species has been documented nesting in a California buckeye (*Aesculus californica*) less than two miles south of the project site on Brooks Island (CDFW, 2015a), there is limited high-quality nesting habitat found on the project site; however, white-tailed kites could occasionally forage in and around the project site and vicinity.

**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 state species of concern. Intermixed stands of bulrush (*Schoenoplectus* spp.), cattail (*Typha* spp.), and other emergent vegetation provide suitable habitat 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. Alameda song sparrow could be found migrating through and foraging in the tall grasses and dense shrubs, such as coyote brush, found within the project site, which could also provide suitable nesting habitat, especially due to the lack of human activity in this area over the last several years.

**Double-crested cormorant** (*Phalacrocorax auritus*). Double-crested cormorant is a former state species of special concern and its nesting colonies are still considered a resource of conservation concern by the CDFW. A yearlong resident along the entire coast of California, the species is fairly common to locally very common along the coast and in estuaries and salt ponds. The species forages mainly on fish, crustaceans, and amphibians, and 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). Historically, a nesting colony occurred at the east end of the Richmond San Rafael Bridge in the vicinity of Castro Rocks, approximately two miles north of the project site.

The species is commonly found in the San Francisco Bay nesting in unused large structures high above ground, such as bridges, and tall trees. Although it is unlikely double-crested cormorant colonies are supported by the vacant Terminal One Warehouse, nearby gum trees could provide suitable nesting habitat for the species.

**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.). No suitable nesting habitat for this species is present within the project site or immediate vicinity; however, the species could migrate through or forage in the waters immediately adjacent to site.

### Marine Resources

**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 beginning November through December.

Winter-run Chinook salmon critical habitat includes all waters of San Francisco Bay north of the Bay Bridge; therefore, the project site lies within critical habitat for this species and is protected under the Pacific Coast Salmon Plan (NMFS, 2005).

**Central Valley Spring-Run Chinook Salmon** (*O. tshawytscha*). A federally-listed threatened evolutionarily significant unit (ESU),[10] 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. Spring-run Chinook may occur in the Central Bay and in the vicinity of the project site in low numbers.

Critical habitat for the Central Valley spring-run Chinook salmon includes all waters of San Francisco Bay north of the Bay Bridge (NMFS, 2005); therefore, the project site is within designated critical habitat for this taxa.

[10] 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*). 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. The primary threats to the fall-run/late fall-run Chinook salmon are impacts from high hatchery production and harvest levels and from the loss of spawning and rearing habitat (NMFS, 2009). There is no critical habitat designated for this taxa. Central Valley fall-run/late-run Chinook salmon can be expected to transit through waters adjacent to the project site and vicinity when project activities would occur. Studies conducted by NMFS (NMFS, 2001) and CDFW (CDFG, 1999) indicate that the primary migration corridor to the ocean is through the northern reaches of Central San Francisco Bay, directly west of the project site.

**Central California Coast Coho Salmon** (*O. kisutch*). The Central California Coast coho salmon is a federally-listed threatened and State-listed endangered ESU. Adult coho migrate through San Francisco Bay after heavy late fall or winter rains to spawn in the Sacramento/San Joaquin Delta. Juvenile coho potentially occur in San Francisco Bay in the spring, summer, and fall, and may be present in the Central Bay waters within or in the vicinity of the project site.

Critical habitat for Central California Coast coho salmon includes all coastal river reaches, including estuarine areas and tributaries accessible to the salmon, between Punta Gorda in Northern California south to the San Lorenzo River in Central California. The project site is within this area, and is therefore within critical habitat for Central California Coast coho salmon (CDFG, 1999).

**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 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 within and in the vicinity of the project site. However, if present, they are expected to be present in low numbers and only occasionally. The project is within critical habitat for Central Valley steelhead, which includes the waters of San Francisco Bay, north of the Bay Bridge (NOAA, 2005).

**Central California Coast Steelhead Trout** (*O. mykiss*). The Central California Coast steelhead trout is federally listed as threatened. These steelhead 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. Juveniles may spend a year or more in San Francisco Bay before moving on to the ocean. This population is known to occur in moderate numbers in the Central Bay, including waters in the vicinity of the project site. While the 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.

Critical habitat includes all river reaches and estuarine areas accessible to the steelhead in coastal river basins, from the Russian River to Aptos Creek (inclusive), and the drainages of San Francisco and San Pablo Bays. Also included 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 within and adjacent to the project site.

**Green Sturgeon** (*Acipenser medirostris*). This anadromous fish is the most widely distributed member of the sturgeon family and the most marine-oriented of the sturgeon species. 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). Adults in the San Joaquin Delta feed on benthic invertebrates including shrimp, amphipods, and occasionally small fish, while juveniles have been reported to feed on opossum shrimp and amphipods. 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 within and adjacent to the project site (NOAA, 2009).

**Longfin Smelt** (*Spirinchus thaleichthys*). The longfin smelt is a state-listed endangered species and a candidate being considered for listing as endangered or threatened by the USFWS (2011). The longfin smelt is a pelagic (open water) schooling fish known to inhabit the San Francisco Bay-Delta, including all of the waters of the Central Bay including the waters in the vicinity of the project site (CDFG, 1999). Although observed in Central San Francisco 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.

**Pacific Herring** (*Clupea pallasii*). Pacific herring is neither a federally- or state-listed protected species nor a managed fish species under the Magnuson-Stevens Act. Pacific herring does, however, represent a species of special concern for San Francisco Bay because it is an important member of the San Francisco Bay marine ecosystem: it provides an important food source for marine mammals, sea birds, and fish, and constitutes a state fishery that is entirely conducted within an urban estuary, making it particularly susceptible to anthropogenic impacts. As a state fishery it is regulated under Sections 8550-8559 of the California Fish and Game Code.

Pacific herring are found throughout the coastal zone from northern Baja California northward around the rim of the North Pacific Basin to Korea. In California, herring forage offshore during spring and summer and then migrate inshore to bays and estuaries to spawn October through

April, with December through February considered the peak spawning period in San Francisco Bay. The largest spawning aggregations in California occur in the San Francisco Bay-Delta and Tomales Bay. Most spawning areas are characterized as having reduced salinity with calm and protected waters. Spawning-substrate such as submerged aquatic vegetation beds, especially eelgrass beds, or rocky intertidal areas are preferred, but man-made structures such as pier pilings and riprap are also frequently used spawning substrates in San Francisco Bay. After hatching, herring fry and juveniles use nearby protected inshore waters for rearing habitat (Bartling, 2006).

**Pacific harbor Seal** (*Phoca vitulina richardsi*). The Pacific harbor seal is a year-round resident in San Francisco Bay and is routinely observed. Harbor seals are protected under the Marine Mammal Protection Act (described below in Section 4.3.3, Regulatory Setting). They have been observed as far upstream in the Delta and Sacramento River as the City of Sacramento, though their use of habitat north of Suisun Bay is irregular (Goals Project, 2000). Harbor seals consume a variety of fish, such as perch, gobies, herring, and sculpin. Harbor seals feed in the deepest waters of the Bay, within the area between the Golden Gate and Treasure Island, and use Yerba Buena Island, six miles south of the project site, as a primary haul out area (Kopec and Harvey, 1995).

**California Sea lion** (*Zalophus californianus*). Like the harbor seal, the California sea lion is a permanent resident in the San Francisco Bay-Delta and protected by the Marine Mammal Protection Act. A common and abundant marine mammal, they are found throughout the West Coast, generally within 10 miles of shore. They breed in Southern California and the Channel Islands, after which they migrate up the Pacific coast to the Bay. They haul out on offshore rocks, sandy beaches, and onto floating docks, wharfs, vessels, and other man-made structures in the bay and coastal waters of the state. California sea lions feed on a wide variety of seafood, mainly squid, fish, and sometimes clams. Commonly eaten fish and squid species include salmon, hake, Pacific whiting, anchovies, herring, schooling fish, rockfish, lamprey, dog fish, and market squid (Southwest Fisheries Science Center, 2014). California sea lions may forage in the waters adjacent to the project site.

**Pacific harbor propoise** (*Phocoena phocoena*). Harbor porpoises inhabit northern temperate and subarctic coastal and offshore waters. In the North Pacific, they are found from Japan north to the Chukchi Sea and from Monterey Bay, California to the Beaufort Sea. They are most often observed in bays, estuaries, harbors, and fjords less than 650 feet (200 meters) deep, like the San Francisco Bay-Delta. Because the primary food for harbor porpoises is fish and squid, this species could have the potential to forage in the waters adjacent to the project site.

### Special-Status Bats

Pallid bat (*Antrozous pallidus*) and Townsend's big-eared bat (*Corynorhinus townsendii*). The Pallid bat and Townsend's big-eared bat are both California species of concern, and hoary bat (*Lasiurus cinereus*) is a Western Bat Working Group medium priority species.11 These bats are

11 The Western Bat Working Group Regional Priority Matrix ranks species in terms of relative priority for funding, planning, and conservation actions, based on the risk of imperilment the species faces (WBWG, 2016). Species are ranked as High, Medium, Low, or "periphery" (a designation that reflects neither high, medium, nor low concern) in each of 10 regions in western North America. The Medium designation indicates a level of concern that should

generally solitary, roost in trees with dense foliage, and occur in a variety of habitats, utilizing caves, mines, tunnels, buildings, or other human-made structures as roosts. All three bats are recorded in the CNDDB as occurring at locations approximately three miles from the project site. Based on the general presence of potential roost habitat in the existing abandoned Terminal One Warehouse, there is potential for bat roosting within the project site. The warehouse contains structural characteristics commonly associated with pallid bat roosts, those that generally have unobstructed entrances/exits, and are high above the ground and inaccessible to terrestrial predators (WBWG, 2005).

#### Other Breeding and Migratory Birds

Richmond's waterfront provides habitat for well over 200 species of birds, with some species as year-round residents, other species as winter residents, and others passing through along the Pacific Flyway during spring and fall migrations. Avian diversity in Richmond is highest in areas with relatively large-sized, diverse patches of habitat. Nonetheless, trees, shrubs, and buildings on the project site and within the vicinity provide nesting habitat for a variety of birds as well as patches of habitat for potential use by migrants as stop-over sites. The most common species documented as nesting in Richmond include California gull (*Larus californicus*), black brant (*Branta bernicla nigricans*), American crow (*Corvus brachyrhynchos*), mourning dove (*Zenaida macroura*), western meadowlark (*Sturnella neglecta*), Brewer's blackbird (*Euphagus cyanocephalus*), black-crowned night heron (*Nycticorax nycticorax*), snowy egret (*Egretta thula)* red-tailed hawk (*Buteo jamaicencis),* and western kingbird (*Tyrannus verticalis*). Few trees in the vicinity of the project site appear suitable for nesting raptors. As discussed below (Regulatory Setting), most migratory birds are protected from harm by the federal Migratory Bird Treaty Act, and most breeding birds in California are protected under the California Fish and Game Code (Section 3503).

### *Critical Habitat – Terrestrial Resources*

Critical habitats are areas 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. Critical habitat may include an area not currently used by an endangered or threatened species, but that will be needed for species recovery. Projects involving a federal agency or federal funding are required to consult with the USFWS to ensure that project actions will not destroy or adversely modify critical habitat. No critical habitat for terrestrial species is present on the project site or immediate vicinity.

### *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

warrant closer evaluation, more research, and conservation actions of both the species and possible threats. A lack of meaningful information is a major obstacle in adequately assessing these species' status and should be considered a threat.

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. Critical habitat for green sturgeon and salmonids listed above is designated in San Francisco Bay and includes the waters adjacent to the project site.

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 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 project site 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.

Additionally, eelgrass is designated as EFH for various federally-managed fish species within the Pacific Coast Groundfish and Pacific Coast Salmon Fisheries Management Plans (FMP). Eelgrass is also considered a habitat area of particular concern (HAPC) for various species within the Pacific Coast Groundfish FMP. An HAPC is a subset of EFH; these areas are rare, particularly susceptible to human-induced degradation, especially ecologically important, and/or located in an environmentally stressed area. Eelgrass beds are present in Brickyard Cove, east of the project site (Merkel & Associates, Inc. 2010).

## *Sensitive Natural Communities*

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* (CDFW, 2010), available through the CNDDB, indicates which natural communities are of special status given the current state of the California classification.

### Terrestrial Resources

The CNDDB reports six sensitive terrestrial natural community occurrences within the nine-quadrangle area, two of which are found within the vicinity of the project site: coastal brackish marsh, occurring in south Richmond in areas primarily covered in pickleweed and saltgrass; and valley needlegrass grassland, found on Brooks Island separated from the project site by Point

Potrero Reach (CDFW, 2015a). Neither of these natural communities are found on the project site.

#### Marine Resources

Within San Francisco Bay, there are many marine communities and habitats that can be considered particularly sensitive to disturbance or possess unique or special ecological value (California State Coastal Conservancy et al., 2010). Additionally, certain waters of the U.S. may be recognized "special aquatic sites," including sanctuaries and refuges, mudflats, wetlands, vegetated shallows, eelgrass beds, and coral reefs due to their unique ecological values. Focused eelgrass inventory surveys suggest that eelgrass is present within the vicinity of the project site and would be considered the only sensitive natural community recognized in this portion of the Central Bay (Merkel & Associates, 2010).

### *Wetlands and Other Waters of the United States*

Portions of the western and southern site perimeter 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 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 California Regional Water Quality Control Board 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 responsible agency 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 jurisdiction under Streambed Alteration Agreements or they support state-listed endangered species; however, CDFW has trust 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. Examples of other waters of the U.S. include rivers, creeks, intermittent and ephemeral channels, ponds, and lakes.

### *Wildlife Movement Corridors*

Wildlife movement corridors are considered an important ecological resource by CDFW and USFWS and under CEQA and NEPA. 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. They may also function as dispersal corridors allowing animals to move between various locations within their range. 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 project site itself would not constitute as a wildlife corridor, it remains within a larger corridor of Central San Francisco Bay. Nearby environmentally sensitive fragments, including Miller/Knox park, Brooks Island, and the Albany Bulb provide high-quality habitat including coastal terrace prairie, northern coastal salt marsh, valley needlegrass grassland, and northern maritime chaparral which could support fish and bird species that may travel around or through the project site and vicinity when moving between these habitat islands.

## 4.3.3 Regulatory Setting

## Federal Regulations

### *Federal Endangered Species Act*

Pursuant to the requirements of the Federal Endangered Species Act (FESA), a federal agency reviewing a proposed project within its jurisdiction must determine whether any federally listed threatened or endangered species may be present within the project site and determine whether the proposed project may affect or "take"[12] such species. In addition, the agency is required to consult with the USFWS and/or 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 since the USACE will 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.

[12] 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.

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 the FESA.

### *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. The ESA defines take as "…harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect any threatened or endangered species." Harm may include significant habitat modification where it actually kills or injures a listed species through impairment of essential behavior (e.g., nesting or reproduction). 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 Marine Mammal Protection Act of 1972 (MMPA), 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 (RHA). 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 permit 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, the Central Bay region of the San Francisco Bay-Delta, including the waters encompassing the project site, is designated as EFH for fish managed under Fishery Management Plans and as a Habitat Area of Particular Concern under Fishery Management Plans.

### *Coastal Zone Management Act*

The Coastal Zone Management Act (CZMA) enacted by Congress in 1972 is administered by NOAA's Office of Ocean and Coastal Resource Management. The overall program objectives of the 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 § 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 affecting the San Francisco Bay and Delta and the Bay shoreline.

### *Long Term Management Strategy Management Plan for Dredging in San Francisco Bay*

The Long Term Management Strategy Management Plan (LTMS) for maintenance dredging of navigation channels in San Francisco Bay, as established in 2001, provides for a cooperative approach to sediment management in the San Francisco Bay-Delta, among the U.S. EPA, USACE, RWQCB, BCDC, and regional stakeholders, including NMFS, CDFW, area

environmental organizations, and water-related industries. The LTMS facilitates the economical and environmentally responsible maintenance of critical and needed navigation channels in the Bay-Delta and the environmentally responsible disposal of dredged material. It maximizes the use of dredged material as a beneficial resource, and establishes a cooperative permitting framework for dredging, dredged material disposal, and development of beneficial reuse site for dredge material. A key component of the LTMS is the establishment of construction work windows that include time periods when construction activities that have the potential to affect aquatic and terrestrial wildlife habitat and migration activity are allowed, restricted, or prohibited. Different restrictions and requirements are enforced depending on the affected species and time of year. If a project proponent wishes to construct during restricted periods, they must formally submit for consultation with the appropriate resource agencies (NMFS, USFWS, and CDFW). Through formal consultation, specific measures must be implemented to avoid or reduce potential impacts.

**Table 4.3-1** presents LTMS-established dredging work windows for the San Francisco Bay-Delta.

**TABLE 4.3-1**
**ENVIRONMENTAL WORK WINDOWS FOR MAINTENANCE DREDGING ACTIVITIES ESTABLISHED IN THE LONG TERM MANAGEMENT STRATEGY FOR SAN FRANCISCO BAY**

| Species | Applicable Bay Region/Location | Authorized Work Windows |
|---|---|---|
| Steelhead Trout | Central San Francisco Bay, Bay Bridge to Sherman Island | June 1 to November 30 |
| Chinook Salmon, juveniles | Bay Bridge to Sherman Island | June 1 to November 30 |
| Coho Salmon | Waters of Marin County from the Golden Gate Bridge to Richmond-San Rafael Bridge | June 1 to October 31 |
| Pacific Herring | Central San Francisco Bay, Richardson Bay, North and South Bay | March 1 to November 30 |
| Dungeness Crab | North Bay, San Pablo Bay, and shallow berthing areas | July 1 to May 30 |

SOURCE: LTMS Environmental Work Windows, Informal Consultation Preparation Packet, prepared by the LTMS Environmental Windows Work Group, April 2004.

### *Federal Essential Fish Habitat Sustainable Fisheries Act*

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.

## State Regulations

### *California Endangered Species Act*

Under the California Endangered Species Act (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 within the project site 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.

### *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.

### *State Regulation of Wetlands and Other Waters*

The state's authority in regulating activities in wetlands and waters in the project site 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 all impacts to 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 Plan*

The 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. 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* (Bay Plan) which specifies goals, objectives, and policies for existing and proposed waterfront land use and other areas. The Bay Plan policies that are most relevant to the proposed project 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

### *Richmond General Plan Policies on Biological Resources*

The Conservation, Natural Resources and Open Space Element of the Richmond General Plan 2030 (City of Richmond, 2012) contains the following objectives and policies related to biological resources protection that are relevant to the proposed project.

- **Goal CN1: Preserved and Restored Natural Habitat and Biodiversity.** Continue to preserve and restore natural habitat and associated plants and wildlife including wetlands, baylands, riparian areas, oak woodlands and other sensitive biological resources. Take restoration efforts such as controlling invasive species, re-establishing natives, daylighting creeks and reclaiming priority conservation areas in order to maintaining critical habitat and biodiversity. Carefully balance natural lands, habitat and protection of multiple species with the need to accommodate development.

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

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

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

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

  Protect and restore creek corridors and riparian areas to ensure they function as healthy wildlife habitat and biological areas.

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

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

  *Policy CN1.2: Local Native Plant Species.* Promote the use of locally propagated native plant and tree species and remove and control the spread of invasive exotic plant species. Promote and protect native plant species in natural areas as well as in public landscaping

of parks, schools, medians and planter strips. Work closely with landowners, landscapers and nurseries to remove and prevent the spread of invasive exotic plant species.

- **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 CN2.1: Open Space and Conservation Areas.* Preserve open space areas along the shoreline, creeks, and in the hills to protect natural habitat and maintain the integrity of hillsides, creeks and wetlands. Protect existing open space, agricultural lands and parks.

  *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.

  - 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.

  *Policy CN2.5: Access to Large-Scale Natural Areas.* Improve access to large-scale natural areas located in the City including regional parks along the shoreline and in the hills. These areas should be open for controlled access to improve public enjoyment and interpretation. Access should be limited where natural habitat is extremely sensitive. Work with transit agencies to improve connections and access to open space and recreation facilities from all Richmond neighborhoods.

- **Goal CN6: A Healthy Urban Environment.** Elevate the quality of urban areas to support human development and provide residents with a healthy urban environment. Remediate contaminated soil and brownfield sites and properly manage mineral resource sites in order to contribute to improved public health and maximize opportunities to develop new uses. Enhance the natural beauty of the area by promoting design that respects landscape context, restoration of urban creeks, creation of green streets and stewardship of the urban forest.

  *Policy CN6.2: Protection and Expansion of Tree Resources.* Protect and expand tree resources within Richmond. Protect native trees, heritage trees and oak woodlands; expand and maintain street tree planning; use zoning and building requirements to ensure that trees are included in new developments; and engage the community to undertake

planting campaigns. Furthermore, promote trees as economic and environmental resources for the use, education and enjoyment of current and future generations.

### Richmond Tree Preservation Ordinance

The City of Richmond's Tree Ordinance applies to 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.

Richmond Municipal Code also protects trees, shrubs and plants from building construction within a park, pleasure ground, alley or other public place in the City of Richmond.

### 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. At the time of this publication, the Urban Greening Plan has yet to be finalized.

### Baylands Ecosystem Habitat Goals Project

The Baylands Ecosystem Habitat Goals Project (Goals Project) established a long-term vision for a healthy and sustainable baylands ecosystem. 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 Richmond General Plan 2030. The Goals Project was recommended by the Governor's "California Wetlands Conservation Policy" and by the Comprehensive Conservation and Management Plan (CCMP) of the U.S. Environmental Protection Agency'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*

Buidling on the Goals Project described above, in 2010 BCDC, the California Ocean Protection Council/California State Coastal Conservancy, 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-Delta (California State Coastal Conservancy et al., 2010). The San Francisco Bay Subtidal Habitat Goals Project takes a Baywide 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. 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 proposed 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.

## 4.3.4 Significance Criteria

Consistent with Appendix G of the State CEQA *Guidelines*, 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.

### Topics with No Impact or Otherwise Not Addressed in this EIR

Due to the nature of the proposed project and its physical setting, the project would not result in impacts related to significance criteria b) (effects on any riparian habitat or other sensitive natural community identified in local or regional plans, policies or regulations…) listed above. No identified riparian or other sensitive natural community identified by local or regional plans, policies or regulations would be substantially adversely affected by the proposed project.

Although, as discussed above, eelgrass beds are present within waters in the vicinity of the project site, the project would involve limited over-water work; no dredging or pile removal would be required for the project, and therefore no submerged aquatic eelgrass would be directly affected by removal. Some over-water work could take place related to the re-surfacing of the Terminal One Pier, and other site construction activities could result in an increase in the deposition of sediment into the Bay, thereby reducing the penetration of ambient light into Bay waters. Decreased light penetration into Bay waters can affect phytoplankton production and the presence and growth of eelgrass. The existing condition of waters in this part of the Bay, however, is typically relatively turbid, and light penetration and phytoplankton production is normally limited; in addition, the implementation of **Mitigation Measure HYD-1** as discussed below would limit sedimentation into the Bay and therefore effects on eelgrass.

No other riparian or sensitive natural community was identified within the vicinity of the site.

# 4.3.5 Impact Analysis

## Approach to Analysis

Project components were evaluated using the above significance criteria. For purposes of this EIR, three principal components were considered:

- 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 considers the interrelationship of these three components. For example, a relatively small magnitude impact to a state or federally listed species could 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.

**Impact BIO-1: Construction of the project could have a substantial adverse effect either directly or through habitat modifications, on migratory birds and/or on bird species identified as special-status in local or regional plans, policies, or regulations, or by the CDFW or USFWS. (Criterion a.) (*Less than Significant with Mitigation*)**

Construction activities, especially those that involve heavy machinery, may adversely affect nesting bird species within 0.25 miles of the project site during the nesting season (January 15 – August 15). Migratory birds, including native raptor and passerine bird species, are known to forage and/or nest nearby in the woodlands and grasslands of Miller/Knox park directly north of the project site. As discussed above, suitable Alameda song sparrow foraging and nesting habitat is present within the project site in areas populated with coyote brush and could be affected by project-related construction. Caspian tern nesting habitat, limited to the sandy, low-lying spit existing on the northwest portion of Brooks Island 0.8 miles southwest of the project site, remains at a distance where potential temporary construction and long term operational impacts to the species from the project are unlikely to occur. Similarly, high quality double-crested cormorant nesting habitat is found approximately two miles north of the project site, in the support structures of the Richmond-San Rafael Bridge. Double-crested cormorants are known to forage near their nesting sites (San Francisco Bay National Wildlife Refuge Complex, 2009); therefore, the potential for their nests to be located within the project site is unlikely.

Project construction activities generate noise and visual change which could affect other bird nesting at and around the project site. Noise pollution can be detrimental to wildlife, and bird

populations can be particularly susceptible because they rely on acoustic signals for mating, predator evasion, and communication between adults and offspring, among other behaviors.

Birds within and in the vicinity of the project site are accustomed to varying levels of ambient noise emanating from existing human activities from the Richmond Yacht Club, Brickyard Cove marina, traffic along Brickyard Cove Road, and cargo ship activity accessing the Richmond Inner Harbor channel through the Point Potrero Reach, the body of water between Brooks Island and Point Potrero. Nevertheless, a single stimulus event that may alter the ambient noise environment from activities such as ground disturbance, could have an effect on bird behavior.

Increases in recreational boating that may be associated with the proposed project could increase ambient noise levels in Bay waters and disturb foraging and resting behavior of special-status bird species, which could lead to decreased fitness and reproductive success. Noise due to vessel traffic could disturb bird use of adjacent shoreline areas if traffic were to approach too close to areas utilized by birds. As noted previously, Brooks Island is used as a nesting ground for special status shorebirds such as Caspian tern. Vessel traffic originating at or destined for the project site that comes close to Brooks Island could cause shorebirds to flush and could disturb foraging and nesting. However, the incremental increase in boating activity from the proposed project is likely to be minor compared to the current use of the Point Potrero Reach by marine vessels.

The loss of an active nest of a special status or common bird species that is attributable to 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 which leads to nest abandonment, must be avoided under federal and California law. Implementation of **Mitigation Measure BIO-1**, Nesting Bird Protection Measures would reduce potential impacts on migratory and special-status birds to a less-than-significant level by restricting certain construction activities during breeding bird season, requiring preconstruction surveys, and implementing avoidance measures if active nests are located. In addition, implementing Noise **Mitigation Measure NOI -1**, as discussed in Section 4.10, Noise, would require the use of noise control methods and technologies during project construction, which would further reduce potential impacts on nesting birds.

> **Mitigation Measure BIO-1: Nesting Bird Protection Measures**. If initial ground disturbance and site grading, building demolition, vegetation removal, tree removal, and other construction activities which may compromise breeding birds or the success of their nests cannot be fully avoided during nesting season (January 15 – August 31), nesting birds and their nests shall be protected during construction through the implementation of the following measures:
>
> 1. The applicant shall ensure that a qualified wildlife biologist conduct preconstruction nesting surveys within 7 days of the start of construction or after any construction breaks of 14 days or more. Surveys will be performed for the project site and suitable habitat within 250 feet of the project site in order to locate any active passerine (perching bird) nests and within 500 feet of the project site and off-site staging areas, or line of sight, to locate any active raptor (birds of prey) or double-crested cormorant

nests. Distances may also be modified if obstacles such as topography, buildings, or trees obscure the construction area from active bird nests, or existing disturbances create an ambient background disturbance similar to the proposed disturbance.

2. If active nests are located during the preconstruction bird nesting survey, a no disturbance buffer shall be established. Typically, these buffer distances are 250 feet for passerines and 500 feet for raptors; however, they may be adjusted (for example, if an obstruction, such as a building or hill, is within line-of-sight between the nest and construction). Modifying nest buffers, prohibiting construction within the buffer, modifying construction, and removing or relocating active nests shall be coordinated with the CDFW as appropriate given the nests that are found on the site.

3. Any birds that begin nesting within the project site and survey buffers amid construction activities are assumed to be habituated to construction-related or similar noise and disturbance levels and no work exclusion zones shall be established around active nests in these cases.

**Significance After Mitigation:** Less Than Significant.

**Project Design Features / Mitigation:** Mitigation Measures BIO-1 and NOI-1.

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**Impact BIO-2: Construction of the project could have a substantial adverse effect either directly or through habitat modifications, on bats identified as special-status in local or regional plans, policies, or regulations, or by the CDFW or USFWS. (Criterion a.) (*Less than Significant with Mitigation*)**

Removing the existing Terminal One Warehouse and clearing of vegetation in support of project construction could result in direct mortality of special-status bats roosting. Direct mortality of special-status bats would be a significant impact. Implementation of **Mitigation Measure BIO-2**, Special-Status Bats Protection 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-2: Special-Status Bats Protection.** A preconstruction survey for special-status bats shall be conducted by a qualified biologist in advance of tree and structure removal within the project site to characterize potential bat habitat and identify active roost sites. Should the preconstruction survey find no bat habitat or bat roosting sites, 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:

1. If removal of trees and structures is to occur during the periods 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 the months of winter torpor (approximately October 15 – February 28)] and if 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/or 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. A 100-foot no disturbance buffer is a typical protective buffer distance; however, 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.

2. 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.

3. Removal of trees with potential bat roosting habitat or active bat roost sites shall follow a two-step removal process:

    a) 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.

    b) 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).

4. 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.

**Significance After Mitigation:** Less Than Significant.

**Project Design Features / Mitigation:** Mitigation Measure BIO-2.

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**Impact BIO-3: Noise generated during proposed project construction activities could have a substantial adverse impact on fish and marine mammals. (Criterion a.) (*Less than Significant, No Mitigation Required*)**

### Construction Impacts

Pile driving is the only construction activity with the potential to exceed noise levels that could be harmful to special-status fish and marine mammals. No pile driving will take place as part of the project, and no construction-period impact would therefore result.

### Operational Impacts

Increases in recreational boating that could occur with the project would increase ambient noise levels in the Bay waters and could disturb foraging and nesting behavior of special-status fish, such as herring utilizing eelgrass beds in Brickyard Cove, and marine mammals, which could lead to decreased fitness and reproductive success. Noise due to vessel traffic could disturb wildlife use of

adjacent shoreline areas if traffic were to approach too close to areas utilized by wildlife. However, the increase in boating activity as a result of the proposed project is likely to be minor compared to the current use of the Point Potrero Reach by marine vessels; a less-than-significant impact would result.

**Significance:** Less Than Significant.

**Project Design Features / Mitigation:** None required.

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**Impact BIO-4: Project construction activities, including re-surfacing of the Terminal One Pier, and any restoration of piles beneath the pier, could locally increase suspended contaminant levels and turbidity from re-suspended sediments, which could have indirect impacts on the marine environment, special-status and managed fish taxa, and spawning and foraging habitat for Pacific herring. (Criteria a., d.) (*Less than Significant with Mitigation*)**

Project construction activities such as grading and excavation would generate loose, erodible soils which could result in erosion or siltation into Bay waters. In addition, over-water project construction activities that would occur beneath the existing Terminal One Warehouse (for example, pile restoration) could cause a localized increase in turbidity. A substantial increase in suspended sediment and turbidity may affect wildlife by interfering with visual foraging, interfering with migratory behavior, or resulting in injury to gills of fish. Indirect effects could include increasing susceptibility to predation and reducing availability of food for some species. Chemical contaminants or hazardous materials that may be released from sediments entering the Bay could be toxic to wildlife or the benthic community in and within proximity to Brickyard Cove. The sediment disturbance would be short-term and limited to work occurring along the perimeter of the shoreline piers, and the sediment plume would be expected to dissipate rapidly after disturbance. Because the water in Brickyard Cove system is naturally turbid from the daily boating activities associated with Harbor Channel and Richmond Yacht Club, and after the effects of regular tidal flushing, effects related to turbidity would likely be less than significant to marine wildlife occurring in the Cove with the implementation of **Mitigation Measure HYD-1**.

**Significance After Mitigation:** Less Than Significant.

**Project Design Features / Mitigation:** Mitigation Measure HYD-1.

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**Impact BIO-5: Construction of the project could have a substantial adverse effect on Waters of the U.S. and the State (the San Francisco Bay). (Criterion c.) (*Less than Significant with Mitigation*)**

The San Francisco Bay is a “navigable water” regulated by the USACE under Section 10 of the RHA and Section 404 of the CWA, and the RWQCB under Section 401 of the CWA. Waters of

Bay also are regulated by the BCDC under the McAteer-Petris Act. No freshwater wetlands are present on the project site.

As discussed above, project construction activities such as grading and excavation would generate loose, erodible soils which could result in erosion or siltation into Bay waters, resulting in indirect impacts to Waters of the U.S. and the state. 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. After project construction is completed, site runoff could transport heavy metals, pesticides, fertilizers, trash, pet waste, automotive fluids, and other toxic chemicals into Bay waters.

During project construction, 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 addition, stormwater discharges from the project site are regulated by the NPDES under the Phase I Municipal Separate Storm Sewer System (MS4) program through the issuance of a Municipal Regional Permit (MRP). All new projects in Richmond must comply with the MRP permit provisions. These include provisions related to construction site controls, new development and redevelopment, and industrial and commercial sites.

Post-construction stormwater management on the project site will integrate the use of landscape features to receive, slow, and treat stormwater ("biotreatment" features) that would be designed to meet current Contra Costa County and RWQCB design criteria. Biotreatment features that will be implemented in the project site will include landscaped areas, street planters, and bioswales. These measures would offset anticipated increased sediment runoff resulting from increased stormwater runoff into the Bay.

Additionally, flood protection strategies would be implemented with adaptive capacities to address sea level rise, as discussed in Section 4.8, Hydrology and Water Quality.

#### Permitting Requirements for Work in Waters of the U.S.

Permit approvals and certifications for work in Waters of the U.S. and the state generally include the following:

**Section 404/Section 10 Permits.** Pursuant to Section 404 of the federal Clean Water Act, permit approval from the USACE must be obtained for the placement of dredge or fill material in waters of the United States, including, for example, the placement of rip-rap or other fill along the shoreline. Construction below mean high water elevation in Seaplane Lagoon or elsewhere along the shoreline would require a Section 10 permit. Preparation of the Section 404/Section 10 permit applications would require a Pre-construction Notification (PCN) and supporting documentation. A PCN outlines project activities, areas of impact, construction techniques, and methods for avoiding and reducing impacts on jurisdictional features.

**Section 401 Water Quality Certification/Waste Discharge Requirements.** Approval of Water Quality Certification (WQC) and/or Waste Discharge Requirements (WDRs) must be obtained from the RWQCB for work within waters of the state. Preparation of the Section 401 Water Quality Certification permit applications requires a permit application and supporting materials including construction techniques, areas of impact, and project schedule.

**BCDC Permit.** Permit approval from BCDC is required for placing solid material including pilings, boat docks, or other fill and/or dredging or other extraction of material from or into waters of the state and within the 100-foot shoreline band inland from the mean high tide line along the shoreline. BCDC permit conditions typically include requirements to construct, guarantee, and maintain public access to the Bay; use of specified construction methods to assure safety or to protect water quality; and mitigation requirements to reduce the adverse environmental impacts of the project.

Compliance with state and federal regulations including the Clean Water Act, Fish and Game Code, and BCDC Bay Plan and policies and requirements will occur through the permitting process for development facilitated by the project. At a minimum, the responsible agencies will require any sensitive natural communities, including navigable waters and tidally inundated areas within the 100-foot shoreline band, be mapped as part of their respective permitting processes. The agencies will also typically require the project applicant to implement standard BMPs (see Section 4.8, Hydrology and Water Quality) to avoid and minimize impacts to jurisdictional features.

By adhering to permitting requirements, stormwater control regulations, and implementation of **Mitigation Measure HYD-1** (Water Quality Best Management Practices), impacts to Waters of the U.S. and the state would be reduced to a less-than-significant level.

**Significance After Mitigation:** Less Than Significant.

**Project Design Features / Mitigation:** Mitigation Measure HYD-1.

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**Impact BIO-6: Project homes and other structures would result in an increased level of nighttime artificial illumination and building density in the project site, but would not substantially alter the behavior of fish, marine mammals, and birds. (Criterion d.) (*Less than Significant with Mitigation*)**

**Impacts to Avian Species due to Collisions with Buildings and Artificial Illumination**. The project site is located within the Pacific Flyway along the eastern shoreline of San Francisco Bay. While exact migratory corridors through the area are unknown and vary by species, birds typically follow coastlines, rivers, and mountain ranges in their migratory passages from wintering to breeding grounds and back again. The waters of the Central Bay along the Richmond shoreline provide valuable stopover habitat for migratory birds. Development of the proposed project may increase the risk of bird collisions to a greater extent than is the case for the existing

Terminal One Warehouse. This would be a significant impact because migratory birds are protected under the Migratory Bird Treaty Act and native resident nongame birds are protected from take under the California Fish and Game Code.

Many avian collisions 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 the birds: for example, studies have indicated that blinking lights or strobe lights affect birds significantly less than non-blinking lights (Gauthreaux and Belser, 2006, and Evans et al., 2007).

Collisions with lighted buildings and other structures are not the only danger that nighttime lighting has for migratory birds. Even if collisions are avoided, birds are still at risk of death or injury. Birds can 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 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 the 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 (Reed et al., 1985).

Direct effects on migratory, as well as resident, birds moving through an area include death or injury as the birds collide with lighted structures and other birds that are attracted to the light, as well as collisions with glass during the daytime, while indirect effects for migratory birds include delayed arrival at breeding or wintering grounds, and reduced energy stores necessary for migration, winter survival, or subsequent reproduction (Gauthreaux and Belser, 2006).

Although the project site is already subject to nighttime illumination from nearby development, and studies suggest night-flying birds are attracted to point-sources of light rather than larger illuminated areas, the proposed project is expected to increase the amount of light and glare generated at the project site with the potential use of reflective building materials such as the

glass facades of the residential buildings, street light fixtures, nighttime lighting of signs and logos, and increased vehicle use.

Moreover, the project is located adjacent to constant avian activity known to occur in the Central San Francisco Bay, and therefore development facilitated by the proposed project has the potential to result in a significant new source of building heights and light that may act as a deceptive appearance or attractant for nocturnal migrating birds, resulting in collisions and avian mortality. For these reasons this is considered a potentially significant impact with respect to nocturnal migratory birds. Measures to reduce the risk of avian collisions should be incorporated in the construction and operations of new buildings in an effort to not create unnecessary glare or lighting impacts on adjacent land uses, and would be consistent with 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 San Francisco Bay Plan's Public Access Policy No. 9: *Avoiding Adverse Effects on Wildlife*, which requires development to "locate night lighting away from sensitive habitat areas."

Implementation of **Mitigation Measure BIO-3** would avoid and minimize these potential impacts 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. With implementation of **Mitigation Measure BIO-3**, the impact would be less than significant.

**Fish and Marine Mammal Behavioral Impacts of Artificial Illumination.** Increased artificial illumination of Bay waters at night can alter normal swimming and foraging behavior of fish, marine mammals, and seabirds. Many pelagic schooling fish, such as sardines and herring, are attracted to illumination cast by boats and offshore structures and are frequently subject to increased predation from other fish species as well as marine birds and occasional marine mammals (*ibid*.). Measures that are often used to minimize impacts of artificial night lighting on birds, fish, and marine mammals include installation of dock lighting that is low to the dock surface; uses low-voltage, sodium, or non yellow-red spectrum lights; and is well shielded to restrict the transmittance of artificial light over the water. The potential for impacts on special-status species from artificial night lighting on docks could be potentially significant, but with the implementation of **Mitigation Measure BIO-3**, which would minimize direct artificial lighting of Bay waters by using shielded, low-mounted, and low light-intensity fixtures and bulbs, these impacts would be reduced to a less than significant level.

> **Mitigation Measure BIO-3: Building Design and Lighting Strategies to Address Biological Resources Impacts.** 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 to ensure that it sufficiently minimizes the potential for bird strikes. The City may also consult with resource agencies such as CDFW, USFWS, or others, as it determines to be appropriate during this review.
>
> ***Building Design.*** The project applicant shall provide to the City a written description of the measures and features of the building design that are intended to address potential impacts

on birds. The building design may include, but are not limited to, some of the following measures:

1. 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;

2. Decrease continuity of reflective surfaces using "visual marker" design techniques, which may include:

    - Patterned or fritted glass, with patterns at most 28 centimeters apart,
    - 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,
    - Geometric fenestration patterns that effectively divide a window into smaller panes of at most 28 centimeters, and/or
    - Decals with patterned or abstract designs, with the maximum clear spaces at most 28 centimeters square.

3. 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;

4. 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;

5. Mute reflections in glass using strategies such as angled glass, shades, internal screens, and overhangs; and

6. 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.

***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 contain light. 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:

1. Avoid installation of lighting in areas where not required for public safety

2. 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:

    - Installing motion-sensitive lighting
    - Installing task lighting
    - Installing programmable timers

- Installing fixtures that use lower-wattage, sodium, and yellow-red spectrum lighting.

3. 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 shall review and approve the educational materials prior to building occupancy.

***Documentation.*** The project applicant and/or 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.

**Significance After Mitigation:** Less Than Significant.

**Project Design Features / Mitigation:** Mitigation Measure BIO-3.

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**Impact BIO-7: The project could 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, due to an increase in light and glare. (Criterion d.) (*Less Than Significant with Mitigation*)**

Although the project site is already subject to nighttime illumination from nearby development, and studies suggest night-flying birds are attracted to point-sources of light rather than larger illuminated areas, the proposed project is expected to increase the amount of light and glare generated at the project site with the potential use of reflective building materials such as the glass facades of the residential buildings, street light fixtures, nighttime lighting of signs and logos, and increased vehicle use. With the implementation of **Mitigation Measure BIO-3**, Building Design to Address Biological Resources Impacts, the proposed project would not interfere substantially with the movement of fish or wildlife, or with established migratory wildlife corridors.

**Significance After Mitigation:** Less Than Significant.

**Project Design Features / Mitigation:** Mitigation Measure BIO-3.

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**Impact BIO-8: The project would not conflict with any local policies or ordinances protecting biological resources, such as an ordinance or tree preservation policy, or adopted local, regional, or State Habitat Conservation Plan. (Criteria e., f.) (*Less than Significant, No Mitigation Required*)**

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 the proposed 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. The proposed project would incorporate a public promenade and a segment of the Bay Trail, which would both provide public access to water-related uses consistent with the Bay Plan, in a location where access currently is restricted. The potential impacts discussed above would be reduced less than significant levels through implementation of the proposed mitigation measures. 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 project would be protective of the Bay's biological resources. Thus, the proposed project 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-Delta 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. 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.

The San Francisco Baylands Habitat Goals and Subtidal Habitat Goals Reports provide a scientific foundation and approach for the conservation and enhancement of the baylands and submerged areas of San Francisco Bay. The Baylands Habitat Goals establish a long-term vision for a healthy and sustainable baylands ecosystem. The Goals Project was recommended by the Governor's "California Wetlands Conservation Policy" and by the Comprehensive Conservation and Management Plan (CCMP) of the U.S. Environmental Protection Agency's San Francisco Estuary Project. The Subtidal Habitat Goals were prepared in collaboration among BCDC, California Ocean Protection Council/California State Coastal Conservancy, NOAA, and the San Francisco Estuary Partnership (Goals Project, 2010). These reports contain recommended conservation goals for Bay habitats potentially affected by project activities that can be used by permitting agencies when evaluating proposed projects within their jurisdiction. Although the Comprehensive Conservation Plan 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, as the analysis above shows, any adverse effects on wetlands, shorelines, and subtidal habitats would also have potential negative effects on special-status species, critical habitat for federal listed species, managed fish species Essential Fish Habitat, or habitat for protected marine mammals.

As discussed above, development facilitated by the proposed project could result in potentially significant impacts on biological resources, which could conflict with applicable local policies, ordinances, or plans protecting biological resources. In addition to the implementation of the above mitigation measures, the proposed project would be implemented in a manner intended to:

- Maintain and improve the quality of the bay, ocean, and shoreline areas;
- Promote the use and development of shoreline areas consistent with the City of Richmond General Plan and the San Francisco Bay Plan;
- Cooperate with and otherwise support regulatory programs of existing regional, state, and federal agencies concerned with San Francisco Bay Area biological resources; and
- Protect rare and endangered species as well as the habitats of known plant and animal species that require a relatively natural environment.

Therefore, with implementation of the measures described above, the potential for the project to conflict with applicable local policies or ordinances protecting biological resources within the project site is low and would represent a less than significant impact.

**Significance:** Less Than Significant.

**Project Design Features / Mitigation:** None required.

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## Cumulative Impacts

This analysis evaluates whether the impacts of the proposed project, including development facilitated by the project, together with the impacts of cumulative development, 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 proposed project to this cumulative impact would be considerable. Both conditions must apply in order for a project's cumulative effects to rise to the level of significance.

**Impact C-BIO-1: The proposed 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. (*Less than Significant with Mitigation*)**

The geographic scope of potential cumulative impacts on biological resources encompasses the sensitive natural communities, species occurrences, and habitats within the Terminal One project site as well as biologically linked areas sharing Central San Francisco Bay and its waters. Past projects within this context, including the development of residences, commercial and industrial areas, and infrastructure, have already caused substantial adverse cumulative changes to biological resources within the project site. For example, the Terminal One site sits on fill of what were once tidal mudflats and marshes, with a nearly complete loss of the original habitat types and many of the species that once occurred there. For this reason, natural communities near Point Richmond and Brickyard Cove are limited to open space areas such as those preserved as part of Miller/Knox park. 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, there has already been an adverse significant cumulative effect on biological resources. With the addition of current and other proposed projects, there is an existing significant cumulative impact *without* the project.

The majority of projects considered for cumulative impacts listed in Chapter 6 of this EIR, including the Bottoms residential project, U. C. Berkeley and Lawrence Berkeley National Laboratory Global Campus, Richmond South Shoreline Specific Plan project, and other projects within the City's South Shoreline Area involve the land-based redevelopment of previously developed areas, or involve dredging, pile driving, pier improvements, or increased boat traffic in Richmond. Many of these areas 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 waterbirds 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 project site and vicinity, there could be cumulative impacts on sensitive biological resources located throughout the Bay. For example, the proposed project might affect birds that use not only the project site's foraging and nesting habitats but also other habitats distant from the project site; 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 projects, which are intended to provide a net benefit to biological resources.

With the implementation of **Mitigation Measures BIO-1 through BIO-3** and **Mitigation Measure HYD-1**, the current impact analysis has shown that the project would result in less than significant impacts on biological resources within and in the vicinity of the project site. When considered within the existing condition of biological resources in the project site and Central Bay in the context of past, present and reasonably foreseeable similar projects, the project would add only a minor, incremental contribution to habitat loss, degradation, and direct and indirect impacts to special-status species. The project's contribution would not be considered

cumulatively considerable because it would, like other cumulative projects, implement adopted mitigation measures and be required to comply with an established regulatory framework. Additionally, future projects would be required to demonstrate that they would not have significant effects on these biological resources, although it is possible that some projects may be approved even though they would have significant, unavoidable impacts on biological resources.

Overall, in combination with past, present, and reasonably foreseeable future projects within the geographic context for this analysis, the project would not result in a cumulatively considerable contribution to a cumulative impact on biological resources.

**Significance After Mitigation:** Less Than Significant.

**Project Design Features / Mitigation:** Mitigation Measures BIO-1, BIO-2, BIO-3, HYD-4.

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# References – Biological Resources

Bartling, R., 2006. *Pacific Herring – Status of the Fisheries Report*, prepared for the California Department of Fish and Game, 2006.

California Department of Fish and Game (CDFG), 1999. *Report on the 1980-1995 fish, shrimp, and crab sampling in the San Francisco estuary, California. Prepared for The Interagency Ecological Program for the Sacramento-San Joaquin Estuary*, prepared by Baxter, R., Hieb, K., DeLeon, S., Fleming, K., and J. Orsi, November 1999.

California Department of Fish and Wildlife (CDFW), 2010. List of Vegetation Alliances and Associations (or Natural Communities List), Vegetation Classification and Mapping Program. Available online: www.dfg.ca.gov/biogeodata/vegcamp/natural_comm_list.asp. Accessed February 2015.

California Department of Fish and Wildlife (CDFW), 2015a. 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. Accessed January 2015.

California Department of Fish and Wildlife (CDFW), 2015b. Special Vascular Plants, Bryophytes, and Lichens List. Accessed January 2015.

California Department of Fish and Wildlife (CDFW), 2015c. Special Animals List. Accessed January 2015.

California Department of Fish and Wildlife (CDFW), 2015d. Biogeographic Data (BIOS), http://bios.dfg.ca.gov. Accessed February 2015.

California Native Plan Society (CNPS), 2015. Inventory of Rare and Endagered Plants (online edition, v8-02), California Native Plant Society, Sacramento, CA. Available at: www.rareplants.cnps.org. Accessed January 2015.

California State Coastal Conservancy, Ocean Protection Council, 2010. *San Francisco Bay Subtidal Habitat Goals Report – Conservation Planning for the Submerged Areas of the Bay; 50-Year Conservation Plan.* Prepared by NOAA National Marine Fisheries Service and Restoration Center, San Francisco Bay Conservation and Development Commission, and San Francisco Estuary Partnership. Available at: www.sfbaysubtidal.org/report.html. Accessed February 2015.

City of Richmond, 2012. *Richmond General Plan 2030: Conservation, Natural Resources and Open Space Element.* Adopted April 25, 2012.

City of Richmond, n.d. Municipal Code. Chapter 10.08 and Chapter 15.04.

East Bay Regional Park District (EBRPD), 1983. *Miller/Knox Regional Shoreline Resource Analysis,* prepared by The Planning Collaborative, Inc. with California Archaeological Consultants, Donald Herzog and Associates, and Wetlands Research Associates, September 1983. Available at: www.ebparks.org/Assets/_Nav_Categories/Park_Planning/Miller-Knox/1983+Miller+Knox+Regional+Shoreline+Resource+Analysis.pdf. Accessed February 24, 2016.

East Bay Regional Park District (EBRPD), 1995. Ferry Point Pier and Ferry Point Terminal Amendment to the Miller-Knox Regional Shoreline Land Use-Development Plan. October 1995.

East Bay Regional Park District (EBRPD), 2015. Brooks Island Regional Preserve. Available at: www.ebparks.org/parks/brooks_island. Accessed January 14, 2015.

Gauthreaux, S.A., Belser, C.G., 2006. Effects of Artificial Night Lighting on Migrating Birds, In: Rich, C. and Longcore, T., Ecological Consequences of Night Lighting. Covelo, CA: Island Press, 2006.

Goals Project, 1999. *Baylands Ecosystem Habitat Goals. A Report of Habitat Recommendations Prepared by the San Francisco Bay Area Wetlands Ecosystem Goals Project*. U.S. Environmental Protection Agency, San Francisco, Calif./S.F. Bay Regional Water Quality Control Board, Oakland, CA, Available at: baylandsgoals.org/wp-content/uploads/2015/10/1999sfbaygoals031799.pdf. Accessed January 2016.

Goals Project, 2000. *Baylands Ecosystem Species and Community Profiles: Life Histories and Environmental Requirements of Key Plants, Fish and Wildlife*. Prepared by the San Francisco Bay Area Wetlands Ecosystem Goals Project. P.R. Olofson, ed. San Francisco Bay Regional Water Quality Control Board, Oakland, California. Available: baylandsgoals.org/wp-content/uploads/2015/10/2000Species_and_Community_Profiles.pdf. June 2000.

Goals Project, 2010. *San Francisco Bay Subtidal Habitat Goals Report Conservation Planning for the Submerged Areas of the Bay.* Prepared by the California State Coastal Conservancy and Ocean Protection Council, NOAA National Marine Fisheries Service and Restoration Center, San Francisco Bay Conservation and Development Commission, and the San Francisco Estuary Partnership, Oakland, California. Available at: www.habitat.noaa.gov/pdf/san_francisco_bay_subtidal_habitat_goals_report.pdf. Accessed January 2016.

Graber, R., 1968. *Nocturnal Migrations in Illinois—Different Points of View*, The Wilson Bulletin 20 (1): 36-71.

Hieb, K., 2011. California Department of Water Resources Interagency Ecological Program (IEP) for the San Francisco Estuary Newsletter. *2010 Status and Trends Report Common Crabs of the San Francisco Estuary*. IEP Fall-Winter 2011 Newsletter, Vol 24(4).

Jones, J., and Francis, C.M., 2003. *The effects of light characteristics on avian mortality at lighthouses*, J. Avian Biology 34: 328–333.

Kelly J.T., A.P. Klimley, and CE Crocker. 2007. Movements of green sturgeon, *Acipenser medirostris*, in the San Francisco Bay estuary, California. Environmental Biology of Fishes, 79:281-295.

Kopec, D. and J. Harvey, 1995. *Toxic pollutants, health indices, and population dynamics of harbor seals in San Francisco Bay, 1989-91: a final report*. Technical publication. Moss Landing, CA, Moss Landing Marine Labs, 1995.

LTMS Environmental Windows Work Group, 2004. LTMS Environmental Work Windows, Informal Consultation Preparation Packet. Available at: www.bcdc.ca.gov/pdf/Dredging/Informal_Consult_Pckt.pdf. April 2004.

McEwan, D., and T.A. Jackson, 1996. *Steelhead Restoration and Management Plan for California*. California Department of Fish and Game, Inland Fisheries Division, Sacramento, California. 1996.

Merkel & Associates, Inc., 2010. San Francisco Bay Eelgrass Inventory: October – November 2009. For the San Francisco – Oakland Bay Bridge East Span Seismic Safety Project as part of the Baywide Eelgrass Inventory and Habitat Management Research Program in conjuction with Caltrans and NOAA-Fisheries. November 2010.

Moyle, P. B., R. M. Yoshiyama, J. E. Williams, and E. D. Wikramanayake. 1995. *Fish Species of Special Concern of California*. Second Edition, University of California, Davis, Department of Wildlife and Fisheries Biology. Prepared for the California Department of Fish and Game, Rancho Cordova, CA. June 1995.

National Marine Fisheries Service (NMFS), 2001. Biological Opinion for the San Francisco-Oakland Bay Bridge East Span Seismic Safety Project.

National Marine Fisheries Service (NMFS), 2009. Fact Sheet: Chinook Salmon (*O. tshawytscha*) Central Valley Fall, Late-fall run ESU. http://www.nmfs.noaa.gov/pr/pdfs/species/chinooksalmon_detailed.pdf. Accessed January 2015.

National Marine Fisheries Service (NMFS), 2014. Interim Sound Threshold Guidance for Marine Mammals. Available at: www.westcoast.fisheries.noaa.gov/protected_species/marine_mammals/threshold_guidance.html. Accessed February 2015.

National Oceanic Atmospheric Association (NOAA), 2005. “Endangered and Threatened Species; Designation of Critical Habitat for Seven Evolutionarily Significant Units of Pacific Salmon and Steelhead in California,” Final Rule, 9 Federal Register 70 (170): 52488-52585. September 2, 2005.

National Oceanic Atmospheric Association (NOAA), 2007. *Report on the Subtidal Habitats and Associated Biological Taxa in San Francisco Bay*, 2007. Prepared by NOAA National Marine Fisheries Service. Santa Rosa, CA. June 2007.

National Oceanic Atmospheric Association (NOAA), 2009. "Endangered and Threatened Wildlife and Plants: Final Rulemaking to Designate Critical Habitat for the Threatened Southern District Population Segment of North American Green Sturgeon," Federal Register 74 (195): 52300-52351. October 9, 2009.

Ogden, L.E., 1996. *Collision Course: The Hazards of Lighted Structures and Windows to Migrating Birds, Special Report for the World Wildlife Fund Canada and the Fatal Light Awareness Program, September 1996.* Available at: www.flap.org. Accessed February 2, 2015.

Ogden, L.E., 2002. *Summary Report on the Bird Friendly Building Program: Effect of Light Reduction on Collision of Migratory Birds, Special Report for the Fatal Light Awareness Program, January 2002*. Available at: www.flap.org. Accessed February 2, 2015.

Point Reyes Bird Observatory (PRBO), 2000. California Partners in Flight: CALPIF Study Area Database White-tailed kite. Available at: www.prbo.org/calpif/htmldocs/grassland.html. Accessed February 2015.

Real Time Research, n.d. Bird Research Northwest: Brooks Island Study Area. Available at: www.birdresearchnw.org/project-info/study-areas/san-francisco-bay-area/brooks-island/. Accessed January 2015.

Reed, Jonathan R., Sincock, John L., and Hailman, Jack P., 1985. *Light Attraction in Endangered Procellariiform Birds: Reduction by Shielding Upward Radiation.* The Auk 102: [377-383] April 1985.

Richardson Bay Audubon Center & Sanctuary, 2015. *All About Eelgrass*. Available at: richardsonbay.audubon.org/all-about-eelgrass. Accessed February 2015.

San Francisco Bay Area National Parks Science and Learning (SFBNPSL), 2015. Intertidal Ecosystems. Available at: www.sfnps.org/intertidal. Accessed February 2015.

San Francisco Bay National Wildlife Refuge Complex, 2009. *Tideline*. Volume 30, Number 4. San Francisco Bay Wildlife Society. Winter, 2009.

Southwest Fisheries Science Center, 2014. "Sea Lion Diet," Available at: swfsc.noaa.gov/textblock.aspx?Division=PRD&ParentMenuId=148&id=1252. Accessed February 2016.

Tasto, R. N., 1979. "San Francisco Bay: Critical to the Dungeness Crab?" In: T. J. Conomos, editor, San Francisco Bay: The Urbanized Estuary. Pacific Div Am Ass Adv Sci, San Francisco, California: 479-490, 1979.

United States Fish and Wildlife Service (USFWS), 1999. "Endangered and Threatened Species; Threatened Status for Two Chinook Salmon Evolutionary Significant Units," Federal Register Final Rule, Volume 64, Number 179, pp. 50,395-50,415. September 16, 1999.

United States Fish and Wildlife Service (USFWS), 2000. *Designated Critical Habitat: Critical Habitat for 19 Evolutionary Significant Units of Salmon and Steelhead in Washington,*

*Oregon, Idaho, and California*, Federal Register, Volume 65, Number 32, February 16, 2000.

United States Fish and Wildlife Service (USFWS), 2011. "Endangered and Threatened Wildlife and Plants; Initiation of Status Review for Longfin Smelt," Federal Register, Volume 76, Number 47. March 10, 2011.

United States Fish and Wildlife Service (USFWS), 2015a. Federally Endangered and Threatened Species List for the *Richmond, Briones Valley, San Francisco North, Oakland West, Oakland East, Petaluma Point, Mare Island, Benicia, San Quentin* USGS 7.5-minute topographic quadrangles. January 2015.

Verheijen, F.J., 1981. *Bird kills at lighted man-made structures: not on nights close to a full moon*. American Birds 35 (3): 251-254.

Western Bat Working Group (WBWG), 2016. Western Bat Species Regional Priority Matrix. Available at: wbwg.org/matrices/species-matrix/. Accessed January 15, 2016.

Zeiner, D.C., Laudenslayer, W.F., Mayer, W.E., and White, M., ed., 1990. *California's Wildlife, Volume I-III: Amphibians and reptiles, Birds, Mammals*. California Statewide Wildlife Habitat Relationships System, California Department of Fish and Game, Sacramento, CA.

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# 4.4 Cultural and Paleontological Resources

## 4.4.1 Introduction

This section includes a discussion of the potential cultural and paleontological resources on the Terminal One project site. Also discussed are the physical and regulatory setting, the significance criteria used for determining environmental impacts, and potential impacts associated with construction, operation, and maintenance of the proposed project. Cultural resources include architectural resources, historic- and prehistoric-era archaeological resources, and human remains. Paleontological resources include fossilized remains of vertebrate and invertebrate organisms, fossil tracks, and plant fossils. References relied upon in this section include the *Cultural and Paleontological Resources Study for the Terminal One Project* prepared by LSA Associates, Inc. (LSA) in December 2004 and the *Terminal No. 1 Historic Evaluation* prepared by Preservation Architecture in June 2004.

## 4.4.2 Environmental Setting

The Terminal One project site occupies approximately 13.3 acres at 1500 Doman Drive at the southern reach of the Point Richmond neighborhood. The project site is located on the shores of San Francisco Bay at an elevation that ranges from approximately 10 feet above mean sea level at the site's southern waterfront edge to approximately 19 feet above mean sea level at the site's northern frontage along Brickyard Cove Road. The soil is classified as Urban Land by the Natural Resources Conservation Service (NRCS), and consists of artificial fill up to 20 feet deep over Bay Mud, sedimentary and volcanic rock (Goerz, 2004 cited in LSA, 2004). The project site was developed in its entirety as a port terminal and although the site has been partially cleared of port-related facilities, certain site improvements remain in place, including a 1915 reinforced concrete wharf, the Terminal One warehouse, railroad spurs, and concrete foundations that once supported tanks for a liquid cargo facility.

### Paleontological Background

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 fossils of 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 or fauna.

### Prehistoric Background

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 and have divided human history in the region into four broad 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.

## 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 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, the descriptions can mask Native adaptability and self-identity. Our current understanding of California's Native cultures suggests that 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. After European contact, Ohlone society was severely disrupted by missionization, disease, and displacement. Today, the Ohlone still have a strong presence in the San Francisco Bay Area, and are highly interested in their historic and prehistoric past.

## Historic Context

The first Europeans to visit the eastern part of the San Francisco Bay area were the Spanish explorers Pedro Fages and Reverend Juan Crespi, who passed through in 1772. After Mexico won independence from Spain in 1821, large tracts of land in California were granted to military heroes and loyalists. Following the 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).

Since its inception, the City of Richmond's southern shoreline has included a terminal port, where its 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. As reported in a 1913 engineering study, "Richmond owes its original foundation to the opportunity afforded for the construction of wharves and piers reaching into deep water close to the natural shoreline" (cited in Preservation Architecture, 2004). In a report prepared in 1912 for the Richmond Harbor Project, which included the original plans for Terminal One, as many as seven privately owned commercial wharves were documented along Richmond's waterfront.

The arrival of the Santa Fe railroad (1899–1900), the establishment of Standard Oil and its industrial waterfront (1901–1902), and the founding of the municipality of Richmond (1905) were also pivotal developments for the Richmond waterfront. A second era of industrial and commercial development took place in the latter half of the 1920s, at the time of the City's association with regional port developer John C. Parr, and the establishment of the Parr-Richmond Terminal Corporation, the Port of Richmond, and the Inner Harbor Project. With this association, Richmond's plans for a municipally owned and operated port were diverted to private control, into which Terminal One was integrated (Preservation Architecture, 2004).

The Terminal One facility was originally constructed in 1915 and consists of a reinforced concrete wharf and transit shed building. Plans for the site appear as early as 1912 as part of the Richmond Harbor Project, a municipal system designed by the City of Richmond. The 1912 plan also noted the locations of several privately owned commercial wharves along Richmond's waterfront. The original site was limited to the water and landfill over which it and its access road and rail line stood. In the 1920s, the waters surrounding Terminal One area were filled to increase the size of the site, and the site's primary use was converted to a bulk liquid (petroleum) transport facility, and a pair of warehouse additions were constructed to the north side of the wharf. While originally built as a trans-shipment point between Richmond's industries via the railroad and regional shipping routes, the complex was converted to an independent liquid storage and transport facility just over a decade after its original construction (Preservation Architecture, 2004).

During World War II, Richmond's Inner Harbor was transformed into 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 Terminal Five, a designated Richmond Historic Landmark as a contributor to Richmond Shipyard. Terminal One's association with the events of World War II is not recorded, except to note that the U.S. Army utilized this facility, with the assumption that it continued to be used for bulk liquid storage and transport (Preservation Architecture, 2004).

## 4.4.3 Findings

### Paleontological Findings

On a regional scale, fossilized plants, animals, and microorganisms are prevalent throughout the Bay Area. For example, many of the hills in the East Bay are made up of sedimentary bedrock that is known to contain a wide range of fossils, including radiolarians, mollusks, diatoms, foraminifers, and non-marine vertebrates. In addition, even geologically young fluvial deposits have been known to contain fresh water mollusks and extinct late Pleistocene vertebrate fossils. The project site overlies young Holocene-age geologic units. Beneath a cap of artificial fill lie deposits of mud and silt associated with the present-day bay estuary, known as Bay Mud. These types of geologic deposits are too young (i.e., less than 10,000 years old) to have fossilized the remains of organisms, or to have preserved vertebrate fossils. While the Bay Mud may contain a variety of marine invertebrate remains and organic matter (mollusks, clams, fomanifera, microorganisms, etc.), such remains are not fossilized, would likely exist in other Bay Mud

deposits around the Bay Area, and would not be considered significant or unique. For these reasons, and in accordance with Society of Vertebrate Paleontology (1995) standards, the paleontological potential of the site is low.

## Archaeological Findings

In 2004, LSA completed a cultural resources study for the proposed project site, which included a records search at the Northwest Information Center of the California Historical Resources Information System (File No. 04-690). The results indicated that no archaeological resources had been previously identified within the project site and that two prehistoric archaeological sites consisting of shell mounds had been identified within a 0.5-mile radius. LSA also completed an intensive archaeological surface survey of the project site and conducted archaeological monitoring during geotechnical investigations for the proposed project. The field studies did not identify archaeological resources or other evidence of past human use or occupation in the project site and additional study was not recommended (LSA, 2004).

## Architectural Findings

The Terminal One Industrial Complex on the project site consists of a 1915 reinforced concrete wharf, a 1915 transit shed building of composite construction (concrete, steel, wood), and a pair of warehouse additions constructed in 1920, also of composite construction. Additionally, extensive paved areas, railroad tracks, a truck weigh scale, the concrete remains of a railroad loading dock, and the remains of concrete pads that supported tanks are also present on the site. The complex is a surviving example of early-to-mid 20$^{th}$ century industrial structures and buildings, specifically a wharf and associated transit complex.

In 2004, Preservation Architecture documented and evaluated the buildings and structures of the Terminal One Industrial Complex for their potential historical significance (Preservation Architecture, 2004). The evaluation included review of the buildings and structures for their eligibility for designation as a historic resource per the City's criteria for such designation (Richmond Register/Richmond Municipal Code), which, in 2004, included the following:

> *A structure, site, or other improvement may be designated a historic resource within the City or may be designated an historic district if it meets any of the following criteria:*
>
> *1) It exemplifies or reflects valued elements of the City's cultural, social, economic, political, aesthetic, engineering, archaeological, or architectural history.*
>
> *2) It is identified with persons or events important in local, state, or national history.*
>
> *3) 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.*
>
> *4) 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.*

*5) It is representative of the notable work of a builder, designer, or architect whose style influenced the City's architectural development (Preservation Architecture, 2004).*

As summarized in this study, in the context of the establishment of San Francisco Bay ports, shipping, and the development of the Panama Canal,[1] the construction of the Terminal One Industrial Complex is an isolated event, disassociated from overall port development and the Richmond Harbor. Additionally, the complex is not an important municipal terminal but is an isolated terminal structure that comprised a small component of a private harbor. Preservation Architecture therefore recommended the complex not eligible for listing under National Register of Historic Places (NRHP) / California Register of Historical Resources (CRHR) Criteria 1/A for association with an important event. The Terminal One Industrial Complex was a collective effort over a period of time and is not associated with any one individual or specific organization. Preservation Architecture therefore recommended the complex not eligible for listing under NRHP/CRHR Criteria 2/B for association with an important person. The buildings and structures at the Terminal One Industrial Complex are not unique in engineering or construction and are recommended not eligible for listing under NRHP/CRHR Criteria 3/C. Finally, the Terminal One Industrial Complex would not yield information important to history and was recommended not eligible for listing under NRHP/CRHR Criteria 4/D. In summary, Preservation Architecture recommended that the Terminal One Industrial Complex does not meet the eligibility criteria for listing in the NRHP or CRHR, nor is it eligible for listing in the City of Richmond Historic Register (Preservation Architecture, 2004).

On November 3, 2014, ESA architectural historian Katherine Anderson completed an updated survey and evaluation of the project site and found no substantial changes to the Terminal One Industrial Complex. Nothing from the survey or additional research conducted altered the earlier conclusions of the 2004 report. An updated Department of Parks and Recreation Form 523 form has been submitted to the Northwest Information Center of the California Historical Resources Information System at Sonoma State University**.**

# 4.4.4 Regulatory Setting

## Federal Regulations

Archaeological resources are protected through the National Historic Preservation Act (NHPA) of 1966, as amended (16 USC 470f), and its 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 NRHP) and to afford the Advisory Council on Historic Preservation (ACHP) a reasonable opportunity to comment on any undertaking that would adversely affect historic properties. Under the NHPA, a property is considered significant if it meets the NRHP listing criteria at 36 CFR 60.4, as stated below:

[1] The development of the Port of Richmond took place concurrently with, and was spurred by, the completion of the Panama Canal, which was anticipated to benefit established Pacific ports through an increase in shipping and commerce.

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

a) That are associated with events that have made a significant contribution to the broad patterns of our history, or

b) That are associated with the lives of persons significant in our past, or

c) That embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction, or

d) That have yielded, or may be likely to yield, information important in prehistory or history.

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 State Historic Preservation Officer (SHPO) and interested parties;
- Assess the effects of the undertaking on historic properties;
- Consult with the SHPO, other agencies, and interested parties to develop an agreement that addresses the treatment of historic properties and notify the ACHP; and finally,
- Proceed with the project according to the conditions of the agreement.

## California 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 (OHP), as an office of the California Department of Parks and Recreation, implements the policies of the NHPA on a statewide level. The OHP also maintains the California Historical Resources Inventory. The SHPO 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 CRHR; (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 a 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:

1) Contains information needed to answer important scientific research questions and that there is a demonstrable public interest in that information.

2) Has a special and particular quality such as being the oldest of its type or the best available example of its type.

3) Is directly associated with a scientifically recognized important prehistoric or historic event or person" (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]).

### California Register of Historical Resources

The CRHR 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 to the CRHR are based on NRHP criteria (PRC Section 5024.1[b]). Certain resources are determined by the statute to be automatically included in the CRHR, including California properties formally determined eligible for or listed in the NRHP.

To be eligible for the CRHR a historical resource must be significant at the local, state, and/or federal level under one or more of the following criteria:

1) Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;

2) Is associated with the lives of persons important in our past;

3) Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values; or,

4) Has yielded, or may be likely to yield, information important in prehistory or history (PRC Section 5024.1[c]).

For a resource to be eligible for the CRHR, it must also retain enough integrity to be recognizable as a historical resource and to convey its significance, and be 50 years or older (except where it can be demonstrated that sufficient time has passed to understand the historical importance of the resource).

### California Public Resources Code

In addition to the definition of "unique archaeological resources" in PRC Section 21083.2, sections of the PRC that are applicable include:

- PRC Section 5097.5 – any unauthorized removal or destruction of archaeological, paleontological resources on sites located on public lands is a misdemeanor.

- PRC Section 5097.99 – prohibits obtaining or possessing Native American artifacts or human remains taken from a grave or cairn; sets penalties.

### California Health and Safety Code

The project is also subject to the provisions of the California Health and Safety Code with respect to the discovery of human remains. Health and Safety Code Section 7050.5 states that "Every person who knowingly mutilates or disinters, wantonly disturbs, or willfully removes any human remains in or from any location other than a dedicated cemetery without authority of law is guilty of a misdemeanor, except as provided in Section 5097.99 of the Public Resources Code."

The measures outlined in Section 7050.5 of the Health and Safety Code and PRC Section 5097.98 are considered standard mitigation measures implemented in the event of an accidental discovery of human remains during excavation activities.

### Senate Bill 18

Senate Bill 18 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.

## Local Regulations

### *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.

As discussed above, Preservation Architecture reviewed the eligibility of the Terminal One Industrial Complex, including the Terminal One Warehouse, for its eligibility for designation as a

historic resource per the City's criteria for such designation (Richmond Register/Richmond Municipal Code) in 2004. This evaluation concluded that the Terminal One Warehouse is isolated from the historic contexts of Richmond, and did not fulfill any of the eligibility criteria for the Richmond Register.

### *City of Richmond General Plan 2030*

The Richmond General Plan 2030 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

Consistent with Appendix G of the CEQA *Guidelines*, a project would cause adverse impacts to cultural 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 a unique archaeological resource pursuant to CEQA Guidelines Section 15064.5;

c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature; or

d) Disturb any human remains, including those interred outside of formal cemeteries.

According to the CEQA *Guidelines* Section 15064.5(a)(3), in general, a resource shall be considered "historically significant" if the resource meets the criteria for listing on the CRHR (PRC Section 5024.1). This section also provides standards for determining what constitutes a "substantial adverse change" that must be considered a significant impact on historical resources.

In addition, a resource included on a local register of historical resources, as defined by PRC Section 5020.1(k) or identified as significant in a historical resource survey meeting the requirements of PRC Section 5024.1(g), shall be presumed to be historically or culturally significant.

## 4.4.6 Discussion of Impacts and Mitigation Measures

**Impact CUL-1: Project implementation would not cause a substantial adverse change in the significance of a historical resource as defined in CEQA Guidelines, Section 15064.5. (Criterion a.) (*Less than Significant, No Mitigation Required*)**

The Terminal One project would result in a significant impact if the project activities cause a substantial adverse change to a historical resource, herein referring to historic-era 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.

The Terminal One Industrial Complex has been recommended not eligible as a historical resource (Preservation Architecture, 2004; ESA, 2015). No additional consideration of the buildings and structures in the project site is necessary. The proposed project will not cause a substantial adverse chance in the significance of a historical resource.

**Significance:** Less Than Significant.

**Project Design Features / Mitigation:** None required.

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**Impact CUL-2: Project construction could cause a substantial adverse change in the significance of an archaeological resource, including those determined to be a historical resource defined in Section 15064.5 or a unique archaeological resource defined in PRC 21083.2. (Criterion b.) (*Less than Significant with Mitigation*)**

The Terminal One project would result in a significant impact if the project would cause a substantial adverse change to an archaeological resource through physical demolition, destruction, relocation, or alteration of the resource.

The cultural resources study completed for the project site did not identify archaeological resources (LSA, 2004). There are no anticipated buried archaeological resources at the project site, however the unintentional discovery of archaeological resources cannot be entirely discounted. Inadvertent discovery of archaeological resources would be a potentially significant impact. Implementation of **Mitigation Measure CUL-1 (Accidental Discovery of Archaeological Resources)** would ensure that work would halt in the vicinity of an unanticipated find so that a qualified archaeologist can make additional recommendations to reduce potential impacts to a less-than-significant level.

**Mitigation Measure CUL-1: Accidental Discovery of Archaeological Resources.** During project construction, if prehistoric or historic-era cultural materials are encountered, all construction activities within 100 feet of the find 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.

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, in consultation with the City and the appropriate Native American representative 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 avoidance is not feasible, a qualified archaeologist, in consultation with the lead agency and the appropriate Native American representative, shall prepare and implement a detailed Archaeological Research Design and Treatment Plan (ARDTP). 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 to target 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 before being finalized, curation of artifacts and data at a local facility acceptable to the appropriate Native American representative, and dissemination of final confidential reports to the appropriate Native American representative, the Northwest Information Center of the California Historical Resources Information System, the City, and interested professionals.

**Significance:** Less Than Significant.

**Project Design Features / Mitigation:** Mitigation Measure CUL-1.

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**Impact CUL-3: Project construction could directly or indirectly destroy a unique paleontological resource or site or unique geologic feature. (Criterion c.) (*Less than Significant with Mitigation*)**

The Terminal One project would result in a significant impact if the project would directly or indirectly destroy a unique paleontological resource or site or unique geologic feature.

While the paleontological sensitivity of the units underlying the project site is low (LSA, 2004), there is a remote possibility that paleontological resources may be discovered during excavations

associated with the project. Inadvertent discovery of paleontological resources would be a potentially significant impact. Implementation of **Mitigation Measure CUL-2 (Accidental Discovery of Paleontological Resources)** would ensure that work would halt in the vicinity of an unanticipated find so that a qualified paleontologist can make additional recommendations to reduce potential impacts to a less-than-significant level.

> **Mitigation Measure CUL-2: Accidental Discovery of Paleontological Resources.** If paleontological resources, such as fossilized bone, teeth, shell, tracks, trails, casts, molds, or impressions are discovered during ground-disturbing activities, work shall stop in that area and within 100 feet of the find until a qualified paleontologist can assess the nature and importance of the find and, if necessary, develop appropriate treatment measures in conformance with Society of Vertebrate Paleontology standards, and in consultation with the City of Richmond.

**Significance After Mitigation:** Less Than Significant.

**Project Design Features / Mitigation:** Mitigation Measure CUL-2.

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**Impact CUL-4: Project construction could disturb any human remains, including those interred outside of formal cemeteries. (Criterion d.) (*Less than Significant with Mitigation*)**

The Terminal One project would result in a significant impact if the project could disturb any human remains, including those interred outside of formal cemeteries.

While there is no indication that the project site has been used for human burial purposes in the recent or distant past, the discovery of human remains during construction that involves ground disturbance cannot be entirely discounted. Disturbance of human remains would be a potentially significant impact. Implementation of **Mitigation Measure CUL-3 (Accidental Discovery of Human Remains)** would ensure that impacts to human remains would be less-than-significant. To facilitate legal compliance, project 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: Accidental 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, in the event of the discovery of human remains during construction, there shall be no further excavation or disturbance of the site or any nearby area reasonably suspected to overlie adjacent remains. 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 his authority, he 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 land owner shall

re-inter the human remains and items associated with Native American burials on the property in a location not subject to further subsurface disturbance.

**Significance After Mitigation:** Less Than Significant.

**Project Design Features / Mitigation:** Mitigation Measure CUL-3.

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## Cumulative Impacts

The analysis of cumulative Cultural and Paleontological Resources impacts is presented in Chapter 6, Other Statutory Sections, of this EIR.

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# References – Cultural and Paleontological Resources

Environmental Science Associates (ESA), 2015. Department of Parks and Recreation Form 523 Update for the Terminal No. 1 Industrial Complex. Prepared for the City of Richmond Community and Economic Development Department Redevelopment Agency. January 2015.

Hoover, Mildred Brooke, Hero Eugene Rensch, Ethel Rensch, and William N. Abeloe, 2002. *Historic Spots in California.* Fifth edition, revised by Douglas E. Kyle. Stanford University Press, Stanford, California.

LSA Associates, Inc. (LSA), 2004.*Cultural and Paleontological Resources Study for the Terminal One Project, Point Richmond, Contra Costa County.* Submitted to City of Richmond Redevelopment Agency. December 2004.

Milliken, Randall T., 1995. *A Time of Little Choice: The Disintegration of Tribal Culture in the San Francisco Bay Area, 1769-1810.* Ballena Press, Menlo Park, 1995.

Milliken, Randall, Richard Fitzgerald, Mark G. Hylkema, Randy Groza, Tom Origer, David G. Bieling, Alan Leventhal, Randy S. Wiberg, Andrew Gottsfield, Donna Gillette, Viviana Bellifemine, Eric Strother, Robert Cartier, and David A. Fredrickson, 2007. Punctuated Culture Change in the San Francisco Bay Area. Chapter 8 in *California Prehistory: Colonization, Culture, and Complexity*, edited by Terry L. Jones and Kathryn A. Klar. Altamira Press, Lanham, Maryland, 2007.

Preservation Architecture, 2004. *Terminal No. 1, Historic Evaluation located at Point Richmond, Richmond, CA.* Prepared for the City of Richmond Community and Economic Development Department Redevelopment Agency. June 2004.

Society of Vertebrate Paleontology (SVP), 1995. *Assessment and mitigation of adverse impacts to nonrenewable paleontologic resources: standard guidelines,* Society of Vertebrate Paleontology News Bulletin, Vol. 163, p. 22–27. 1995.

# 4.5 Geology, Soils, and Mineral Resources

## 4.5.1 Introduction

This section identifies and evaluates potential impacts related to geology, soils, and seismic conditions that could result from the proposed project. This section establishes existing conditions based on regional geology and seismicity as well as a geotechnical investigation for the proposed project (Engeo, 2015). The existing setting is followed by a discussion of the soils, geologic units, earthquake faults, and potential seismic hazards at the project site. 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.

## 4.5.2 Environmental Setting

### Regional Setting

The project site 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. Franciscan rocks are overlain by volcanic cones and flows of the Quien Sabe, Sonoma and Clear Lake volcanic fields (CGS, 2002a).

### Project Setting: Geology and Soils

Review of geotechnical reports prepared for the project site and nearby development shows the soils to consist of alluvial deposits overlain by a soft to very stiff marine clay deposit, locally known as “Bay Mud.” 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. In general, according to the most recent geotechnical report for the project site, the

[1] A geomorphic province is an area that possesses similar bedrock, structure, history, and age.

stratigraphy of the site from youngest to oldest consists of artificial fill, Young Bay Mud (YBM), Older Alluvium and bedrock (Engeo, 2015).[2]

The project site sits entirely on artificial fill generated from the hillsides to the north which consists of bedrock from the Franciscan complex. Based on observations of the hillside to the north of the project site and the existing fill, much of the rock is sandstone that ranges from weathered to extremely weathered. The fill material is generally a few feet thick across the project site; however, site surveys indicate the presence of a former swale along the western boundary where the fill material may be as much as 20 to 30 feet thick. The YBM thickness ranges from near zero feet thick up to as much as 40 feet thick. The YBM is underlain in most areas by a layer of stiff to hard clayey silt and clayey sand interpreted to be older alluvium deposited prior to the rise of sea level. The stiff older alluvium is underlain in all subsurface exploration points by weathered bedrock of the Franciscan Formation.

During the most recent geotechnical investigation at the site, the groundwater table was observed in the fill above the YBM strata, at depths ranging from 2 to 8 feet below existing grade (Engeo, 2015). Due to the YBM's relatively impervious surface, groundwater infiltrating through the fill is likely to perch on top of the YBM. Based on the site's proximity to the Bay, tidal fluctuations and seasonal rain events would likely affect the elevation of the groundwater table.

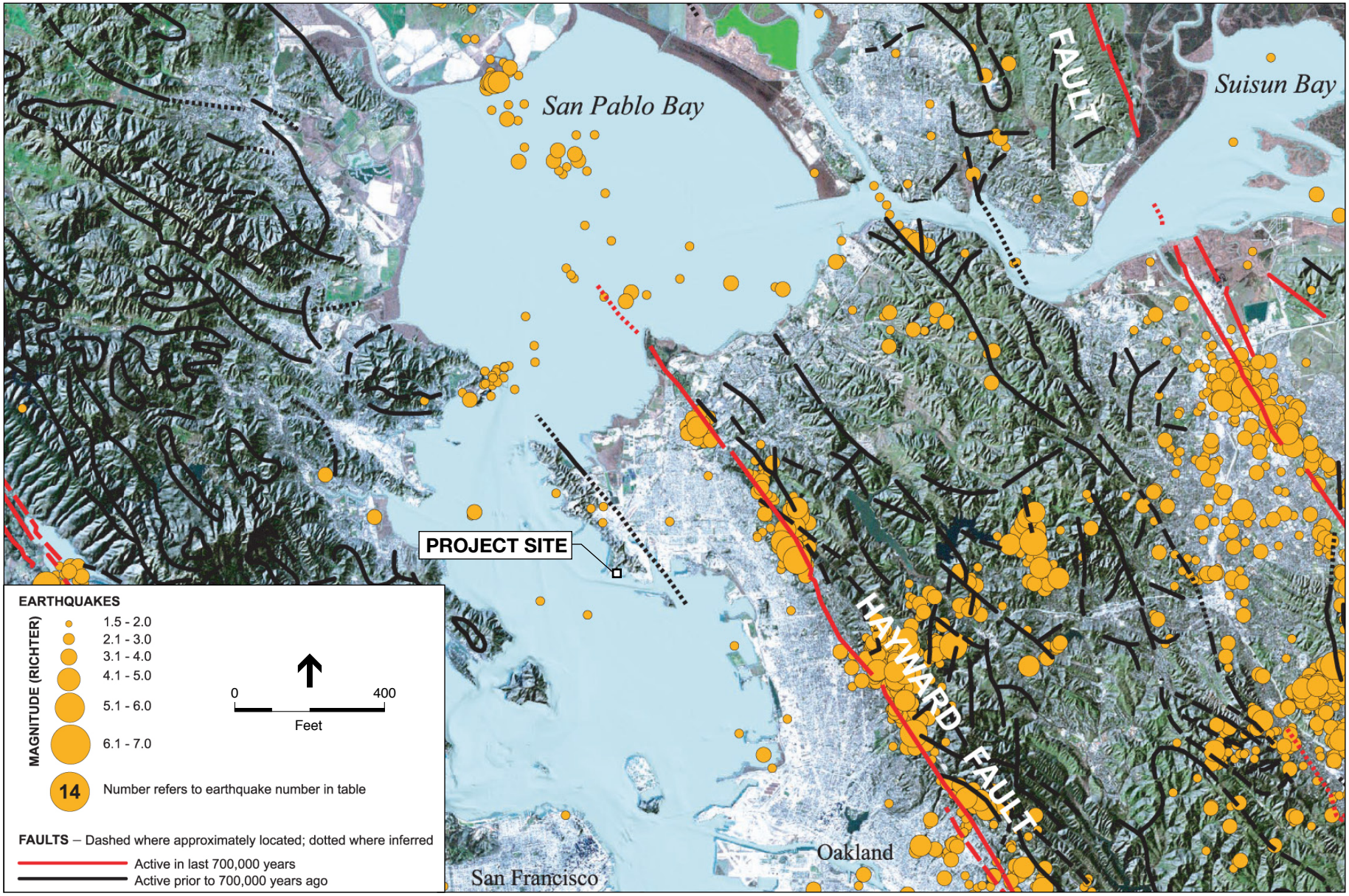
## Project Setting: Faults and Seismicity

The project site 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.**[3] The U.S. Geological Survey (USGS) along with the California Geological Survey 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 indicated a 63 percent likelihood that such an earthquake event will occur in the Bay Area (USGS, 2008).

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).

[2] YBM encountered below fill also consists of what is classified as soft to very soft silty clay and clayey silt (Engeo, 2015).

[3] 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)



**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 PROJECT AREA VICINITY**

| Fault | Distance and Direction from Project Site | Recency of Movement | Historical Seismicity[a] | Maximum Moment Magnitude Earthquake (Mw)[b] |
|---|---|---|---|---|
| Hayward | 4 miles northeast | Historic (1868 rupture) | M 6.8, 1868<br>Many <M 4.5 | 7.1 |
| San Andreas | 15 miles southwest | Historic (1906; 1989 ruptures) | M 7.1, 1989<br>M 8.25, 1906<br>M 7.0, 1838<br>Many <M 6 | 7.9 |
| Concord–Green Valley | 18 miles northeast | Historic (1955) | Historic active creep | 6.7 |
| Rodgers Creek | 18 miles north | Historic | M 6.7, 1898<br>M 5.6, 5.7, 1969 | 7.0 |
| Calaveras | 22 miles east | Historic (1861 1911, 1984) | M 5.6–M 6.4,1861<br>M 6.2, 1911, 1984 | 6.8 |
| Marsh Creek–Greenville | 25 miles northeast | Historic (1980 rupture) | M 5.6 1980 | 6.9 |
| San Gregorio | 30 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, 2010; Peterson e. al., 1996; USGS, 2003a.

Ground movement during an earthquake can vary depending on the overall magnitude, distance to the fault, focus of earthquake energy, and type of geologic material. The composition of underlying soils, even those relatively distant from faults, can intensify ground shaking. For this reason, earthquake intensities are also measured in terms of their observed effects at a given locality. The Modified Mercalli (MM) intensity scale 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), and intensities ranging from IV to X could cause moderate to significant structural damage.[4] The intensities of an earthquake will vary over the region of a fault and generally decrease with distance from the epicenter of the earthquake.

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.[5] Other principal faults capable of producing significant ground shaking in the Bay Area are listed on **Table 4.5-1** and include the Concord-Green Valley, Marsh Creek-Greenville, San Gregorio and Rodgers Creek Faults.

4 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.
5 A strike-slip fault is a fault on which movement is parallel to the fault's strike or lateral expression at the surface.

**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

Of the faults in the vicinity of the proposed project, the closest active fault to the site is the Hayward fault. Inactive faults are also located throughout the Bay Area. Inactive faults with a long period of inactivity do not provide any guarantee that a considerable seismic event could occur. Occasionally, faults classified as inactive can exhibit secondary movement during a major event on another active fault.

### *Hayward Fault*

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.[6] 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 characteristic feature of the Hayward fault is its well-expressed and relatively consistent fault creep.[7] Although large earthquakes on the Hayward fault have been rare since 1868, slow fault creep has continued to occur and has caused measurable offset. Fault creep on the East Bay segment of the Hayward fault is estimated at 9 millimeters per year (mm/yr) (Peterson, et al., 1996). However, 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 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 Zone 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

6 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).

7 Fault creep is defined as the slow, more or less continuous movement occurring on faults due to ongoing tectonic deformation (USGS, 2012).

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 (ABAG, 2003).

### *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.

This fault separates rocks of different ages, with older rocks west of the fault and younger sedimentary rocks to the east. The location of the main active fault trace is defined by youthful geomorphic features (linear scarps and troughs, right-laterally deflected drainage, and sag ponds) and local groundwater barriers. The Calaveras fault is designated as an Alquist-Priolo Earthquake Hazard Zone. There is a distinct change in slip rate and fault behavior north and south of the vicinity of Calaveras Reservoir. North of Calaveras Reservoir, the fault is characterized by a relatively low slip rate of 5-6 mm/yr and sparse seismicity. South of Calaveras Reservoir the fault zone is characterized by a higher rate of surface fault creep. 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 project site is 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 project region.

***Ground Shaking.*** Strong ground shaking from earthquakes generated by active faults in the Bay Area is a significant hazard to the project site and could affect the site during the next 30 years. During the life of the project, proposed 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 at the project site 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 project site. 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 an 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).

***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 project site is considered to have a very high potential for liquefaction (ABAG, 2015). The geotechnical investigation completed in 2015 for the project site included an analysis of liquefaction potential; however, the analysis was limited to the fill material since the underlying YBM was considered too plastic to be subject to liquefaction and the alluvium is typically too old and deep to be considered a significant liquefaction risk (Engeo, 2015). The results indicated that the sand, silty sand, and sandy silt soil deposits in the location of the mapped historic swale have the highest potential for liquefaction (ibid).

***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.

Given the geologic setting and characteristics of the underlying materials of the project site, the site could be subjected to earthquake-induced settlement.

### Other Geologic Hazards

***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 five 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 soils, 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.

As described above, under Differential Settlement, the project site is underlain by poorly engineered artificial fill that varies in depth and thickness; geotechnical borings indicate up to 25 feet of artificial fill in the area of the historic swale. Compressible Bay Mud underlies the fill and is up to 40 feet thick. At locations on the site where there is a more limited fill layer and thin YBM deposits, settlement would be nominal. However, in areas of greater fill depth on the site, static settlement would likely occur (Engeo, 2015).

***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.

Project site soil erosion is dominated 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 project site does not experience excessive soil erosion.

***Landslides/Slope Failure.*** Landslide risk includes 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).

In addition, particular to the presence of soft Bay Mud and YBM deposits at the project site, slope instability can also occur resulting from lateral loading (e.g., placement of new structures) on the YBM underlying the project site. Shoreline locations can be prone to this instability depending on the characteristics of the YBM, 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 project site as including areas that are generally stable to marginally stable along the coastal edges and within the center of the site, and unstable inland near Brickyard Cove Road, with regards to landslide potential (City of Richmond, 2012).

# 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)[8], 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;
- 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.

8 *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.

## Local Regulations

### *Richmond City General Plan*

The City has established goals, policies, and implementing actions in the Richmond General Plan 2030 in regards to geologic hazards. Goals and actions as outlined in the Public Safety and Noise Element that would apply to the proposed 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.
>
> *Goal SN3 Emergency Preparedness*. Develop effective mechanisms for a coordinated response to emergencies and natural disasters to best protect residents, businesses and the environment.
>
> *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.

The City has also established goals, policies, and implementing actions in the Richmond General Plan 2030 in regards to soils. Goals and actions as outlined in the Conservation, Natural Resources and Open Space Element that are applicable to the proposed project 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;

f) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state; or

g) 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?

### Topics with No Impact or Otherwise Not Addressed in this EIR

Review and comparison of the setting circumstances and project 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 project site are the Hayward fault, located approximately four miles to the east, and the San Andreas fault, which is approximately 15 miles to the southeast. Although fault rupture is not necessarily limited to areas that coincide with the mapped fault trace, the project site is sufficiently far enough away 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 project would have no impacts associated with criteria e), because the project would not 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.

In addition, the project would have no impacts associated with criteria f) or g), because, according to the California Geological Survey and the General Plan EIR (City of Richmond, 2011), no mineral resource deposits have been identified in the vicinity of the project site. Implementation of the project would have no impact on the availability of either known or unknown mineral resources.

## 4.5.5 Discussion of Impacts and Mitigation Measures

**Impact GEO-1: Project development could be damaged by seismically induced ground shaking and thereby expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death. (Criterion a.2) (*Less than Significant, No Mitigation Required*)**

According to the USGS, the project site 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, 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. An area where bedrock is exposed or located relatively shallow tends to experience surface waves from an earthquake as more of a sharp jolt. As discussed above in the setting, the project site and surroundings could be subject to substantial ground shaking which could in turn cause significant damage in structures that are not adequately engineered.

For new construction, all of the seismic hazards discussed previously in this section can be mitigated through the application of current industry standard geotechnical practices and seismic structural design according to the requirements found in the most recent version of the CBC, which includes or exceeds the requirements of the International Building Code. After decades of study of past earthquakes and the performance of structures and other improvements, building codes have incorporated measures to reduce the potential for catastrophic damage to occur in buildings, roadways, and utility connections. Although damage and injury cannot be completely avoided during a significant seismic event, construction or renovation in accordance with the CBC would reduce the potential damage and personal injury to less than significant levels.

Appropriate grading and design, in accordance with the CBC requirements and local planning and building department requirements, would be used to reduce the secondary effects of ground shaking on structures and associated improvements. Any fill materials would be appropriately compacted and engineered as directed by the California certified engineering geologist or geotechnical engineer assigned to the project.

The preliminary geotechnical investigation prepared for the project determined that the proposed project was feasible with implementation of geotechnical recommendations contained within the report (Engeo, 2015). A final design-level geotechnical investigation would be performed for the project and project site in accordance with standard industry practices and code requirements. The

investigation would include an analysis of expected ground motions at the site from known active faults. The analysis would be completed 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 accelerations expected from known active faults. The investigation would determine final design parameters for the earthwork, foundations, foundation slabs, and any surrounding related improvements, including utilities, parking lots, roadways, and sidewalks. The investigation would be reviewed and approved by a certified engineering geologist or geotechnical engineer. Therefore, implementation of the geotechnical recommendations made by the final design-level geotechnical report in accordance with the current seismic design criteria required under the CBC would reduce the potential impacts associated with ground shaking during a major seismic event to less-than-significant levels.

**Significance:** Less Than Significant.

**Project Design Features / Mitigation:** None required.

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**Impact GEO-2: Project development could be damaged by seismically related ground failure including liquefaction and thereby expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death. (Criterion a.3) (*Less than Significant, No Mitigation Required*)**

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 at the site could result in loss of bearing pressure, lateral spreading, sand boils (liquefied soil exiting at the ground surface), and earthquake-induced settlement causing damage in proposed structures if not designed appropriately. Mapping compiled by ABAG indicates that the entire project site has a very high potential for liquefaction (ABAG, 2015). The preliminary geotechnical report for the project site concluded that the sandy deposits found in the artificial fill associated with the historic swale are potentially liquefiable (Engeo, 2015). The fill in this area is estimated to be as much as 20 to 30 feet thick, with uncompacted fill materials that could be susceptible to liquefaction.

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 settlement, or other earthquake-induced ground failures. The impacts from ground failure, including liquefaction, lateral spreading, and sand boils from development of the proposed project would be addressed through a final design-level geotechnical investigation prepared in accordance with CBC building code requirements and standard industry practices. Development would be required to conform to the current seismic design provisions of the CBC to mitigate losses from ground failure as a result of an earthquake. Site preparations such as removal of liquefiable fill materials and replacement

with engineered fills or treatment of existing soils have proven effective in minimizing the potential for liquefaction related damage. Due to the potential presence of hazardous materials (see further discussion in Section 4.7, *Hazards and Hazardous Materials)*, removal of fill may not be prudent in which case other methods of ground treatment may be more suitable, as determined in the final design-level geotechnical investigation. Therefore, implementation of the geotechnical recommendations made by the final design-level geotechnical report in accordance with current CBC building code requirements would reduce the potential impacts associated seismically-related ground failure, including liquefaction, to less-than-significant levels.

**Significance:** Less Than Significant.

**Project Design Features / Mitigation:** None required.

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**Impact GEO-3: Project development could be damaged by seismically related landslides or slope failure and thereby expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death. (Criterion a.4) (*Less than Significant, No Mitigation Required*)**

The proposed project includes grading activities, placement of fills, and construction of new structures that would place new loadings on underlying materials. If not engineered appropriately, these new loadings could be subject to slope failure within underlying Bay Mud materials which could damage proposed improvements or potentially adversely affect local visitors, residents, or workers. Based on the preliminary geotechnical investigation, the engineering characteristics of the underlying soft Bay Mud deposits indicate the potential for placement of engineered fill or structures may cause underlying Bay Mud to fail. As a result, a slope stability analysis was conducted for the shoreline and concluded that seismic displacement could be between 1 to 2 feet along the shoreline in areas of the exposed bank slopes. The area where deformation occurs could extend 200 feet or more into the site from the shoreline, potentially damaging any structures or improvements within the zone of deformation including the wharf structure (Engeo, 2015). However, measures identified in the investigation report could minimize these impacts to the existing wharf (although further evaluation of the wharf structure was recommended). Further investigation of slope stability would be contained within the design level geotechnical investigation that would be required prior to building permit issuance. The shoreline stabilization measures, if necessary, that would be contained within this investigation would 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 the project design prior to approval of a building permit.

Therefore, a comprehensive, implementation of the geotechnical recommendations made by the final design-level geotechnical report in accordance with the current CBC building code requirements would reduce the potential for slope instability and slope failure to adversely affect proposed improvements to less-than-significant levels.

**Significance:** Less Than Significant.

**Project Design Features / Mitigation:** None required.

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**Impact GEO-4: The project could result in soil erosion during excavation, grading, and construction activities. (Criterion b) (*Less than Significant, No Mitigation Required*)**

Project construction 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 the project when concrete and asphalt are removed and soils are stockpiled and exposed.

The project would be required through the NPDES Construction General Permit administered by the State to establish erosion control measures for grading activities, and the applicant has committed to preparing an Erosion Control Plan for City review prior to the start of construction. The Erosion Control Plan would include, at a minimum, the following requirements:

- Excavation and grading activities would be scheduled for the dry season only (April 15 to October 15), to the extent possible. This would reduce the chance of severe erosion from intense rainfall and surface runoff, as well as the potential for soil saturation;
- Temporary erosion control measures would be provided until re-vegetation is established or impervious surfaces (e.g., asphalt, concrete) are added;
- After completion of grading, erosion protection would be provided on all cut-and-fill slopes; and
- Erosion control BMPs selected and implemented for the project would be in place and operational prior to the onset of major earthwork on the site.

Therefore implementation of the Erosion Control Plan and required BMPs as part of the NPDES Construction General Permit would minimize erosion impacts during construction and reduce potential impacts to less–than-significant levels.

**Significance:** Less Than Significant.

**Project Design Features / Mitigation:** None required.

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**Impact GEO-5: The project could result in on- or off-site 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 project site is underlain by artificial fills and Bay Mud materials which are susceptible to settlement and subsidence. 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. As noted above, the thickness of the fill ranges from a few feet, to 20 to 30 feet in the area of the historic swale. Structures placed across materials of substantively different engineering properties can be susceptible to differential settlement. To minimize settlement in areas that are susceptible, a common approach is to implement a surcharge program. Surcharging consists of stockpiling fill materials in areas where settlement is a concern and leaving it in place a sufficient amount of time to partially pre-consolidate underlying materials. The preliminary geotechnical evaluation for the project site has recommended an approximately 4-foot thickness of fill for the surcharge program based on preliminary grading plans (Engeo, 2015). As discussed above for Impact GEO-1, a design-level geotechnical investigation would be performed for the proposed improvements and would recommend an appropriate approach to address settlement and subsidence hazards. The investigation would include an analysis of the underlying soil properties including the potential for instability, liquefaction, subsidence, or collapse. As noted above, the project site is underlain by Bay Mud deposits which are known to be soft and compressible under new loadings such as the placement of new fills or new construction. The analyses would be in accordance with current engineering standards that would effectively mitigate unstable soils. The investigations would determine final design parameters for the earthwork, foundations, foundation slabs, and any surrounding related improvements, utilities, roadways, parking lots, and sidewalks. The investigations would be reviewed and approved by a California registered geotechnical engineer or engineering geologist and submitted to the City for review. 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 potential impacts associated with unstable geologic units or materials to less-than-significant levels.

**Significance:** Less Than Significant.

**Project Design Features / Mitigation:** None required.

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**Impact GEO-6: Project implementation could occur on expansive soils, creating risks to life and property. (Criterion d) (*Less than Significant, No Mitigation Required*)**

The effects of expansive soils, if 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, the proposed project would receive 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.

**Project Design Features / Mitigation:** None required.

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## Cumulative Impacts

**Impact C-GEO-1: The 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 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 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 proposed 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 future development of the proposed 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.

**Project Design Features / Mitigation:** None required.

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# References – Geology and Soils

Association of Bay Area Governments (ABAG), 2003. *Modified Mercalli Intensity Scale* Available at: www.abag.ca.gov/bayarea/eqmaps/doc/mmi.html. Accessed January 6, 2016.

Association of Bay Area Governments (ABAG), 2015. *Liquefaction Susceptibility.* Available at: gis.abag.ca.gov/arcgis/rest/directories/arcgisoutput/Utilities/PrintingTools_GPServer/_ags_3ba5a92766f8465fbf9ba1af48c70398.pdf. Accessed February 27, 2015.

Bryant, W.A., and Cluett, S.E., compilers, 2000. Fault number 55a, Hayward fault zone, Northern Hayward section, in Quaternary fault and fold database of the United States, ver 1.0: U.S. Geological Survey Open-File Report 03-417.Available at: qfaults.cr.usgs.gov/faults/FMPro?-db=us%20web%20fault%20database.fp5&- format=record3%5fdetail.htm&-lay=scientist%20input&-sortfield=name&-op=cn&namesearch=Hayward&Statesearch=California&-max=10&-recid=34220&-find. Accessed February, 2015.

California Geological Survey (CGS), 1990. *The Loma Prieta (Santa Cruz Mountains), California, Earthquake of 17 October 1989*, Special Publication 104, 1990.

California Geological Survey (CGS), 2002a. *California Geomorphic Provinces*, CGS Note 36, 2002.

California Geological Survey (CGS), 2002b. *How Earthquakes Are Measured*, CDMG Note 32, 2002.

City of Richmond, 2011. *General Plan 2030 EIR*. August 2011.

City of Richmond, 2012. *Richmond General Plan 2030: Public Safety and Noise Element.* Adopted April 25, 2012.

Contra Costa County, 2000. *General Plan, Chapter 10: Safety Element.*

Engeo Incorporated (Engeo), 2015. *Geotechnical Feasibility Report/ Terminal One/ Richmond, CA.* December 30, 2014, Revised January 14, 2015.

Hart, E.W., 2007. *Fault-Rupture Hazard Zones in California: Alquist-Priolo Earthquake Fault Zoning Act with Index to Earthquake Fault Zones Maps.* Department of Conservation, California Geological Survey, Special Publication 42, 1990, interim revision 2007.

Jennings, C.W. and Bryant, W.A., compilers, 2010. California Geological Survey (CGS), *2010 Fault Activity Map of California*, CGS Geologic Data Map No. 6. Available at: www.quake.ca.gov/gmaps/FAM/faultactivitymap.html. Accessed January 6, 2016.

Peterson, M.D., Bryant, W.A., Cramer, C.H., 1996. *Probabilistic Seismic Hazard Assessment for the State of California*, California Geological Survey (formerly California Division of Mines and Geology) Open-File Report issued jointly with U.S. Geological Survey, CDMG 96-08 and USGS 96-706, 1996.

United States Geological Survey (USGS), 2003a. Working Group on California Earthquake Probabilities (WG02), Open File Report 03-214, *Earthquake Probabilities in the San*

*Francisco Bay Region: 2002-2031.* Available at: pubs.usgs.gov/of/2003/of03-214/. Accessed January 6, 2016.

United States Geological Survey (USGS), 2003b. *Background Information on the ShakeMaps*. Available at: earthquake.usgs.gov/research/shakemap/. Accessed January 6, 2016.

United States Geological Survey (USGS), 2008. Working Group on California Earthquake Probabilities (WG02), Fact Sheet 2008-3027, *Forecasting California's Earthquakes – What Can We Expect in the Next 30 Years?* Available at: pubs.usgs.gov/fs/2008/3027/fs2008-3027.pdf. Accessed January 6, 2016.

United States Geological Survey (USGS), 2012. *Earthquake Glossary, Creep*. Available at: earthquake.usgs.gov/learn/glossary/?term=creep. Accessed January 6, 2016.

# 4.6 Climate Change, Greenhouse Gases, and Energy

## 4.6.1 Introduction

This section provides an overview of global and local climate change, and examines the potential for the proposed project to result in increased greenhouse gas (GHG) emissions. This section discusses the physical and regulatory setting; the baseline for determining environmental impacts; the criteria used for determining the significance of environmental impacts; potential impacts associated with construction, operation, and maintenance of the project; an evaluation of the consistency of the proposed project with statewide and local planning efforts to reduce GHG emissions; and mitigation measures to reduce or avoid environmental impacts determined to be potentially significant.

## 4.6.2 Environmental Setting

### Greenhouse Gases

Gases that trap heat in the atmosphere are called greenhouse gases or GHGs. GHGs allow sunlight to enter the atmosphere, but trap a portion of the outward-bound infrared radiation, which warms the air. The process is similar to the effect greenhouses have in raising the internal temperature, hence the name GHGs. Both natural processes and human activities emit GHGs. The accumulation of GHGs in the atmosphere regulates the Earth's temperature; however, emissions from human activities such as fossil fuel-based electricity production and the use of motor vehicles have elevated the concentration of GHGs in the atmosphere. This accumulation of GHGs has contributed to an increase in the temperature of the Earth's atmosphere and has contributed to global climate change.

Global climate change is a change in the average weather on earth that can be measured by wind patterns, storms, precipitation, and temperature. Although there is disagreement as to the rate of global climate change and the extent of the impacts attributable to human activities, most in the scientific community agree that there is a direct link between increased emissions of GHGs and long term global temperature increases.

The primary GHGs are carbon dioxide ($CO_2$), methane ($CH_4$), nitrous oxide ($N_2O$), sulfur hexafluoride ($SF_6$), perfluorocarbons (PFCs), and hydrofluorocarbons (HFCs). $CO_2$ is the most common reference gas for climate change. To account for the warming potential of GHGs, GHG emissions are often quantified and reported as $CO_2$ equivalents ($CO_2e$). For example, $SF_6$ is a GHG commonly used in the utility industry as an insulating gas in circuit breakers and other electronic equipment. $SF_6$, while comprising a small fraction of the total GHGs emitted annually world-wide, is a much more potent GHG with 23,900 times the global warming potential as $CO_2$. Large emission sources are reported in million metric tons of $CO_2e$.[1]

[1] The term metric ton is commonly used in the U.S. to refer to the metric system unit, tonne, which is defined as a mass equal to 1,000 kilograms. A metric ton is approximately 1.1 short tons and approximately 2,204.6 pounds.

## Impacts of Climate Change

Climate change is predicted to result in a range of impacts, including human health impacts as well as ecosystem and biodiversity impacts. Some of the potential effects of global warming in California may include loss in snow pack, sea level rise, more extreme heat days per year, more high ozone days, more large forest fires, and more drought years. Globally, climate change has the potential to impact numerous environmental resources through potential, though uncertain, impacts related to future air temperatures and precipitation patterns. The projected effects of global warming on weather and climate are likely to vary regionally, but are expected to include the following direct effects (IPCC, 2007):

- Higher maximum temperatures and more hot days over nearly all land areas;
- Higher minimum temperatures, fewer cold days and frost days over nearly all land areas;
- Reduced diurnal temperature range over most land areas;
- Increase of heat index over land areas; and
- More intense precipitation events.

Secondary effects that are projected to result from global warming include global rise in sea level, impacts to agriculture, changes in disease vectors, and changes in habitat and biodiversity. While the possible outcomes and the feedback mechanisms involved are not fully understood and much research remains to be done, the potential for substantial environmental, social, and economic consequences over the long term may be great.

## Greenhouse Gas Emissions Estimates

### *State of California Emissions*

The California Air Resources Board (CARB) estimated that in 2012 California emitted approximately 459 million tons of $CO_2e$, or nearly 7 percent of U.S. emissions. Of these gases, CARB found that transportation was the source of approximately 37 percent of the state's GHG emissions, followed by industrial sources at 22 percent, and electricity generation (both in-state and out-of-state) at 21 percent. Generating a smaller fraction, agriculture and forestry were identified as the source of approximately 15 percent, and commercial activities were identified as the source of approximately 5 percent (CARB, 2014).

### *Bay Area Emissions*

In the San Francisco Bay Area, GHG emissions from the transportation sector and industrial/commercial sector represent the largest sources of GHG emissions, each accounting for approximately 36.4 percent of the Bay Area's 95.8 million tons of $CO_2e$ in 2007. Electricity/co-generation sources account for approximately 15.9 percent of the Bay Area's GHG emissions, followed by residential fuel usage at approximately 7.1 percent. Off-road equipment and agricultural sources currently account for approximately 3 percent and 1.2 percent of the total Bay Area GHG emissions, respectively (BAAQMD, 2010).

#### City of Richmond Emissions

The City of Richmond General Plan contains an Energy and Climate Change Element, adopted in in 2012, which presents baseline GHG inventories and future year inventory projections. The City's baseline year, 2005, accounts for approximately 5.8 million metric tons (MT) CO2e. Of the sources in this total, the largest contributor is commercial/industrial energy at 88 percent, followed by on-road transportation at 9 percent, residential energy at 2 percent, and community waste at 1 percent (City of Richmond, 2012).

# 4.6.3 Regulatory Setting

## 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 U.S. EPA 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 U.S. EPA had the authority to regulate GHGs.

On December 7, 2009, the U.S. EPA 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 U.S. EPA 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 U.S. EPA 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 U.S. EPA to verify annual GHG emissions reports.

## State

The CARB is the agency responsible for coordination and oversight of state and local air pollution control programs in California. There are currently no state regulations in California

that establish ambient air quality standards for GHGs. However, California has passed laws directing CARB to develop actions to reduce GHG emissions, and several state legislative actions related to climate change and GHG emissions have come into play in the past decade. 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 1493 (Pavley Standards)*

In 2002, then-Governor Gray Davis signed Assembly Bill (AB) 1493, which required the California Air Resources Board (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. All mobile sources are required to comply with these regulations as they are phased in from 2009 through 2016. Because the Pavley standards would impose stricter standards than those under the federal Clean Air Act, California applied to the U.S. EPA for a waiver under the federal Clean Air Act, which was granted in 2009.

### *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 sets forth the following 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.

### *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.

As part of the update to the Scoping Plan, the emissions reductions required to meet the 2020 statewide GHG emissions limit were further 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, 2014).

### 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 adopt the cap-and-trade regulation by January 1, 2011, and the program itself was to begin in 2012. However, a San Francisco Superior Court judge issued a final order implementing a decision that found flaws in CARB's adoption of the Scoping Plan. CARB appealed the judge's order, which blocked CARB from implementing its recently adopted cap-and-trade program, and has obtained a temporary suspension from the appellate court. The first auction of "carbon offset credits" was held in November 2012.

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).

### *Senate Bill 1368*

SB 1368 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 (CPUC) 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.

### *Executive Order S-1-07*

Executive Order S-1-07, signed by then-Governor Arnold Schwarzenegger in 2007, proclaims 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.

### *California Environmental Quality Act and Senate Bill 97*

The California Environmental Quality Act (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 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 State CEQA *Guidelines* amendments, as required by SB 97. These State 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.

The CEQA *Guidelines* § 15064.4 specifically address 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 (§ [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 (§ 15126.4[c]) on measures to mitigate GHG emissions, when such emissions are found to be significant:

> Consistent with § 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 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, 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 375*

In addition to policy directly guided by AB 32, the legislature in 2008 passed SB 375, 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. SB 375 also includes provisions for streamlined CEQA review for some infill projects, such as transit-oriented development. The Metropolitan Transportation Commission (MTC) is responsible for developing RTPs for the San Francisco Bay Area. MTC's 2013 RTP will be its first plan subject to SB 375.

### *Title 24 Building Energy Efficiency Standards*

Title 24 of the California Code of Regulations (CCR) is the means by which the State of 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)*

Effective January 2014, CALGreen supplements the California Building Standards Code (Title 24) and requires all new buildings in the state to incorporate energy saving features.

## Regional

In June 2010, the Bay Area Air Quality Management District (BAAQMD) adopted the final *CEQA Air Quality Guidelines*, thereby replacing former guidelines adopted in December 1999, and adopted new thresholds of significance to assist lead agencies in determining when potential air quality impacts would be considered significant under CEQA. Updated in May 2011, these guidelines include recommendations for analytical methodologies to determine air quality impacts and identify mitigation measures that can be used to avoid or reduce air quality impacts, including impacts of GHGs (BAAQMD, 2011).

In May of 2011 the BAAQMD adopted new Thresholds of Significance (2011 Thresholds) for GHG impacts. Subsequently, the Alameda Superior Court issued a stay and required the BAAQMD to conduct additional environmental review in connection with its adoption of the thresholds. However, in August 2013 the State Court of Appeal issued a full reversal of the Superior Court ruling, although at the time of this analysis, BAAQMD has not formally readopted these thresholds. Notwithstanding formal adoption, the 2011 Thresholds are based on substantial evidence provided by BAAQMD, and have been accepted by the City of Richmond for use in this EIR (BAAQMD, 2009). A recent judicial decision the California Supreme Court held that that lead agencies may rely on existing numerical thresholds of significance for GHG emissions to define the level at which an environmental effect normally is considered significant provided the significance of the impact is independently determined.

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, 2011). 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.

## Local

### City of Richmond General Plan

Chapter 8 (Energy and Climate Change Element), of the City of Richmond General Plan 2030 (City of Richmond, 2012) 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-3.4: 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.

*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 Draft Climate Action Plan*

The City is currently in the process of drafting its Climate Action Plan. The Climate Action Plan is an implementing action of the Energy and Climate Change Element adopted in 2012. The Climate Action Plan will be 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 update the City's emissions inventory, establish an emissions reduction target, and identify and prioritize potential City and community actions to reduce emissions. The document will facilitate the City of Richmond in achieving state goals established through AB 32 and SB 375 and air emissions standards adopted by the California Air Resources Board.

### *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. 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.

## 4.6.4 Significance Criteria

Consistent with CEQA *Guidelines* Sections 15064.4 and 15064.7(c), Appendix G of the CEQA Guidelines, and the BAAQMD's 2011 Thresholds for GHG emissions, a project would cause adverse impacts associated with GHG emissions if it would:

a) Generate greenhouse gas emissions, either directly or indirectly, in excess of 1,100 metric tons of $CO_2e$ annually or 4.6 MT $CO_2e$/SP/yr; or

b) Conflict with any applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of greenhouse gases.

In addition, based on CEQA Guidelines Section Appendix F, a significant impact would occur if implementation of the project would:

c) Result in a wasteful, inefficient and unnecessary use of energy; or

d) Result in a significant demand on regional energy supply or requirements of substantial additional capacity.

# 4.6.5 Discussion of Impacts and Mitigation Measures

This analysis evaluates the project's impacts related to greenhouse gases emissions. The evaluation considered project plans, current CEQA *Guidelines* Appendix G significance criteria, conditions at the project site, and applicable regulations and guidelines.

## Approach to Analysis

Potential impacts are assessed by modeling the estimated $CO_2$ emissions generated by project construction and operations, using the California Emissions Estimator Model (CalEEMod) version 2013.2.2 land use emissions model, and comparing modeled emissions to the significance thresholds.

Both the 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, 2011; CAPCOA, 2008). Therefore, the evaluation of GHG impacts evaluates whether the project would make a considerable contribution to cumulative climate change effects.

Potential conflicts with applicable plans, policies or regulations adopted for the purpose of reducing the emissions of GHG are qualitatively assessed below.

## Impact Analysis

**Impact GHG-1: The project would result in an increase in GHG emissions. (Criteria a.) (*Less than Significant, No Mitigation Required*)**

The project would generate GHG emissions from a variety of sources, including project construction and project operations.

### Construction Emissions

Construction emissions from the project were estimated using the CalEEMod emissions model. Sources would include fossil fuel combustion by construction vehicles and equipment. Construction-related GHG emissions for each year of the anticipated 18-month construction period are presented in **Table 4.6-1**. All model inputs and output are provided in **Appendix B**. Estimated emissions are 657 metric tons of carbon dioxide equivalent greenhouse gases ($CO_2e$) in 2017 and 276 metric tons $CO_2e$ in 2018. As discussed earlier, BAAQMD has not established a quantitative threshold relative to construction-related emissions. In lieu of any proposed or adopted thresholds, these emissions are considered significant unless best management practices are implemented to reduce GHG emissions during construction, as feasible.

**TABLE 4.6-1**
**ESTIMATED CONSTRUCTION-RELATED GHG EMISSIONS**

| Emission Source | Total Emissions (MT) | | | |
|---|---|---|---|---|
| | $CO_2$ | $CH_4$ | $N_2O$ | Total $CO_2e$ |
| 2017 | 655 | 0.11 | 0 | 657 |
| 2018 | 275 | 0.04 | 0 | 276 |
| Total | 930 | 0.15 | 0 | 934 |

SOURCE: ESA (Appendix B)

As described in **Project Design Features GHG-1** and **GHG-2**, the project's grading and demolition plans have been designed to substantially reduce both the number of construction-related trips to and from the site and the GHG emissions those trips would generate. The grading plan will result in a near balance of cut and fill on-site, thereby minimizing the need to import or export soil, substantially reducing the truck trips to and from the site and in the process substantially reducing the GHG emissions those truck trips would generate. In addition, the project's demolition plan will result in the recycling, reprocessing, and reuse on-site of the bulk of the materials generated by demolition of the warehouse and remaining hardscape elements, thereby minimizing the need to export the demolition waste-materials off-site as well as the need to import materials to the project site.

Implementation of **Project Design Features GHG-1** and **GHG-2** will ensure that the applicant employs feasible, effective measures to reduce GHG emissions during project construction. This mitigation measure would therefore reduce the construction-related impact to a less-than-significant level.

### Operational Emissions

*Area, Energy, and Indirect Sources*

Operational GHG emissions associated with the project would result from electrical and natural gas usage, water and wastewater transport (the energy used to pump water and wastewater to and from the project site), and solid waste generation. GHG emissions from electrical usage are generated when energy consumed on the site is generated by the electrical supplier, PG&E. GHG emissions from natural gas are direct emissions resulting from on-site combustion for heating and other purposes. GHG emissions from water and wastewater transport are also indirect emissions resulting from the energy required to transport water from its source, and the energy required to treat wastewater and transport it to its treated discharge point. Solid waste-related emissions are generated when the increased waste generated by the project is disposed in a landfill where it decomposes, producing methane gas.[2] Maintenance operations of backup generators, presumed to potentially be required for the taller condominium buildings, would also result in direct GHG emissions.

[2] $CH_4$ from decomposition of municipal solid waste deposited in landfills is counted as an anthropogenic (human-produced) GHG. (U.S. EPA, 2006).

GHG emissions from electrical usage, natural gas combustion, mobile transportation, water and wastewater conveyance, and solid waste were estimated using the CalEEMod model, while generator emissions were estimated using emission factors from U.S. EPA. GHG emissions are presented in **Table 4.6-2**. Energy use (electrical and natural gas) represents approximately 23 percent of estimated operational GHG emissions. Solid waste represents approximately 3 percent of operational GHG emissions and water usage represents approximately 6 percent.

**TABLE 4.6-2**
**PROJECT INCREMENT OF OPERATIONAL GHG EMISSIONS**

| Emission Source | Total Emissions (MT/Year) | | | |
|---|---|---|---|---|
| | $CO_2$ | $CH_4$ | $N_2O$ | Total $CO_2e$ |
| Area Sources | 15 | <1 | <1 | 15 |
| Energy Sources | 660 | 0.03 | 0.01 | 664 |
| Mobile Sources | 2,002 | 0.08 | <1 | 2,004 |
| Solid Waste | 36.0 | 2.13 | <1 | 81 |
| Water and Wastewater | 34.8 | 0.02 | 0.01 | 40 |
| **Total** | **2,748** | **2.26** | **0.02** | **2,803** |

NOTE: Columns may not total precisely due to rounding.

SOURCE: ESA (Appendix B)

### Mobile Emission Sources

Once operational and fully occupied, the proposed development would result in an increase of an estimated 2,470 daily vehicle trips above baseline levels, as described in Section 4.13, Transportation and Traffic. GHG emissions from motor vehicle sources were calculated using CalEEMod. **Table 4.6-2** presents the incremental mobile source GHG emissions associated with the project, which represent approximately 72 percent of the total operational GHG emissions.

As shown in **Table 4.6-2**, the sum of both direct and indirect GHG emissions resulting from operation of the project would result in an estimated 2,803 metric tons per year of $CO_2e$.[3] This is above the 1,100 metric ton per year threshold established by the BAAQMD. However, emissions would also be below the service population threshold of 4.6 metric tons of $CO_2e$/SP/yr, with project emissions estimated to be approximately 4.3 metric tons $CO_2e$/SP/yr[4]. Operational GHG emissions would therefore be less than significant.

**Significance After Mitigation:** Less than Significant.

**Project Design Features / Mitigation:** Project Design Features GHG-1 and GHG-2.

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[3] $CO_2e$ in all calculations of project impact include $CO_2$, $CH_4$ and $N_2O$, as applicable.
[4] Total of 2,803 MT/year of CO2e divided by a service population of 640 residents and 8 employees).

**Impact GHG-2: The project could conflict with the AB 32 Scoping Plan or City of Richmond's Energy and Climate Change Element Goals and Policies for reducing GHG emissions. (Criteria b.) (*Less than Significant, No Mitigation Required*)**

The State of California's Climate Change Scoping Plan identifies 39 Recommended Actions (qualitative measures) to address climate change. Of the 39 measures identified, those that would be considered to have the greatest potential applications to the project would be those actions related to electricity and natural gas use, and green building design (GB).

Scoping Plan Actions E-1 and GB-1 together aim to reduce electricity demand by increased efficiency of Utility Energy Programs and adoption of more stringent building and appliance standards. Elements of these actions include encouraging construction of zero net energy buildings and implementation of passive solar design.

In addition, the Energy and Climate Change Element of the Richmond General Plan 2030 (City of Richmond, 2012) 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 them is provided in the local regulatory setting section) and an assessment is made in the table as to whether these policies and actions are reasonably applicable to the proposed project. If applicable, a determination is made as to whether the proposed project is consistent with the intent of 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 a plan established for the purposes of reducing GHG emissions. There is no clear project description element that addresses specific Policies or Actions of the Energy and Climate Change Element; however, **Project Design Features GHG-1** and **GHG-2** have been identified to ensure project consistency with the Energy and Climate Change Element as well as the State's Scoping Plan.

As discussed above under Impact GHG-1, project emissions would be below the BAAQMD's service population threshold of 4.6 metric tons of CO2e/SP/yr. As shown in **Table 4.6-3**, above, the project is largely consistent with most of the applicable goals, policies and actions of the Richmond General Plan 2030 Energy and Climate Change Element. Per the discussion in **Table 4.6-3**, the City and applicant will also consider the following **Recommended Measure GHG-1** that would further the goals of the Energy and Climate Change Element:

> ***Recommended Measure GHG-1:*** The City and applicant shall consider including the following design features in the proposed project, as part of the Planned Area Plan and Design Review processes:
>
> - Provide an electric car charging station on the project site.
> - Include centralized recycling collection areas within the common space in the condominium flats.
> - Include water recycling and rainwater catchment in the condominium buildings to recycle water.

**TABLE 4.6-3**
**APPLICABLE GOALS, POLICIES AND ACTIONS OF THE CONTROL STRATEGIES OF THE ENERGY AND CLIMATE CHANGE ELEMENT OF THE RICHMOND GENERAL PLAN 2030**

| 2010 Clean Air Plan Control Strategy | Elements of Proposed Project Site Development Consistent with the Policy or Action or Explanation of Non-applicability or Mitigation Measure to be Implemented to Address Consistency |
|---|---|
| Goal EC-4: Sustainable Development: Reduce energy consumption by promoting sustainable land uses and development patterns including infill development, encouragement of higher-density, mixed-use projects around existing public transit infrastructure, schools, parks, neighborhood-serving retail and other critical services and incorporate ecologically sustainable practices and materials into new development. | |
| ***Policy EC-2.4*: *Safe and Convenient Walking and Bicycling***. | Walking and bicycle trails on the new shoreline drive, a pedestrian and bicycle oriented promenade on the Terminal One Mews, a Bay Trail Loop connecting the existing Bay Trail segments that extend to the east along Brickyard Cove Road and to the west through the Miller/Knox Park and providing direct bicycle and pedestrian access to the Terminal One Waterfront Park and shoreline, and a direct "commuter" extension of the Bay Trail from its current terminus, north of the project site to a connection with the Bay Trail segments that run through the Miller/Knox Park at the intersection of Dornan Drive and Brickyard Cove Road. |
| ***Policy EC-2.6*: Private Automobile Use** | The proposed project and circulation plan are designed to deemphasize the automobile:<br>• Brickyard Cove Road has been retained as a collector roadway which will provide commuter and commercial traffic with a means of bypassing the project. The through-put function of this existing roadway will, in turn, reduce both the volume of Shoreline Drive traffic and the potential traffic conflicts.<br>• Locating the driveway entrances/exits to the parking podium off Brickyard Cove Road, the project's circulation plan has been designed to allow residents to access their units without the need to make use of Shoreline Drive.<br>• The design of the on-site vehicular circulation system also incorporates traffic calming features to prioritize pedestrian and bicycle modes of travel and include both a ring road configuration with two sweeping curves that require automobiles approaching and exiting Shoreline Drive's southern reach to reduce speeds and measures such as raised crosswalks/speed tables and stop signs, 10 foot wide travel lanes, on-street parking, and a "Safety Zone" designation with a posted speed limit of 20 mph. |
| ***Action EC2.A: Climate-Friendly Fuel Using Vehicles.*** | Consider implementation of **Recommended Measure GHG-1** for the project sponsor to provide an electric car charging station on the project site. |
| ***Action EC2.D: Transit Incentives Program*** | The nearest transit line (72M) is over a mile to the north of the project site which would not be considered proximate for the purposes of land use planning in the Plan Bay Area Sustainable Communities Strategy. The Bay Area Rapid Transit (BART) station nearest to the project site is the Richmond station at 1700 Nevin Avenue, approximately 3.2 miles from the site. A new ferry route between the San Francisco Ferry Terminal and a new terminal at the Ford Peninsula in Richmond, located approximately 3.6 miles from the project site, is scheduled to commence operations in 2017 at the earliest. The project Land Disposition Agreement (LDA) requires that, prior to the close of escrow with the City, the applicant prepare and submit a Transit Access Plan to the City that evaluates the feasibility of extending existing AC Transit routes to the project site. The project applicant and the City of Richmond will consult with AC Transit to determine if transit service can be extended to improve access for residents and visitors to the site. With the implementation of this provision of the LDA, the project will be consistent with Action EC2.D. |
| ***Action EC2.F: Promote Bicycle Use*** | See consistency with Policy EC2.4, above |

**TABLE 4.6-3 (Continued)**
**APPLICABLE GOALS, POLICIES AND ACTIONS OF THE CONTROL STRATEGIES OF THE ENERGY AND CLIMATE CHANGE ELEMENT OF THE RICHMOND GENERAL PLAN 2030**

| 2010 Clean Air Plan Control Strategy | Elements of Proposed Project Site Development Consistent with the Policy or Action or Explanation of Non-applicability or Mitigation Measure to be Implemented to Address Consistency |
|---|---|
| ***Policy EC-3.1*: *Renewable Energy*** | As part of the design review process, the applicant and the City are reviewing the feasibility of installing on-site solar photovoltaic (PV) systems on project structures and whether such installations will be consistent with design and public view goals and requirements for the project. Because the individual units in the condominium buildings will be separately metered, solar PV installation may be limited to a system that serves the generation requirements of the common area facilities and operations. The applicant's analysis and conclusions regarding the feasibility of project solar PV installations and the City's review of these conclusions will ensure the project is consistent with Policy EC-3.1. |
| ***Policy EC-3.2*: *Energy Efficiency and Conservation*** | Compliance with the City's Commercial and Residential Green Building Standards and CALGreen will ensure the project is consistent with Policy EC-3.2. |
| ***Policy EC-3.3*: *Solid Waste Reduction and Recycling*** | Consider implementation of **Recommended Measure GHG-1** requiring the project sponsor to design centralized recycling collection areas, particularly in condominium flats. |
| ***Policy EC-3.4*: Water Conservation and Reuse** | See consistency with Action EC-3.F, below |
| ***Action EC3.F: Water Conservation*** | **Implement Mitigation Measure GHG-2c** requiring low-flow appliances and fixtures in all new residential units; require use of state-of-the-art irrigation systems that reduce water consumption including graywater systems and rainwater catchment; use of drought-tolerant and native vegetation; and require new plantings be grouped by water needs listed as a part of project approval. |
| ***Action EC3.G: Water Recycling*** | Consider implementation of **Recommended Measure GHG-1** to require water recycling and rainwater catchment in new development to recycle water. |
| ***Policy EC-4.1*: *Mixed Use and Infill Development*** | The project site is not in a commercial corridor so much of this policy is not applicable. The one applicable measure would be to require the property owners to comply with and pay for state and federal requirements for site remediation as a condition for approving development on contaminated sites which is part of the project (See Section 4.7, *Hazards and Hazardous Materials*), and hence the project is consistent with this policy. |
| ***Policy EC-4.2: Compact Walkable Neighborhoods and Livable Streets*** | See consistency with Policy EC-2.4 |
| ***Policy EC-4.3: Green Buildings and Landscaping*** | See consistency with Policy EC-3.2 and Action EC3.F |
| ***Action EC4.H: Green Building Ordinances*** | The proposed project would be required to comply with the City of Richmond's Green Building Ordinance adopted in 2009. Multi-family projects must earn 60 points on the "GreenPoint" rated checklist. |

The project is generally consistent with the City of Richmond's Energy and Climate Change Element Goals and Policies for reducing GHG emissions. In addition, the project would not result in emissions that would exceed the BAAQMD-developed thresholds for GHGs. This impact would therefore be less than significant.

**Significance After Mitigation:** Less Than Significant.

**Project Design Features / Mitigation:** Project Design Features GHG-1 and GHG-2.

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**Impact ENE-1: The project would not result in wasteful, inefficient and unnecessary use of energy, and would not require substantial additional energy capacity. (Criteria c, d) (*Less than Significant, No Mitigation Required*)**

Development of the project would result in the construction of up to 334 new housing units, approximately 2,000 square feet of new retail uses, open space and park uses, and parking areas. Construction of the project would require energy for off-road equipment operation, vendor and construction worker vehicle trips and demolition haul trips. These sources would require approximately 61,000 gallons of diesel fuel and 33,000 gallons of gasoline over a construction period of approximately 18 months. Once constructed, the project would increase energy demand for electricity, natural gas, and gasoline for increased motor vehicle trips. The estimated increase in energy demand from project operation is presented in **Table 4.6-4**.

**TABLE 4.6-4**
**ENERGY DEMAND FOR CONSTRUCTION AND OPERATION OF THE PROJECT**

| Project Component | Amount | Unit |
|---|---|---|
| **Construction** | 61,000 | Gallons diesel[b] |
| **Construction** | 33,000 | Gallons gasoline |
| **Operation** | | |
| Electricity | 1,470 | MegaWatt-hour/Year |
| Natural Gas | 6,650 | Mega BTU/Year |
| Motor Vehicles | 227,000 | Gallons Gasoline/Year[c] |
| Total Operational | 38,906 | Mega BTU/Year |

[a] Project construction and operational energy estimates were made using CalEEMod, version 2013.2.
[b] Construction energy occurs over an 18 month construction period. A portion of construction energy use is construction worker trips. Some of these trips would be gasoline and not diesel.
[c] Gasoline powered vehicles assumed. Per Air Resources Board, less than 1 percent of light duty auto trips in the Bay Area are diesel.
SOURCE: ESA, 2015.

Although the project would result in the consumption of large quantities of energy, the consumption would be typical for a new project of this size. In addition, several aspects of the project 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.

### 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, for non-residential buildings would be applied. The California Energy Commission adopted new Energy

Efficiency Standards for Residential and Nonresidential Buildings that went into effect on January 1, 2014. Among the reasons that the Energy Commission adopted the 2013 changes to the Building Energy Efficiency Standards was to respond to AB32 and climate change concerns. The Commission 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 2013 standards. According to the California Energy Commission, the 2013 Standards are 25 percent more efficient than previous standards for residential construction and 30 percent better for nonresidential construction.

Pursuant to the California Building Standards Code and the Energy Efficiency Standards, the City's Building Division would review the design components of the project's energy conservation measures when the project's building plans are submitted. These measures could include: 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/or other measures.

As noted in the discussion of GHG impacts above, a greater percentage of building energy is projected to be generated from renewable sources in coming years. Other laws also are likely to result in more efficient use of all types of energy, and reduction in reliance on nonrenewable sources of energy. These include the federal Energy Policy Act of 2005, which 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).

### Infill Development Strategies

Electrical and gas services would be provided by PG&E. The project site is located in an urbanized area where existing infrastructure provides for efficient delivery of electricity and natural gas. PG&E has not identified any deficiencies in electric and gas service in the project vicinity.

Existing regulations combine with attributes of the project's infill location to prevent wasteful and unnecessary uses of energy. Therefore, the project would have a less-than-significant impact with regards to energy usage.

**Significance After Mitigation:** Less Than Significant.

**Project Design Features / Mitigation:** None.

# References – Climate Change and Greenhouse Gas Emissions

Bay Area Air Quality Management District (BAAQMD), 2009. Revised Draft Options and Justification Report California Environmental Quality Act Thresholds of Significance. October 2009.

BAAQMD, 2010. Source Inventory of Bay Area Greenhouse Gas Emissions. Updated February 2010.

BAAQMD, 2011. *CEQA Air Quality Guidelines*. Adopted June 2010, updated May 2011. Available at: www.baaqmd.gov/~/media/Files/Planning%20and%20Research/CEQA/BAAQMD%20CEQA%20Guidelines%20May%202011.ashx?la=en. Accessed February 2016.

California Air Pollution Control Officers Association (CAPCOA), 2008. CEQA and Climate Change.

California Air Resources Board (CARB), 2008. Climate Change Scoping Plan. Adopted December 11, 2008, re-approved by CARB on August 24, 2011.

CARB, 2014. Greenhouse Gas Inventory Data 2000 to 2012, May 2014.

City of Richmond, 2012. *Richmond General Plan 2030: Energy and Climate Change Element*. Adopted April 25, 2012.

Intergovernmental Panel on Climate Change (IPCC), 2007. Climate Change 2007: Impacts, Adaptation, and Vulnerability. Contribution of Working Group II to the Third Assessment Report of the Intergovernmental Panel on Climate Change [Parry, Martin L., Canziani, Osvaldo F., Palutikof, Jean P., van der Linden, Paul J., and Hanson, Clair E. (eds.)]. Cambridge University Press, Cambridge, United Kingdom.

United States Environmental Protections Agency (U.S. EPA), 2006. Solid Waste Management and Greenhouse Gases, A Lifecycle Assessment of Emissions and Sinks, September, 2006.

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# 4.7 Hazards and Hazardous Materials

## 4.7.1 Introduction

This section discusses the extent to which hazardous conditions or hazardous materials are presentat the project site and evaluates the potential for implementation of the 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 governing project implementation is also provided. Potential impacts are discussed and evaluated, and mitigation measures are identified where appropriate.

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 hazards and hazardous materials on the built project, as set forth in Appendix G of the CEQA *Guidelines*, in order to provide information to the public and decision-makers.

## 4.7.2 Environmental Setting

### Definitions

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[o]) as 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.

A hazardous waste, for the purpose of this EIR, is any hazardous material that is abandoned, discarded, or recycled, as defined in the State Health and Safety Code (Chapter 6.95, Section 25125). 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 are consolidated in the "Cortese List" pursuant to Government Code Section 65962.5. The Cortese List is located on the California Environmental Protection Agency's (Cal EPA) website and is a compilation of the following lists:

- 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, 2016 .

Pursuant to Section 15300.2 of the CEQA *Guidelines*, a categorical exemption shall not be used for a project located on a site included in the Cortese List.

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 closed 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.

The lists and databases comprising the Cortese List were reviewed to identify any active cleanup sites at or within 1,000 feet of the project site (project vicinity). (Statuses of Cortese List sites are updated periodically and would need to be revisited prior to construction of the project.) Within the project site and vicinity, there are two listed SLIC sites and one Military Cleanup site currently identified in the State Water Resources Control Board Geotracker database, as described in Table 4.7-1 below (SWRCB, 2015). No other cleanup sites were identified that could

have the potential to affect the project site through migration of contaminants onto the project site.

**TABLE 4.7-1**
**REGULATORY SITES LISTED IN THE PROJECT SITE AND VICINITY**

| Site Name/ Address | Regulatory List | Site Summary |
|---|---|---|
| **Regulatory Sites Listed within the Project Site** | | |
| Richmond Terminal 1<br>1500 Dornan Drive, Richmond, CA | SLIC Cleanup Site | Active case. Potential for groundwater contamination from diesel, polynuclear aromatic hydrocarbons (PAHs), tetracholorethylene (PCE), and vinyl chloride. The site has been under investigation since September 2, 1998. On July 24, 2006, the San Francisco Bay Regional Water Quality Control Board (RWQCB) approved the completion of thermal treatment of volatile organic compounds (VOC) impacts in the Southwest Tank Farm Area and removal of PAH-impacted soil in the Central Area. |
| Parr Richmond Terminal #1<br>Richmond, CA | Military Evaluation | Case completed and closed ("no further action") as of February 12, 2013. Investigation of potential site contamination that may have occurred from activities undertaken under a former Department of Defense (World War II) lease of the site. |
| **Regulatory Sites Listed within the Vicinity of the Project Site** | | |
| Ferry Point<br>Dornan Drive, Richmond Pt Area<br>(adjacent to project site to the west) | SLIC Cleanup Site | Case completed and closed as of August 13, 2010. Contaminants of concern included solvents affecting soil. Cleanup goals approved by the RWQCB for soil remediation activities at the Ferry Point site were 1,000 parts per million (ppm) for TPHd and 1 ppm for PCBs, in the diesel and PCB affected areas respectively. These goals were met by excavating affected soil and backfilling the areas with clean fill.<br><br>EBRPD purchased the property after completion of remediation efforts, and transformed the site into a public park. |

SOURCE: DTSC, 2016

### 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), and polychlorinated biphenyls (PCBs).

***Lead and Lead-Based Paint.*** Prior to the U.S. Environmental Protection Agency (U.S. EPA) ban in 1978, lead-based paint was commonly used on interior and exterior surfaces of buildings. Through such disturbances as sanding and scraping activities, or renovation work, or gradual wear and tear, old peeling paint, or 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 EPA in the 1970s. 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 is to 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 U.S. EPA 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.

## Regional and Site Setting

The project site and vicinity are characterized by a mix of open space, residential, recreational, and former industrial uses. The site is generally flat and bounded by riprap on the south and west, and by a bluff and bedrock outcropping just north of the site. The formerly used Terminal One pier and warehouse are present on the southwest portion of the site. Historical uses on and around the project site involved shipping and industrial activities dating back to 1915-1918 when the port facility was constructed.

Terminal One was used primarily as a storage and warehouse facility for the transfer of cargo and bulk liquids from ships to trucks and rail cars. Site improvements at various times included a total of 68 chemical storage tanks (primarily liquid materials), warehouse buildings for the storage of dry goods, an office building, boilers, an underground fuel storage tank, a truck scale, and a below-grade stormwater system of sumps, clarifiers, and piping. Most of the former tanks were located in the southwestern portion of the site known as the Southwestern Tank Farm Area. A

tank farm was also located in the northeastern corner of the site known as the Northeastern Tank Farm Area. The remainder of the site is known as the Central Area.

### Contaminants of Potential Concern On Site

Various hazardous and non-hazardous materials were stored in the tanks on the site and included petroleum products (e.g., fuels and oils) and solvents, as well as vegetable, coconut, and cottonseed oils. Through the years, portions of the site have been leased and subleased by a number of tenants and as a result the use, storage, and disposal of hazardous materials has varied over time. In total, over 120 chemicals have been detected in soil and groundwater at the site, with volatile organic compounds (i.e. tetrachloroethene (PCE), tirchloroethene (TCE), cis-1,2 dichloroethene (cis-1,2 DCE), and vinyl chloride) present at elevated levels in the soil and groundwater of the southwestern portion of the site (AMEC, 2008). Benzo(a)pyrene, a semi-volatile organic compound (SVOC), was found at elevated concentrations in the soil at isolated locations within the central portion of the site. In addition, a fuel or crude oil that has undergone substantial biological degradation has been detected in soil and groundwater at the site (AMEC, 2008). Within the Northeastern Tank Farm Area, petroleum components including benzene and xylenes are of primary concern in both soil and groundwater (RWQCB, 2008).

### Site Cleanup Completed and Remedial Action Objectives

Sites with identified releases of hazardous materials are initially investigated to determine the full extent of contamination both vertically and horizontally for both soil and groundwater. Site closure is generally determined based on an evaluation of the presence of contaminants of potential concern ("COPCs") and evaluation of potential risk to human health and the environment.

A Remedial Investigation Report (RI) was completed for the site in early 2004 and included a Human Health Risk Assessment (HHRA) and a Feasibility Study (FS). The HHRA determines health-based remediation goals for a site based on calculated risk management factors according to established risk assessment protocols. The FS evaluates the COPCs and available remediation technologies to reduce the COPCs to levels that have acceptable levels of risk.

The levels of risk, or health-based risks, that are deemed acceptable are generally based on statistical calculations of cancer risk (i.e., one-in-a-million cancer risk) considering site specific conditions, proposed future uses, and potential pathways of exposure. For example, contamination that is found at depths beneath relatively impenetrable materials like concrete or very tight clays represents a much lower risk than shallow contamination of relatively porous soils in open landscaped areas.

The RI for the project site was approved by the San Francisco Bay Regional Water Quality Control Board (RWQCB) as complete with all chemicals of concern adequately characterized. Subsequently, the RWQCB issued a cleanup order (Order No. R2-2004-0045) specifying cleanup requirements for the site (RWQCB, 2004). An Updated Proposed Remedial Action Plan (UPRAP) was approved by the RWQCB on February 4, 2005. Two Partial Completion Reports

were submitted to the RWQCB in February and June 2006, detailing remedial actions up to that time, and were approved on July 24, 2006.

The Remedial Action Objectives for the site are to reduce the risk to human health and the environment by preventing direct exposure of potential receptors to soil and groundwater contamination as well as indirect exposure to soil vapors that may emanate from contaminated soil and groundwater. An additional objective is to support the long-term protection of water resources (AMEC, 2008).

### Ongoing Required Remedial Actions

Remedial actions required at the site were approved by the RWQCB in 2006 for the UPRAP. Some remedial actions have been completed, and some are ongoing. All remedial actions required at the site by the RWQCB are:

1. Treatment by in situ thermal desorption[1] of all soil and groundwater above Site cleanup goals for ambient air exposure and the presence of DNAPL to 20 feet depth below ground surface in the southwestern portion of the Site. This action was completed and approved by the RWQCB in 2006;
2. Excavation and off-site disposal of PAH-affected soil in the Central Area. This action was completed and approved by the RWQCB in 2006;
3. Implementation of the soil management protocols described in the Soil Risk Management Report for the site. This action has not yet been completed;
4. Construction of a slurry wall/vapor barrier along the northern and eastern perimeter of the Southwest Tank Farm. This action has not yet been completed;
5. Submission of a report documenting completion of (1) and (2) above. This action was completed and approved by the RWQCB;
6. Installation of two groundwater monitoring wells to monitor potential migration of contaminants to the Bay, completion of a period of monitoring, and submittal of a subsequent report. This action has not yet been completed; and
7. Recording of an appropriate deed restriction. This action has not yet been completed.

According to the approval letter of July 24, 2006, the RWQCB requires completion of items 3-7, above, prior to issuing a letter confirming "no further action" is required at the site.

### Amendment to Updated Proposed Remedial Action Plan

Under the Terminal One Land Disposition Agreement (LDA), the applicant is responsible for completing remedial actions required at the site as prescribed by the 2005 UPRAP (City of

[1] In situ thermal desorption is a soil remediation process in which heat and vacuum are applied simultaneously to subsurface soils, either with surface heater blankets or with an array of vertical heater/vacuum wells. As the soil is heated, contaminants are vaporized or destroyed by a number of mechanisms, including (1) evaporation into the air stream, (2) steam distillation into the water vapor stream, (3) boiling, (4) oxidation, and (5) pyrolysis. The vaporized water, contaminants, and natural organic compounds are drawn by the vacuum in a direction countercurrent to the heat flow.

Richmond, 2014).[2] In addition, the applicant is responsible for assuring that site preparation and development are carried out in accordance with the soil management prescriptions of the Soil Management Plan (SMP) also approved by the RWQCB in 2005. Although both of these RWQCB-approved plans remain in effect, they were prepared for the former, Point Richmond Shores project at the site and they are tailored to the former development proposal.

During the eight-year period between the 2006 completion of the remedial actions involving in-situ thermal desorption treatment and off-site disposal of PAH-affected soils and the 2014 City approval of the Terminal One LDA, no further remedial actions or soil testing were undertaken pending the preparation of a new site development proposal. With the 2014 submittal of a new site development proposal by the applicant, and the City's approval of the Terminal One LDA based on that proposal, the applicant proposed additional targeted testing of soils at the project site was warranted in order to better understand both (a) the level of residual sub-surface contamination remaining after eight years of natural biodegradation and (b) the scope of the additional remedial actions that might be necessary to mitigate any remaining contamination prior to site development. The initial results of this targeted site investigation suggest that residual subsurface concentrations of petroleum hydrocarbons and solvents have been remediated through both active and natural processes to a level that will support amendment of the 2005 UPRAP and SMP to modify certain remedial actions and soil management requirements. These amendments would include revisions to the 2005 UPRAP to allow residential land uses to be safely developed on the southwest portion of the site where the UPRAP limits development to recreational uses.

The applicant has met with the RWQCB to review the results of this targeted site investigation and to request the RWQCB's direction with respect to the additional testing that will need to be performed in order to provide the information required to evaluate and approve amendments to the UPRAP and SMP. The applicant is moving forward with a soil and groundwater testing program based upon these plans.

The existing UPRAP and SMP are designed to reduce impacts associated with the exposure of people or the environment to hazardous conditions or materials at the project site to a less-than-significant level. A decision by the RWQCB to approve amendments to the UPRAP or SMP based on a new development proposal and new environmental sampling data will only be made if the RWQCB concludes that the amended UPRAP and SMP will prevent exposure to contaminants at a level that would endanger human health. RWQCB issuance of a "No Further Action" letter confirming completion of remedial actions prescribed by the amended UPRAP will be required before occupancy can proceed at the project site.

### Wildland Fire

The project site is surrounded on several sides by vegetated open space areas and urban areas that can get very dry during summer months. 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

[2] Terminal One LDA, Section 4.1.7 "Mitigation Measures."

conditions that result in warm, dry fire seasons with strong afternoon winds. Wildfire hazard maps from the California Department of Forestry and Fire Protection (CAL FIRE) and compiled by the Association of Bay Area Governments (ABAG) show the site as being within or at least immediately adjacent to an area that is considered a fire threatened community (ABAG, 2015).[3] The CAL FIRE Fire Hazard Severity Zones maps rank land under local and State responsibility as to wildland fire hazard. The project site is shown as being located in or at least partially within an area considered to have a Moderate Fire Hazard Severity Zone (CAL FIRE, 2015). 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 project site is located approximately 15 miles north of Oakland International Airport, the nearest airport. Due to the project site's location outside airport influence areas, the public safety requirements to minimize the risk related to airport proximity would not apply.

## 4.7.3 Regulatory Setting

### Federal

The primary federal agencies with responsibility for hazardous materials management include the U.S. EPA, 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 4.7-1**.

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.

[3] The mapping tool used for this interface is not intended for site specific analysis and as a result this discussion is generalized.

**TABLE 4.7-2**
**FEDERAL LAWS AND REGULATIONS RELATED TO HAZARDOUS MATERIALS MANAGEMENT**

| Classification | Law or Responsible Federal Agency | Description |
|---|---|---|
| **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 Waste Handling** | Resource Conservation and Recovery Act of 1976 (RCRA) | Under RCRA, the EPA 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 (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. |
| | U.S. EPA | The EPA monitors and regulates hazardous materials used structural and building components and affects on human health. |

# State

## Unified Program

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 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

The State agency partners involved in the Unified Program have the responsibility of setting program element standards, working with Cal/EPA on ensuring program consistency, and providing technical assistance to the certified unified program agencies (CUPAs). The following State agencies are involved with the Unified Program:

**California Environmental Protection Agency (Cal EPA).** The Secretary of the California Environmental Protection Agency is directly responsible for coordinating the administration of the Unified Program. The Secretary certifies Unified Program Agencies. The Secretary has certified 83 CUPAs to date. These 83 CUPAs carry out the responsibilities previously handled by approximately 1,300 State and local agencies.

**Department of Toxic Substances Control (DTSC).** The Department of Toxic Substances Control provides technical assistance and evaluation for the hazardous waste generator program including onsite treatment (tiered permitting).

**Governor's Office of Emergency Services (OES).** The Governor's Office of Emergency Services is responsible for providing technical assistance and evaluation of the Hazardous Material Release Response Plan (Business Plan) Program and the California Accidental Release Response Plan (CalARP) Programs.

**Office of the State Fire Marshal (OSFM).** 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.

**State Water Resources Control Board (SWRCB).** The State Water Resources Control Board provides technical assistance and evaluation for the underground storage tank program in addition to handling the oversight and enforcement for the aboveground storage tank program.

Title 22 of the California Code of Regulations & Hazardous Waste Control Law, Chapter 6.5 DTSC regulates the generation, transportation, treatment, storage, and disposal of hazardous waste under RCRA and the California Hazardous Waste Control Law. Both laws impose "cradle to grave" regulatory systems for handling hazardous waste in a manner that protects human health and the environment. Cal EPA has delegated some of its authority under the Hazardous Waste Control Law to county health departments and other CUPAs.

### Hazardous Materials Management

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.

### Hazardous Waste Handling

The Cal EPA/DTSC regulates the generation, transportation, treatment, storage, and disposal of hazardous waste. State and federal laws require detailed planning to ensure that hazardous materials are properly handled, used, stored, and disposed of, and, in the event that such materials are accidentally released, to prevent or to mitigate injury to health or the environment. Laws and regulations require hazardous materials users to store these materials appropriately and to train employees to manage them safely.

Under the federal RCRA, described in **Table 4.7-1**, individual states may implement their own hazardous waste programs in lieu of RCRA, as long as the state program is at least as stringent as federal RCRA requirements. In 1992, USEPA authorized DTSC to be the primary authority for enforcing RCRA hazardous waste requirements in California. DTSC regulates the generation, transportation, treatment, storage, and disposal of hazardous waste. The hazardous waste regulations establish criteria for identifying, packaging, and labeling hazardous wastes; prescribe management of hazardous waste; establish permit requirements for hazardous waste treatment, storage, disposal, and transportation; and identify hazardous wastes that cannot be disposed of in landfills.

### California Human Health Screening Levels

The California Human Health Screening Levels (CHHSLs) were developed as a tool to assist in the evaluation of contaminated sites for potential adverse threats to human health. Preparation of the CHHSLS was required by the California Land Environmental Restoration and Reuse Act of 2001 (SB 32 (Chapter 764, Statutes of 2001, OEHHA, 2007. The CHHSLs are concentrations of 54 hazardous chemicals in soil or soil gas the Cal/EPA considers to be below thresholds of concern for risks to human health. The CHHSLs were developed by OEHHA, an agency under the umbrella of Cal/EPA, and are contained in its report entitled *Human-Exposure-Based Screening Numbers Developed to Aid Estimation of Cleanup Costs for Contaminated Soil* (OEHHA and CEPA 2004). The thresholds of concern used to develop the CHHSLs are an excess lifetime cancer risk of 1 in 1 million and a hazard quotient of 1.0 for noncancer health effects. The CHHSLs were developed using standard exposure assumptions and chemical toxicity values published by USEPA and Cal/EPA. The CHHSLs can be used to screen sites for potential human

health concerns where releases of hazardous chemicals to soils have occurred. Under most circumstances, the presence of a chemical in soil, soil gas, or indoor air at concentrations below the corresponding CHHSLs can be assumed to not pose a significant health risk to people who may live (residential CHHSLs) or work (commercial/industrial CHHSLs) at the site.

### California Department of Toxic Substances Control / Hazardous Waste Management

The Federal Resource Conservation and Recovery Act of 1976 (RCRA) established a "cradle-to-grave" regulatory program governing the generation, transportation, treatment, storage, and disposal of hazardous waste. Under RCRA, individual states may implement their own hazardous waste programs in lieu of RCRA as long as the state program is at least as stringent as federal RCRA requirements (see **Table 4.7-1**).

The U.S. EPA approved California's RCRA program, called the Hazardous Waste Control Law (HWCL) in 1992. In California, Cal EPA and the Department of Toxic Substances Control DTSC, a department within Cal EPA, regulates the generation, transportation, treatment, storage, and disposal of hazardous waste. The hazardous waste regulations establish criteria for identifying, packaging, and labeling hazardous wastes; dictate the management of hazardous waste; establish permit requirements for hazardous waste treatment, storage, disposal, and transportation; and identify hazardous wastes that cannot be disposed of in landfills. These regulations also require hazardous waste generators to prepare a Hazardous Waste Contingency Plan that describe hazardous waste storage and secondary containment facilities, emergency response and evacuation procedures, and employee hazardous waste training program. While DTSC generally retains authority, day to day enforcement of hazardous waste management rules is delegated to the CUPA, the Contra Costa County Health Services (CCHS) Department.

### Hazardous Materials Transportation

The State of California 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.

In January 1996, Cal EPA adopted regulations implementing a Unified Hazardous Waste and Hazardous Materials Management Regulatory Program (Unified Program). The program has six elements: hazardous waste generators and hazardous waste on-site treatment; underground storage tanks; aboveground storage tanks; hazardous materials release response plans and inventories; risk management and prevention programs; and Unified Fire Code hazardous materials management plans and inventories. The plan is implemented at the local level. The Certified Unified Program Agency (CUPA) is the local agency that is responsible for the implementation of the Unified Program. In Richmond, CCHS is the designated CUPA for all businesses.

### California Department of Toxic Substances Control

The DTSC is responsible for regulating management of hazardous waste and correction of releases of hazardous constituents to the environment. The DTSC promulgates rules and regulations, but enforcement of compliance with California hazardous waste management regulations is delegated to local agencies. CCHS is the local agency having jurisdiction over compliance with California hazardous waste management regulations. DTSC retains the authority to intercede in hazardous waste management issues, permitting for hazardous waste treatment, storage and disposal, and review and approval of corrective action planning activity at hazardous waste contaminated sites.

## Regional and Local

### Airborne Pollutants

The BAAQMD is vested by the California legislature with authority to regulate 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. Cal/OSHA regulates asbestos removal to ensure the health and safety of workers removing asbestos containing materials and also must be notified of asbestos abatement activities.

### Richmond General Plan 2030

The Richmond General Plan 2030 identifies goals, policies and actions that address hazards and hazardous materials. Goals and policies presented in the Public Safety and Noise and Conservation, Natural Resources and Open Space elements of the General Plan applicable to this 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*, a project would cause adverse impacts related to hazards and hazardous materials if it 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 project is addressed in Section 4.2, *Air Quality*.

## Topics with No Impact or Otherwise Not Addressed in this EIR

Review and comparison of the setting circumstances and project characteristics with each of the eight significance criteria stated above clearly show that no impacts associated with hazards or hazardous materials would result for Criteria c), e), and f). The following discusses the reasoning supporting this conclusion:

#### The project would not emit hazardous emissions or handle hazardous or acutely hazardous materials, substances or waste within one-quarter mile of an existing or proposed school. (Criterion c)

The project site is not located within 0.25 miles of an existing or proposed school and would only require limited quantities of hazardous materials. Therefore, the project would not handle or result in emissions of hazardous materials within 0.25 miles of an existing school, and would have no impact.

#### The 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)

There is no airport land use plan that includes the project site, and there are no public airports or public use airports within two miles of the project site. Therefore, the project would have no impact.

#### The project would not be located in the vicinity of a private airstrip. (Criterion f)

There is no private airstrip in the vicinity of the project site. Therefore, the project would have no impact.

# 4.7.6 Discussion of Impacts and Mitigation Measures

## Approach to Analysis

The following analysis considers existing site uses and regulatory requirements along with the proposed project. Considering some of the general proposed site uses such as residential and retail, some assumptions have been made based on professional judgment about typical uses and practices of handling, storing and disposing of hazardous materials.

**Impact HAZ-1: The project would include the routine transport, use and disposal of hazardous materials during construction and operation but would not create a significant hazard to the public or the environment. (Criterion a.)** ***(Less than Significant with Mitigation)***

### Construction

Demolition of existing structures on the project site may expose construction workers, the public, or the environment to hazardous materials such as LBP, ACMs, and PCBs. 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.

Between March 21 and April 17, 2008, a licensed asbestos abatement contractor (Janus Corporation) conducted removal and disposal of asbestos-containing gypsum wallboard, skim coat, vinyl floor tile and associated mastic, ceramic tile adhesive, transite panels, patch compound, roofing penetration mastic, and exterior paint from the interior and exterior surfaces of the Terminal One warehouse building (IHI Environmental, 2008). The materials were contained and hauled offsite in accordance with local, state and federal regulations such that there would no longer be any substantive threat related to asbestos remaining in the Terminal One building onsite.

Both the federal OSHA and Cal OSHA regulate worker exposure during construction activities that disturb LBP. The Interim Final Rule found in 29 CFR 1926.62 covers construction work in which employees may be exposed to lead during such activities as demolition, removal, surface preparation for repainting, renovation, cleanup, and routine maintenance. OSHA-specified compliance includes respiratory protection, protective clothing, housekeeping, special high-efficiency filtered vacuums, hygiene facilities, medical surveillance, and training.

Fluorescent lighting ballasts manufactured prior to 1978, and electrical transformers, capacitors, and generators manufactured prior to 1977, may contain PCBs. In accordance with the Toxic Substances Control Act and other federal and state regulations, the applicant would be required to properly handle and dispose of electrical equipment and lighting ballasts that contain PCBs, reducing potential impacts to a less-than-significant level.

Implementation of **Mitigation Measures HAZ-1a** through **HAZ-1d** would reduce construction period impacts to less-than-significant levels.

> **Mitigation Measure HAZ-1a:** Prior to issuance of any demolition permit, the project applicant shall submit to the Contra Costa Health Services Department a hazardous building material assessment prepared by qualified licensed contractors for any structure intended for demolition indicating whether LBP or lead-based coatings, and/or PCB-containing equipment, are present.
>
> **Mitigation Measure HAZ-1b:** If the assessment required by Mitigation Measure HAZ-1a indicates the presence of LBP, and/or PCBs, the project applicant shall create and implement a health and safety 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.

**Mitigation Measure HAZ-1c:** If the assessment required by Mitigation Measure HAZ-1a finds presence of LBP, the project applicant shall develop and implement a LBP removal plan. The plan shall specify, but not be limited to, the following elements for implementation:

1. Develop a removal specification approved by a Certified Lead Project Designer.
2. Ensure that all removal workers are properly trained.
3. Contain all work areas to prohibit off-site migration of paint chip debris.
4. Remove all peeling and stratified LBP on building and non-building surfaces to the degree necessary to safely and properly complete demolition activities according to recommendations of the survey. The demolition contractor shall be responsible for the proper containment and disposal of intact LBP on all equipment to be cut and/or removed during the demolition.
5. Provide on-site personnel and area air monitoring during all removal activities to ensure that workers and the environment are adequately protected by the control measures used.
6. Clean up and/or vacuum paint chips with a high efficiency particulate air (HEPA) filter.
7. Collect, segregate, and profile waste for disposal determination.
8. Properly dispose of all waste.

**Mitigation Measure HAZ-1d:** If the assessment required by Mitigation Measure HAZ-1a finds presence of PCBs, the project applicant shall ensure that PCB abatement is conducted prior to building demolition or renovation. PCBs shall be removed by a qualified contractor and transported in accordance with Caltrans requirements.

### Operation

Project development would include implementation of required remedial actions to address legacy contamination associated with the former industrial activities at the site. The remedial actions completed to date have followed the stages of investigation, identification, and remediation as required by the RWQCB, the overseeing regulatory agency, and in accordance with the RWQCB's cleanup order (Order No. R2-2004-0045). In general, proposed development on contaminated sites requires that an approved remedial action plan has been completed and certified by the overseeing agency prior to development or a change in proposed land use. Ultimately, cleanup levels are determined based on site-specific factors that include potential exposure pathways, future land uses, and the characteristics of the contaminants involved. The remediation goals provided in the existing UPRAP for the site were based on a human health risk assessment that included site-specific analysis of exposure pathways and the appropriate thresholds that would be required to protect human health and the environment for future occupants and visitors. However, following completion of remediation, any residual volatile

contaminants could pose a risk to future occupants of buildings onsite through inhalation of volatile organics and incidental ingestion or dermal contact with contaminated soil or groundwater. While the remediation activities described above would minimize exposure risks to future residents, workers, visitors or ecological systems, especially due to direct contact, confirmation is necessary to ensure that there would be no future exposure to these hazards from vapor intrusion into buildings to be constructed at the site.

In addition, the project currently proposes constructing housing in the area of the Southwestern Tank Farm Area and Northeastern Tank Farm Area. Housing in these areas is not addressed by the current UPRAP, which will be required to be revised and approved by the RWQCB to reflect the current project site plan, before homes can be developed in these areas.

Implementation of **Mitigation Measures HAZ-1e** and **Mitigation Measure HAZ-1f** would ensure that remediation activities have successfully reduced the threat to human health and the environment to less-than-significant levels.

> **Mitigation Measure HAZ-1e:** Prior to issuance of any building permit, the project applicant shall submit to the City a soil vapor assessment prepared by a qualified licensed environmental consultant for any structure intended for human occupancy (i.e., occupied by a human for a minimum of 2,000 hours annually). The assessment shall consist of laboratory analysis of soil gas samples collected as part of remediation confirmation to document that soil gas concentrations will not adversely affect future occupants or visitors to proposed structures.
>
> **Mitigation Measure HAZ-1f:** Prior to issuance of any building permit, the project applicant shall submit to the City confirmation that the site remedial action plan has been revised as necessary, and approved by the San Francisco Regional Water Quality Control Board (RWQCB), to address the construction of housing and other infrastructure (i.e., water utilities) in areas of the site not otherwise contemplated for housing or infrastructure in the 2005 Updated Proposed Remedial Action Plan, and that all remedial actions required to be completed per the revised remedial action plan prior to project construction have been approved as complete, and documented as such, by the RWQCB.

Once constructed, the project would consist primarily of residential land uses but would also include retail, parks, and building support 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, and because the health effects associated with them are generally not as serious as industrial uses, operation of most of the new uses at the project site would not cause an adverse effect on 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 the CCHS Department (the CUPA), any businesses that

would store hazardous materials and/or waste at its business site 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 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. With adherence to existing regulatory requirements, impacts related to the routine transport, use or disposal of hazardous materials during operation would be less than significant.

**Significance After Mitigation:** Less Than Significant.

**Project Design Features / Mitigation:** Mitigation Measures HAZ-1a, HAZ-1b, HAZ-1c, HAZ-1d, HAZ-1e.

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**Impact HAZ-2: The project would not create a significant hazard to the public or environment through an upset or accident involving the release of hazardous materials. (Criterion b.)** ***(Less than Significant, No Mitigation Required)***

### Construction

Temporary construction activities associated with development of the project may involve limited quantities of gasoline, diesel fuel, hydraulic fluid, solvents, oils, and paints for the construction of homes and other uses within the project site. These materials would be transported along roadways and temporarily stored on-site. Containment and spill cleanup measures that would be included in a site-specific Storm Water Pollution Prevention Plan (SWPPP) as required under the National Pollution Discharge Elimination System (NPDES) permit program to prevent hazardous materials from spreading off the property are discussed in Section 4.8, *Hydrology and Water Quality*. Hazardous materials that would be generated during construction would be disposed of as described in the required SWPPP. Therefore, compliance with existing regulations (NPDES permit program), a necessary condition of construction, would address potential upsets and accidents, and any impacts during construction would be less than significant.

### Operation

As noted above, proposed land uses including residential, retail, and parks would likely require the use of hazardous materials and wastes common to similar land use settings. These 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. If not handled appropriately, upset and accident conditions could result in releases of hazardous materials or wastes that could affect residents, workers, the public or the environment. As described above, residential land use is associated with relatively small quantities of hazardous materials and any commercial land uses that would store hazardous materials and/or waste at its business site would be required to submit a Hazardous Materials Management Plan in accordance with CCHS Department requirements. Both the federal and State governments require all

businesses that handle more than a specified amount of hazardous materials to submit an annual business plan to the local CUPA. With adherence to existing regulatory requirements, the potential to adversely affect workers, residents, visitors, or the environment would be reduced to less-than-significant levels.

**Significance:** Less Than Significant.

**Project Design Features / Mitigation:** None required.

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**Impact HAZ-3: Development of the project would be located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and could result in a safety hazard to the public or environment through exposure to previous contamination of soil or groundwater. (Criterion d.) (*Less than Significant with Mitigation*)**

As discussed above, the project site has a history of industrial use, and releases of hazardous materials at the site have been well documented. Contamination of subsurface soils and groundwater can potentially expose workers, the public, or future occupants to legacy contaminants through direct exposure, from contact with contaminated soils through excavation or other ground disturbing activities or vapor intrusion into proposed structures. The site has 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 in accordance with the approved RAP prior to development. The remediation activities will be actively overseen by the RWQCB to ensure that all remediation is completed to levels that protect human health and the environment and that are appropriate for the future uses at 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 of the site. If not handled appropriately, construction workers or the public could become exposed to contaminants that could cause adverse health effects. A Soil Risk Management Plan was prepared for the project site in 2005 and may require revisions to reflect more recent regulation, industry standards, and/or more recent data from the site (Geomatrix, 2005). With implementation of Mitigation Measure HAZ-2, the potential impact would be less than significant.

> **Mitigation Measure HAZ-2:** During construction, the applicant's construction contractor lead/foreperson shall ensure that all earthwork activities cease upon discovery of any suspect soils (e.g., petroleum odor and/or discoloration) during construction in accordance with an updated Soil Risk Management Plan prepared by a qualified environmental consultant and approved by the San Francisco Bay Regional Water Quality Control Board (RWQCB). Upon any such discovery, the applicant or their construction contractor shall notify the RWQCB and retain a qualified environmental firm to collect soil samples to confirm the level of contamination that may be present. If contamination is found to be present, any further proposed groundbreaking activities within areas of identified or suspected contamination shall be conducted according to a site specific health and safety plan, prepared by a licensed professional. The contractor shall follow all procedural

direction given by the RWQCB and in accordance with the updated Soil Risk Management Plan prepared for the site to ensure that suspect soils are isolated, protected from runoff, and disposed of in accordance with transportation laws and the requirements of the licensed receiving facility.

**Significance After Mitigation:** Less Than Significant.

**Project Design Features / Mitigation:** Mitigation Measure HAZ-2.

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**Impact HAZ-4: The 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*)**

The project site is located along the Bay shoreline; project development would increase the demand for fire protection and expand the geographic area within which services must be provided. The circulation plan for the project is 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*). Proposed improvements would not close or reroute any of the existing roadways and would not interfere with roads, access, and egress of future occupants. Therefore, the project would not interfere with an adopted emergency response plan or emergency evacuation plan, and would have no impact.

**Significance:** Less Than Significant.

**Project Design Features / Mitigation:** None required.

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**Impact HAZ-5: The 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.) (*Less than Significant, No Mitigation Required*)**

As noted above in the Environmental Setting section, the project site is located in an area that has been mapped in a fire threatened community (ABAG, 2015). The severity of the hazard has been categorized as moderate (ibid). Regardless, the project would comply with all sections of the California Fire Code as enforced locally by the City that address fire suppression and safety requirements to minimize fire hazards. In addition, the project site and vicinity are within the service area of the Richmond Fire Department, which would respond to fires reported at the site (more detail on fire and emergency response for the site are presented in Section 4.12, *Public Services*). Therefore, with adherence to all Fire Code safety requirements and accessibility to fire department response, the project would have a less than significant impact related to wildland fires.

**Significance:** Less Than Significant.

**Project Design Features / Mitigation:** None required.

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## Cumulative Impacts

The analysis of cumulative Hazards and Hazardous Materials impacts is presented in Chapter 6, Other Statutory Sections, of this EIR.

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# References – Hazards and Hazardous Materials

AMEC Geomatrix (AMEC), 2008. *Status of Remediation Efforts, Terminal One Site*, August 27, 2008.

Association of Bay Area Governments (ABAG), 2015. Wildland Urban Interface Fire Threat Available at: gis.abag.ca.gov/website/Hazards/?hlyr=wui. Accessed February 6, 2015.

California Department of Forestry and Fire Protection (CAL FIRE), 2015. Draft Fire Hazard Severity Zones in Local Responsibility Areas. Available at: frap.fire.ca.gov/webdata/maps/statewide/fhszl06_1_map.pdf. Accessed January 4, 2015. Version dated September 17, 2007.

City of Richmond, 2014. Terminal One Land Disposition Agreement. Effective August 6, 2014.

Department of Toxic Substances Control (DTSC), 2016. Envirostor Database. Available at:www.envirostor.dtsc.ca.gov/public/mapfull.asp?global_id=&x=-119&y=37&zl=18&ms=640,480&mt=m&findaddress=True&city=richmond,%20ca&zip=&county=&federal_superfund=true&state_response=true&voluntary_cleanup=true&school_cleanup=true&ca_site=true&tiered_permit=true&evaluation=true&military_evaluation=true&school_investigation=true&operating=true&post_closure=true&non_operating=true. Accessed January 7, 2014.

Geomatrix Consultants, 2005. *Soil Risk Management Plan, Terminal One Site,* February 2005.

IHI Environmental, 2008. *Summary of Asbestos Abatement Observations and Air Monitoring*, May 7, 2008.

Office of Environmental Health Hazard Assessment (OEHHA), 2007. Risk Assessment: Soil and Soil Gas. Available at: oehha.ca.gov/risk/CHHSLs092310.html. Accessed February 2016.

Regional Water Quality Control Board (RWQCB), 2004. *Site Cleanup Requirements Order, R2-2004-0045, Terminal One, 1500 Dornan Drive, Richmond California*, June 24, 2004.

State Water Resources Control Board (SWRCB), 2015. GeoTracker database. Available at: geotracker.waterboards.ca.gov/.

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# 4.8 Hydrology and Water Quality

## 4.8.1 Introduction

This section describes existing hydrologic conditions in the project 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 project and identifies potential project impacts and appropriate mitigation measures when necessary.

## 4.8.2 Environmental Setting

### Regional Setting

The project site is located adjacent to the San Francisco Bay. No creeks or streams cross the project site. Miller/Knox Lagoon is located approximately 0.3 miles north of the project site, and is geographically separated from the site by the bluffs in Miller/Knox Regional Shoreline park (Miller/Knox park) that are directly north of the site.

#### *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 per year with the majority of rainfall occurring between October and April. Analysis of long-term precipitation records indicates that wetter and drier cycles, lasting several years each, are common in the region.

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 project site is located within the 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, and on the south by the Niles Cone groundwater basin (DWR, 2004). The Easy Bay Plan Subbasin is underlain by unconsolidated Quaternary age 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).

#### *Water Quality*

The San Francisco Bay is an 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 discharges, groundwater and surface water interactions, and water quality/water quantity relationships. A number of water bodies in the Bay 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. Pollutants in these water bodies include chlordane, pesticides, dioxins, furans, mercury, polychlorinated biphenyls (PCBs), and selenium (SWRCB, 2010).

The State and Regional Water Quality Control Boards (RWQCBs) have implemented the Water Management Initiative as the model for which water resources are to be protected. The RWQCB is now structured to promote a watershed-based approach towards implementation of programs. RWQCB 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.

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. These diffuse sources of pollutants range from parking lots, bare earth at construction sites, agricultural sites and a host of many other sources. The total amount of pollutants entering aquatic systems from these diffuse, nonpoint sources is now generally considered to be greater than that from any other source, such as pipe discharges (point source).

In the project site and surroundings, the storm drain system is designed to prevent flooding by channeling stormwater runoff northward via channels, culverts, and overland flow toward eventual discharge to San Francisco Bay. However, much of this runoff is not treated, and it can potentially deliver pollutants to the Bay from any impermeable surface within the area. Stormwater runoff accounts for 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.

## Project Setting

### *Existing Features*

The 13.3-acre project site includes the 94,000 square-foot Terminal One Warehouse, the Terminal One Pier which consists of a concrete deck supported by pre-cast concrete piles, a shoreline armored with rock and concrete rip rap, and hardscape surfaces on the site including former building foundations, storage tank pads, and asphalt paving. Parts of the site consist of vegetation encroaching onto areas of paving and hardscape. The site is relatively level and is approximately 8 to 14 feet North American Vertical Datum of 1988 (NAVD88). Roughly 52 percent of the site (approximately 6.9 acres, or 303,000 square feet) consists of existing impervious areas (**Appendix D**). Surface soils have been characterized as clayey sand fill (ENGEO, 2015). Ponding occurs in some lower-lying areas on the site.

In general, stormwater on the site drains by overland sheetflow from north to south. Some stormwater runoff is also collected on-site through a system of drain inlets and underground storm lines that eventually discharge into the Bay. The extent and condition of the existing stormwater drainage system is largely unknown (**Appendix D**). Stormwater to the north of the site drains along the north side of Brickyard Cove Road into a ditch, and flows west into a storm drain inlet near the intersection of Brickyard Cove Road and Dornan Drive. City utility plans show drainage infrastructure along Dornan Drive at the western boundary of the project site.

### *Project Site Groundwater*

Groundwater at the project site and surroundings is typically found at shallow depths (2 to 8 feet below existing grade) and is contained within the alluvial sediments, above Young Bay Mud (YBM) (ENGEO, 2015). Groundwater resources are not generally used in this area for water supply purposes. Because of the site's proximity to the Bay, tidal fluctuations and rainfall are likely to affect the elevation of the groundwater table.

### *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.

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).[1] 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 applicant raises the development above the BFE.

The June 16, 2009 FIRM for the Terminal One area (**Figure 4.8-1**) indicates that the BFE elevation at the site is 9.0 feet, and that the property is not within a flood zone. However, on September 30, 2015, FEMA released a revised FIRM for the area, which indicates the area of the Bay south of the shoreline, and parts of the shoreline underlying the existing Terminal One Warehouse and extending to the east are situated in coastal Zone VE, with a BFE elevation of 11 feet NAVD (see **Appendix D**). The 2015 FIRM additionally shows that a portion of the site is subject to a 500-year storm flood hazard.

A recent topographic survey of the site indicates that existing grades are as low as approximately 8 feet NAVD near the southeast corner of the warehouse, and rise to approximately 16 feet NAVD along Brickyard Cove Road (**Appendix D**). The Terminal One Pier is located at an

[1] FEMA bases the BFE on the North American Vertical Datum of 1988.

elevation of approximately 12.5 feet NAVD and is not located in the areas mapped as flood zones on the 2015 FIRM.

### Tsunami and Seiche

Tsunami are waves caused by an underwater earthquake, landslide, or volcanic eruption, while seiches are waves in an enclosed or semi-enclosed body of water such as a lake, reservoir, or harbor. Flooding from tsunami could generally affect low-lying areas along the Pacific Coast and San Francisco Bay shorelines; these waves, however, would attenuate as they travel inside San Francisco Bay (URS, 2013). The project site is not located within a mapped tsunami inundation area (City of Richmond, 2012). In addition, seiche risk at areas along Richmond's shoreline, including the project site, is minimal because there are no large confined bodies of water with depths that would cause this hazard (City of Richmond, 2011).

### 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.

Although some areas in the city are within the dam failure inundation area for the San Pablo Reservoir, the project site does not lie within this area (City of Richmond, 2011).

### 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 the global sea level.

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 greenhouse gas emissions and Earth's response to these emissions. In spite of this uncertainty in NRC's and other's 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.

## Regulatory Setting

The regulatory requirements for the project include:

- The Federal Clean Water Act, as enforced by the Environmental Protection Agency (US EPA);
- The California Porter-Cologne Water Quality Control Act and related California Administrative Code sections administered by the California State Water Resources Control Board and the San Francisco Bay Regional Water Quality Control Board; and
- Permitting requirements, which must be fulfilled prior to development, enforced by the City of Richmond.

The applicable plans, policies, and regulations are discussed below.

## *Federal Surface Water Quality Requirements*

### 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 US EPA the authority to implement pollution control programs such as setting 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 US Army Corps of Engineers (USACE) 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.

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 US EPA has delegated authority for NPDES permitting to the California State Water Resources Control Board (SWRCB), which has nine regional boards. The San Francisco Bay RWQCB regulates water quality in the project site and surroundings.

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.

#### United States Environmental Protection Agency

The US EPA is responsible for implementing federal laws designed to protect air, water, and land. While numerous federal environmental laws guide US EPA's activities, its primary mandate with respect to water quality is the CWA. US EPA has developed national technology-based water quality standards and states have developed water quality standards in accordance with the CWA. US EPA also has authority to establish water quality standards if a state fails to do so. In the National Toxics Rule (NTR) and California Toxics Rule (CTR), US EPA 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 US EPA has delegated authority for NPDES permitting to the California State Water Resources Control Board (SWRCB), which has nine regional boards. The San Francisco Bay RWQCB regulates water quality in the Plan Area and surroundings. Under this system, municipal and industrial facilities are required to obtain a NPDES permit 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.

### *Rivers and Harbors Act*

Section 10 of the Rivers and Harbors Act of 1899 prohibits work affecting the course, location, conditions or capacity of navigable waters of the United States without a permit from the USACE. Examples of activities requiring a permit from the USACE are the construction of any structure in or over any navigable water; excavation or deposition of materials in such waters; and various types of work performed in such waters, including placement of fill and stream channelization. The Corp's compliance with Section 404 of the Clean Water Act and NEPA will also satisfy requirements under Section 10 of the Rivers and Harbors Act.

### *State, Regional and Local Water Quality Regulations and Agencies*

#### Porter-Cologne Act

The State Board and the RWQCBs share the 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 this requirement for the San Francisco Bay area, the Regional Water Quality Control Plan for the San Francisco Bay Basin (Basin Plan) was prepared

by the RWQCB 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 RWQCB 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 RWQCB's other activities include permitting of waste discharges and implementing monitoring programs of pollutant effects.

The RWQCB most recently revised the Basin Plan on December 31, 2011, 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 US EPA's list of 126 pollutants.

Water quality objectives are achieved primarily through the establishment and enforcement of Waste Discharge Requirements for each wastewater discharger. 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.

### 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. The project will require a permit from BCDC, which is necessary prior to the commencement of work within 100 feet of the shoreline.

BCDC policies also require sea level rise risk assessments to be conducted when planning shoreline areas or designing large shoreline projects within BCDC jurisdiction. Risk assessments should be prepared by a qualified engineer, and based on the estimated 100-year flood elevation, taking into account the best estimates of future sea level rise.

### *Construction General Permit*

The California Construction Stormwater Permit (Construction General Permit)[2], 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 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 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;
- 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.

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;

[2] *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.

- 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.

### 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 is comprised of 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 San Francisco Bay RWQCB for municipal separate storm sewer systems (MS4s). The permit contains a comprehensive plan to reduce the discharge of pollutants to the "maximum extent practicable" and mandated 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 RWQCB 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). 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 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 project would be subject to these requirements.

#### *C.3 Permit Requirements*

The NPDES permit lists 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.

### *Dewatering Permit*

Construction activities such as excavation and trenching in areas with shallow groundwater would require dewatering, which would be subject to the RWQCB construction dewatering permit requirements. Dewatering operations are regulated under State requirements for stormwater pollution prevention and control. Discharge of non-stormwater from a trench or excavation that contains sediments or other pollutants 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 RWQCB. However, the removed water could potentially be contaminated with chemicals released from construction equipment or sediments from excavation. Therefore, disposal of dewatering discharge would require permits either from the RWQCB for discharge to surface creeks and groundwater or from local agencies for discharge to storm or sanitary sewers. The RWQCB lists non-stormwater discharge controls specifically for dewatering operations. The control measures are described in the mitigation for impacts discussion. Discharge of water resulting from dewatering operations would require an NPDES Permit, or a waiver (exemption) from the RWQCB, which would establish discharge limitations for specific chemicals (if they occur in the dewatering flows).

### *Dredging Permitting*

Construction activities associated with implementation of the project, such as the shoreline improvements or wharf construction, could involve dredging. The project sponsor for such projects would be required to apply for and obtain Section 404 permit from the USACE prior to dredging. As a part of the Section 404 permitting process, the project sponsor would be required to obtain a water quality certification from the RWQCB under Section 401 of the CWA. The project would be required to dredge and dispose material in accordance with the requirements of the RWQCB Basin Plan and USACE. The RWQCB 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 the USEPA- Region 9, U.S. Army Corps of Engineers-San Francisco, San Francisco Bay RWQCB, 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). The proposed project would likely fall into the first category.

# 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 intowater 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 stor- age, 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.

#### Stormwater Management and Discharge Control

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.

## 4.8.5 Significance Criteria

Based on California Environmental Quality Act (CEQA) Guidelines Appendix G, the project would cause adverse impacts to hydrology and water quality if it 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.

## 4.8.6 Discussion of No Hydrology and Water Quality Impacts

Review and comparison of the setting and the project with the significance criteria stated above, clearly show that no impacts would be associated with criterion f (otherwise substantially degrade water quality). Other than the change in drainage patterns as a result of redevelopment of the project site, the project would not otherwise include any other discharges of water that could degrade water quality.

The potential water quality changes and associated impacts that are anticipated from redevelopment are discussed in Section 4.8.7, *Discussion of Impacts and Mitigation Measures*. However, there are no elements of the project that would otherwise substantially degrade water quality; therefore, there would be no impact.

## 4.8.7 Discussion of Impacts and Mitigation Measures

The applicant conducted a hydrological analysis of the 10-year storm event at the site (see **Appendix D**). As discussed in **Appendix D**, the area within the project boundary, along with the south side portion of Brickyard Cove Road extending along the northern project boundary line, and the portion of Dornan Drive along the western boundary, were used to develop a storm runoff value of approximately 22 cubic feet per second (CFS). An analysis of existing runoff conditions in areas that are tributary to the project site indicates that the storm runoff flow for these areas would be approximately 20 CFS.

Calculations made by the project applicant indicate that, after construction is completed, the proposed project would result in approximately 406,000 square feet (9.3 acres) of impervious surface, which is approximately 103,000 square feet (2.4 acres) of additional impervious surface when compared with the existing conditions (which equal approximately 303,000 square feet, or 7 acres, of impervious surface) at the site. The applicant also estimates that an on-site bioretention area of approximately 16,250 square feet would be required to provide on-site retention and

stormwater quality treatment of rainfall runoff generated by a post-project impervious surface of 406,000 square feet. In addition, calculations made by the applicant indicate that approximately 90,000 square feet of the additional project impervious surface would consist of landscaped areas between the condominium buildings (above the underground parking podiums). To the extent feasible, the applicant will design these "green roof" on-structure landscape elements to be self-retaining (i.e., these areas would be designed to retain the first one inch of rainfall without producing any runoff, and would therefore provide stormwater retention capacity).[3] If these areas are subtracted from the overall total impervious surface represented by the project, the total project impervious surface that is not self-retaining is reduced to 316,000 square feet, resulting in approximately 13,000 square feet (0.3 acres) of additional impervious surface.

The applicant's calculations indicate that the additional runoff associated with this impervious surface would require approximately 12,650 square feet of on-site retention and biotreatment area. Accordingly, depending upon the extent to which the on-structure landscaping is designed to be self-retaining, the applicant will be required to provide for the equivalent of between 2,150 square feet and 5,750 square feet of additional bioretention capacity.

**Impact HYD-1: The 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*)**

Stormwater pollution, during both construction and operational phases of the project, can include oils, fuels, heavy metals, pesticides, and other contaminants of concern that originate on rooftops, parking lots, and other impervious surfaces that are subsequently washed into local waterways during storm events. Pollutants 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 on the project site can increase the level of stormwater pollution that could ultimately wash to San Francisco Bay. Any increased pollution that would violate water quality standards is considered a potentially significant impact.

### Project Construction

During construction, development under the project would be subject to the NPDES General Construction Permit requirements which include preparation of a SWPPP along with a Notice of Intent prior to construction. Implementation of the SWPPP would begin with the commencement of construction and continue though the completion of the project. At a minimum, the SWPPP would include a description of construction materials, practices and equipment storage and maintenance, a list of pollutants likely to contact stormwater, site specific erosion and sedimentation control practices, list of provisions to eliminate or reduce discharge of materials to stormwater and BMPs for fuel and equipment storage. The project applicant would develop and

[3] Per the Contra Costa Clean Water Program's Stormwater C.3 Guidebook (CCCWP, 2012), self-retaining areas designed to retain the first one inch of rainfall without producing runoff are best suited for flat, heavily landscaped sites, and can also be used on mild slopes if it is reasonable to expect that a one-inch rainfall event would produce no runoff.

implement a monitoring program as required under the General Construction Permit. The 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 and 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 sponsor would submit a Notice of Termination to the RWQCB.

Even with the implementation of a project-specific SWPPP, construction activities could result in the release of chemical contaminants into the Bay, which could be toxic to sensitive wildlife or the benthic community in and within proximity to Brickyard Cove. Implementation of Mitigation Measure HYD-1, below, would require the inclusion of measures that would be protective to Bay ecological resoruces, and would protect the Bay from turbidity and contaminant impacts during construction. Due to tidal flushing of the project area, any resuspension of sediments would be temporary and would not cause long term effects.

> **Mitigation Measure HYD-1: Water Quality Best Management Practices for All Construction Activities Over the Bay.** The project sponsor shall ensure that the following best management practices are included in the SWPPP prepared in accordance with the Construction General Stormwater Permit:
>
> 1. The construction contractor shall minimize the production of debris when cutting or demolishing portions of the over-water pier components or constructing new over-water components, and shall utilize netting, containment vessels, work platforms, or the equivalent to catch any falling debris;
> 2. The construction contractor shall install a containment boom around the work area to contain floating debris, and shall provide a vessel to retrieve debris from the containment area at the end of each work day;
> 3. Straw bales, wattles, fiber rolls, gravel bags, or equivalent devices shall be installed around the perimeter of the pier and stockpiled materials that are exposed to the environment to prevent debris from being transported to the Bay via runoff;
> 4. The use of hazardous materials during construction shall be minimized to the extent practical, and the amount of hazardous materials stored on the piers or adjacent to the waterfront shall be limited to what is needed to immediately support construction activities. The quantities shall not exceed 55 gallons for a specific material. All hazardous materials shall be stored safely and securely in approved

containers, under cover or in an approved storage shed or cabinet, and in adequate secondary containment. Fueling of generators and other equipment shall be conducted away from the pier edge and other locations where a spill could easily enter the Bay, and adequate spill cleanup materials shall be provided during all fueling operations;

5. 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 will be properly disposed;

6. Inactive material stock piles must be covered at all times;

7. Construction material shall be covered every night and during any rainfall event;

8. Construction crews shall implement measures to prevent saw water and wash water from entering the Bay;

9. Active debris boxes shall be covered during rain events to prevent contact with rainwater;

10. No concrete shall be stored on-site. After trucks are finished placing concrete, they shall be washed out in a designated area, and the wash water shall be contained within plastic kid pools or similar containment. Once dried, the residual concrete shall be appropriately disposed of off-site;

11. At the end of each work day (at a minimum), the part of the Terminal One Pier deck upon which construction activities have taken place that day shall be cleaned of particulates, sediment, and debris, by manual or mechanical means such as vacuuming or sweeping. Power washing is not an acceptable method for cleaning;

12. Non-stormwater discharges to the Bay shall be prohibited unless specified in the SWPPP and approved by the City;

13. A Materials Management and Disposal Plan (MMDP) shall be prepared to prevent any debris from falling into the Bay during construction to the maximum extent practicable and also ensure the appropriate disposal of all construction-related materials. The measures identified in the MMDP shall be based on the Best Available Technology, and will include, but not be limited to, the following:

    a. During construction, any barges performing the work shall be moored in a position to capture and contain the debris generated during any sub-structure or in-water work. In the event that debris does reach the Bay, personnel in workboats 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;

    b. Construction waste shall be collected and transported to an authorized upland disposal area, and per federal, state, and local laws and regulations;

    c. All construction material, wastes, debris, sediment, rubbish, trash, fencing, etc., shall be removed from the site once the proposed project is completed

and transported to an authorized disposal area, in compliance with applicable federal, state, and local laws and regulations.

The MMDP shall be submitted to the San Francisco Bay RWQCB for review and approval.

With the implementation of Mitigation Measure HYD-1, this would be a less-than-significant impact.

### Project Operations

Many of the guidelines, ordinances, and permit requirements discussed above in the Regulatory Setting would be effective in controlling pollutants in stormwater runoff. The project site is currently largely developed or disturbed and more than half of the site area is covered in impervious surfaces. With the proposed development of the project, the amount of impervious surface at the site would increase by between approximately 13,000 and 103,000 square feet, depending on the extent to which the applicant is able to design the on-structure landscaping to be self-retaining; the applicant has calculated that the additional runoff associated with this increase would require approximately 12,650 to 16,250 square feet of stormwater retention area. The project includes approximately 10,500 square feet of on-site bioretention features (seasonal wetland habitat/stormwater treatment bioswales).

After construction of the approximately 10,500 square feet of planned on-site bioretention features (consisting of seasonal wetland habitat/stormwater treatment bioswales), between approximately 2,150 and 5,750 square feet of additional on-site stormwater retention areas would still be required to treat the runoff that would result from the projected increased impervious surface. As discussed in Chapter 3, Project Description (**Project Design Feature HYD-1**), the applicant has committed to revising the project and site plan as needed prior to final review and approval of project entitlements by the City, to provide on-site stormwater treatment features that are adequate to address stormwater treatment requirements. As discussed below, the revised project and site plan will be reviewed by the City for compliance with applicable regulatory requirements and standards. Stormwater treatment features could include additional landscaped areas, rain gardens, discharge of roof drains into bio-retention flow-through planters, constructed wetlands, or other features. The project will also incorporate source control measures, including draining walkways and other concrete areas to landscaped areas. Because the additional area that would be required would be relatively small (between 2,150 and 5,750 square feet), this additional capacity can be located on-site, within the development footprint that has already been identified and with little change to the planned amount of excavation and construction. Accordingly, no additional impacts are expected from the construction of additional treatment facilities.

The revised project and site plan will be reviewed by the City Public Works Department to confirm that the proposed stormwater treatment features meet the requirements of the Contra Costa Clean Water Program and the NPDES MS4 permit. These requirements are imposed by law and therefore no further mitigation is necessary.

**Significance After Mitigation:** Less Than Significant.

**Project Design Features / Mitigation:** Project Design Feature HYD-1, Mitigation Measure HYD-1.

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**Impact HYD-2: The project would 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 the project uses would be provided by the public water supply. Dewatering may be necessary during construction on a temporary basis and perhaps even longer term because of the high groundwater table and proposed underground improvements. Final design measures will 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 RWQCB.

Although the project would result in increased amount of impervious surfaces at the site, the addition would be relatively minor, especially in light of improvements as required by the NPDES MS4 permit including flow through planters. As a result there would be no significant decrease in the amount of stormwater recharging to underlying water supplies. Therefore, the project would have a less than significant impact on groundwater levels.

**Significance:** Less Than Significant.

**Project Design Features / Mitigation:** None required.

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**Impact HYD-3: 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*)**

As mentioned above, more than half of the site area is covered in impervious surfaces. The project would not alter the course of a stream or river. As described under Impact HYD-1, the project would result in additional impervious surfaces that could increase the amount of surface run-off at the project site. Runoff at the site would flow into stormwater retention features and/or storm drains in Shoreline Drive and other locations on the site, and then into the San Francisco Bay; no land or urban uses are located downstream of stormwater runoff flows that would be affected by erosion or siltation. The project applicant will provide bioretention features on the site that will treat the anticipated increase in runoff from the increased impervious surface area,

consistent with the Contra Costa County Clean Water Program and the Storm Water Management Plan as required by the NPDES MS4 permit, which require pollutant source control features such as use of landscaped areas for infiltration of stormwater, and treatment planters. The City's Public Works Department would review final project plans to ensure they incorporate design standards consistent with the requirements of the Contra Costa Clean Water Program and the NPDES MS4 permit.

As described in **Project Design Feature HYD-1**, in Chapter 3, Project Description, the applicant will commit to revising the project and site plan as needed prior to final review and approval of project entitlements by the City, to provide on-site stormwater treatment features that are adequate to address stormwater treatement requirements. As discussed above, the revised project and site plan will be reviewed by the City for compliance with applicable regulatory requirements and standards. With the implementation of this project design feature, the impact would be less than significant.

**Significance:** Less Than Significant.

**Project Design Features / Mitigation:** Project Design Feature HYD-1.

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**Impact HYD-4: 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 discussed above, the area of the Bay south of the shoreline, and parts of the shoreline underlying the existing Terminal One Warehouse and extending to the east, are situated in coastal Zone VE (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), as defined by FEMA on the current FIRM. As discussed under Impact HYD-1, the project applicant has committed to include in the final project design appropriate features to direct and treat the anticipated stormwater flow that would occur after construction of the project (**Project Design Feature HYD-1**), and the revised project and site plan will be reviewed by the City for compliance with applicable regulatory requirements and standards. Accordingly, the proposed project would not substantially increase surface water runoff during rain events in this watershed and would not increase the potential for flooding, onsite or offsite.

As discussed below under Impact HYD-7, with 2 and 3 feet of sea level rise, the site could experience flooding, including flooding of areas currently planned for stormwater retention and treatment (seasonal wetland habitat/stormwater treatment bioswales, and landscaped areas that self-retain stormwater). As discussed below, the applicant has committed to implementing sea level rise measures and an adaptation approach that will ensure that on-site infrastructure, including stormwater infrastructure, is adequate to treat stormwater runoff at the project site (**Project Design Feature HYD-2**).

With the implementation of **Project Design Feature HYD-1** and **Project Design Feature HYD-2**, the impact would be less than significant.

**Significance:** Less Than Significant.

**Project Design Features / Mitigation:** Project Design Feature HYD-1, Project Design Feature HYD-2.

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**Impact HYD-5: 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)***

As discussed for Impact HYD-1, the project applicant has committed to include in the final project design appropriate features to direct and treat the anticipated stormwater flow that would occur after construction of the project (**Project Design Feature HYD-1**), and the revised project and site plan will be reviewed by the City for compliance with applicable regulatory requirements and standards. The project would therefore not cause flows to exceed the capacity of existing drainage systems.

During construction of the proposed 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 as discussed above, the impact would be less than significant.

**Significance:** Less Than Significant.

**Project Design Features / Mitigation:** Mitigation Measure HYD-1.

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**Impact HYD-6: 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)***

As discussed above, the area of the Bay south of the shoreline, and parts of the shoreline underlying the existing Terminal One Warehouse and extending to the east, are situated in coastal Zone VE (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), as defined by FEMA on the current FIRM. No other parts of the project site are located in areas mapped as 100-year flood hazard areas. No homes are planned for the area located in coastal zone VE; the re-purposed and re-surfaced Terminal One Pier and parts of the waterfront park, however, are planned to be

located within this zone, and could be exposed to flooding hazards if not designed appropriately. In addition, some project homes (primarily townhomes) are planned for areas mapped on the FEMA FIRM as subject to hazards from a 500-year flood.

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.

The base flood elevation for the project site has been determined to be 11 feet based on the North American Vertical Datum of 1988 (NAVD 88). Grading activities associated with construction of the project would include raising the ground level above the effective FEMA 100-year still water elevation of 11 feet NAVD88 in locations where housing is planned, along Shoreline Drive, and for most areas inside the perimeter of Shoreline Drive (i.e., most parts of the site, with the exception of some areas immediately adjacent to the shoreline and in portions of the site where bioretention areas are planned); in addition, finished floor levels of residential structures at the site would be located above 14.5 feet to address up to 3 feet of sea level rise. In addition, per Municipal Code requirements, the project applicant will be required to obtain a development permit for all project plans, including plans for the proposed Terminal One Pier as well as the project homes, that would be reviewed to ensure that the proposed project is safe from flooding and does not impede flood flows. Additionally, as discussed for Impact HYD-1, the project applicant has committed to include in the final project design appropriate features to direct and treat the anticipated stormwater flow that would occur after construction of the project (**Project Design Feature HYD-1**). Accordingly, the proposed project would not substantially increase surface water runoff during rain events in this watershed and would not increase the potential for flooding, onsite or offsite.

With compliance with existing City of Richmond Municipal Code requirements, implementation of Project Design Feature HYD-1, and implementation of grading 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.

**Project Design Features / Mitigation:** Project Design Feature HYD-1.

---

**Impact HYD-7: 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 stated above, 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 at the project site are gradually sloping from northeast to southwest, with elevations ranging from approximately 8 feet NAVD88 along the southern shoreline to approximately 14 to 18 feet NAVD88 along the site's northern frontage with Brickyard Cove Road. According to a mapping tool compiled by the National Oceanic and Atmospheric Administration (NOAA), the existing project site would see increasing inundation from the southwest, in the location of the Terminal One Pier, when sea level rise reaches approximately 2 feet; with 3 feet of sea level rise, the project site would see further increasing inundation in this area (including the deck of the Terminal One Pier), as well as along the southeastern border of the site (NOAA, 2015).

The project's grading plan calls for the removal of soil from the northern portion of the site to be used as on-site fill for the purpose of raising the grades of the southern portion of the site. The resulting earthwork balance would have a leveling effect on site grades and would allow the finished floor elevations of all buildings on the site to be set at or above 14.5 feet NAVD88 to account for future increases in the site's BFE of up to approximately 3.5 feet of sea level rise. To assess the potential impacts associated with sea level rise on project features other than residential structures, two scenarios were studied. The first scenario involves an increase in sea level of 2 feet; the second considers a sea level increase of 3 feet.

**Figure 4.8-2** examines the potential 100-year flood impacts on the project that would be associated with a rise in sea level of 2 feet, assuming a starting BFE of 11 feet. As this figure shows, with the single exception of the Shoreline Drive roadway and certain immediately adjacent landscaped areas bordering the bay side of the roadway, potential 100-year flood impacts resulting from a 2 foot rise in sea level would be limited to areas within a narrow band along the site's shoreline, including the shoreline reach beneath the Terminal One Pier. In addition, the potential for infrequent and limited roadway flooding (most of which would be contained within the curb to curb width of the street) would be caused by backflow of drainage through the storm drain inlets at the edge of the roadway. 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.

**Figure 4.8-3** examines the potential 100-year flood impacts associated with a rise in sea level of 3 feet, again assuming a BFE of 11 feet. As already noted, because the townhomes and condominium flats would all have a minimum finished floor elevation of 14.5 feet, the entirety of the project's habitable space would remain above the potential 100-year flood level, even with a rise in sea level of 3 feet. As shown on Figure 4.8-3, with a sea level rise of 3 feet, portions of the project site that extend beyond the western, southern, and eastern perimeter of the parking

podiums and ground level residential units would experience flooding. These perimeter areas include the Terminal One Pier, Shoreline Drive, the Bay Trail Loop, other trails and walkways, a significant portion of the stormwater treatment gardens, a southern segment of the north/south promenade between condominium buildings 3 and 4, and the south-facing open space that serves as a landscape buffer between the townhomes and Shoreline Drive. As proposed, none of these areas would have finished elevations of over 14 feet and as a result would be at risk of flooding with a 3-foot rise in sea level and a concomitant increase in the BFE from 11 feet to 14 feet.

The project design sets the grade of the Bay Trail Loop at a minimum finished elevation at or very near 13.9 feet. This bicycle/pedestrian facility, in combination with Brickyard Cove Road to the north, effectively encircles all of the project features referenced above, with the exception of the Terminal One Pier and shoreline. If appropriately designed and engineered, the Bay Trail Loop can serve a dual purpose, functioning not only as a bicycle and pedestrian pathway, but also as a protective embankment, effectively shielding the area and facilities inside the Loop from inundation at 100-year flood levels below its height. Accordingly, if the finished elevation of the Bay Trail Loop is set at 14.1 feet rather than the 13.9 feet prescribed by the current grading plans, and the Bay Trail Loop is designed to function in a protective capacity, either as initially constructed or as retrofitted on an as needed basis, the potential 100-year flood impacts resulting from a 3-foot rise in sea level could be limited to the areas of the site south of the Bay Trial Loop, including the Terminal One Pier. Since the project site's shoreline is a VE zone, indicating it is currently susceptible to wave overtopping, the Bay Trail Loop embankment may be subject to wave runup and overtopping. These processes should be considered when setting the Bay Trail Loop's final design and evaluationg its flood mitigation performance.

**At 3 feet of sea level rise, very little of the project infrastructure would experience flooding, with the exception of Shoreline Drive, which may experience infrequent flooding events resulting from backflow of drainage through storm drain inlets. Sea Level Rise Project Design Feature and Adaptation Mitigation Measure**

Projected sea level rise would expose the existing project site to significant flood risk. To avoid this potential impact and improve resiliency, the proposed project will use a project design feature, as presented in Chapter 3, Project Description, and as discussed below; and an adaptation mitigation measure, as discussed below. The project design feature includes actions to be taken in the short term (during project construction) that are planned by the applicant. The adaptation mitigation measure includes actions to be taken in the short term (prior to occupancy of homes on the project site) as well as the long term (to 2050) and the very long term (to 2100 and further), as detailed below. As described previously in this EIR, both the project design feature and the mitigation measure will be monitored by the City to ensure compliance and efficacy.

*Rationale*

The basis for the project design feature and adaptation mitigation measure follows State guidance as well as City of Richmond guidance (as articulated in General Plan Policy EC6.3, Adapting to Climate Change), and considers the following rationales:

- Timeframe – A rise in sea level of 3 feet by 2100 is assumed. Under the possible scenario that sea level rise is more rapid (NRC, 2012), 3 feet of rise could occur by 2075. Given general building assumptions, this long-term timeframe is consistent with the expected lifespan of the residential and recreational elements of the project.
- Adaptive capacity – Adaptive capacity is defined as the ability or potential of a system to respond successfully to change; more specifically in the context of the adaptation approach described here, this term refers to site and project features that can be changed or added in the future to address sea level rise. Residential buildings and associated infrastructure typically have limited and/or costly options for future adaptation to sea level rise. Hence, the project calls for new residential construction and associated infrastructure (such as stormwater infrastructure) to accommodate 3 feet of sea level rise at the outset. For features with more adaptive capacity, such as public amenities and road infrastructure, adaptive capacity can be addressed in the future when the rate of sea level rise and the risk associated with sea level rise are better understood.
- Risk tolerance – Risk tolerance for structures is articulated by the flood insurance process, most notably FEMA's National Flood Insurance Program, which calls for design at the 100-year return interval, which means there would be a one percent chance of flooding annually. The project forecasts societal risk tolerance forward by adding up to 3 feet to the 100-year base flood elevation.

*Geographical Scope*

The geographical scope of the sea level rise project design feature and mitigation measure for the project site includes only areas within the project site boundaries. As planning efforts to address sea level rise progress, the City will need to further develop citywide adaptation strategies. General Plan Action EC6.G, Adapative Management Plan, calls for the development of just such a citywide adaptation strategy:

> *Action EC6. G Adaptive Management Plan.* The City shall develop an Adaptation Strategy 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:
>
> - 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;
> - 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 the first bullet); and
> - 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.

As discussed further below, the project, like the City, will also develop an adaptive management plan. Because design and implementation of the future City-wide adaption strategy and the

project-specific 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.

### Project Design Feature

Project homes and stormwater infrastructure may be vulnerable to sea level rise, if placed below the projected future coastal flood levels, resulting in a significant impact. These impacts are required to be addressed in the near term, because retrofitting and housing stormwater infrastructure in the mid- or long-term timeframe may not be feasible, or could be prohibitively costly. The implementation of **Project Design Feature HYD-2** would reduce this impact to a less-than-significant level.

> **Project Design Feature HYD-2: Sea Level Rise Measures.** The applicant will ensure that the project design includes the following measures to address sea level rise of up to 3 feet:
>
> 1. Placement of finished floor elevations of residential structures above 14.5 feet NAVD88, an elevation greater than the current site BFE, or 11 feet NAVD88, plus 3 feet of sea level rise and a 0.5 feet additional margin; and
>
> 2. 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).
>
> 3. Placement of the finished elevation of the Bay Trail Loop at or above 14.1 feet NAVD88, an elevation greater than the current site BFE (11 feet NAVD88) plus 3 feet of sea level rise;
>
> 4. If feasible, design of the Bay Trail Loop to function as a flood mitigation embankment either as initially constructed or as retrofitted on an as needed basis. Because the project site's shoreline is a VE zone, indicating it is currently susceptible to wave overtopping, the Bay Trail Loop embankment may be subject to wave runup and overtopping. These processes shall be considered when setting the Bay Trail Loop's final design and evaluating its flood mitigation performance.

### Adaptation Strategies

Successful implementation of strategies for managing the 100-year flood risk associated with a rise in sea level of up to 3 feet (including installation of backflow prevention devices, design of the Bay Trail Loop to function as a protective embankment where feasible, and/or design of other protective site features) requires (a) that the need for such strategies and features be intermittently reassessed in order to determine the appropriate timing of the improvements relative to need and to schedule installations and (b) that a financing plan be developed to assure that adequate resources will be available to fund the construction of the respective improvements at the time they are scheduled for installation.

In addition, when the increase in sea level is projected to exceed 3 feet, new strategies will need to be developed and additional adaptive measures will need to be undertaken on an as-needed basis. Successful formulation and implementation of such strategies for managing the risk posed

by a 100-year storm event in combination with a rise in sea level of greater than 3 feet will also 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.

**Project Design Feature HYD-3** is designed to address the monitoring and reporting, strategic programming, and financial planning functions that will play a critical role in determining the success of the effort to manage the flood risks associated with sea level rise.

The adaptative approach that is the core of **Project Design Feature HYD-3** also recognizes that development features vary in their timeframe, adaptive capacity, and risk, and that 3 feet of sea level rise will take decades to occur. In order to retain flexibility of response to changing site conditions, adaptation measures remain conceptual and will be developed further during later stages of the project. Last, the adaptation approach recognizes a need to ensure public access to the shoreline in the short term, rather than require measures to adapt to projected long-term sea level rise conditions that could prevent or impede access.

The adaptation approach is detailed in **Project Design Feature HYD-3**:

> **Project Design Feature HYD-3: Sea Level Rise Adaptation Strategies:** The applicant shall include provisions in the project's Covenants, Conditions, and Restrictions that require the Homeowner's Association to engage a degreed coastal geomorphologist, a licensed engineer, or a comparably qualified expert in the management of flood risks associated with sea level rise to prepare an Adaptive Flood Risk Management Plan. The initial adaptive management plan shall be completed and submitted to the City for review and comment by January 1, 2035. The plan shall be updated every ten years, with the first plan update to be completed and submitted to the City for review and comment by January 1, 2045 and with subsequent updates to be completed and submitted to the City on January 1 every ten years thereafter.
>
> The Adaptive Flood Risk Management Plan shall include:
>
> 1. A Monitoring and Reporting Program – to include:
>
>    a. A review of scientific literature including up-to-date estimates of local sea level rise and available data and studies from other shoreline sites in Richmond as well as neighboring/regional jurisdictions to estimate the actual increase in sea level at the site;
>
>    b. A review of federal, State, local, and regional law, regulations, and guidance that address sea level rise;
>
>    c. A report that addresses the following points:
>
>       i. A discussion of any estimated difference in sea level at the site since the previous 10-year report;

ii. A discussion of how the project complies with any new applicable statutory or regulatory requirements;

iii. A discussion of the observed characteristics and impacts, if any, related to flooding on the site, based on site observations and photos as well as conversations with site residents and City Public Works staff;

iv. A discussion of the monitoring triggers that will be used to determine the installation schedule for:

- Any backflow prevention devices that are required to address flood impacts associated with a 2 foot increase in sea level;
- Any protective features that will enable the Bay Trail Loop (and/or other protective features as needed) to serve as a flood protection measure to address flood impacts associated with a 3-foot increase in sea level; and/or
- Any additional adaptive flood risk management measures that will be required to address flood impacts associated with a rise in sea level of greater than 3 feet.

v. A recommended schedule for implementing the adaptive flood risk management measures referenced in subsection iv. above and/or an update to a previously presented recommended schedule; and

vi. A report on the adaptation measures financing mechanism (see subsection 3. below), and an estimated projection of funds that would be available 10 years into the future.

2. An Adaptive Flood Risk Management Strategy to address 100-year flood impacts associated with a rise in sea level of greater than 3 feet. If the monitoring program and the updated monitoring report prepared every ten years results in a projection that the rise in sea level will exceed 3 feet during the subsequent 25-year period, the Adaptive Flood Risk Management Plan shall also include:

a. An analysis of adaptive measures which, if implemented, either on a stand-alone basis or in combination with other measures, would prevent or substantially reduce human health and safety impacts as well as property loss and damage related to 100-year flooding and an increase in sea level of greater than 3 feet;

b. The formulation of an adaptive measures strategy which reflects a best practices and cost-effective approach to addressing the 100-year flood risk associated with an increase in sea level greater than 3 feet; and

c. An estimate of the costs and timeframes involved in implementing the adaptive measures strategy formulated in accordance with subsection b. above.

The nature of the adaptation measure/s to be implemented will be reviewed and approved by the City Planning Division and Public Works Department and other

regulatory agencies as necessary, and will be based on the results of monitoring and reporting.

3. A Financing Strategy which will be designed to:

    a. Generate sufficient resources to cover the costs of:

        i. The backflow prevention devices as required to address flood impacts associated with a 2 foot increase in sea level (to the extent these devices were not already installed when the storm drain system was initially constructed);

        ii. The protective features as required to enable the Bay Trail Loop to serve as an effective barrier to address flood impacts associated with a 3-foot increase in sea level (to the extent these protective features were not already incorporated in the Bay Trail Loop when it was originally constructed); and

        iii. The adaptive measures strategy formulated to address flood impacts associated with an increase in sea level of greater than 3 feet;

    b. Generate such funds and to make such funds available within a timeframe to cover the flood improvement costs as they are incurred in accordance with the implementation schedule.

    The financing strategy may include funding from the following private and public financing mechanisms:

    a. Homeowner Association fees;

    b. Mello Roos Community Services District special taxes;

    c. Assessment District Assessments; and

    d. Other public or private financing mechanisms as determined by the Homeowner Association and the City to be appropriate and feasible.

With the implementation of the sea level rise project measures and adaptation approach as described in **Project Design Feature HYD-2** and **Project Design Feature HYD-3,** the impact would be less than significant.

**Significance:** Less Than Significant.

**Project Design Features / Mitigation:** Project Design Feature HYD-2, Project Design Feature HYD-3.

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**Impact HYD-8: The project would not would not result in or cause inundation by seiche, tsunami, or mudflow. (Criterion j) (*Less than Significant, No Mitigation Required*)**

The California Geological Survey has mapped tsunami inundation areas along the Richmond shoreline (CGS, 2009). The part of the project site proposed for residential development is located outside of the inundation zone, as shown on **Figure 4.8-4**; future residents would therefore not be affected by tsunami. The site, as a relatively flat property, would also not be subject to mudflow and, as discussed above, would not be subject to seiche. Impacts under this criterion would be less than significant.

**Significance:** Less Than Significant.

**Project Design Features / Mitigation:** None required.

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## Cumulative Impacts

The analysis of cumulative Hydrology and Water Quality Resources impacts is presented in Chapter 6, Other Statutory Sections, of this EIR.

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# References – Hydrology and Water Quality

California Department of Water Resources, 2004. Santa Clara Valley Groundwater Basin, East Bay Plan Subbasin. San Francisco Bay Hydrologic Region. California's Groundwater Bulletin 118. Last updated February 27, 2004.

California Geologic Survey (CGS), 2009. Tsunami Inundation Map for Emergency Planning. State of California – County of Contra Costa. Richmond Quadrangle, San Quentin Quadrangle. July 31, 2009.

City of Richmond, 2011. General Plan Update Draft Environmental Impact Report. February.

City of Richmond, 2012. *Richmond General Plan 2030: Public Safety and Noise Element.* Adopted April 25, 2012.

Contra Costa Clean Water Program (CCCWP), 2012. Stormwater C.3 Guidebook: Stormwater Quality Requirements for Development Applications. 6th Edition. February 12, 2012.

Engeo Incorporated, 2015. *Geotechnical Feasibility Report/ Terminal One/ Richmond, CA*. December 30, 2014, Revised January 14, 2015.

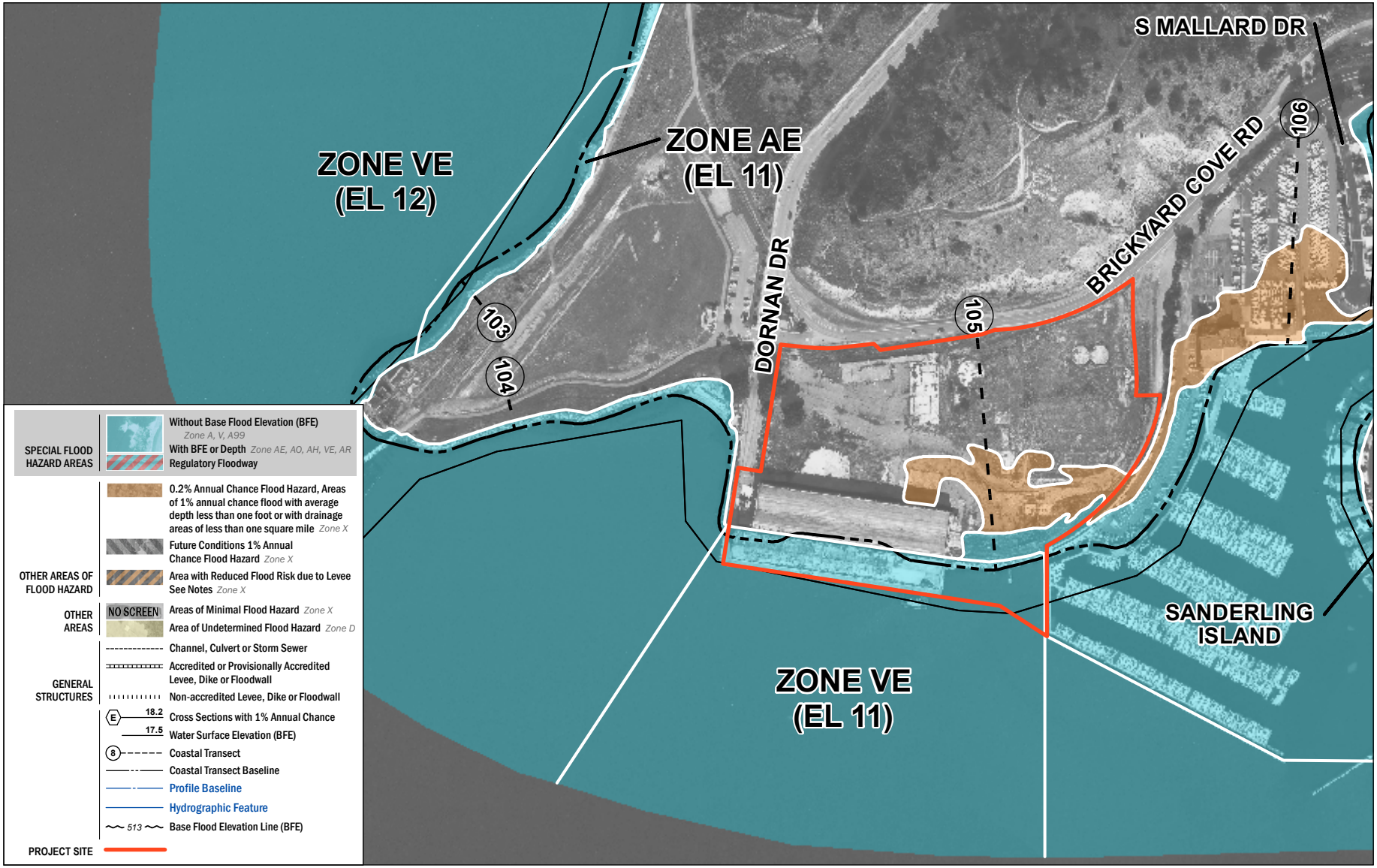
National Oceanic and Atmospheric Administration (NOAA), *Sea Level Rise and Coastal Flooding Impacts Webtool,* accessed May 14, 2015.

National Research Council (NRC), 2012. *Sea Level Rise for the Coasts of California, Oregon, and Washington: Past, Present, and Future.* Committee on Sea Level Rise in California, Oregon, and Washington; Board on Earth Sciences and Resources; Ocean Studies Board; Division on Earth and Life Studies.

Ocean Protection Council, 2013. *State of California Sea-Level Rise Guidance Document.* Developed by the Coastal and Ocean Working Group of the California Climate Action Team (CO-CAT), with science support provided by the Ocean Protection Council's Science Advisory Team and the California Ocean Science Trust.

State Water Resources Control Board (SWRCB), 2010. California 303(d) List of Water Quality Limited Segments, Final 2010 Integrated Report (Clean Water Act Section 303(d) List / 305(b) Report), EPA Final Approval: October 11, 2011. Accessed February 4, 2015 http://www.waterboards.ca.gov/water_issues/programs/tmdl/integrated2010.shtml.

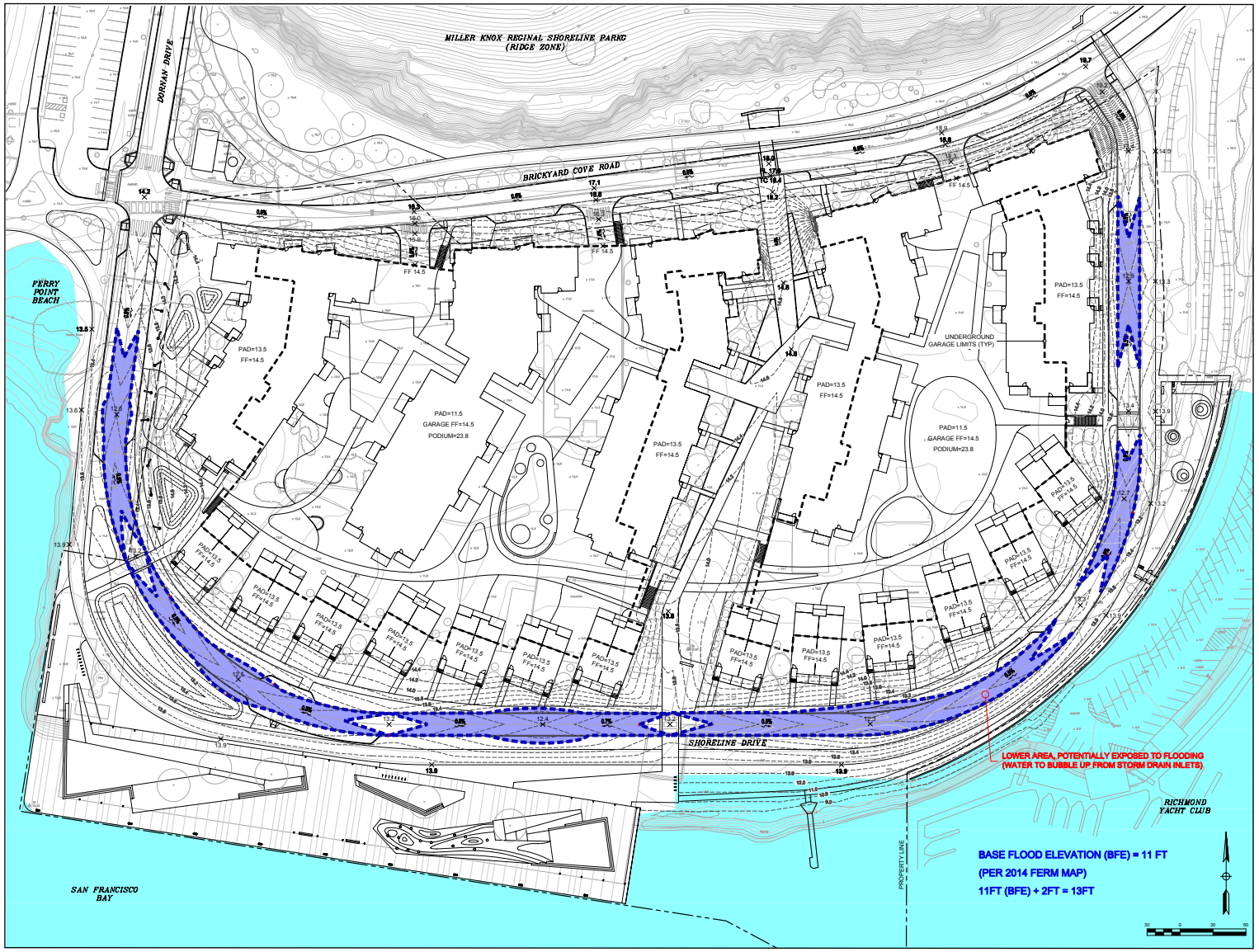
URS, 2013. *Tsunami Hazard at the Chevron Richmond Oil Refinery and Terminal.* Prepared for Chevron. April 19, 2013.




SOURCE: FEMA, 2015



**Figure 4.8-1**
FEMA FIRM Mapped Flood Hazard Zones

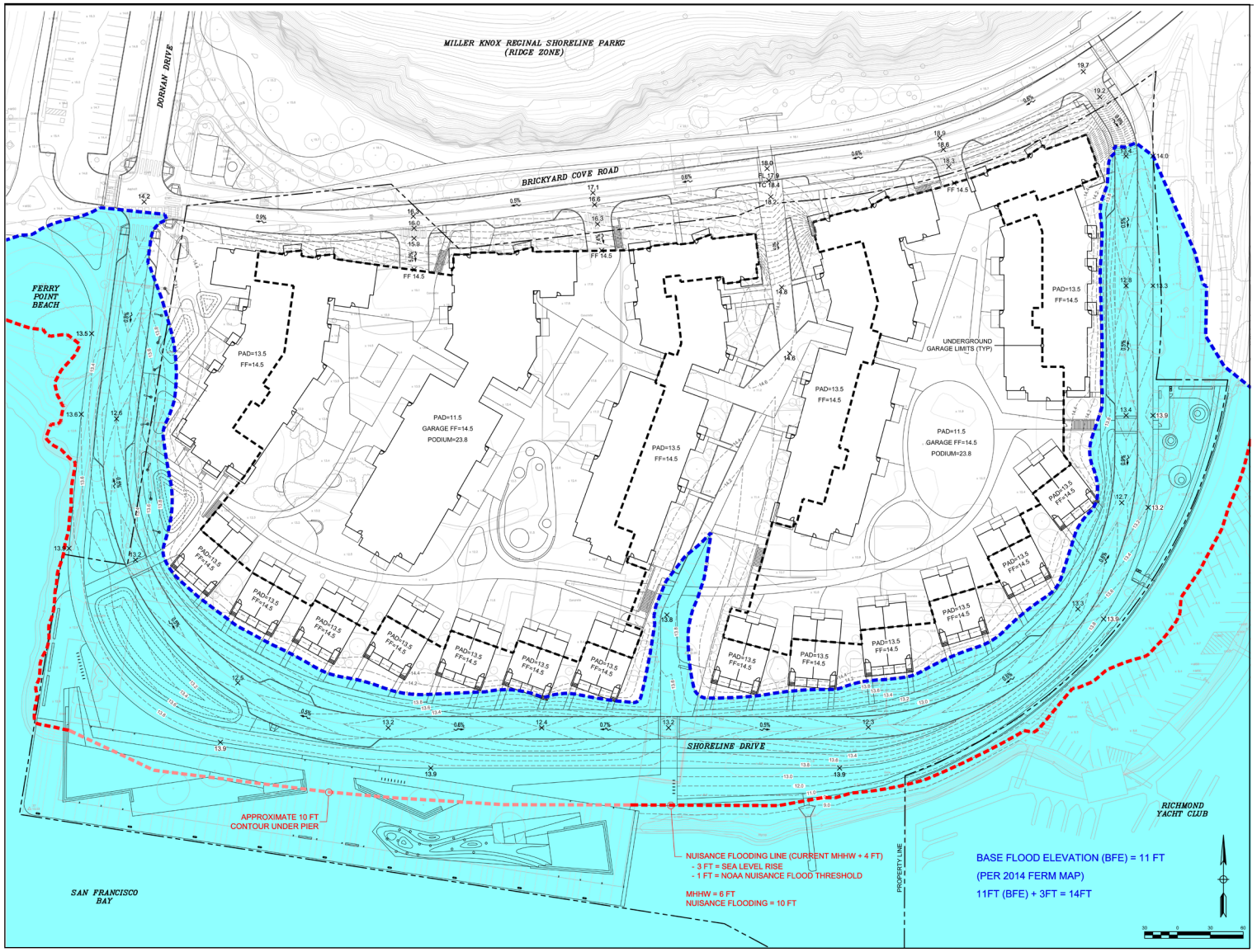



SOURCE: BKF, 2016



**Figure 4.8-2**

Terminal One Flooding Levels 2 Feet Abouve Base Flood Elevation

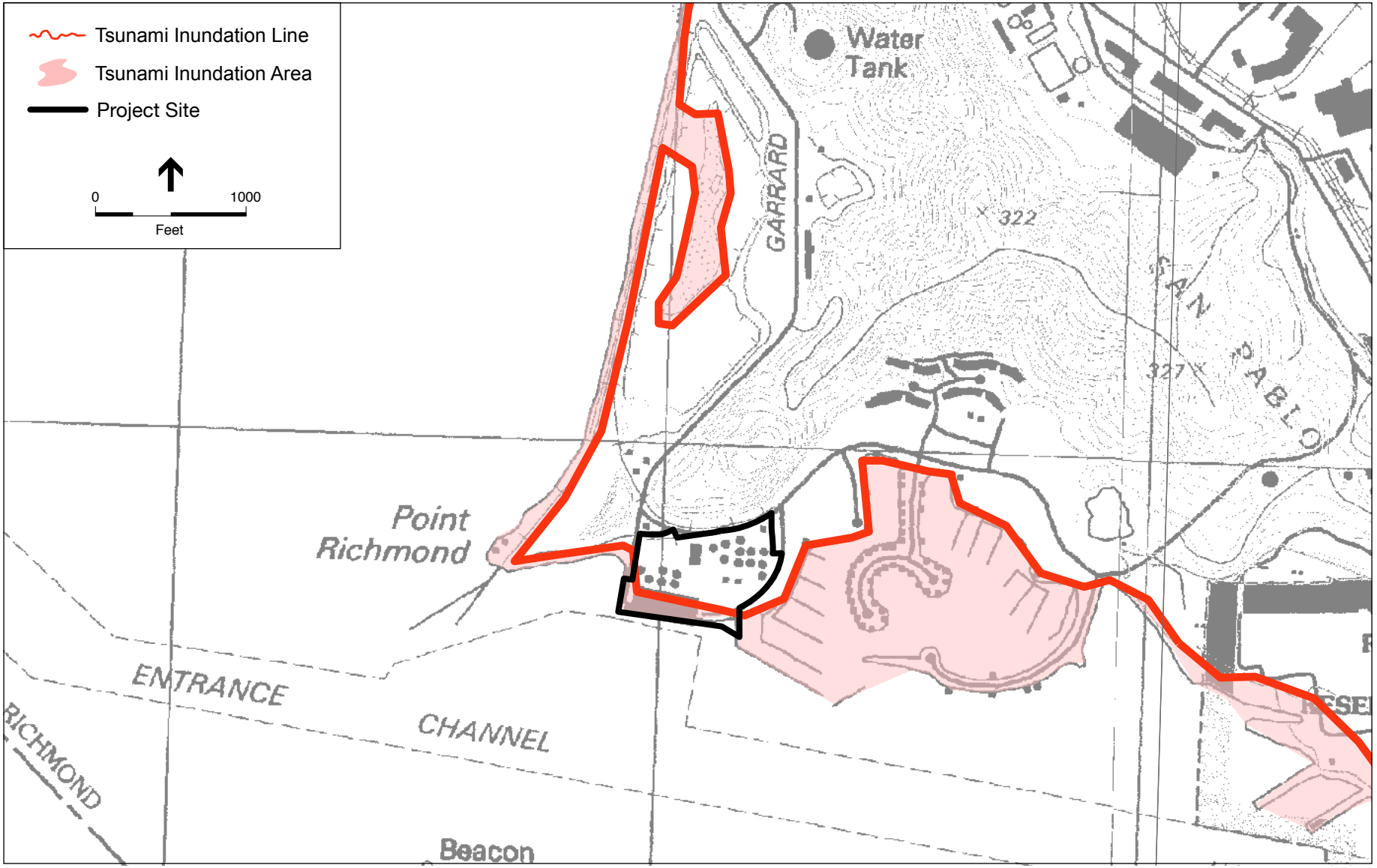



SOURCE: BKF, 2016

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**Figure 4.8-3**

Terminal One Flooding Levels 3 Feet Above Base Flood Elevation




SOURCE: California Emergency Management Agency, California Geological Survey, 2009



**Figure 4.8-4**
Tsunami Inundation Map

# 4.9 Land Use and Planning

## 4.9.1 Introduction

This section evaluates the potential for the project to adversely affect existing land uses or land use patterns or conflict with applicable plans, policies, or regulations addressing land use. The analysis in this section considers the relationship of the land uses that would result with implementation of the project to regional and local land use patterns, as well as the General Plan and zoning designations for the project site.

Overall, this section addresses the physical aspects of land use and the regulatory planning framework that guides future development on the project site.

## 4.9.2 Setting

### Regional and Local Setting

The City of Richmond is located in West Contra Costa County, on the San Francisco and San Pablo Bays. The cities of El Cerrito, San Pablo and Pinole, as well as unincorporated areas of Contra Costa County border Richmond to the north and east; the Berkeley Hills and San Pablo and Sobrante ridges frame the eastern edge of the city. Richmond features a 32-mile shoreline and over 6,300 acres of parks and open space including local, regional, state and national resources, greenways and trails.

### History and Existing Uses on the Project Site

The Terminal One site lies within an area that was historically very actively used for industrial purposes, which included primarily port and related cargo transport activities. Since the 1990s and the cessation of port and shipping activities at the site, activities at the site have included demolition of structures, removal of storage tanks, and remediation of soil and groundwater contamination.

Details regarding the site's background and history are presented in Chapter 1, *Introduction* (section 1.1.1).

### Uses Surrounding the Project Site

Existing land uses surrounding the project site consists of predominantly recreation/open space and residential uses, as shown in **Figure 3-3**. The Miller/Knox Regional Shoreline park (Miller/Knox park) lies northwest of the site, and the neighborhood of Brickyard Cove is to the northeast; the San Francisco Bay lies to the south.

The Miller/Knox park, adjacent to the project site to the north, west, and northeast, was dedicated by the East Bay Regional Parks District in 1972. This park, administered by the East Bay Regional Parks District (EBRPD), consists of approximately 307 acres of open and recreational

space. The park has both shoreline and upland areas, which provide panoramic views of the Bay and Bay Area cities, including Oakland and San Francisco. The regional shoreline includes Keller Beach, north of the project site, large picnic and barbecue areas, a model railroad museum, and parking. An historic pier and an active fishing pier are features of Ferry Point, a peninsula that was once the western terminus of the transcontinental railroad, and sits west of the project site.

The Richmond Yacht Club, 351 Brickyard Cove Road, is located east of the project site. The Club includes wet berths, lockers, and trailer spaces. South of the project site lies the Harbor Channel of San Francisco Bay. The Channel is primarily used for recreational boating; however, auto warehouse ships also travel through to access the Port of Richmond.

During the 1970s, 1980s, and 1990s, areas of residential development were established or expanded east of the project site and the Richmond Yacht Club, in the Brickyard Cove neighborhood. Within this neighborhood, Brickyard Landing contains four condominium complex buildings, totaling about 245 units. The complex has private recreation facilities, such as tennis courts and a swimming pool and spa complex. Seacliff Estates is to the east of the Brickyard Landing condominium complex. Single-family, floating residences at Brickyard Cove Marina are located east of the Richmond Yacht Club, along Sandpiper Spit.

## Existing General Plan Land Use Designation

The General Plan land use designation for the site is described below. The Richmond General Plan 2030 is discussed in detail under 4.9.3 *Regulatory Setting*, further in this section.

#### Medium Density Residential (Density: 10 to 40 du/acre; Height: up to 35 ft.)

The entire project site has a General Plan land use designation of Medium Density Residential, and the site is identified on the General Plan Land Use Areas Map as a residential neighborhood (City of Richmond, 2012). According to the Richmond General Plan 2030, the Medium Density Residential designation allows for single and multi-family housing types such as one to three-story garden apartments, historic bungalows and cottages on small lots, townhouses, and stacked flats. Neighborhood mixed-use development is permitted at neighborhood nodes. The Richmond General Plan 2030 (City of Richmond, 2012) also provides that "[b]uilding height in a Medium-Density Residential land use classification may exceed 35 feet as part of an approved Planned Area (PA) district."

## Existing Zoning Designations

The zoning designation for the site is Coastline Commercial (C-C) with a Special Features Overlay (District No. 1, Brickyard Cove Area, as described in Section 15.04.520.060 of the City's Zoning Ordinance).

#### Coastline Commercial (C-C) District

The project site is within the Coastline Commercial (C-C) District. The C-C district intends to create, preserve and enhance areas with a selective range of establishments serving water-oriented

uses including: Bait shops, sail makers and ship chandlers, marine supply stores and business services (City of Richmond, 2011). The C-C zone permits live/work residential uses, open space and recreational uses such as marinas and parks, civic and public uses, industrial uses, and agricultural uses such as commercial fishing, and fish hatcheries and preserves. Other uses are conditionally permitted within the C-C district.

### SFO-Special Features Overlay District

For areas of the city designated with a Special Features Overlay (SFO) district, additional controls addressing specific factors, such as special features or resources that require protection, are applied. The SFO district overlays a base zoning district. The project site is designated with SFO District No.1, for the Brickyard Cove Area (City of Richmond, 2011). The purpose of this SFO district is to preserve the unique physical features and guide development so as to enhance the environmental characteristics of Brickyard Cove and the surrounding hills and ridges. Three regulations specifically apply to the area:

1. Preservation of the Ridge Crests
    a. A conditional use permit is required if any portion of a structure is proposed to extend above thirty (30) feet or two (2) stories in height unless such structure is in conformity with any plan of development, approved by the Planning Commission in accordance with the zoning or subdivision ordinances.
2. Preservation of Natural Hill Slopes, Rectification of Scarred Areas, and Enhancement of the Environment
    a. New development and the continuing operation of existing land use or activities shall be done in a manner which will avoid creating visible scars or otherwise marring the landscape by means of excavation, placement of fill, permanent removal of top soil or native vegetation, grading of roads and driveways routing, and placement of utility lines and poles, or erection of structures.
3. Preservation of Brickyard Cove as a Water Body of Scenic Interest
    a. Diking and Filling. Prior to placement of any more fill material within this area, other than the designated area for a mud dike, the following must be obtained:
        i. A tentative Subdivision Map or a plan of development which is approved by the Planning Commission. In approving such map or plan the Planning Commission shall be guided by the following development concepts:
            1. Brickyard Cove should be preserved as a distinctive water mass and all forms of offshore use, reclamation or development should be undertaken in a conservation context in order to maximize the potential enjoyment of this primary focal point for the entire surrounding peninsular area. Any potentially conflicting offshore developments should be curtailed unless they are clearly of greater public necessity and interest than the overall need to preserve this water body and its shoreline.
            2. The recognized foreshortening and magnification of visual effect over water should be considered in evaluating the environmental

and aesthetic impact of any offshore development, and determining the permitted distance of such development from the shore and from each other. Specifically, objects or developments on or above the water appear closer and larger than at the same geographical distance on land, and thus have greater effect upon the visual environmental scene.

3. Offshore developments should be made more compatible with bayside recreational and residential use by utilizing:

    a. Islands, narrow spits or other simulated natural features of a coastline landscape;

    b. A limited percentage of the predominantly water area for man-made structures which are artificial in material or form. The bulk and number of all piers, jetties, causeways, bridges or other connective structures should be kept to a minimum.

# 4.9.3 Regulatory Setting

## Applicable Plans and 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. **Figure 4.9-1** shows areas within and adjacent to the project that are subject to SLC 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. 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. The terms for uses of Public Trust lands within the project site boundaries were established as part of a grant agreement between the City and the SLC, initiated in 19XX (and updated subsequently).

Initial outreach to and conversations between the applicant and staff at the SLC indicate that State review and approval of the proposed project may be required to settle title issues involving tidelands and the Public Trust Doctrine.

### 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 project site is 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 project site is not within an area subject to an agricultural preserve or a Williamson Act Contract (DLRP, 2012).

### 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. The project will require a permit from BCDC, which is necessary prior to the commencement of work within 100 feet of the shoreline, measured from mean high tide.

### Association of Bay Area Governments

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. 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, which is undertaken by the Metropolitan Transportation Commission. ABAG itself does not have formal regulatory authority, but aids land use planning through intergovernmental coordination. ABAG is the regional coordinator of the California Environmental Quality Act (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 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.

### Metropolitan Transportation Commission

The Metropolitan Transportation Commission (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. 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.

### Miller/Knox Regional Shoreline Land Use Plan Amendment and EIR

In 2013, the EBRPD began preparation of a Land Use Plan Amendment (LUPA) and EIR for Miller/Knox Regional Shoreline (EBRPD, 2014). The LUPA is a long-range planning document

that updates a previous Land Use Plan. The LUPA will suggest programs for the management and conservation of park resources and will offer proposals for future recreational use. A Notice of Preparation (NOP) for an EIR was issued in May 2013.

### 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. Key goals and policies within the General Plan that apply to the project site include:

- **Goal LU 1: 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.

- **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 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.

- **Goal LU 5: 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. Ther 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 LU 6: 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.

### 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.

### Other Plans and Studies

Other planning agencies have jurisdictional oversight pertaining to land use over portions of the project and project site and are discussed in detail in Section 4.3, *Biological Resources*; Section 4.5, *Geology and Soils*; and Section 4.15*, Utilities and Service Systems*. These include the U.S. Army Corps of Engineers and the San Francisco Bay Regional Water Quality Control Board (SFRWQCB).

## 4.9.4 Significance Criteria

Consistent with Appendix G of the State CEQA *Guidelines*, a project would have significant adverse impacts to land use and planning if it 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.

### Topics with No Impact or Otherwise Not Addressed in this EIR

The proposed project would not result in significant impacts pursuant to 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.

**The project would not conflict with an adopted habitat conservation plan or natural community conservation plan (Criterion c).**

The Habitat Conservation Plan nearest to the project site is the East Contra Costa County Habitat Conservation Plan/Natural Community Conservation Plan (HCP/NCCP; ECCCHC, 2014), whose closest boundary is located approximately 28 miles east of the project site across several urbanized areas (San Pablo, El Sobrante, Martinez, etc.). The project site 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 project site. Thus, the project would have no impact on a habitat conservation plan or a natural community conservation plan. A discussion of special-status species that the project could potentially impact can be found in Section 4.3, *Biological Resources*.

**The project would not convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance to non-agricultural use (Criterion d).**

The project would be located entirely within a developed area and is designated for multi-family residential uses. Former uses on the project site include industrial and port-related activities, and the site is not identified as Prime Farmland, Unique Farmland, or Farmland of Statewide or Local Importance by the FMMP; it is designated as Urban Land. Thus, the project would have no impact on important farmland.

**The project would not conflict with existing agricultural zoning, or a Williamson Act contract (Criterion e).**

The project site is zoned for coastline commercial uses, with a special features overlay district to protect unique aesthetic and natural resources. Furthermore, the site is not covered by a Williamson Act contract. Thus, implementation of the project would not interact with or conflict with existing agricultural zoning or a Williamson Act contract, and would have no impact.

**The project would not conflict with existing zoning for, or cause rezoning of, forest land, timberland, or timberland zoned Timberland Production (Criterion f).**

The project site is not zoned as forest land or timberland, and there are no forests on the project site. No impact on forest land or timberland would occur with implementation of the project.

**The project would not result in the loss of forest land or conversion of forest land to non-forest use (Criterion g).**

As stated above, the project site is not zoned as forest land and there are no forests on the project site. The project would not result in the loss of forest land or conversion of forest land to non-forest uses, and would have no impact.

**The project 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 or conversion of forest land to non-forest use (Criterion h).**

The project would be constructed and operated entirely within a previously developed area designated as Urban Land by the FMMP. The project site does not contain farmland and there are

no aspects of the project that would affect any agricultural land off-site. Moreover, the project site does not contain forest land and there are no aspects of the project that would affect any forest land off-site. Thus, implementation of the project would not result in conversion of farmland, on-site or off-site, to a non-agricultural use, nor would it result in conversion of forest land to non-forest use. The project would have no impact.

## 4.9.5 Discussion of Impacts and Mitigation Measures

Section 15125(d) of the California Environmental Quality Act (CEQA) Guidelines states that an EIR "shall discuss any inconsistencies between the Project and applicable general plans and regional plans" as a part of the discussion of the existing project setting. However, the Guidelines further state that inconsistency with an adopted plan does not necessarily indicate a significant impact by the project.

This section considers adopted City and regional plans and the policies that are applicable to the project, and determines whether the project conforms to those plans and policies. Plans that were reviewed include the Richmond General Plan 2030 and the City's Zoning Ordinance. Some other local, regional or State plans and policies that relate to topical areas other than land use (such as air quality, water quality and biological resources) are discussed in more detail in their respective topical sections of this EIR.

**Impact LUP-1: The project would not divide an established community.** ***(Less than Significant, No Mitigation Required)***

Land uses surrounding the project site, located along Dornan Drive and Brickyard Cove Road, include condominiums, two-story single-family homes, and a regional park. The project site is currently vacant of active uses; no existing commercial, recreational, or residential community would be disrupted by the project. The project would establish a new residential area and new park area in addition to a connection for the Bay Trail from the Miller/Knox park to the existing Brickyard Cove community. The proposed multi-family condominium uses and townhomes are similar to the existing uses in the surrounding area. Therefore, the project would facilitate connections between communities, and would not physically divide an established community.

**Significance:** Less Than Significant.

**Project Design Features / Mitigation:** None required.

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**Impact LUP-2: The project would be in general conformance with applicable regional or local plans and policies adopted for the purpose of avoiding or mitigating environmental effects.** ***(Less than Significant, No Mitigation Required)***

**Table 4.9-1** presents General Plan policies relevant to the proposed project, coupled with an analysis of whether the project would be generally consistent with these policies. As shown in the

table, the project would be consistent with pertinent land use policies of the Richmond General Plan 2030. As discussed in Chapter 3, *Project Description*, the project will not require a General Plan Amendment.

If the current General Plan designation of Medium Density Residential remains at the site, the proposed project density would be consistent with this designation which allows residential development at a density of 10 to 40 dwelling units per acre (du/ac). Per the methodology established by the City, the density of residential development represented by a project is calculated by estimating the gross and net developable areas of the site. The gross developable area is equal to the gross area of the dry land portion of the project site; for the Terminal One project site, this area is approximately 12.6 acres (approximately 548,900 square feet). The net developable area is calculated by applying a land use efficiency factor of 80 percent to the gross developable area. Applying this factor to the approximately 12.6 gross developable acres of the project site yields a result of approximately 10.1 net developable acres. The project residential density is calculated by dividing the total number of dwelling units to be developed on the site as part of the project (334 homes) by the net developable acreage (approximately 10.1 acres). Applying this calculation yields an overall project density of approximately 33.1 homes per net developable acre – a number that is below the maximum of 40 dwelling units per acre permitted under the Medium Density Residential General Plan designation, and within the range of residential density for this designation.

As amended in 2015, the Medium Density Residential General Plan designation allows for a maximum building height that exceeds 35 feet as part of an approved Planned Area district, as long as the proposed building height undergoes review under CEQA (City of Richmond, 2015). As discussed in Section 4.1, Aesthetics, the project's proposed maximum building heights of 64 feet would not result in a significant impact to aesthetics, nor would these building heights result in any other significant environmental impacts. As a part of a comprehensive design program for the project and the site, and subject to City design review, the project's proposed building heights would not be inconsistent with the height provisions of the Medium Density Residential General Plan designation.

The project includes a request for a zoning reclassification, for the City to designate the entire project site as Planned Area District (PA). The PA zoning designation allows for flexible development standards to promote higher density development. Per the City of Richmond Zoning Ordinance, a site zoned PA must meet the minimum lot size requirement of 2 acres to permit a mix of residential and non-residential uses. The project site is 13.3 acres, and would be consistent with the current minimum lot size ***[see city attorney memo]***. In addition, the current C-C zoning designation for the site is not fully consistent with the underlying General Plan designation of Medium Density Residential; with the proposed rezoning, the City would be able to ensure that the program uses and development program proposed under a PA zoning designation would be consistent with the Medium Density Residential General Plan designation, rectifying existing inconsistencies between this zoning district and the General Plan designation.

The project includes the establishment of new residential development as well as new park and trail uses on a former industrial site. The residential component of the project is consistent with ABAG's goals for ensuring Bay Area jurisdictions build sufficient housing in their respective communities, and the project's development of Bay Trail connections is consistent with ABAG's goals for this regional trail. Because the project would not result in significant visual, noise, or traffic impacts to users of the Miller/Knox park (as discussed in Section 4.1, *Aesthetics*, Section 4.10, *Noise*, and 4.13, *Transportation and Traffic*, respectively), and because the trails established as part of the project would provide connections to this park for existing residents in the Brickyard Cove neighborhood, the project would also be consistent with EBRPD's overall master plan. The project applicant would be required to apply to BCDC for a permit prior to construction; the permit review process will ensure that project design is consistent with Bay Plan and BCDC policies and goals.

The 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.

**Project Design Features / Mitigation:** None required.

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## Cumulative Impacts

The analysis of cumulative Land Use and Planning impacts is presented in Chapter 6, Other Statutory Sections, of this EIR.

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**TABLE 4.9-1**
**GENERAL PLAN POLICY CONSISTENCY ANALYSIS**

| No. | Policy | Consistency Analysis |
|---|---|---|
| **Goal LU 1: An Improved Urban Environment.** | | |
| *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:<br>• Promoting higher-density, transit-oriented and pedestrian-friendly development along key commercial corridors, at key intersections (community nodes and gateways); and<br>• Supporting local-serving commercial activities in residential areas to provide needed services and amenities close to where people live and work. | Consistent:<br>- The project would provide higher-density (multi-family) housing on a vacant, infill site.<br>- The project has been designed to emphasize and prioritize pedestrian and bicycle circulation, rather than vehicular circulation.<br>- The project would include neighborhood- and visitor-serving retail uses, making these amenities available to the new Terminal One community. |
| **Goal LU2: Healthy and Viable Neighborhoods.** | | |
| *Policy LU 2.2* | *Compact Walkable Neighborhoods and Livable Streets.* Promote safe and walkable neighborhoods and inter-connected streets through the design of streetscapes, public gathering places and all types of physical development. Provide pedestrian amenities such as sidewalks and street trees, transit and bike improvements, lighting and landscaping and appropriate traffic calming measures to ensure a safe pedestrian environment. Support uses and public space improvements that generate street-level activity, create eyes-on-the-street, provide opportunities for community interaction and encourage a sense of collective ownership of common areas. Encourage mixed-use development that attracts people and facilitates activity throughout the day. Prohibit isolated or gated communities in order to improve physical connectivity throughout the City, and create incentives to remove barriers in existing gated areas. Maintain streets to ensure that neighborhoods and streets are safe and well used. | Consistent:<br>- The project would include landscaped gardens, a children's play area, a native grass meadow area, garden sculptures, and an off leash dog park within the new neighborhood and accessible to residents.<br>- The project has been designed to emphasize and prioritize pedestrian and bicycle circulation, rather than vehicular circulation.<br>- The project would include neighborhood- and visitor-serving retail uses, making these amenities available to the new Terminal One community.<br>- The project would feature the Terminal One Mews, a pedestrian and bicycle oriented promenade extending from Brickyard Cove Road to Shoreline Drive.The project would also include connections between Bay Trail segments, and provide direct bicycle access to the Terminal One waterfront park, shoreline, and Miller/Knox Regional Shoreline.<br>- The project would include a "Commuter Extension" for bicyclists and pedestrians with a more direct connection to the existing Bay Trail in Miller-Knox park than the Bay Trail Loop. |
| **Goal LU4: Enhanced Environmental Quality.** | | |
| *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.<br>• 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. | Consistent:<br>- The project would develop a waterfront park with reuse of the Terminal One Pier.<br>- The project would maintain the existing Bay Trail and complete Bay Trail segments within the the project site.<br>- The proposed park would include walking trails which will provide direct access to the Terminal One shoreline.<br>- The project would include public gardens consisting of native coastal plantings and seasonal wetland habitat that would incorporate a stormwater treatment bioswale, buffering shoreline resources from residential uses. |

**TABLE 4.9-1**
**GENERAL PLAN POLICY CONSISTENCY ANALYSIS**

| No. | Policy | Consistency Analysis |
|---|---|---|
| *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. | Consistent:<br>- The project would include public gardens consisting of native coastal plantings and seasonal wetland habitat that would incorporate a stormwater treatment bioswale, and a tidelands habitat and marine ecology area, and would buffer shoreline resources from residential uses.<br>- The project would develop the Terminal One waterfront park, which would provide public open space along the shoreline. |
| *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. | Consistent:<br>- The project would include public gardens consisting of native coastal plantings and seasonal wetland habitat that would incorporate a stormwater treatment bioswale. This biological feature would help the project to mitigate stormwater runoff by removing sediments and pollutants through onsite retention and treatment, and would help buffer shoreline resources from residential uses.<br>- The project would feature a tidelands habitat and marine ecology area. |
| *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. | Consistent:<br>- The project includes the remediation and reuse of a large, formerly industrial site and the development of a project with a mix of uses.<br>- Project development would take place consistent with the applicable regulations of local, state, and federal agencies with oversight over contaminated site cleanup.<br>- Mitigation measures pertaining to Hazards and Hazardous Materials are included within this EIR and would become incorporated into the project (see Section 4.7, *Hazards and Hazardous Materials*). |

**TABLE 4.9-1**
**GENERAL PLAN POLICY CONSISTENCY ANALYSIS**

| No. | Policy | Consistency Analysis |
|---|---|---|
| **Goal LU 5: Balanced and Compatible Uses.** | | |
| *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. | Consistent:<br>- The project includes a mix of uses, including residential and parks and open space, as well as a neighborhood-serving retail area at one of the main project intersections.<br>- The project would include trails, incorporating sections of existing abandoned rail lines that formerly served the Terminal One Warehouse and pier; this would distinguish and transform the former rail corridor.<br>- The project has been designed to emphasize and prioritize pedestrian and bicycle circulation, rather than vehicular circulation. |
| *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. | Consistent:<br>- The addition of a shoreline park and connections between segments of the Bay Trail would provide the public with access to the shoreline for recreational and/or scenic purposes. |
| *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. | Consistent.<br>- The project would include a public garden, which would serve as a transitional buffer between park-related uses to the south of the project's shoreline road and the residential uses to the north. This feature would also help treat stormwater runoff by removing sediments and pollutants through onsite retention and treatment.<br>- Building heights for the condominiums would "step-up" across the site, in additional to having flat roofs to reduce impacts of project buildings to view of the Bay.<br>- Project development would take place consistent with the applicable regulations of local, state, and federal agencies with oversight over contaminated site cleanup.<br>- Noise impacts related to project construction and operation would be less than significant. |

**TABLE 4.9-1**
**GENERAL PLAN POLICY CONSISTENCY ANALYSIS**

| No. | Policy | Consistency Analysis |
|---|---|---|
| **Goal LU 6: High Quality and Sustainable Development.** | | |
| *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. | Consistent:<br>- The project would establish a new community on the site, and serve this community by incorporating park and open space, walking trails, bike paths, neighborhood retail, and access to the shoreline and Terminal One pier.<br>- The project has been designed to emphasize and prioritize pedestrian and bicycle circulation, rather than vehicular circulation. |
| *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. | Consistent:<br>- The project has been designed to emphasize and prioritize pedestrian and bicycle circulation, rather than vehicular circulation.<br>- The project demolition plan includes re-using and recycling onsite most of the demolished structures and hardscape/<br>- The project would include neighborhood retail and recreational and open space, serving residents and reducing vehicle trips.<br>- The project would include native coastal plantings and seasonal wetland habitat/stormwater treatment bioswale, which would help mitigate stormwater runoff by removing sediments and pollutants through onsite retention and treatment.<br>- The project would also include a tidelands habitat and marine ecology area.<br>- The project would be designed to address two to three feet of sea level rise. |
| *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. | Consistent:<br>- The project would develop 334 units of market rate condominiums, using high quality design and materials.<br>- The project has been designed to emphasize and prioritize pedestrian and bicycle circulation, rather than vehicular circulation.<br>- The project is subject to review by the City's Design Review Board and the Planning Division to ensure quality and sustainability throughout design features, materials, color and amenities, and consistency with the City's Commercial and Residential Green Building Standards, as well as the requirements of CALGreen. |

# References – Land Use and Planning

California Department of Conservation, Division of Land Resource Protection (DLRP), 2012. Farmland Mapping and Monitoring Program. Contra Costa County Important Farmland Available at: www.conservation.ca.gov/dlrp/FMMP/Pages/Index.aspx. Accessed February 2016.

City of Richmond, 2011. Zoning Ordinance, City of Richmond, California. Last updated and published March 2010. Available at: www.ci.richmond.ca.us/index.aspx?NID=101. Accessed December 26, 2014.

City of Richmond, 2012. *Richmond General Plan 2030: Land Use Element.* Adopted April 25, 2012.

City of Richmond, 2015. Bottoms Property Project Proposed General Plan Amendment, Exhibit 1D, General Plan Amendment Text Revision Table. Richmond City Council Staff Report. Item #H2. December 16.

East Bay Regional Park District (EBRPD), 2013. Master Plan 2013, Final Draft; July 16, 2013. Available at: www.ebparks.org/about/planning/mp. Accessed December 29, 2014.

EBRPD, 2014. *Land Use Plans in Progress: Miller Knox Regional Shoreline.* Available at: www.ebparks.org/about/planning#miller-knox. Accessed December 29, 2014.

East Contra Costa County Habitat Conservancy (ECCCHC), 2014. HCP Overview/History. Available at: www.co.contra-costa.ca.us/depart/cd/water/HCP/. Accessed January 6, 2015.

# 4.10 Noise

## 4.10.1 Introduction

This section provides an overview of the existing noise environment at the proposed project site and surrounding area, as well as a discussion of the regulatory framework addressing noise impacts, an analysis of potential noise impacts that would result from implementation of the project, and mitigation measures where appropriate.

## 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.

### 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

[1] All noise levels reported herein reflect A-weighted decibels unless otherwise stated.

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

**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: United States Department of Housing and Urban Development, *The Noise Guidebook*, 1985.

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 because European nations have continued to study noise and its health effects. According to 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 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. 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. The major noise sources surrounding the project site are low-volume vehicular traffic on Brickyard Cove Road and Dornan Drive. There are no active airports within 10 miles of the project site.

Long-term (48-hour) noise monitoring was conducted at two locations on the project site in November of 2014. The first noise monitoring location (LT-1) was at the northern project site boundary setback approximately 50 feet from the centerline of Brickyard Cove Road. The second noise monitoring location (LT-2) was at the southern project site boundary setback approximately 50 feet from the Bay. Noise monitoring data for these two locations are presented in **Table 4.10-3**. These data indicate the relatively quiet conditions of the project site which are generally less than 55 dBA (hourly Leq) during daytime hours and less than 50 dBA (hourly Leq) during nighttime hours.

**TABLE 4.10-3**
**MEASURED LONG-TERM NOISE LEVELS ON THE PROJECT SITE**

| Site No. | Measurement Location | Noise Level in dBA[a] | | |
|---|---|---|---|---|
| | | DNL/CNEL | Daytime $L_{eq}$ | Nighttime $L_{eq}$ |
| **Based on 24-Hour Noise Measurement Data** | | | | |
| LT-1 | Northwestern Portion of project site approximately 50 feet south of Brickyard Cove Road | 55/55 | 53 | 47 |
| LT-2 | Southeastern Portion of project site | 53/54 | 50 | 46 |

NOTES:

[a] dBA = A-weighted decibels. DNL = day-night noise level. $L_{eq}$ = equivalent steady-state noise level over a 1-hour period produced by the same noise energy as the variable noise levels during that period.

### 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. While formerly a port/industrial land use, the project site is located amidst open space/recreational and residential land uses. The closest existing residences (homes built on platforms over water) are located approximately 575 feet east of the project site on South Mallard Drive and Sanderling Island. The Brickyard Cove residential community is approximately 1,000 feet northeast of the project site. Although not technically a "sensitive receptor" for noise, the Richmond Yacht Club's clubhouse is located approximately 130 feet east of the project site.

## 4.10.3 Regulatory Setting

### Federal

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.

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, state, and local agencies regulate different aspects of environmental noise.

### State of California

State regulations include requirements for the construction of new hotels, motels, apartment houses, and dwellings other than detached single-family dwellings that are intended to limit the

extent of noise transmitted into habitable spaces. These requirements are collectively known as the California Noise Insulation Standards and are found in *California Code of Regulations*, Title 24 (known as the Building Standards Administrative Code), Part 2 (known as the California Building Code), Appendix Chapters 12 and 12A. There are no comparable noise standards for office or other commercial structures.

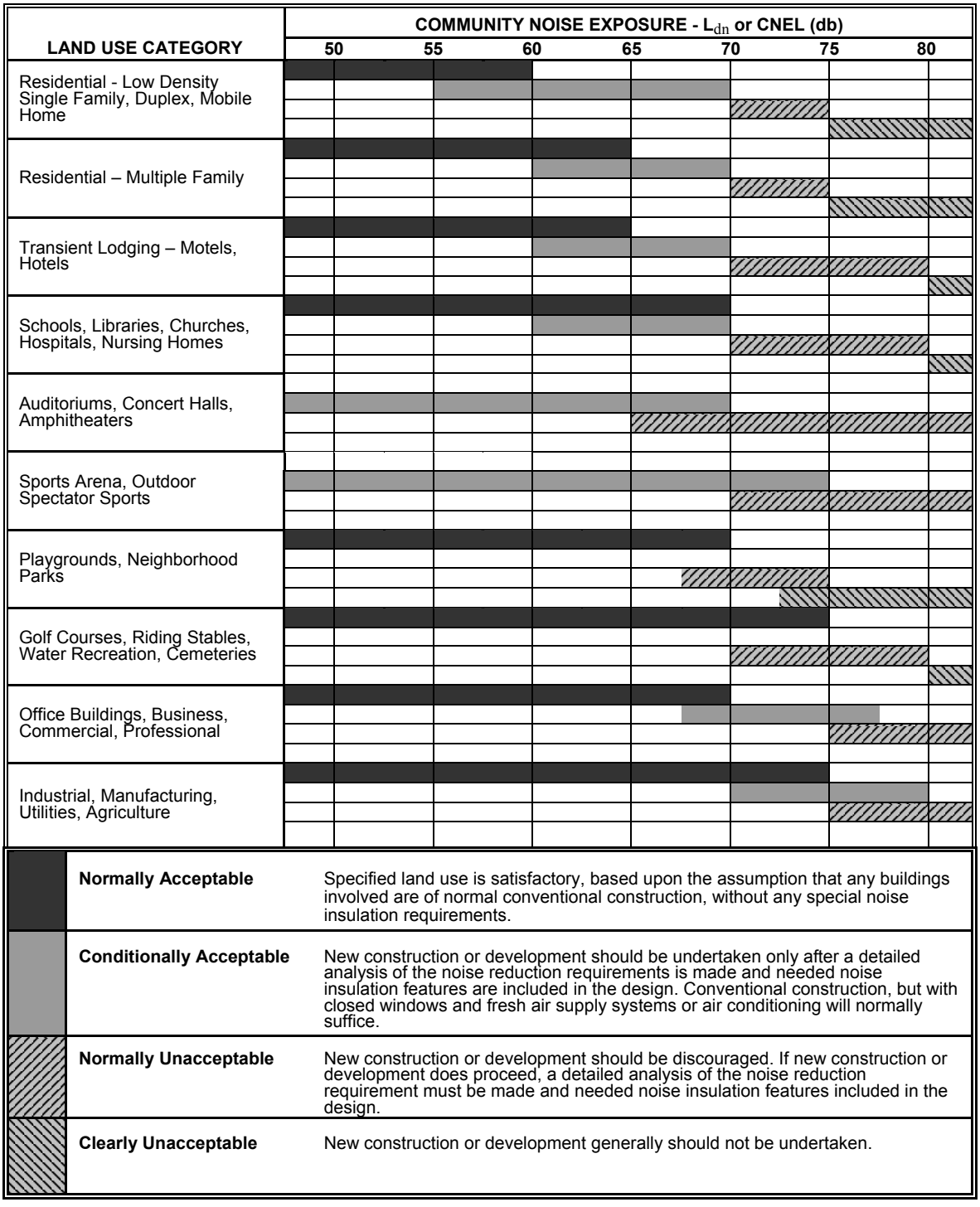
## City of Richmond General Plan

The Public Safety and Noise Element (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 4.10-4**. This table indicates that residential land uses are normally acceptable in noise environments less than 65 dBA Ldn (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 Noise Element applicable to this project are as follows:

- **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.

**TABLE 4.10-4**
**ACCEPTABLE NOISE LEVELS**




SOURCE: California Office of Planning and Research, 2003. General Plan Guidelines.

*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 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 SN-4.3: 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 SN-4A: 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 multi-family residential land uses, the ordinance cites weekday (7:00 a.m. to 7:00 p.m.) noise standards for mobile construction equipment of 75 dbA and 80 dBA, respectively. The weekend and holiday (9:00 a.m. to 8:00 p.m.) standards are 60 dBA and 65 dBA, respectively.

For stationary source construction noise, the ordinance cites weekday (7:00 a.m. to 7:00 p.m.) noise standards of 60 dbA and 65 dBA, respectively. The weekend and holiday (9:00 a.m. to 8:00 p.m.) 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 which does not produce adverse impacts on surrounding properties nor the community at large. These standards are presented in **Table 4.10-5**. 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 p.m. and 7 a.m.
- 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 4.10-5**
**NOISE PERFORMANCE STANDARDS OF THE CITY OF RICHMOND MUNICIPAL CODE**

| Zoning District | 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*, the 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) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project;

c) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project;

d) 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);

e) 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); or

f) Exposure of persons to or generation of excessive ground-borne vibration or ground-borne noise levels.

## Topics with No Impact or Otherwise Not Addressed in this EIR

The proposed project would not result in significant impacts pursuant to Significance Criteria d) and e), impacts related to exposure of people to excessive noise levels based on proximity to public airports or private airstrips, listed above. The project site is more than two miles distant

from the nearest public or private airport or airstrip (Oakland International Airport), and is not within the area of the Airport Land Use Plan for Oakland International Airport. Moreover, the project site is not within the noise contours for Oakland International Airport. Therefore, criteria d) and e) do not apply to this project, and will not be discussed further.

# 4.10.5 Discussion of Impacts and Mitigation Measures

## Approach to Analysis

Noise impacts are assessed based on a comparative analysis of the noise levels resulting from the project and the noise levels under existing conditions. Analysis of temporary construction noise effects is based on: typical construction phases and equipment noise levels; attenuation of those noise levels due to distances; and any barriers between the construction activity and the sensitive receptors near the sources of construction noise. Operational impacts are analyzed using reference noise levels and attenuation for operational equipment.

**Impact NOI-1: Construction of the project would result in a temporary increase in ambient noise levels. (Criteria a., c.) (*Less Than Significant with Mitigation*)**

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 the project 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 a.m. and 7:00 p.m. where noise from construction activities exceeds 80 dBA, Lmax at multi-family residences in the vicinity of the project site; and where noise exceeds 75 dBA, Lmax at single family residences in the vicinity of the project site.

The proposed project would be developed in up to five phases, from west to east across the project site, and would be completed within approximately 31 months, (refer to Section 3.1, *Project Description,* for complete phasing details). During Phase 1 of the construction process, all Offsite Improvements, including the Terminal One waterfront park improvements, the new shoreline road, the Terminal One Pier re-purposing, and the Bay Trail Loop, would be completed. In addition, Phase 1 would include on-site utility infrastructure, storm drain improvements, the western parking podium, and the most westerly condominium building and townhome buildings. The remaining five condominium buildings and 22 townhome buildings, the easterly parking podium, the project's internal Mews, and associated onsite utility and project features would be completed in the following phases. The proposed project phasing would ultimately be determined by market conditions and could therefore be reduced to four or fewer phases.

Construction activity noise levels at and near the project site would fluctuate depending on the particular type, number, and duration of uses of various pieces of construction equipment throughout each development phase. Construction activities associated with the project at large would involve

excavation, grading, demolition and earth movement. **Table 4.10-6** shows typical noise levels experienced during different construction stages and **Table 4.10-7** shows typical noise levels produced by various types of construction equipment.

**TABLE 4.10-6**
**TYPICAL NOISE LEVELS FROM CONSTRUCTION ACTIVITY**

| Construction Phase | Noise Level[a] (dBA, Leq) at 50 feet | Noise Level[a] (dBA, Leq) at 350 feet | Noise Level[a] (dBA, Leq) at 575 feet |
|---|---|---|---|
| Ground clearing | 84 | 66 | 60 |
| Excavation | 89 | 71 | 65 |
| Foundations | 78 | 60 | 54 |
| Erection | 85 | 67 | 61 |
| Finishing | 89 | 71 | 65 |

[a] Average noise levels correspond to the indicated distance from the noisiest piece of equipment associated with a given phase of construction and an additional 200 feet from the rest of the equipment associated with that phase.

SOURCE: Bolt, Baranek, and Newman, 1971; Cunniff, 1977.

**TABLE 4.10-7**
**TYPICAL NOISE LEVELS FROM CONSTRUCTION EQUIPMENT**

| Construction Equipment | Noise Level (dBA, Leq at 50 Feet) | Noise Level (dBA, Leq at 350 Feet) | Noise Level (dBA, Leq at 575 Feet) |
|---|---|---|---|
| Dump truck | 88 | 70 | 64 |
| Portable air compressor | 81 | 63 | 57 |
| Concrete mixer (truck) | 85 | 67 | 61 |
| Scraper | 88 | 70 | 64 |
| Jackhammer | 88 | 70 | 64 |
| Dozer | 87 | 69 | 63 |
| Paver | 89 | 71 | 65 |
| Generator | 76 | 64 | 58 |
| Backhoe | 85 | 67 | 61 |
| Pile driver | 101 | 89 | 83 |

SOURCE: FTA, 2006 and FHWA, 2006.

The nearest existing sensitive residential receptors to the project site are homes located approximately 575 feet east of the proposed project site. As shown in **Table 4.10-7**, at this distance only noise from pile driving could exceed the maximum noise level (80 dBA) allowed by the Richmond municipal code at the nearest multi-family land use.

While most of the proposed structures would be unlikely to require piles, the townhomes and condominium flats would be built over single-level parking podiums that may be constructed partially below grade. If piles are required for the podium structures, pile driving could result in a significant temporary increase in ambient noise levels.

Recreational users of trails and other park facilities at Miller/Knox Regional Shoreline park are not considered to be sensitive receptors to noise in the same way that residential users are; however,

temporary noise from construction activities during weekdays could exceed 70 dBA as perceived by recreational users, and affect these users detrimentally.

The following mitigation measures would reduce noise levels from construction and pile installation.

**Mitigation Measure NOI-1a: Construction Noise Control Measures.** 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 as specified in Mitigation Measure NOI-1b.

**Mitigation Measure NOI-1b: Pile Driving Noise-Reducing Techniques and Muffling Devices.** Noise-reducing pile-driving techniques shall be employed during project construction. These techniques shall include:

- Limiting pile driving or other impact-related noise-generating activity to 9:00 a.m. to 5:00 p.m., 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, and installing shrouds around the pile-driving hammer where feasible;
- Implementing "quiet" pile-driving technology (such as pre-drilling of piles and the use of more than one pile driver to shorten the total pile driving duration), where feasible, in consideration of geotechnical and structural requirements and conditions;

- 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. They consist of blocks of material 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.

The above measures would reduce the severity of noise generated by construction and pile driving activities and reduce the potential annoyance to nearby residents and recreational users and others who could be disturbed by pile driving.

**Significance After Mitigation:** Less Than Significant.

**Project Design Features / Mitigation:** Mitigation Measures NOI-1a, NOI-1b.

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**Impact NOI-2: Occupants of the proposed new buildings could be exposed to high noise levels. (Criteria a., b.) (*Less than Significant, No Mitigation Required*)**

As discussed above in the Setting section, the City of Richmond General Plan establishes land use compatibility standards for new development within Richmond. These standards are intended to ensure that occupants of new developments are not exposed to inappropriately loud noise. Ambient noise levels around new multi-family residential uses are "normally acceptable" if below 65 CNEL, and "conditionally acceptable" between 60 and 70 CNEL (City of Richmond, 2012).

As presented in **Table 4.10-3**, monitored long-term noise levels at the project site ranged from 54 to 55 CNEL. This existing noise environment would be considered to be normally acceptable for the proposed land uses. Noise level exposure for occupants of the proposed new buildings would therefore be less than significant.

**Significance:** Less Than Significant.

**Project Design Features / Mitigation:** None required.

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**Impact NOI-3: Project operations could cause a long-term increase in ambient noise levels in the project vicinity. (Criteria b.) (*Less Than Significant, No Mitigation Required*)**

Long-term noise sources associated with project operations would include automobile traffic and if required, an emergency power back-up generator. The generator would be tested regularly and operated occasionally. Typically, the Bay Area Air Quality Management District 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 the distance to the nearest receptor (approximately 575 feet) would be sufficient to ensure that this occasional testing would not result in a substantial permanent increase in noise levels over ambient conditions, as shown in **Table 4.10-7**.

The project would also generate additional vehicle traffic in and around the project site. Increased traffic would primarily be on the local roadway network, including Brickyard Cove Road and Dornan Drive. Based on the Caltrans definition of a readily perceptible increase in noise levels, a project would be considered to generate a significant impact if it resulted in a permanent increase in ambient noise levels greater than 5 dBA in the project vicinity above levels existing without the project.

Noise levels were determined for this analysis using the Federal Highway Administration (FHWA) Traffic Noise Prediction Model and the turning movements discussed in Section 4.13, Transportation and Traffic, for Existing (2014), Existing Plus Project, and Cumulative Plus Project conditions (**Appendix E**). Peak hour intersection turning data from the traffic study were analyzed to evaluate increases and resulting traffic-generated noise increases on roadway links most affected by project-related traffic. The roadway segments analyzed and the results of the noise increases resulting from modeling are shown in **Table 4.10-8**, below.

**TABLE 4.10-8**
**PEAK-HOUR TRAFFIC NOISE LEVELS IN THE VICINITY OF THE PROJECT**

| Roadway Segment[a,b] | Existing | Existing Plus Project | Difference between Existing Plus Project and Existing | Cumulative No Project (2040) | Cumulative Plus Project (2040) | Difference between Cumulative Plus Project and Existing |
|---|---|---|---|---|---|---|
| South Garrard Boulevard south of East Richmond Avenue | 56.3 | 60.0 | 3.7 | 57.5 | 60.6 | 4.3 |
| Brickyard Cove Road between project Driveway and Sandpiper Spit | 53.6 | 55.6 | 2.0 | 58.7 | 59.4 | 5.8 |
| Seacliff Drive between Sandpiper Spit and Canal Boulevard | 55.1 | 56.6 | 1.5 | 58.9 | 59.6 | 4.5 |

[a] 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.
[b] The analysis considered the vehicle mix based on – cars 97%, medium trucks two percent, and heavy trucks one percent. Traffic speeds for all vehicle classes were set at 25 mph.

SOURCE: ESA (Appendix E)

As shown in **Table 4.10-8**, the increase in traffic noise from the Existing Plus Project compared to the Existing scenario would increase peak hour noise levels by less than 5 dBA at all roadway segments. Overall, traffic noise impacts associated with the project at all analyzed roadway segments in the vicinity of the project site would be less than significant.

**Significance:** Less Than Significant.

**Project Design Features / Mitigation:** None required.

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**Impact NOI-4: Project construction could generate ground-borne vibration. (Criterion f.) (*Less Than Significant, No Mitigation Required*)**

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 project demolition and construction activities.[2] The proposed condominium flats and podium structures may be founded on driven piles.

Of the construction equipment likely to be used for project demolition and construction, pile driving has the potential to result in the highest levels of ground-borne vibration. Pile driving can result in peak particle velocities (PPV) of up to 1.5 inches per second (in/sec) at a distance of 25 feet (FTA, 2006), but typically results in an average of about 0.644 PPV at that distance. The Caltrans measure of the threshold of architectural damage for conventional sensitive structures is 0.5 in/sec PPV for new residential structures and modern commercial buildings and 0.25 in/sec PPV for historic and older buildings.

The nearest existing off-site structure (the Richmond Yacht Club) is approximately 140 feet away from the site of the proposed easternmost podium structure, where pile driving may occur. At this distance, vibration from pile driving would be expected to be reduced to 0.05 inches per second. Therefore, vibration from pile driving would not exceed the criterion published by Caltrans of 0.25 in/sec for the protection of fragile older buildings, or the 0.5 in/sec PPV criterion for newer buildings.

Consequently, the project would have a less-than-significant impact with regard to ground-borne vibration.

**Significance:** Less Than Significant.

**Project Design Features / Mitigation:** None required.

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## Cumulative Impact Analysis

**Impact C-NOI-1: Construction activities of the proposed project combined with cumulative construction noise in the project area could cause a substantial temporary or periodic increase in ambient noise levels in the project vicinity during construction. (*Less than Significant, No Mitigation Required*)**

[2] Deep dynamic compaction is not a proposed construction method for the proposed project.

The geographic scope of analysis for cumulative noise and vibration impacts encompasses sensitive receptors within approximately 500 feet of the proposed project site. Beyond 500 feet, the contributions of noise from other projects would be greatly attenuated through both distance and intervening structures, and their contribution would be expected to be minimal. Chapter 6, *Other Statutory Sections* (6.3, Cumulative Impacts) summarizes reasonably foreseeable future projects in the project vicinity. Other cumulative projects that could contribute to cumulative construction noise would include construction activities associated with improvements to the Miller/Knox Regional Shoreline park, including Ferry Point. Other potential cumulative projects are sufficiently distant such that they would not meaningfully contribute to construction noise impacts.

Improvements to Miller/Knox Regional Shoreline park may involve the isolated operation of trucks, loaders, excavators or bulldozers to transport and distribute materials to stabilize the shoreline and open the lagoon to the bay. Operation of this equipment could combine with construction activities of the proposed project and result in increased ambient noise levels at receptors near the project site.

Receptors to the north of the Miller/Knox Regional Shoreline park are located over 800 feet away from the lagoon and over 3,800 feet away from the project site. At this distance, noise from construction on the project site would be attenuated to such a degree as to not meaningfully contribute to increased ambient noise levels. Similarly, receptors to the east of Miller/Knox Regional Shoreline are separated from the lagoon area by hills and separated from Ferry Point by approximately 2,300 feet. At this distance, noise from construction activities at the lagoon and Ferry Point would be attenuated to such a degree as to not meaningfully contribute to increased ambient noise levels. To demonstrate this effect, noise from a bulldozer at 50 feet would be 87 dBA, while at 2,300 and 3,800 feet away the noise levels would be attenuated to 48 and 43 dBA, respectively, well below monitored daytime ambient noise levels in the area presented in **Table 4.10-3**. Consequently, the proposed project combined with cumulative construction noise in the project area would have a less than significant impact with regard to temporary or periodic increase in ambient noise levels in the project vicinity during construction.

**Significance:** Less Than Significant.

**Project Design Features / Mitigation:** None required.

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**Impact C-NOI-2: Operation of the proposed project when considered with other cumulative development would not cause a substantial permanent increase in ambient noise levels in the project vicinity. (*Less Than Significant, No Mitigation Required*)**

Operational noise impacts of the proposed project would primarily result from increased traffic on the local roadway network. Cumulative plus project traffic data was used to estimate the cumulative operational noise increases shown in **Table 4.10-8**. Significant cumulative increases in ambient roadside noise levels are not predicted to occur at the three road segments analyzed.

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 project and existing conditions to increments recognized by Caltrans as representing a readily perceptible increase in noise levels. If the roadside noise levels would increase by 5 dBA, a cumulative noise impact would be considered to occur. However, the proposed project would only 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 roadside noise analysis (if a cumulative noise impact is predicted) is to evaluate if the contribution of the project to roadside noise levels is cumulatively considerable. This second procedure (if necessary) involves assessing whether the project contribution to roadside noise levels (i.e., the difference between cumulative conditions and cumulative plus project conditions) would result in an increase of 3dBA or more which Caltrans recognizes as a barely perceptible increase (Caltrans, 2013).

The roadway segments analyzed and the results of the noise increases resulting from modeling are shown in **Table 4.10-8**. As can be seen from the table, a cumulative increase in noise levels along Brickyard Cove Road would exceed 5 dBA which would be the only roadway to experience a cumulatively significant noise increase. However, the projects contribution to this cumulative increase would be 0.7 dBA (59.4 dBA - 58.7 dBA) which would not be a perceptible increase and would not be a cumulatively considerable contribution to the overall cumulative noise increase predicted along Brickyard Cove Drive. Consequently, the proposed project's cumulative roadside noise impact would be less than significant.

**Significance:** Less Than Significant.

**Project Design Features / Mitigation:** None required.

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# References – Noise

Bolt, Baranek and Newman, 1971. Noise from Construction Equipment and Operations, Building Equipment, and Home Appliances.

California Office of Planning and Research, 2003. *General Plan Guidelines.*

Cunniff, Patrick, 1977. *Environmental Noise Pollution*.

City of Richmond, 2012. *Richmond General Plan 2030: Public Safety and Noise Element*. Available at: www.ci.richmond.ca.us/index.aspx?nid=2608.

Federal Highway Administration (FHWA), 2006. FHWA Highway Construction Noise Handbook. August 2006.

Federal Transit Administration (FTA), 2006. Transit Noise and Vibration Impact Assessment, May 2006.

State of California, Governor's Office of Planning and Research, 2003. General Plan Guidelines. Appendix C: Guidelines for the preparation and Content of the Noise Element of the General Plan, 2003. Available at: opr.ca.gov/docs/General_Plan_Guidelines_ 2003.pdf.; Accessed December 31, 2014.

United States Department of Housing and Urban Development, 1985. The Noise Guidebook.

World Health Organization (WHO), 1999. Guidelines for Community Noise, Geneva, http://www.who.int/ docstore/peh/noise/guidelines2.html, accessed February 25, 2016.

# 4.11 Population, Housing, and Employment

## 4.11.1 Introduction

This section identifies and evaluates the potential impacts related to population, housing, and employment that could result from project implementation.[1] This section includes a description of existing and projected conditions, criteria used to determine impact significance, and a discussion of impacts associated with implementation of the project. The demographic information presented in this section provides the statistical basis for determining population and employment-related inputs and/or impacts in other sections of this Draft EIR.

## 4.11.2 Environmental Setting

### Project Site

The project site is located in the Point Richmond neighborhood of Richmond, within U.S. Census Tract 3780. As of 2010, this Census tract had a population of approximately 3,435 living in approximately 1,792 households, with an average persons per household rate of 1.9. The median income for a household in Census Tract 3780 was $72,708 and the labor force comprises approximately 1,811 workers (U.S. Census, 2015a).

The project site does not currently include housing or residents. The closest housing to the project site is approximately 0.1 miles away (Brickyard Cove Neighborhood).

### 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 area is growing rapidly, with approximately 25 percent growth expected to occur from 2010 to 2040 (ABAG, 2013a). In 2010, the population of Contra Costa County was 1,049,025 (ABAG, 2013a).

In November 2015, the County's total labor force was approximately 549,800 workers (EDD, 2015a). This total represents an increase of approximately 25,800 workers from January 2010 to October 2015 (EDD, 2015a; EDD, 2015b). 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).

[1] Although CEQA *Guidelines* Appendix G includes a heading that refers only to "Population and Housing" (item XII), topic (A) under that heading also refers to population growth resulting from new businesses. Therefore, the topics of employment and its relation to population growth are addressed in this Draft EIR chapter. Similarly, the employment figures introduced in this Draft EIR chapter are used in various other chapters as appropriate.

The City of Richmond's total labor force in November 2015 was approximately 53,700 workers (EDD, 2015c). Between January 2010 and November 2015, the City's labor force increased by approximately 2,000 workers (Ibid.). The City of Richmond's unemployment rate was 5.3 percent in November 2015 (Ibid.) and had previously reached 17.8 percent in January 2010 (EDD, 2015c). There were approximately 2,900 unemployed persons in Richmond in November 2015 (Ibid).

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.

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 103,701 people were living in Richmond in 2010, nearly 1.5 percent of the total Bay Area population. There were approximately 36,093 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.

The overall housing vacancy rate declined for both the County and the 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, 2015b; and DOF, 2015).

### Employment

Business activity and employment have been growing substantially, and unemployment has decreased substantially in Richmond and Contra Costa County, as the region rebounds from the national recession, as shown in **Table 4.11-2**. 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 4.11-1**
**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% pph** |
| 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% pph** |
| 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% pph** |
| Total jobs | 3,385,300 | 3,669,990 | 3,987,150 | 4,196,580 | 4,505,230 | **22.8%** |
| Total employed residents | 3,268,680 | 3,547,310 | 3,849,790 | 4,052,020 | 4,350,070 | **21.9%** |

SOURCE: ABAG, 2013a. 2010 figures are consistent with the U.S. Census.

[1] Includes Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Solano, and Sonoma counties.

Population counts for 2010, population growth projections, housing unit counts, and total employment (including construction employment, and unemployment) are presented in **Tables 4.11-2** and **4.11-3** for Contra Costa County, the City of Richmond, and the Alameda and Contra Costa counties sub-region.

### 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. The current and projected total numbers of jobs and employed residents in the City of Richmond indicates that the jobs-housing ratio for the city is, and is expected to be, 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).

**TABLE 4.11-2**
**RECENT EMPLOYMENT TRENDS, RICHMOND, CONTRA COSTA COUNTY, AND ALAMEDA AND CONTRA COSTA COUNTIES SUB-REGION – 2010 TO 2040**

| | Employment | | Percent in Construction Trades | | Unemployment Rate | |
|---|---|---|---|---|---|---|
| | 2010 | 2015 | 2010 | 2015 | 2010 | 2015 (November Only) |
| **City of Richmond** | 45,300 | 46,440 | NA | NA | **12.5%** | **5.3%** |
| **Contra Costa County** | 467,900 | 524,500 | NA | NA | **11.0%** | **4.6%** |
| **Alameda and Contra Costa Counties Sub-region** | 1,164,300 | 1,106,400 | 4% (46,600) | 6% (66,400) | NA | NA |

SOURCES: EDD, 2015a; EDD, 2015b; EDD, 2015c; EDD, 2015d, EDD, 2015e
NA = Not Available

**TABLE 4.11-3**
**POPULATION AND HOUSING TRENDS, RICHMOND AND CONTRA COSTA COUNTY – 2010 TO 2040**

| | Population and Growth Projections | | | | | | Housing Vacancy Rates | |
|---|---|---|---|---|---|---|---|---|
| | | | | | 2010 – 2040 Projected Growth | | | |
| | 2010 | 2015 | 2020 Projection | 2040 Projection | Total | Percent | 2010 | 2015 |
| **City of Richmond** | 103,701 | 109,100 | 114,600 | 140,100 | 36,400 | 35.1 | **8.2%** | **8.0%** |
| **Contra Costa County** | 1,049,025 | 1,085,700 | 1,123,500 | 1,338,400 | 289,380 | 27.6 | **6.2%** | **6.1%** |

SOURCE: ABAG, 2013a; U.S. Census, 2015a; U.S. Census, 2015b; DOF, 2015

## 4.11.3 Contributions to Citywide Growth from the Project

This section describes and quantifies the potential growth in population, households, and employment that could occur from development of the 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 project would introduce residential and employment population growth in the new Terminal One neighborhood. The project would include up to 334 new housing units.

The new units would accommodate approximately 321 households, with 640 residents. Estimates of potential housing and population growth are presented in **Table 4.11-4**.

**TABLE 4.11-4**
**PROJECT HOUSING DEVELOPMENT AND ESTIMATED DIRECT POPULATION GROWTH**

| Potential Development | Housing Units | Occupied Households[a] | Population[b] |
|---|---|---|---|
| Total (rounded) | 334 | 321 | 640 |

[a] Assumes an average four percent vacancy factor.
[b] Conservatively assumes an average of 1.9 persons per household for multifamily condominium flats (308 units), and 2.1 persons per household for attached townhomes (26 units), consistent with persons per household in the city as a whole and in Census Tract 3780, current housing market trends, and population as allocated to Traffic Analysis Zones in the Contra Costa Countywide Travel Demand Model.

The project would include approximately 2,000 square feet (sf) of retail space (visitor and neighborhood-serving uses). Businesses on the project site would support employment of approximately 8 jobs at full occupancy, as summarized in **Table 4.11-5**.

**TABLE 4.11-5**
**PROJECT NON-RESIDENTIAL SPACE AND PROJECTED EMPLOYMENT GROWTH**

| Potential Development | Use (square feet) | Employees[a] |
|---|---|---|
| Retail (neighborhood- and visitor-serving) | **2,000** | **8** |

[a] Employment estimated by ESA (250 square feet per employee), based on common density factors by use for the type of development proposed, and consistent with the Contra Costa County Transportation Authority Countywide Travel Demand Model.

# 4.11.4 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 proposed project but identifies one of the three parcels that comprise the project site as part of the City's vacant land inventory, and indicates that, according to the underlying land use designation, between 44 and 72 housing units could be constructed at the site.

### Richmond General Plan 2030

The Economic and Housing Elements of the Richmond General Plan 2030 contain goals and policies related to employment and housing. Applicable goals and policies include:

- **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 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.

## 4.11.6 Significance Criteria

Consistent with Appendix G of the CEQA *Guidelines*, 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.

## Topics with No Impact or Otherwise Not Addressed in this EIR

The proposed project would not result in significant impacts pursuant to Significance Criteria "b" and "c" (displacement of existing housing or people), listed above. The project site currently does not include any housing, and the project would not result in the displacement of any existing housing or people; therefore, the proposed project would not result in an impact.

# 4.11.7 Discussion of Impacts and Mitigation Measures

**Impact POP-1: The project would not directly or indirectly induce substantial population growth. (*Less than Significant, No Mitigation Required)***

The project would result in the construction of up to 334 new homes on the project site, and up to 2,000 sf of neighborhood- and visitor-serving retail uses. As discussed above, this new development could induce population growth of up to 640 residents and 8 workers on the site as new homes and businesses are created.

ABAG estimates that between 2015 and 2040, the City of Richmond would experience an increase of approximately 9,200 households, representing a 24.3 percent increase (ABAG, 2013a). The population of the City of Richmond is anticipated to increase by roughly 31,000 between 2015 and 2040 (ABAG, 2013a). Population growth within the project site would constitute approximately 2 percent of the growth projected to occur within the City between 2015 and 2040.

### Direct Inducement of Population Growth

The growth of households and population due to the development of the project would contribute to population growth expected in Richmond, Contra Costa County, and the region. Trends of growth for the City and the region presented in this section are based largely on regional projections data published by ABAG in its *Projections 2013* (ABAG, 2013a). ABAG's methodology considers existing and planned land use data provided by local jurisdictions (typically, assumptions underlying the jurisdictions' general plans) in formulating local and regional projections.

Growth as a result of the project would be consistent with that assumed in the City's General Plan because the current General Plan land use classification on the project site (Medium Density Residential) anticipates residential development and growth to the level proposed by the project. The growth envisioned for the project site in the General Plan is also generally reflected in the ABAG *Projections 2013* data presented in **Table 4.11-1**. Therefore, although the project would result in population growth, it would not directly induce substantial population growth requiring new infrastructure not previously contemplated in the General Plan, or in regional projections.

### Indirect Inducement of Population Growth

Indirect inducement of growth could occur if the proposed project could encourage or spur growth in areas outside of the project site due to the construction of infrastructure – such as roads

or utilities – that would open undeveloped areas to new growth, or stimulate additional growth in existing developed areas. The project site is relatively isolated geographically – it is surrounded by existing built-out areas and open space lands managed by the East Bay Regional Parks District – and the extension of roads and infrastructure to the site is therefore not likely to induce growth in the vicinity of the project site. As described in Chapter 3, *Project Description*, and in Section 4.14, *Utilities and Service Systems*, the project will include new water, stormwater, and sanitary sewer pipelines and infrastructure, and new joint (gas and electrical) trench installations. These improvements would be developed almost solely within the project site, and would be required for any substantive redevelopment of the project site, including that envisioned in the General Plan.

Development of the proposed project could encourage new nearby commercial development outside of the project site, as new residents, employees, and visitors on the project site create new demand for services and goods in close proximity. Whether and to what extent this would occur, and when, cannot be predicted at this stage, given that development of the project would occur over time for several years, and development of nearby commercial areas may occur regardless and independently (though concurrently). Any such ancillary development in areas near the project site would not be of a size likely to require the development of new housing for additional new commercial employees. (Also see *Growth Inducing Impacts*, in Chapter 6 of this EIR.) Therefore the project's impacts with respect to the indirect inducement of population growth would be less-than-significant.

#### Other Secondary and Temporary Effects of Growth

Construction of the proposed project will require temporary construction employment. As shown in **Table 4.11-2**, a considerably large construction workforce is available within the project region (Alameda and Contra Costa counties). It is expected that most project construction workers would come from the regional labor pool; thus, project construction would not generate a permanent increase in population or cause a decrease in permanent housing availability. Because such employment would be limited to the period of construction and because sufficient construction workers are available in the local labor force, no long-term population growth is likely to ensue, and the impact with respect to secondary growth effects would be less-than-significant.

The increase of permanent employment opportunities related to the project (up to 8 new jobs) would equal less than 0.2 percent of ABAG's projected increase in the population of the city from 2015 to 2020. Existing housing stock in Richmond and the greater East Bay would be able to accommodate this minor increase in employment. As a result, the employment generated by the project does not conflict with adopted regional growth projections. The project's addition of up to 8 job opportunities would not indirectly induce substantial unanticipated population growth and the project's impact in this regard would be less-than-significant.

**Significance:** Less Than Significant.

**Project Design Features / Mitigation:** None required.

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## Cumulative Impacts

The discussion of Population and Housing cumulative impacts is presented in Chapter 6, Other Statutory Sections, of this EIR.

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# References – Population, Housing, and Employment

Association of Bay Area Governments (ABAG), 2013a. *Bay Area Plan Projections 2013.* December 2013.

Association of Bay Area Governments (ABAG), 2013b. *Regional Housing Need Plan, San Francisco Bay Area, 2014-2022*. Adopted by ABAG Executive Board July 18, 2013.

California Department of Finance (DOF), 2015. *E-5 Population and Housing Estimates for Cities, Counties, and the State, 2011 -2015, with 2010 Census Benchmark*. Accessed October 8, 2015.

California Employment Development Department (EDD), 2015a. Monthly Labor Force Data for Counties. December 18, 2015.

California Employment Development Department (EDD), 2015b. *Historical Data for Unemployment Rate and Labor Force in Contra Costa County*. Accessed October 8, 2015.

California Employment Development Department (EDD), 2015c. *Monthly Labor Force Data for Cities and Census Designated Places (CDP), November 2015 – Preliminary, Data Not Seasonally Adjusted.* Accessed December 23, 2015.

California Employment Development Department (EDD), 2015d. Official EDD Statewide News Release. *Oakland Hayward Berkeley MD (Alameda and Contra Costa Counties).* December 18, 2015.

California Employment Development Department (EDD), 2015e. *Oakland Hayward Berkeley MD (Alameda and Contra Costa Counties). Industry Employment & Labor Force – by Annual Average. March 2014 Benchmark.* October 16, 2015.

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

City of Richmond, 2013. *Richmond General Plan 2030: Housing Element.* Adopted January 2013.

U.S. Census Bureau (U.S. Census), 2015a. *2010 Demographic Profile Data, Profile of General Population and Housing Characteristics.* Accessed December 23, 2015.

U.S. Census Bureau (U.S. Census), 2015b. *2010-2014 American Community Survey 5-Year Estimates*. Accessed December 23, 2015.

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# 4.12 Public Services and Recreation

## 4.12.1 Introduction

This section addresses existing conditions and the potential impacts that implementation of the proposed project could have to public services, including police protection services, fire protection and emergency services, parks, and public schools provided in Richmond. This section also addresses the potential physical impacts regarding recreational facilities that could occur with implementation of the project.

## 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 from 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 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 project site is served by Fire Station 61, located at 140 West Richmond Avenue, which is about 1.1 miles from the project site (City of Richmond, 2016). Travel time from this station to the project site is less than five minutes. Response from this station is currently provided with an engine staffed by a fire captain and two firefighters. Fire Station 67, located at 1131 Cutting Boulevard, is approximately 1.8 miles from the project site (City of Richmond, 2016).

The Fire Department's minimum daily staffing requirement of the 26 on-duty staff allows it to reach their 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 project site 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, 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 project site 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 immediately.

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 cities 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 project site 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 project site 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, 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 2013-2014 school year (CDE, 2015a).

Students in the district may apply to attend a neighborhood school outside of their residence area. Washington Elementary School is the nearest elementary school to the project site and is located approximately 1.3 miles north, at 565 Wine Street. During the 2013-2014 school year, 479 students attended this school (CDE, 2015b). Lovonya DeJean Middle School is the nearest middle school to the site, located 4.5 miles northeast, at 3400 Macdonald Avenue. Lovonya DeJean Middle School served 629 students during the 2013-2014 school year (CDE, 2015c). The nearest high school, John F. Kennedy, is 4.2 miles northeast of the project site at 4300 Cutting Boulevard. The high school had enrollment of 826 students in the 2013-2014 school year (CDE, 2015d). A summary of local schools is presented in **Table 4.12-1**. **Table 4.12-2** presents a summary of the estimated number of schoolchildren that would live in the homes that would be built as part of the project.

**TABLE 4.12-1**
**LOCAL SCHOOL SUMMARY**

| School | Enrollment 2013-2014 |
|---|---|
| Washington Elementary School | 479 |
| Lovonya DeJean Middle School | 629 |
| John F. Kennedy High School | 826 |

SOURCE: California Department of Education, 2016

**TABLE 4.12-2**
**SCHOOL-AGE CHILDREN ESTIMATED FOR THE PROJECT SITE**

| | City of Richmond, 2010[a] | Students per Residential Housing Unit[c] | Proposed Project (Estimated) |
|---|---|---|---|
| *Project Information:* | | | |
| Population | 103,701 | NA | 640 |
| Occupied Housing Units | 36,093 | NA | 321[b] |
| *Student Generation:* | | | |
| Kindergarten - 6th Grade | NA | 0.058 | 19 |
| 7th - 8th Grade | NA | 0.004 | 1 |
| 9th - 12th Grade | NA | 0.017 | 6 |
| | **TOTAL:** | **0.08** | **26** |

SOURCE: U.S. Census 2015; WCCUSD, 2013.
a = From U.S. Census 2015
b = Based on 321 housing units directly created by the project (334 housing units with a 4 percent vacancy factor).
c = Estimated, based on student generation rate for multi-family units (WCCUSD, 2013).
NA = Not Available or Not Applicable

## Parks

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 is has a visitor center operated by the National Parks Service (City of Richmond, 2011). These facilities are described in more detail below.

### *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 project site include: Washington Park, a 2.5-acre park north of the project site; Janice Park, a small park approximately 4,500 square feet in size, north of the project site; and Nevin Park, a neighborhood park consisting of 4.4 acres, northeast of the project site.

### *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 closest regional park to the project site 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 as well as 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 (EBPRD, 2016).

The EBRPD is currently preparing a Land Use Plan Amendment (LUPA) for the 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

[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.

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, 2016).

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.

### *Trails and Open Space*

The San Francisco Bay Trail (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) has been overseeing planning and construction of the Bay Trail, in cooperation with local jurisdictions. The Ferry Point Loop, a 7.1 mile section of the Bay Trail, encircles the Miller/Knox park and is adjacent to the Point Richmond Historic District. At the location of the project site, a major local gap in the Bay Trail exists: the Ferry Point Loop runs along Brickyard Cove Road north of the project site, rather than along the shoreline (EBRPD, 2016). The Bay Trail Loop proposed as part of the project (see Section 3.4.1) would connect existing Bay Trail segments that extend along Brickyard Cove Road to the east and through Miller/Knox park to the west, extending along the outside curve of the new shoreline road and providing bicycle and pedestrian access to the shoreline. The proposed project would also connect two segments of the Ferry Point Loop trail, one of which is within Miller/Knox park and one of which extends east along the norther frontage of Brickyard Cove Road opposite the mid-point of the project's northern boundary.

## 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.

## City of Richmond General Plan

The Community Facilities and Infrastructure, Parks and Recreation, and Public Safety and Noise elements of the Richmond General Plan 2030 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.

## 4.12.5 Significance Criteria

Based on California Environmental Quality Act (CEQA) *Guidelines* Appendix G, a project would cause adverse impacts if it 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.

## 4.14.4 Discussion of Impacts and Mitigation Measures

**Impact PUB-1: The 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, No Mitigation Required*)**

The project would generate an increase of up to 334 residential units and 2,000 square feet of new retail uses. As discussed in Section 4.11, *Population, Housing, and Employment*, the project could induce population growth of up to 648 people (640 residents and 8 workers) on the site as new homes and businesses are created.

### Fire Protection (RFD)

The project's accompanying increase in population represents approximately 0.6 percent of the RFD's service population. The increased population attributable to the project would be expected to result in an incremental increase in the number of emergency medical calls at the project site. However, this increase would be minor given the project's relatively small contribution to total growth within the context of the larger community, which has been recently accounted for in the City's updated General Plan. Therefore, the project would not result in the need for new or physically altered fire facilities to ensure the provision of adequate fire or emergency services.

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. The impact would be less than significant.

### Police Protection (RPD)

The project could incrementally increase the demand for police services, but the increase in population from the project represents approximately 0.5 percent of the RPD's service population, would not be substantial, and has been recently accounted for in the City's updated General Plan. The 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

Based on student generation rates recommended by the WCCUSD for the type of residential development proposed as a part of the project, the project's increase of 334 residential units would result in approximately 19 new elementary students, 1 new middle school student and 6 new high school students, a total of 26 students. The addition of 19 elementary students represents approximately 0.02 percent of the existing enrollment of elementary school students in the WCCUSD (CDE, 2016). The addition of one middle school student represents 0.002 percent of the existing enrollment of middle school students. Increasing the population of high school students by 6 students represents an approximately 0.07 percent increase in enrollment in high school students.

As described in the Regulatory Setting, the project would comply with Senate Bill (SB) 50, which fully mitigates the potential effect of new student population that may be generated by the project on public school facilities. No new school facilities would be necessary to serve the project. The impact would be less than significant.

### Parks

The 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. The project would include the Terminal One waterfront park, which would extend along the length of the site's shoreline. The waterfront park would include public open space, parkland amenities, and related improvements. The project would also construct both a

primary shoreline connection and a secondary "commuter" connection between the segments of the existing Bay Trail that extend along Brickyard Cove Road and through Miller/Knox park (see Chapter 3, *Project Description*). **Figure 3-4, Project Annotated Conceptual Site and Landscape Plan**, and **Figure 3-5, Terminal One Pier Improvements**, illustrate the park, trail and open space concepts for the project. Additional public parks and extensive open space facilities are located within two miles of the project site. The additional resident population that would be generated by the project would incrementally increase the use of area parks and recreational facilities, but 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 included as a part of the 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 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.

**Project Design Features / Mitigation:** None required.

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## Cumulative Impacts

The discussion of Public Services and Recreation cumulative impacts is presented in Chapter 6, Other Statutory Sections, of this EIR.

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# References – Public Services and Recreation

California Department of Education (CDE), 2015a. DataQuest School Enrollment by Ethnicity for 2013-2014: West Contra Costa Unified. Available at: www.ed-data.org/district/Contra-Costa/West-Contra-Costa-Unified. Accessed January 12, 2015.

California Department of Education (CDE), 2015b. DataQuest School Enrollment by Ethnicity for 2013-2014: Washington Elementary. Available at: data1.cde.ca.gov/dataquest/Enrollment/EthnicEnr.aspx?cType=ALL&cGender=B&cYear=2014-15&Level=School&cSelect=Washington+Elementar--West+Contra+Cos--0761796-6005037&cChoice=SchEnrEth. Accessed January 12, 2015.

California Department of Education (CDE), 2015c. DataQuest School Enrollment by Ethnicity for 2013-2014: Lovonya DeJean Middle School. Available at:

data1.cde.ca.gov/dataquest/Enrollment/EthnicEnr.aspx?cType=ALL&cGender=B&cYear=2014-15&Level=School&cSelect=Lovonya+DeJean+Middl--West+Contra+Cos--0761796-6120885&cChoice=SchEnrEth. Accessed January 12, 2015.

California Department of Education (CDE), 2015d. DataQuest School Enrollment by Ethnicity for 2013-2014: John F. Kennedy High School. Available at: data1.cde.ca.gov/dataquest/Enrollment/EthnicEnr.aspx?cType=ALL&cGender=B&cYear=2014-15&Level=School&cSelect=Kennedy+High--West+Contra+Cos--0761796-0733659&cChoice=SchEnrEth. Accessed January 12, 2015.

California Department of Education (CDE), 2016. DataQuest School Enrollment by Grade for 2013-2014: West Contra Costa Unified School District. Available at: data1.cde.ca.gov/dataquest/Enrollment/GradeEnr.aspx?cChoice=DistEnrGrd&cYear=2014-15&cSelect=0761796--West%20Contra%20Costa%20Unified&TheCounty=&cLevel=District&cTopic=Enrollment&myTimeFrame=S&cType=ALL&cGender=B. Accessed January 5, 2016.

City of Richmond, 2011. *General Plan 2030 EIR*. August 2011.

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

City of Richmond, 2014. Fire Department Facts. http://www.ci.richmond.ca.us/1483/Department-Facts. Accessed January 12, 2016.

City of Richmond, 2015. Fire Department. Available at: www.ci.richmond.ca.us/79/Fire-Department. Accessed January 12, 2016.

City of Richmond, 2016. Fire Station Locations. Available at:www.ci.richmond.ca.us/406/Fire-Stations. Accessed January 11, 2016.

East Bay Regional Park District (EBRPD), 2016. Park Planning. Available at: www.ebparks.org/about/planning#miller-knox. Accessed January 04, 2016.

Richmond Police Department (RPD), 2015. Communications Center. Available at: www.ci.richmond.ca.us/1063/Communications-Center. Accessed January 2015.

U.S. Census Bureau (U.S. Census), 2015. *2010 Demographic Profile Data, Profile of General Population and Housing Characteristics.* Available at: factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?src=CF. Accessed December 23, 2015.

West Contra Costa Unified School District (WCCUSD), 2013. School Facility Needs Analysis for West Contra Costa Unified School District. November 21, 2013.

# 4.13 Transportation and Traffic

## 4.13.1 Introduction

This section describes the transportation and circulation conditions, including transit services, parking conditions, and pedestrian and bicycle facilities in the vicinity of the proposed project. This section describes the regulatory setting relevant to transportation and circulation issues. Potential impacts of the proposed development 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 project during the weekday morning and evening peak hours. The analysis includes the results of field reconnaissance performed in November 2014 to collect volume data (traffic counts) and signal operations data, document intersection lane configurations, and record observations of pedestrian and bicycle activity. 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 four scenarios:

- **Existing** – Represents existing conditions with volumes obtained from recent traffic counts and the existing roadway system.
- **Existing Plus Project** – Existing conditions plus traffic generated after completion of the proposed project.
- **2040 No Project** – Future conditions with planned population and employment growth, and planned transportation system improvements, for the year 2040. This scenario assumes no traffic growth at the project site. Traffic projections were developed using the CCTA Countywide Travel Demand Model.
- **2040 Plus Project** – 2040 No Project conditions plus traffic generated after completion of the proposed project.

## 4.13.2 Existing Conditions

The existing transportation-related context in which the proposed project would be constructed is described below, beginning with a description of the study area (the area including the project site and vicinity that could be affected by the proposed project) and the street network that serves the project site. Existing transit service, and bicycle and pedestrian facilities, are also described. Intersection levels of service are then defined and current conditions for intersections 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 project site is provided by Interstate 580 (I-580), while direct local access is provided via Brickyard Cove Road and Dornan Drive. These and other roadways in the study area are described below.

***Interstate 580 (I-580)*** is an east-west six-lane freeway in the project vicinity. 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 project site is provided via interchanges at Canal Boulevard and Castro Street. I-580 has an average annual daily traffic (AADT) volume of approximately 80,000 vehicles (Caltrans, 2015) just east of the Canal Street Interchange.

***Brickyard Cove Road*** is a two-lane east-west roadway that forms the north boundary of the project site. Brickyard Cove Road connects Seacliff Drive in the east and Dornan Drive in the west. East of the project site, Brickyard Cove Road includes a landscaped median with left-turn pockets at most intersections and driveways. The Ferry Point multi-use trail is located along the north side of the street. The posted speed limit is 25 miles per hour (mph).

***Canal Boulevard*** is a north-south roadway located between the Port of Richmond in the south and I-580. North of I-580, Canal Boulevard continues as Richmond Parkway. Canal Boulevard provides one travel lane in each direction south of Seacliff Drive and two travel lanes in each direction north of Seacliff Drive. The Richmond General Plan 2030 (City of Richmond, 2012) identifies Canal Boulevard as an existing truck route south of Garrard Boulevard. Canal Boulevard includes Class II bicycle lanes north of Seacliff Drive, and a Class I bicycle path that runs parallel to the west side of the roadway south of Seacliff Drive. Railroad tracks run parallel to Canal Boulevard between the shipyards in the south and West Cutting Boulevard in the north. The posted speed limit is 40 mph.

***Cutting Boulevard*** is an east-west roadway 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 two-way left-turn lanes at mid-block driveways. The Richmond General Plan 2030 (City of Richmond, 2012) identifies Cutting Boulevard as an existing truck route west of Harbour Way. West of I-580, Cutting Boulevard includes Class II bicycle lanes and sidewalks on both sides of the roadway. The posted speed limit is 40 mph.

***Dornan Drive*** is a north-south roadway with one travel lane in each direction located between the project site and Brickyard Cove Road to the south and the Point Richmond Tunnel to the north. North of the Point Richmond Tunnel, Dornan Drive continues as South Garrard Boulevard. The posted speed limit is 35 mph.

***Seacliff Drive*** is a two-lane southwest-northeast roadway located between Brickyard Cove Road in the southwest and Canal Boulevard in the northeast. Most of the roadway includes a landscaped median with left-turn breaks and/or pockets at most intersections and driveways. The Ferry Point multi-use trail is located along the north side of the street. The posted speed limit is 25 mph.

## Study Intersections

The analysis of impacts to traffic in the study area evaluated operations at 12 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 project-related traffic has the potential to cause an impact.

1. I-580 Westbound Ramps/Canal Boulevard (Signalized)
2. I-580 Eastbound Ramps/Canal Boulevard (Signalized)
3. West Cutting Boulevard/Canal Boulevard (Signalized)
4. Seacliff Drive/Canal Boulevard (Unsignalized)
5. Seacliff Drive/Sandpiper Spit (Unsignalized)
6. Brickyard Cove Road/Dornan Drive (Unsignalized)
7. Western Drive/Dornan Drive (Unsignalized)
8. Richmond Avenue/South Garrard Boulevard (Unsignalized)
9. West Cutting Boulevard/South Garrard Boulevard (Unsignalized)
10. East Standard Avenue/I-580 Eastbound On-Ramp/Castro Street (Signalized)
11. Brickyard Cove Road/Shoreline Drive (Unsignalized; Plus Project conditions only)

## Transit Service

Transit service providers in the project vicinity include AC Transit, which provides local and Transbay bus service with connections to the Transbay Terminal in San Francisco; and Bay Area Rapid Transit (BART) and Amtrak, which provide regional rail service. The existing transit services provided near the project site are described below.

### 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. **Figure 4.13-2** shows the existing bus service in the project vicinity. No direct bus service is provided at the project site (AC Transit, 2015). The nearest bus stop to the project site is on Garrard Boulevard at Cutting Boulevard, approximately 1.2 miles north of the project site. This bus stop is served by AC Transit Route 72M, which operates between Point Richmond and Downtown Oakland and connects the project site to the Richmond and El Cerrito BART Stations. Weekday and weekend service hours are from 6:00 AM to 12:30 AM with approximately 30-minute headways.[1]

[1] "Headway" refers to the time or distance between vehicles in a transit system.




**LEGEND**

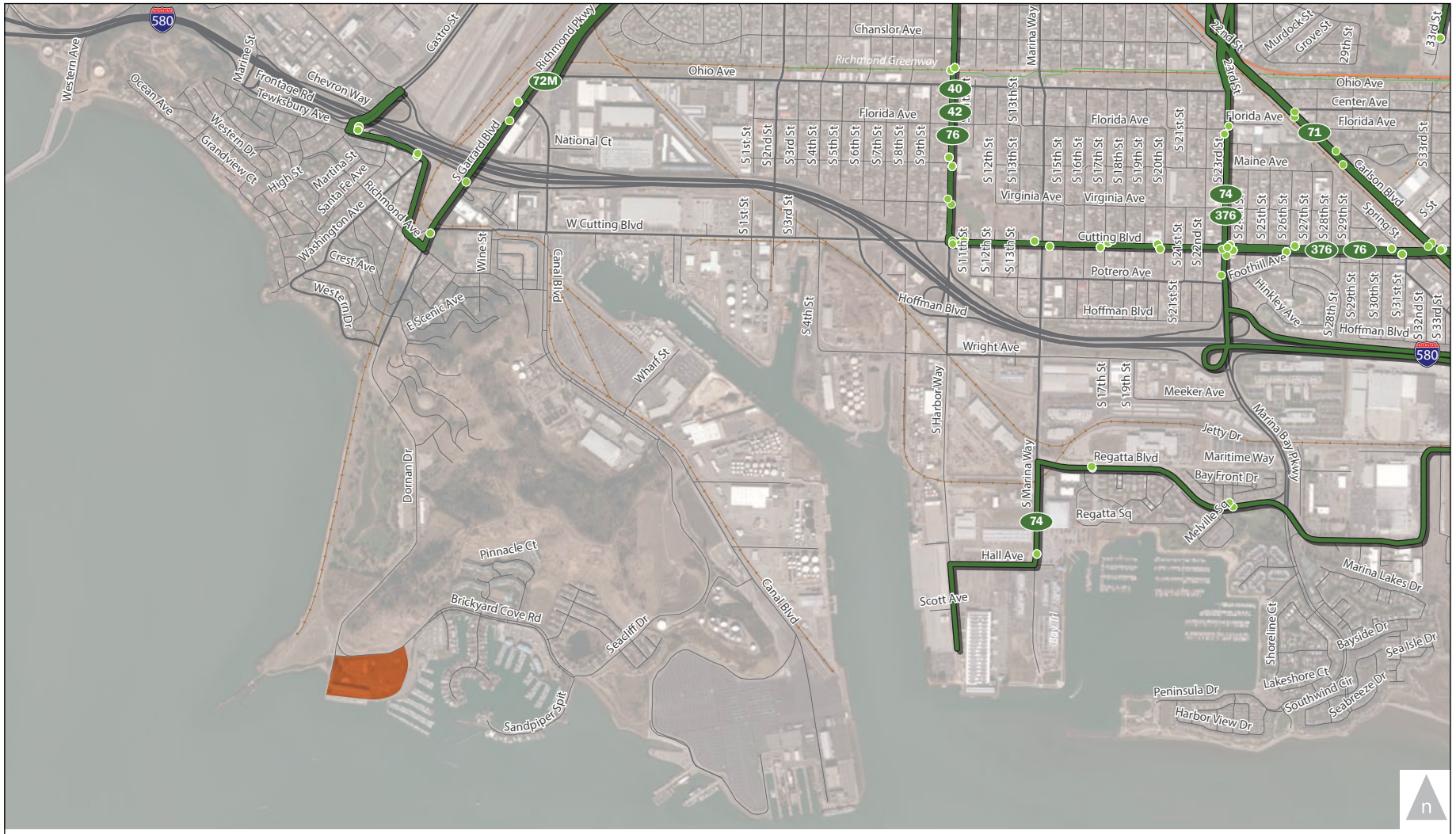
# Study Intersection

SOURCE: Fehr & Peers Transportation Consultants, 2016

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**Figure 4.13-1**

Site Vicinity Map and Study Intersection Locations




**LEGEND**

Project Site

# AC Transit Route

Bus Stop

SOURCE: Fehr & Peers Transportation Consultants, 2016

City of Richmond Terminal One Project EIR . 140325

**Figure 4.13-2**
Existing Transit Service

### Bay Area Rapid Transit (BART)

Bay Area Rapid Transit (BART) provides regional rail service throughout the East Bay and across the Bay to San Francisco and the Peninsula. The nearest station is the Richmond BART Station, located about 2.5 miles northeast of the project site. Daily weekday ridership at the Richmond Station was approximately 9,500 riders in October 2015 (BART, 2015). Parking at the Richmond BART Station is provided in a six-level parking structure with a total capacity of 750 vehicles; parking capacity is typically reached by approximately 7:30 AM on weekdays.

### Amtrak

Amtrak provides inter-city rail service throughout California and the country. The Richmond station is located adjacent to the Richmond BART Station. The Richmond Station is served by the Capitol Corridor line, which operates between San Jose and Sacramento. In fiscal year 2014, about 1.4 million passengers used the Capital Corridor rail service (Amtrak, 2014).

## Pedestrian and Bicycle Facilities

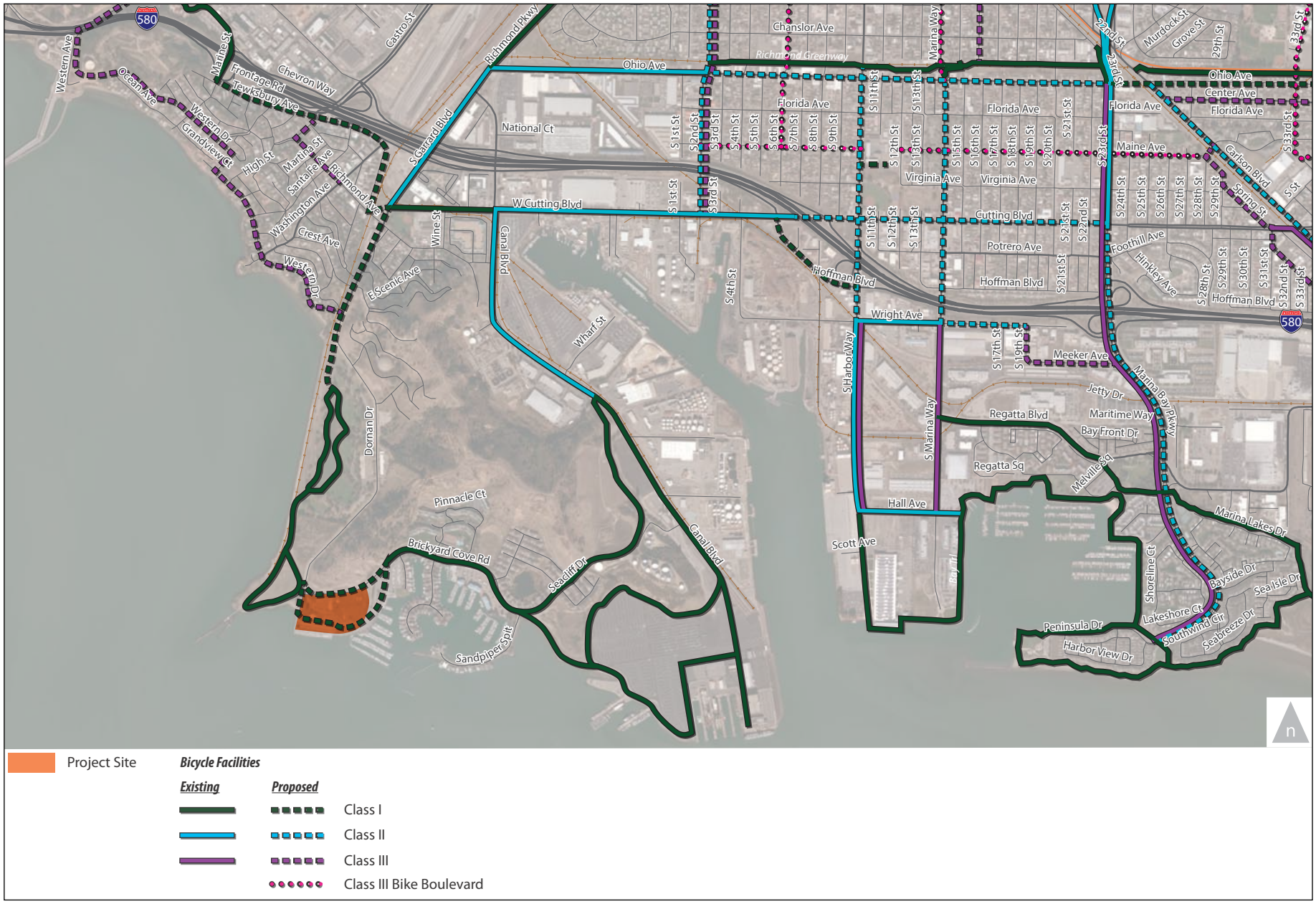
Pedestrian facilities include sidewalks, crosswalks, pedestrian signals, and multi-use trails. Pedestrian facilities serving the project site include multi-use paths on the west side of Dornan Drive, through the Miller/Knox park (Miller/Knox park), and on the north side of Brickyard Cove Road and Seacliff Drive. East of Mallard Drive, Brickyard Cove Road also provides a sidewalk on the south side of the street. Other streets in the project vicinity provide intermittent sidewalks.

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** identifies existing and proposed bicycle facilities in the study area. Existing bicycle facilities near the project site include Class I paths adjacent to Dornan Drive, Brickyard Cove Road, and Seacliff Drive, which are part of the Bay Trail network, and Class II lanes on Canal Boulevard north of Seacliff Drive and on West Cutting Boulevard west of I-580. There are no Class III routes in the study area.

Bicycle and pedestrian activity is minimal in the vicinity of the I-580 Interchange on Canal Boulevard, with two to three bikes per hour observed during the study data collection period (November 2014) and fewer than five pedestrian crossings per hour. Higher pedestrian and bicycle activity was observed along Seacliff Drive, with about 10 bicyclists and 15 pedestrians traveling on the corridor during the PM peak hour.




SOURCE: Fehr & Peers Transportation Consultants, 2016

City of Richmond Terminal One Project EIR . 140325

**Figure 4.13-3**
Existing and Proposed Bicycle Facilities

## At-Grade Railroad Crossings

Trains traveling through at-grade crossings can affect traffic flow at adjacent intersections and result in potential conflicts between the crossing trains and motorists, bicyclists, and pedestrians. **Figure 4.13-4** shows the location of the active at-grade railroad crossings in the project site vicinity; **Table 4.13-1** summarizes the characteristics of these crossings, all of which are public at-grade crossings on the Richmond Yard Sub operated by the BNSF Railway Company with gate controls on the vehicular approaches.

When trains cross the at-grade crossing on Canal Boulevard (#5), about 150 feet south of Cutting Boulevard, the signalized Cutting Boulevard/Canal Boulevard intersection switches to a flashing red mode on all approaches, effectively functioning as an all-way stop-controlled intersection during train crossings.

Five years (2009-2014) of collision data were collected from the Federal Railroad Administration for railroad crossings within the project vicinity (Federal Railroad Administration, 2014). The only reported collision in the project vicinity was in July 2011 at the crossing on Richmond Parkway (#1). This collision involved a freight train and a van that crossed the gates after they were closed. The train was traveling at 5 mph and the driver of the van was injured.

## Existing Traffic Operating Conditions

### 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 in November 2014 at nine of the ten existing study intersections. For the East Standard Avenue/I-580 Eastbound On-Ramp/Castro Street intersection (#10), data were collected in October 2014. Within the peak periods, the peak hours (i.e., the hour with the highest traffic volumes observed in the study area) are from 7:30 to 8:30 AM. (AM peak hour) and from 4:15 to 5:15 PM (PM peak hour).

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 4.13-5** shows the existing AM and PM peak hour traffic volumes, intersection lane configurations, and traffic control devices at all the study intersections. **Appendix E** presents the raw traffic data collected at the study intersections.




City of Richmond Terminal One Project EIR . 140325

SOURCE: Fehr & Peers Transportation Consultants, 2016

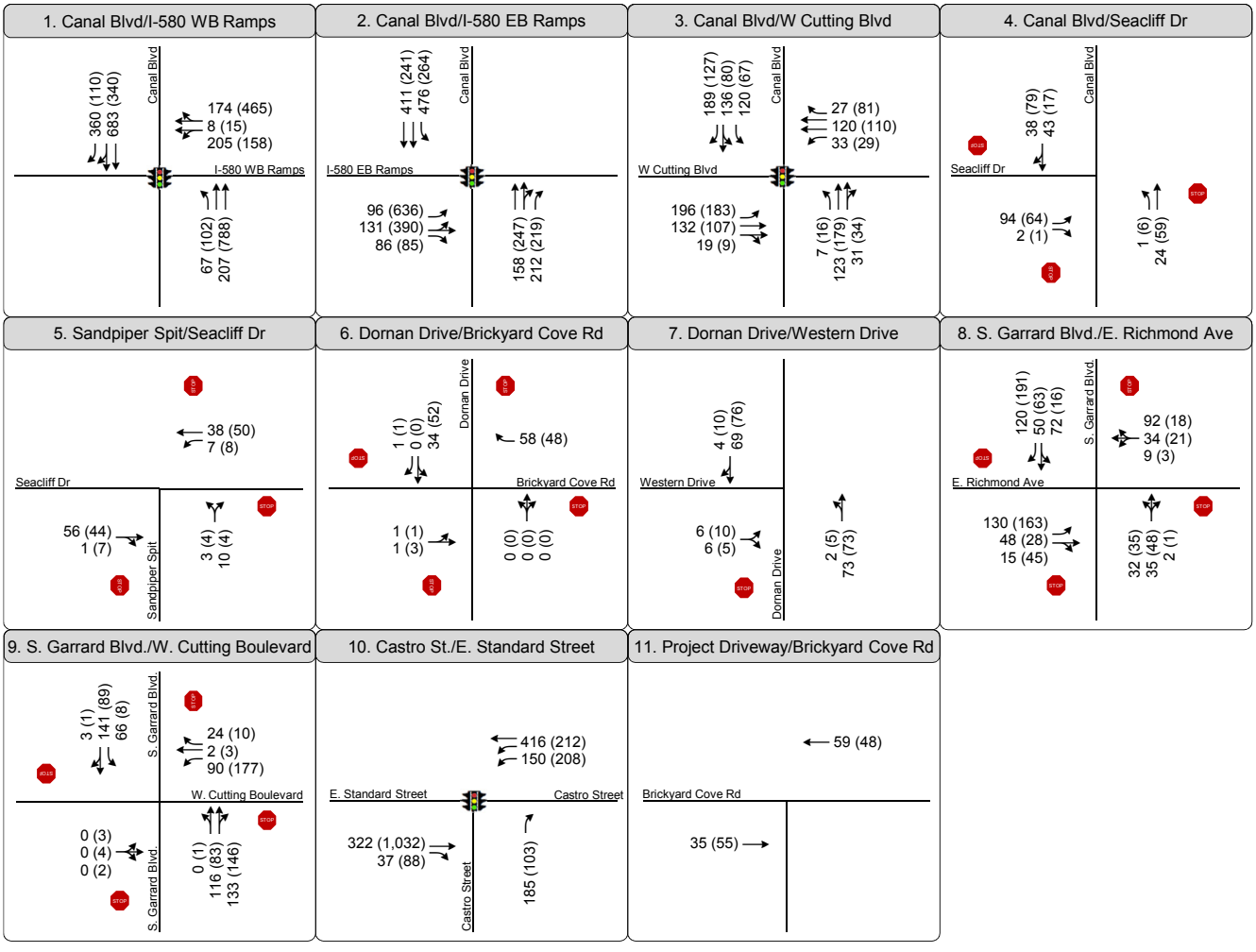
**Figure 4.13-4**
At-Grade Railroad Crossings

**TABLE 4.13-1**
**AT-GRADE RAILROAD CROSSING INVENTORY**

| Location | # of Daily Train Movements | Train Crossing Speed (MPH) | # of Train Tracks | # of Traffic Lanes Crossing Railroad | Traffic Control Devices | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Advance Warning | Pavement Markings | Train Signals | Bells | Gates | Four Quadrant Gates |
| 1. Richmond Parkway, north of Ohio Avenue | 8 | 1 to 10 | 1 | 5 | Yes | Yes | No | Yes | Yes | No |
| 2. Richmond Avenue, west of South Garrard Boulevard | - | - | - | - | - | - | - | - | - | - |
| 3. South Garrard Boulevard north of West Cutting Boulevard | 32 | 1 to 10 | 1 | 4 | Yes | Yes | No | Yes | Yes | No |
| 4. West Cutting Boulevard east of Wine Street | 32 | 1 to 10 | 1 | 4 | Yes | Yes | No | Yes | Yes | No |
| 5. Canal Boulevard South of West Cutting Boulevard | 32 | 1 to 10 | 1 | 4 | Yes | Yes | No | Yes | Yes | No |

SOURCE: Federal Railroad Administration Office, 2014.






SOURCE: Fehr & Peers Transportation Consultants, 2016

**Figure 4.13-5**
Peak Hour Traffic Volumes, Intersection Controls and Lane Configurations – Existing 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.

### 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.

## Existing Intersection Operations

Existing operations were evaluated for the weekday AM and PM peak hours using the existing vehicle, bicycle, and pedestrian volumes and the existing lane configurations and signal timing parameters as inputs into the LOS calculations. **Table 4.13-3** presents the existing AM and PM peak-hour intersection LOS and delays. During the AM peak hour, all but one of the study intersections operate at LOS B or better. The West Cutting Boulevard/Canal Boulevard intersection (#3) is the exception, and operates at LOS C during the AM peak hour. During the PM peak hour, six of the ten study intersections currently operate at LOS B or better. The I-580 Westbound Ramps/Canal Boulevard (#1) and the West Cutting Boulevard/Canal Boulevard (#3) intersections, which operate at LOS C during the PM peak hour; and the I-580 Eastbound Ramps/Canal Boulevard (#2) and the East Standard Avenue and I-580 Eastbound On-Ramp/Castro Street (#10) intersections, which operate at LOS D during the PM peak hour, are the exceptions.

**Appendix E** presents the detailed intersection LOS calculations. Field observations confirm the calculated LOS at the study intersections. The unsignalized Brickyard Cove Road/Shoreline Drive intersection (#11) would be constructed as part of the proposed project; as such, this intersection is not evaluated for Existing conditions.

**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 to be 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.*

**TABLE 4.13-3**
**EXISTING CONDITIONS INTERSECTION LOS SUMMARY**

| No. | Intersection | Traffic Control [a] | Peak Hour | Delay (sec/veh) [b,c] | LOS |
|---|---|---|---|---|---|
| 1 | I-580 Westbound Ramps/Canal Boulevard [d] | Signal | AM<br>PM | 14.2<br>28.3 | B<br>C |
| 2 | I-580 Eastbound Ramps/Canal Boulevard [d] | Signal | AM<br>PM | 18.2<br>43.0 | B<br>D |
| 3 | W. Cutting Boulevard/Canal Boulevard [d, e] | Signal | AM<br>PM | 25.1<br>22.3 | C<br>C |
| 4 | Seacliff Drive/Canal Boulevard | AWSC | AM<br>PM | 8.5<br>8.2 | A<br>A |
| 5 | Seacliff Drive/Sandpiper Spit | AWSC | AM<br>PM | 7.5<br>7.4 | A<br>A |
| 6 | Brickyard Cove Road/Dornan Drive | AWSC | AM<br>PM | 7.3<br>7.6 | A<br>A |
| 7 | Western Drive/Dornan Drive | SSSC | AM<br>PM | 0.8(9.5)<br>1.0(9.8) | A(A)<br>A(A) |
| 8 | Richmond Avenue/South Garrard Boulevard [d, e] | AWSC | AM<br>PM | 10.3<br>9.9 | B<br>A |
| 9 | West Cutting Boulevard/South Garrard Boulevard [d, e] | AWSC | AM<br>PM | 9.8<br>10.2 | A<br>B |
| 10 | East Standard Avenue and I-580 Eastbound On-Ramp/Castro Street [d] | Signal | AM<br>PM | 11.1<br>47.3 | B<br>D |
| 11 | Brickyard Cove Road/Shoreline Drive | SSSC | AM<br>PM | Does Not Exist | |

a Signal = signalized intersection; AWSC = All-Way Stop Control ; SSSC = Side-Street Stop Control.
b The delay and LOS for side-street stop-control intersections represent the average intersection (worst movement or approach); for signalized and all-way stop-control, the delay and LOS represent the intersection overall.
c Delay and LOS calculated using the 2010 HCM (TRB, 2010) methods unless noted.
d Delay and LOS calculated using HCM 2000 (TRB, 2000) due to limitations in 2010 HCM (TRB, 2010).
e Operations maybe worse than shown during rail crossing activity.

SOURCE: Appendix E

The intersection LOS summarized in **Table 4.13-3** does not account for activity at the at-grade rail crossings near the intersections. For example, when trains cross the at-grade crossing on Canal Boulevard, the signalized West Cutting Boulevard/Canal Boulevard intersection (#3) 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. Field observations indicate that the queues at the crossing gates did not spill back to adjacent intersections, and that all queues cleared within one signal cycle after trains cleared the at-grade crossing and the signal returned to normal operations.

### Signal Warrants

To assess the need for signalization of stop-controlled intersections, the Manual on Uniform Traffic Control Devices (MUTCD) provides eight signal warrants[2] (Caltrans, 2012). The Peak Hour Volume and Delay warrant is used to assess the need for signalization at unsignalized intersections. None of the unsignalized study intersections currently meet peak-hour signal warrants. **Appendix E** presents the signal warrant calculations.

## Collision Data

Five years (2010-2014) of California Highway Patrol (CHP) collision data were collected for the study area. **Table** summarizes the collision history for roadways in the project vicinity. In the past five years, the majority of reported collisions involved motor vehicles colliding with other motor vehicles or fixed objects. No collisions involving pedestrians were reported. Four collisions involving bicyclists were reported, one on Seacliff Drive, one on Brickyard Cove Road, and two at the West Cutting Boulevard/Canal Boulevard intersection. The bicycle collision on Seacliff Drive resulted in a fatality. It occurred in summer 2010 about 1,300 feet west of Canal Boulevard. A bicyclist traveling in the southbound direction was on the wrong side of the road when he collided with a motor vehicle.

## Planned Transportation Network Changes

A review of available information indicates that the only major change in the transportation network planned in the vicinity of the project site is the construction of the new Richmond Ferry Terminal, located about four miles (driving distance) to the east on the Ford Peninsula. The Richmond Ferry Terminal would provide regular ferry service between Richmond and San Francisco in the near future. The 2040 conditions analyses account for the Richmond Ferry Terminal.

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 the study intersections, for future scenarios.

[2] 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.

**TABLE 4.13-4**
**STUDY AREA COLLISION DATA SUMMARY**

| Metric | Seacliff Drive [a] | | Brickyard Cove Road [b] | | Dornan Drive [c] | | S. Garrard Boulevard [d] | | W. Cutting Boulevard/ Canal Boulevard [e] | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Number | Percent | Number | Percent | Number | Percent | Number | Percent | Number | Percent |
| Total Collisions | 5 | -- | 2 | -- | 5 | -- | 5 | -- | 7 | -- |
| Collisions Involving Only Motor Vehicles | 1 | 20% | 0 | -- | 3 | 60% | 3 | 60% | 5 | 71% |
| Collisions Involving Motor Vehicles and Fixed Objects | 3 | 60% | 1 | 50% | 2 | 20% | 2 | 40% | 0 | 0% |
| Collisions Involving Bicyclists and Fixed Objects | 0 | -- | 0 | -- | 0 | -- | 0 | -- | 1 | 14% |
| Collisions Involving Bicyclists and Motor Vehicles | 1 | 20% | 1 | 50% | 0 | -- | 0 | -- | 1 | 14% |
| Collisions Involving Pedestrians and Motor Vehicles | 0 | -- | 0 | -- | 0 | -- | 0 | -- | 0 | -- |
| Collisions that Resulted in Injury or Fatality [f] | 3 | 60% | 2 | 100% | 0 | -- | 2 | 40% | 4 | 57% |
| Motor Vehicle Only Collisions Resulting in Injury or Fatality | 2 | 40% | 1 | 50% | 0 | -- | 2 | 40% | 2 | 29% |
| Pedestrian Collisions Resulting in Injury or Fatality | 0 | -- | 0 | -- | 0 | -- | 0 | -- | 0 | -- |
| Bicycle Collisions Resulting in Injury or Fatality | 1 | 20% | 1 | 50% | 0 | -- | 0 | -- | 2 | 29% |
| Collisions Resulting in Fatality | 1 | 20% | 0 | -- | 0 | -- | 0 | -- | 0 | -- |

a. Seacliff Drive between Canal Boulevard and Brickyard Cove Road.
b. Brickyard Cove Road between Seacliff Drive and Dornan Drive.
c. Dornan Drive between Brickyard Cove Road and Western Drive.
d. South Garrard Boulevard between West Ohio Avenue and Western Drive.
e. Within 100 feet of the West Cutting Boulevard/Canal Boulevard intersection.
f. Percentage reflects the number of collisions resulting in injury divided by the total number of collisions.

SOURCE: California Highway Patrol SWITRS data between 2010 and 2014 summarized by Fehr & Peers Transportation Consultants (Appendix E)

# 4.13.3 Regulatory Framework

The project was reviewed for compliance with the following local plans and policies.

## Richmond General Plan 2030

The Richmond General Plan 2030 Circulation Element contains the following goals, policies and actions that are relevant to the project. The General Plan document contains a 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.

  *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 been adopted yet.

The Action Plan designates Routes of Regional Significance and sets Multi-modal Traffic Service Objectives (MTSOs) for each route. The *2014 Proposal for Adoption West County Action Plan for Routes of Regional Significance* proposes to eliminate Cutting Boulevard as a Route of Regional Significance. The only Route of Regional Significance near the project is I-580. The MTSO for I-580 is to maintain Delay Index[3] of 2.5 or less.

## 4.13.4 Project Transportation Characteristics

Various characteristics of the project are described below.

[3] Delay Index is defined as the ratio between travel time on a segment of road during congested conditions, and the travel time on the same segment during uncongested, free-flow conditions.

## Project Description

The project is in the City of Richmond, bounded by Brickyard Cove Road to the northwest, Dornan Drive to the west, San Francisco Bay to the south, and the Richmond Yacht Club to the east. The project proposes to develop up to 334 multi-family residential units consisting of 308 condominium flats in five buildings and 26 townhomes in duplexes, 2,000 square feet of commercial space, and a waterfront park along the shoreline. The project site is currently vacant of active uses.

### Automobile Access and Circulation

Automobile access to the site would be from Brickyard Cove Road and through Dornan Drive and the new Shoreline Drive, which would be located along the shoreline and the project perimeter and would connect to Dornan Drive at the northwest corner of the project site, and to Brickyard Cove Road at the northeast corner of the project site. The proposed project would eliminate the existing curved connection between Brickyard Cove Road and Dornan Drive at the site's northwest corner and would route all automobile movements to travel through an all-way stop-controlled Brickyard Cove Road/Dornan Drive/Shoreline Drive intersection. The intersection would continue to provide access to the Miller/Knox park parking lot.

Shoreline Drive would be a two-lane roadway with one 10-foot wide lane in each direction. The intersection of Shoreline Drive at Brickyard Cove Road at the northeast corner of the site (about 900 feet east of Dornan Drive) would be controlled by a stop sign on the Shoreline Drive approach. Shoreline Drive would not provide direct access to the project's off-street parking facilities; however, it would provide intermittent parallel on-street parking spaces that would be publicly available. It would provide an extension of the Bay Trail on the Bay side of the roadway and a sidewalk/pedestrian pathway on the other side of the roadway, which would provide pedestrian connections to the buildings within the development.

Brickyard Cove Road would provide direct access to the site parking facilities through three full-access driveways located between Dornan Drive and Shoreline Drive. Brickyard Cove Road would provide one eleven-foot travel lane in each direction, with intermittent, publicly available, parallel on-street parking spaces on the south side of the street, as well as a sidewalk on the south side of the street along the project site frontage and an extension of Bay Trail on the north side of the street.

### Bicycle and Pedestrian Access and Circulation

The project's circulation system is designed to prioritize pedestrian and bicycle modes of travel. It would feature:

- A shoreline extension of the Bay Trail (the Bay Trail Loop) providing bicycle and pedestrian access to the project's waterfront park from off-site locations to the east, north, and west;
- A "commuter" extension of the Bay Trail;

- An interconnected network of on-site multi-use trails designed both to provide the public with full access to the project's waterfront park and shoreline amenities and to tie together the project's residential and park-related land uses.

These pedestrian and bicycle features are described in more detail below. **Figure 3-8** and **Figure 3-7** show the project pedestrian and bicycle circulation plans.

***The Bay Trail Loop.*** This proposed 10-foot-wide paved trail would be constructed along the Bay side of Shoreline Drive and would connect the existing Bay Trail segments that extend to the east along Brickyard Cove Road and to the west through Miller/Knox park, providing direct bicycle and pedestrian access to the Terminal One waterfront park and shoreline. In addition, the proposed project includes a commuter trail/ Bay Trail extension which would connect the existing trail segment located on the north side of Brickyard Cove Road and the existing trail segment in Miller/Knox park by way of the Dornan Drive/Shoreline Drive/Brickyard Cove Road intersection. extension will provide bicyclists and pedestrians with a more direct connection to the existing Bay Trail in Miller/Knox park than the Bay Trail Loop.

***Terminal One Waterfront Park***. This public park would extend the length of the Terminal One site shoreline and would incorporate parkland-related amenities, including the re-surfaced Terminal One Pier with its boardwalk gardens, a shoreline extension of the Bay Trail (see the discussion of the Bay Trail Loop above), a project gateway and entry plaza with a pocket node of visitor-serving retail, public gardens featuring native coastal plantings and seasonal wetland habitat, a tidelands habitat and marine ecology area, and a shoreline trail system with connections to Miller/Knox park to the west and north of the project site.

***Terminal One Mews.*** This pedestrian and bicycle-oriented paseo (promenade) would extend between Brickyard Cove Road at the northern edge of the project site and the southern reach of Shoreline Drive and would open up the site along a north/south axis, tying together the project's park and residential uses and connecting to Bay Trail segments north of Brickyard Cove Road and south of Shoreline Drive. It would establish a visual and physical connection between the Miller/Knox park headlands and the San Francisco Bay shoreline across the project site.

### Transit Service

As noted previously, no bus service is provided in the vicinity of the project site. The nearest bus stop to the project site is on Garrard Boulevard at Cutting Boulevard, approximately 1.2 miles north of the project site. This bus stop is served by AC Transit Route 72M, which operates between Point Richmond and Downtown Oakland and connects the project site to the Richmond and El Cerrito BART Stations. The project Land Disposition Agreement (LDA) requires that, prior to the close of escrow with the City, the applicant prepare and submit a Transit Access Plan to the City that evaluates the feasibility of extending existing AC Transit routes to the project site. The project applicant and the City of Richmond will consult with AC Transit to determine if transit service can be extended to improve access for residents and visitors to the site.

## 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. The project trip generation was estimated using rates and/or equations from the Institute of Transportation Engineers *Trip Generation Manual* (2012; 9th Edition) land use code 220 (apartments) for the multi-family units, and land use code 932 (high-turnover [sit-down] restaurant) for the commercial component of the project. **Table 4.13-5** shows the resulting trip generation estimates.

**TABLE 4.13-5**
**AUTOMOBILE TRIP GENERATION ESTIMATES**

| Land Use | ITE Code | Units [a] | AM Peak Hour | | | PM Peak Hour | | | Daily Total |
|---|---|---|---|---|---|---|---|---|---|
| | | | In | Out | Total | In | Out | Total | |
| Multi-Family | 220 [b] | 334 DU | 34 | 136 | 170 | 135 | 72 | 207 | 2,220 |
| Restaurant | 932 [c] | 2 KSF | 12 | 10 | 22 | 12 | 8 | 20 | 250 |
| ***Total Automobile Trips*** | | | **46** | **146** | **192** | **147** | **80** | **227** | **2,470** |

a. DU = dwelling unit. KSF = 1,000 square feet
b. Although the project applicant has indicated that the homes built on the project site would be for-sale units (ITE Code 230), ITE Code 220, which has a higher trip generation rate, was used to provide a conservative estimate for the residential component of the project in the event that conversion to rental occurs.
ITE Trip Generation (2012; 9th Edition) land use category 220 - Apartment:
AM: (T) = 0.51 (X); Enter = 20%, Exit = 80%
PM: (T) = 0.62 (X); Enter = 65%, Exit = 35%
Daily: (T) = 6.65 (X)
Where X = dwelling unit, T = number of automobile trips
c. ITE Trip Generation (2012; 9th Edition) land use category 932 – High-Turnover (Sit Down) Restaurant:
Daily: T = 127.15(X)
AM Peak Hour: T = 10.81(X); Enter = 55%; Exit = 45%
PM Peak Hour: T = 9.85(X); Enter = 60%; Exit = 40%
Where T = trips generated, X = 1000 square feet leasable area
SOURCE: *ITE Trip Generation, 9th Edition, 2012;* Appendix E.

The trip generation estimates do not include trips that would be associated with the proposed waterfront park that would be developed as part of the project. Considering the small size of the new park, it is expected that almost all of the weekday visitors to the park would be residents and visitors of the proposed project or current visitors to the much larger Miller/Knox park, which is adjacent to the project site. Therefore, the proposed waterfront park is expected to generate little or no external traffic during the weekday AM and PM peak hours and is not included in the project trip generation.

The proposed project is estimated to generate approximately 2,470 daily vehicle trips, including 192 AM peak hour and 227 PM peak hour trips.[4]

[4] The traffic operations analyses presented in the subsequent subsections of this section are based on a previous larger project, which generated 297 AM peak hour (99 inbound and 198 outbound) and 325 PM peak hour (147 inbound and 80 outbound)

### Project Trip Distribution and Assignment

The trip distribution and assignment process estimates how the vehicle trips generated by the project would distribute across the roadway network. **Figure 4.13-6** shows the trip distribution for the project. The trip distribution accounts for traffic patterns in the project vicinity and the location of complementary land uses and likely paths that would be used to travel to and from the site.

Trips generated by the project were assigned to the roadway network according to the trip distribution shown on **Figure 4.13-6**. **Figure 4.13-7** presents the resulting AM and PM peak hour trip assignment by intersection turning movement at the study intersections.

## 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 2030 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 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) without the project and the project is expected to cause the facility to operate at an unacceptable LOS (LOS E or F);
- If an intersection is projected to operate at or over capacity (i.e., LOS E or F) 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.

trips. Therefore, the Existing Plus Project and 2040 Plus Project conditions analyses presented in subsequent subsections of this report present worse conditions than expected and are conservative.



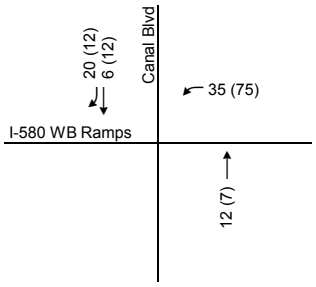

SOURCE: Fehr & Peers Transportation Consultants, 2016

City of Richmond Terminal One Project EIR . 140325

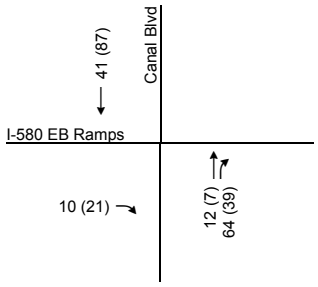
**Figure 4.13-6**
Project Trip Distribution



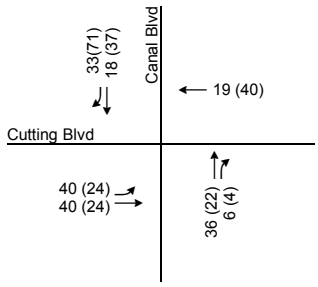

**1. I-580 WB Ramps/Canal Blvd.**



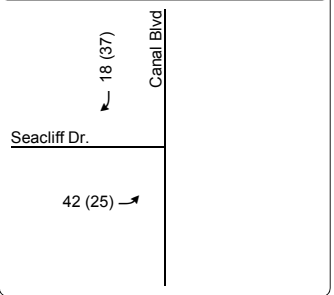

**2. I-580 EB Ramps/Canal Blvd.**




**3. W. Cutting Blvd./Canal Blvd.**



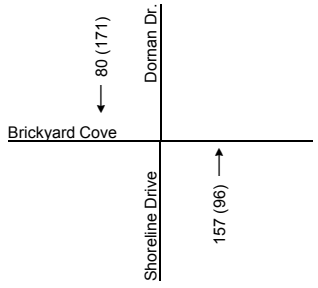

**4. Seacliff Dr./Canal Blvd.**



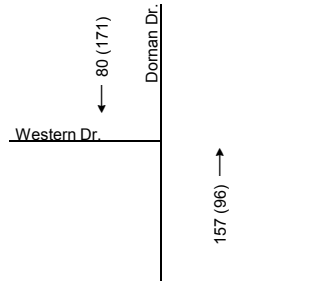

**5. Seacliff Dr./Sandpiper Spit**



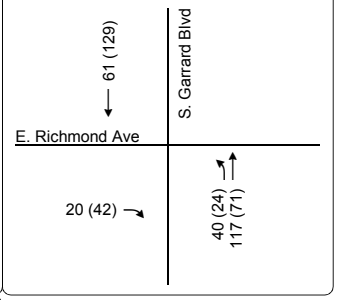

**6. Brickyard Cove Rd/Dornan Dr.**



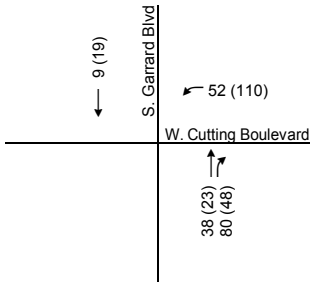

**7. Western Dr./Dornan Dr.**



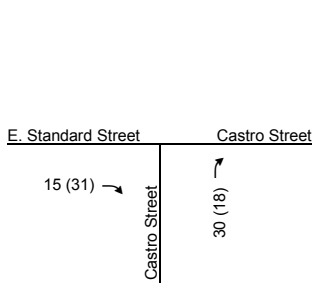

**8. E. Richmond Ave/S. Garrard Blvd.**



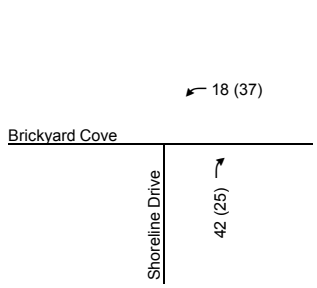

**9. W. Cutting Blvd./S.Garrard Blvd.**




**10. E. Standard Street/Castro Street**




**11. Brickyard Cove Rd/Shoreline Drive**




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SOURCE: Fehr & Peers Transportation Consultants, 2016

**Figure 4.13-7**
Project Trip Assignment

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) Project construction would result in a substantial, though temporary, adverse effect on the circulation system during the project construction period.

h) 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 "h" (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 nor interfere with existing air traffic; the nearest public airport is Oakland International Airport, located approximately 15 miles southeast of the project site. 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.

## 4.13.5 Discussion of Impacts and Mitigation Measures

This section discusses potential impacts to transportation and circulation that could result from the implementation of the proposed 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 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.

## Traffic Increase

**Impact TRF-1: The project would not 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. (*Less than Significant, No Mitigation Required)***

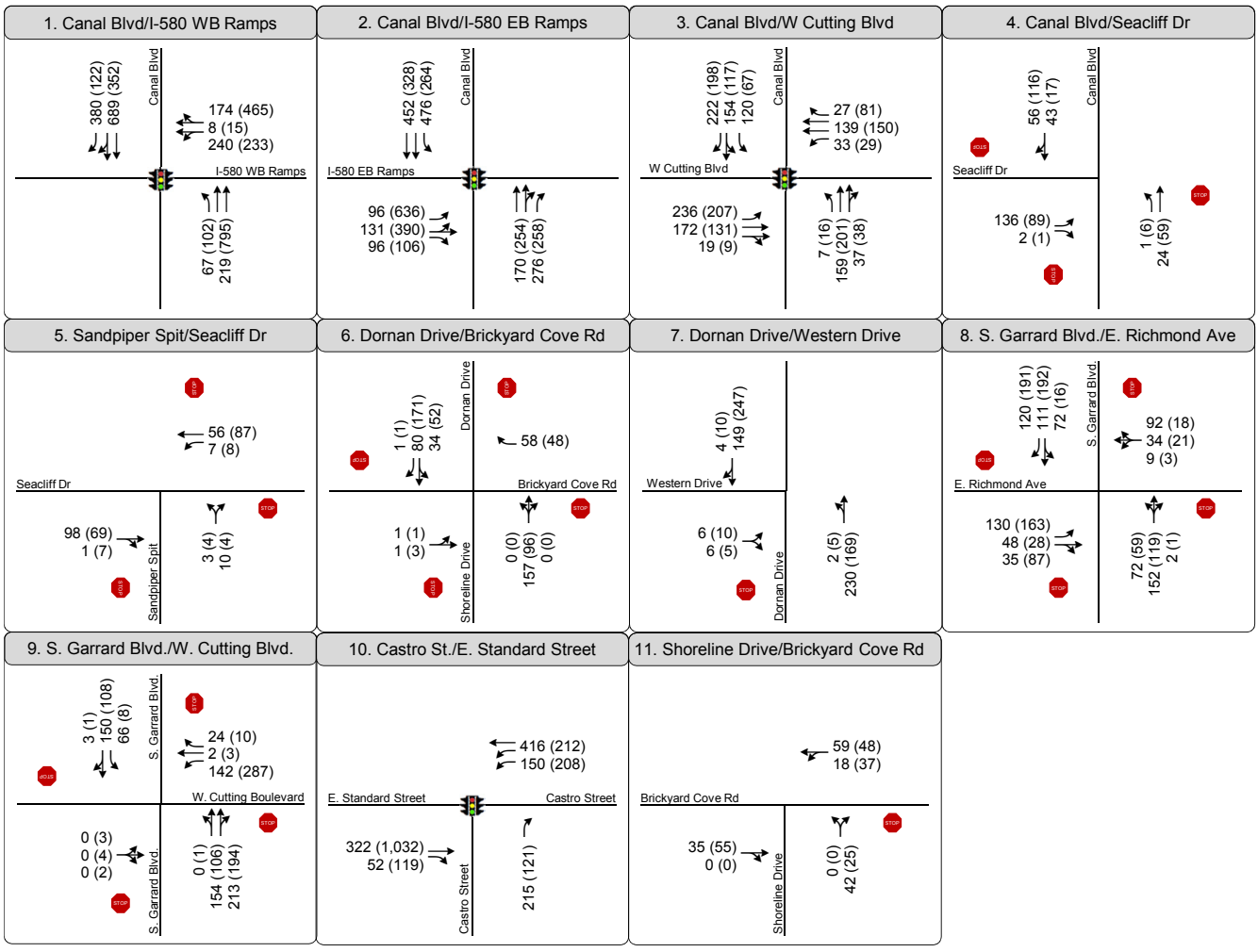
This section evaluates impacts of the project on traffic operations at the study intersections under Existing and 2040 conditions.

### Existing Plus Project Operations Analysis

**Figure 4.13-8** presents the peak hour intersection traffic volumes under Existing Plus Project Conditions, which consists of existing traffic volumes (Figure 4.13-5) plus traffic volumes generated by the project (Figure 4.13-7). Figure 4.13-8 also presents the lane configurations and controls at the study intersections, which are expected to be the same as Existing Conditions, except at the Brickyard Cove Road/Dornan Drive (#6) and Brickyard Cove Road/Shoreline Drive (#11) intersections. These two intersections would be modified by the proposed project to provide a stop-controlled approach on the south side of both intersections to accommodate access to and from the project site. In addition, the project would eliminate the existing uncontrolled movements between the north and east approaches at the Brickyard Cove Road/Dornan Drive (#6) intersection.

Intersection LOS calculations were completed with the traffic volumes and roadway network described above. **Table 4.13-6** summarizes intersection operations under Existing Plus Project conditions at the 11 study intersections. With the addition of project trips, the majority of study intersections would continue to operate at the same LOS, but would experience slightly more delay than under Existing Conditions. All intersections would continue to operate at LOS D or better during the AM and PM peak hours. None of the unsignalized study intersections would meet the peak-hour signal warrant under Existing Plus Project conditions. Therefore, the project would not cause a significant impact at the study intersections.




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SOURCE: Fehr & Peers Transportation Consultants, 2016

**Figure 4.13-8**

Peak Hour Traffic Volumes, Intersection Controls and Lane Configurations – Existing Plus Project Conditions

**TABLE 4.13-6**
**EXISTING PLUS PROJECT CONDITIONS INTERSECTION LOS SUMMARY**

| No. | Intersection | Traffic Control[a] | Peak Hour | Existing | | Existing Plus Project | | Significant Impact? |
|---|---|---|---|---|---|---|---|---|
| | | | | Delay (sec/veh)[b,c] | LOS | Delay (sec/veh)[b,c] | LOS | |
| 1 | I-580 Westbound Ramps/Canal Boulevard [d] | Signal | AM<br>PM | 14.2<br>28.3 | B<br>C | 15.0<br>28.5 | B<br>C | No<br>No |
| 2 | I-580 Eastbound Ramps/Canal Boulevard [d] | Signal | AM<br>PM | 18.2<br>43.0 | B<br>D | 19.3<br>42.4 | B<br>D | No<br>No |
| 3 | W. Cutting Boulevard/ Canal Boulevard [d,e] | Signal | AM<br>PM | 25.1<br>22.3 | C<br>C | 28.5<br>24.5 | C<br>C | No<br>No |
| 4 | Seacliff Drive/Canal Boulevard | AWSC | AM<br>PM | 8.5<br>8.2 | A<br>A | 9.0<br>8.5 | A<br>A | No<br>No |
| 5 | Seacliff Drive/Sandpiper Spit | AWSC | AM<br>PM | 7.5<br>7.4 | A<br>A | 7.8<br>7.7 | A<br>A | No<br>No |
| 6 | Brickyard Cove Road/Dornan Drive | AWSC | AM<br>PM | 7.3<br>7.6 | A<br>A | 8.3<br>9.2 | A<br>A | No<br>No |
| 7 | Western Drive/Dornan Drive | SSSC | AM<br>PM | 0.8(9.5)<br>1.0(9.8) | A(A)<br>A(A) | <1.0(10.9)<br><1.0(11.9) | A(B)<br>A(B) | No<br>No |
| 8 | Richmond Avenue/ South Garrard Boulevard [d,,e] | AWSC | AM<br>PM | 10.3<br>9.9 | B<br>A | 13.0<br>11.7 | B<br>B | No<br>No |
| 9 | West Cutting Boulevard/ South Garrard Boulevard [d,e] | AWSC | AM<br>PM | 9.8<br>10.2 | A<br>B | 11.8<br>13.8 | B<br>B | No<br>No |
| 10 | East Standard Avenue & I-580 Eastbound On-Ramp/Castro Street [d] | Signal | AM<br>PM | 11.1<br>47.3 | B<br>D | 11.2<br>47.7 | B<br>D | No<br>No |
| 11 | Brickyard Cove Road/Shoreline Drive | SSSC | AM<br>PM | Does Not Exist | | 3.2(8.6)<br>3.0(8.7) | A(A)<br>A(A) | No<br>No |

NOTES:
a Signal = signalized intersection; AWSC = all-way stop controlled intersection; SSSC = side-street stop controlled intersection
b The delay and LOS for side-street stop-control intersections represent the average intersection (worst movement or approach); for signalized and all-way stop-control, the delay and LOS represent overall intersection.
c Delay and LOS for all intersections calculated using the 2010 HCM (TRB, 2010) methods unless noted.
d Delay and LOS calculated using HCM 2000 (TRB, 2000) due to limitations in 2010 HCM (TRB, 2010).
e Operations maybe worse than shown during rail crossing activity.

SOURCE: Appendix E.

### Cumulative (2040) No Project Conditions

The Cumulative (2040) No Project traffic volume forecasts were developed using the CCTA Countywide Travel Demand Model and existing traffic volumes. The main inputs to the 2040 forecasting process are the model outputs from the CCTA Model and the existing traffic counts. The most recent version of the CCTA Model is based on Association of Bay Area Government (ABAG) *Projections 2013* (i.e., Plan Bay Area). The 2040 Model land use database was updated to be consistent with the Richmond General Plan 2030 and to reflect the recently approved Bottoms Property Residential Development, as well as anticipated buildout of the proposed Richmond Bay Specific Plan (previously known as the Richmond South Shoreline Specific Plan), the Berkeley Global Campus (previously known as Richmond Bay Campus), and the Richmond Ferry Terminal. No changes were made to the model roadway network because there are no approved and fully funded roadway modifications planned in the study area.

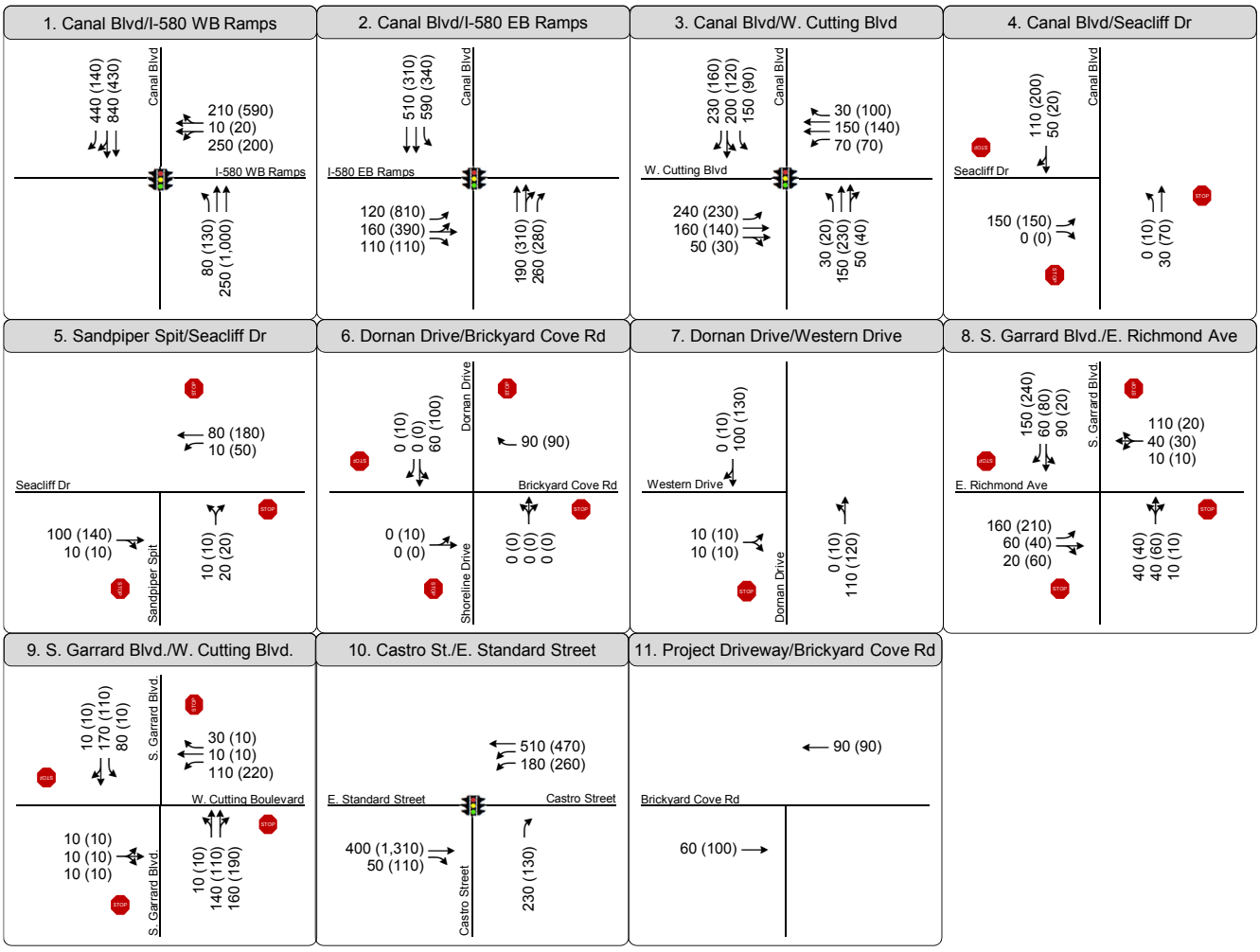
Consistent with the CCTA's *Technical Procedures* (2013), the forecasting process utilized by the model produced 2010 and 2040 volumes and existing turning movement counts, and estimated the 2040 intersection turning movements using the Furnessing method.[5] Furnessing is an iterative process that develops future turning movements by applying the difference between the base model volumes and the existing counts to future model approach and departure volumes. At intersections not included in the model, a growth rate based on adjacent intersection growth and land uses was applied. Overall, existing traffic volumes are expected to increase in the study area by approximately one to two percent per year. **Figure 4.13-9** presents the peak hour intersection traffic volumes at the study intersections under 2040 No Project conditions.

Intersection LOS calculations for 2040 No Project conditions were completed with the traffic volumes and roadway network described above. **Table 4.13-7** summarizes the intersection LOS results.

The study intersections are projected to experience more delay under 2040 No Project conditions than under Existing Conditions, due to planned regional growth. All but two study intersections are expected to continue to operate at LOS D or better during both AM and PM peak hours, with these exceptions: the I-580 Eastbound Ramps/Canal Boulevard (#2) and East Standard Avenue/ I-580 Eastbound On-Ramp/Castro Street (#10) intersections, which are both expected to operate at LOS F during the PM peak hour.

[5] Outlined in NCHRP-255, the industry-standard Furness technique estimates future intersection turning movement volumes based on comparing existing traffic 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.




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SOURCE: Fehr & Peers Transportation Consultants, 2016

**Figure 4.13-9**

Peak Hour Traffic Volumes, Intersection Controls and Lane Configurations – Cumulative (2040) No Project Conditions

**TABLE 4.13-7**
**CUMULATIVE (2040) CONDITIONS INTERSECTION LOS SUMMARY**

| No. | Intersection | Traffic Control [a] | Peak Hour | 2040 No Project | | 2040 Plus Project | | Significant Impact? |
|---|---|---|---|---|---|---|---|---|
| | | | | Delay (sec/veh) [b,c] | LOS | Delay (sec/veh) [b,c] | LOS | |
| 1 | I-580 Westbound Ramps/Canal Boulevard [d] | Signal | AM | 16.5 | B | 17.7 | B | No |
| | | | PM | 33.3 | C | 34.4 | C | No |
| 2 | I-580 Eastbound Ramps/Canal Boulevard [d] | Signal | AM | 42.8 | D | 48.4 | D | No |
| | | | PM | **103.8** | **F** | **100.8** [f] | **F** | No |
| 3 | W. Cutting Boulevard/ Canal Boulevard [d,e] | Signal | AM | 27.6 | C | 32.5 | C | No |
| | | | PM | 24.6 | C | 27.1 | C | No |
| 4 | Seacliff Drive/Canal Boulevard | AWSC | AM | 9.2 | A | 9.8 | A | No |
| | | | PM | 9.4 | A | 10.0 | A | No |
| 5 | Seacliff Drive/Sandpiper Spit | AWSC | AM | 7.9 | A | 8.2 | A | No |
| | | | PM | 8.5 | A | 8.9 | A | No |
| 6 | Brickyard Cove Road/Dornan Drive | AWSC | AM | 7.5 | A | 8.5 | A | No |
| | | | PM | 8.0 | A | 9.8 | A | No |
| 7 | Western Drive/Dornan Drive | SSSC | AM | <1.0(9.8) | A(A) | <1.0(11.1) | A(B) | No |
| | | | PM | 1.0(10.3) | A(B) | <1.0(12.4) | A(B) | No |
| 8 | Richmond Avenue/ South Garrard Boulevard [d,e] | AWSC | AM | 10.7 | B | 13.5 | B | No |
| | | | PM | 11.1 | B | 13.2 | B | No |
| 9 | West Cutting Boulevard/ South Garrard Boulevard [d, e] | AWSC | AM | 10.7 | B | 13.1 | B | No |
| | | | PM | 11.5 | B | 16.2 | C | No |
| 10 | East Standard Avenue & I-580 Eastbound On-Ramp/Castro Street [d] | Signal | AM | 12.0 | B | 12.1 | B | No |
| | | | PM | **107.8** | **F** | **112.0** | **F** | No |
| 11 | Brickyard Cove Road/Shoreline Drive | SSSC | AM | Does Not Exist | | 2.4(8.8) | A(A) | No |
| | | | PM | | | 2.0(8.9) | A(A) | No |

Notes: **bold** text indicates LOS F operations.

a Signal = signalized intersection; AWSC = all-way stop controlled intersection; SSSC = side-street stop controlled intersection

b The delay and LOS for side-street stop-control intersections represent the average intersection (worst movement or approach); for signalized and all-way stop-control, the delay and LOS represent overall intersection.

c Delay and LOS for all intersections calculated using the 2010 HCM (TRB, 2010) methods unless noted.

d Delay and LOS calculated using HCM 2000 (TRB, 2000) due to limitations in 2010 HCM (TRB, 2010).

e Operations maybe worse than shown during rail crossing activity.

f Delay improves slightly with the addition of project traffic because signal timing would automatically adjust the green time allocations and cycle lengths to allocate more green time to the approaches with the higher volume, and reduce their delay.

Source: Appendix E

### Cumulative (2040) Plus Project Conditions

**Figure 4.13-10** presents the peak hour intersection traffic volumes under Cumulative (2040) Plus Project Conditions, which consists of Cumulative (2040) No Project traffic volumes (Figure 4.13-8) plus traffic volumes generated by the project (Figure 4.13-7). Figure 4.13-10 also presents the lane configurations and controls at the study intersections, which are expected to be the same as Existing Conditions, except at the Brickyard Cove Road/Dornan Drive (#6) and Brickyard Cove Road/Shoreline Drive (#11) intersections. As noted previously, these two intersections would be modified by the proposed project to provide access to and from the project site.

Intersection LOS calculations were completed with the traffic volumes and roadway network described above. **Table 4.13-7** summarizes intersection operations under 2040 conditions at the 11 study intersections. The majority of study intersections would continue to operate at the same LOS, but would experience slightly more delay, as under Cumulative (2040) No Project Conditions with the addition of project generated trips.

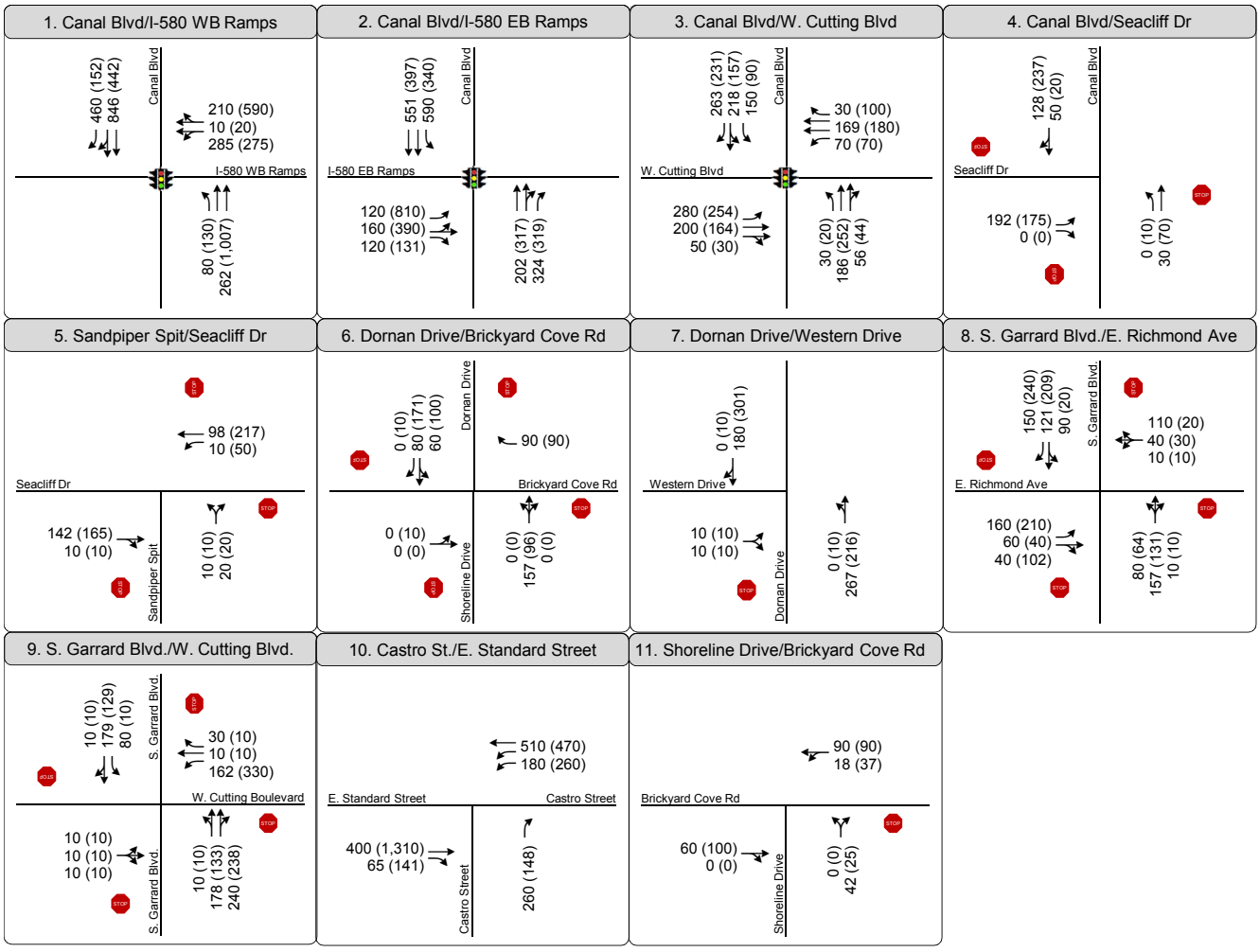
All study intersections would continue to operate at LOS D or better during the AM and PM peak hours, except the I-580 Eastbound Ramps/Canal Boulevard (#2) and East Standard Avenue/I-580 Eastbound On-Ramp/Castro Street (#10) intersections. Both intersections would operate at LOS F during the PM peak hour under 2040 conditions with or without the proposed project. The impact at these two intersections is not considered significant because the project-generated traffic would not increase average intersection delay by more than five seconds. None of the unsignalized study intersections would meet the peak-hour signal warrant under Cumulative (2040) Plus Project conditions. Therefore, the project would not cause a significant impact at the study intersections under Cumulative (2040) Plus Project conditions.

**Significance:** Less Than Significant.

**Project Design Features / Mitigation:** None required.

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SOURCE: Fehr & Peers Transportation Consultants, 2016

**Figure 4.13-10**
Peak Hour Traffic Volumes, Intersection Controls and Lane Configurations – Cumulative (2040) Plus Project Conditions

## CMP Evaluation

**Impact TRF-2: The project would not 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 or highways. (*Less than Significant, No Mitigation Required)***

As previously described, based on the *2014 Proposal for Adoption West County Action Plan for Routes of Regional Significance*, the only Route of Regional Significance near the project is I-580. The established MTSO for I-580 is to maintain a Delay Index of 2.5 or less. **Table 4.13-8** presents the year 2040 Delay Index on I-580 with and without the proposed project based on the results of the CCTA Model. The Delay Index on I-580 is expected to remain below the established MTSO of 2.5. Therefore, the project would not cause a significant impact on a Route of Regional Significance.

**TABLE 4.13-8**
**CUMULATIVE (2040) CONDITIONS DELAY INDEX SUMMARY**

| Freeway Segment | Peak Hour | MTSO Delay Index | 2040 No Project [a] | | 2040 Plus Project [a] | | Significant Impact? |
|---|---|---|---|---|---|---|---|
| | | | Speed (MPH) | Delay Index | Speed (MPH) | Delay Index | |
| I-580 Eastbound | AM | 2.5 | 47 | 1.4 | 46 | 1.4 | No |
| | PM | 2.5 | 37 | 1.7 | 36 | 1.8 | No |
| I-580 Westbound | AM | 2.5 | 40 | 1.6 | 40 | 1.6 | No |
| | PM | 2.5 | 53 | 1.2 | 52 | 1.3 | No |

Notes:

a Speed and Delay Index as calculated by the CCTA Travel Demand Model

Source: Appendix E

**Significance:** Less Than Significant.

**Project Design Features / Mitigation:** None required.

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## Transportation Hazards and Safety

**Impact TRF-3: The 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)***

Impacts of the proposed project on various aspects of safety in and around the project site are discussed below.

### Project Access and Circulation

Primary access to the proposed project site would be provided along the Dornan Drive and Seacliff Drive/Brickyard Cove Road corridors. As previously described, the proposed project would construct a new roadway, Shoreline Drive, and modify the existing roadways adjacent to the project site. To the extent feasible, the project proposes separate facilities for automobiles and bicyclists and pedestrians to minimize potential conflicts between the modes.

The proposed project would provide various elements that would improve safety for all transportation modes, especially pedestrians and bicyclists, including:

- Shoreline Drive, a roadway that will include features such as speed tables,[6] on-street parking, and narrow travel lanes (ten-foot wide lanes) to ensure lower speeds.
- Enhanced crosswalks, such as those that would be installed on speed tables that would be raised in the road but flush with the adjacent Bay Trail and/or sidewalks, at several locations across Brickyard Cove Road and Shoreline Drive to improve safety for pedestrians and bicycles crossing these two roadways.
- Construction of an all-way stop-controlled Brickyard Cove Road/Dornan Drive/Shoreline Drive intersection that would provide crosswalks on all approaches and provide safe crossings for pedestrian and bicyclists travelling between the project site, Bay Trail, and Miller-Knox park.
- Elimination of the existing high-speed curve that connects Brickyard Cove Road and Dornan Drive northwest of the project site. All traffic would be channeled to the all-way stop-controlled Brickyard Cove Road/Dornan Drive/Shoreline Drive intersection, resulting in lower speeds for vehicles along both Dornan Drive and Brickyard Cove Road.
- The Brickyard Cove Road/Shoreline Drive intersection, which would be controlled by a stop sign on the northbound Shoreline Drive approach. The approach would provide adequate sight distance between vehicles turning into and out of Shoreline Drive and conflicting vehicular and pedestrian movements on Brickyard Cove Road.
- The three project driveways on Brickyard Cove Road would provide adequate sight distance between vehicles turning into and out of the driveways and conflicting vehicular and pedestrian movements. The proposed design for Brickyard Cove Road would include features that reduce motorist speed on the part of the road adjacent to the project site. These features include speed tables, on-street parking, narrow travel lanes (11-foot wide lanes), and elimination of the existing high-speed curve that connects Brickyard Cove Road and Dornan Drive. Because Brickyard Cove Road would be a low-speed roadway, and because of the expected low volumes of through-traffic volumes on the roadway and traffic turning left into the project driveways, the proposed roadway configuration of Brickyard Cove Road would accommodate traffic turning left into the project driveways and no dedicated left-turn lanes would be needed on Brickyard Cove Road at the project driveways.

[6] Speed tables/raised crosswalks are traffic-calming devices similar to speed humps, but longer, with a flat top. Speed tables reduce motorist speed and provide a level surface for pedestrians crossing the street.

### Seacliff Drive, Brickyard Cove Road, and Dornan Drive

All traffic entering and leaving the project site would use either Brickyard Cove Road or Dornan Drive. As previously documented, a number of collisions have been reported on both of these corridors in the last five years. As described above, the proposed project would modify Brickyard Cove Road along the project frontage, and Dornan Drive adjacent to the project, which would improve safety at these locations. The proposed project would not modify these corridors except as adjacent to the project site. In addition, the residential and recreational uses proposed by the project are consistent with surrounding existing uses. Thus, the additional traffic generated by the project on Brickyard Cove Road, Dornan Drive, and Seacliff Drive is not expected to increase the collision rate along these corridors.

### At-Grade Railroad Crossings

The proposed project would add traffic to existing queues at intersections adjacent to at-grade railroad crossings, specifically, the northbound and eastbound approaches of the West Cutting Boulevard/Canal Boulevard (#3) and the southbound and westbound approaches of the West Cutting Boulevard/South Garrard Boulevard (#9) intersections. Based on the traffic operations analysis previously presented, the peak hour queues at these locations would not spill back onto the railroad tracks after the completion of the project during typical operations under either Existing Plus Project or 2040 Plus Project conditions. In addition, the project would generate minimal new pedestrian and bicycle traffic to the existing at-grade intersections near the project site.

### Parking

The City of Richmond requires that residential uses provide resident and guest parking for each unit (City of Richmond, 2011c), depending upon the type (e.g., single family, multifamily) and size (e.g., one-bedroom, two-bedroom, etc.). Based on these requirements and the unit types/counts/sizes proposed as part of the project, the total required parking for the project per the City of Richmond zoning code is 586 parking spaces (518 spaces for residents and 68 guest spaces), as summarized in **Table 4.13-9**. Parking for residents and guests of the 308 condominium units and the 26 townhomes would be provided in two single-level parking podiums that would have a combined capacity for a total of approximately 587 spaces (518 spaces for residents and up to 69 spaces for guests). The parking podiums would be accessed by driveways off Brickyard Cove Road to the north. Up to 30 public, on-street parking spaces would also be provided along Shoreline Drive and Brickyard Cove Road. A total of 617 private and public spaces would be provided on the site and along Brickyard Cove Road, which would comprise sufficient parking to accommodate expected demand.

Because the proposed project would not substantially increase hazards due to a design feature or incompatible uses, the project would not cause a significant impact related to transportation hazards or safety.

**TABLE 4.13-9**
**PARKING REQUIREMENTS FOR PROJECT RESIDENTS AND GUESTS[1]**

| Unit Type | Unit Count | Parking Spaces Per Unit | Parking Spaces Per Unit Type |
|---|---|---|---|
| ***Parking Requirements – Project Residents*** | | | |
| **Condominiums** | | | |
| One bedroom | 34 | 1.0 | 34 |
| Two bedroom | 233 | 1.5 | 350 |
| Three bedroom | 41 | 2.0 | 82 |
| **Townhomes** | | | |
| Three bedroom | 26 | 2.0 | 52 |
| ***SUBTOTAL:*** | **334** | | **518** |
| ***Parking Requirements – Guests*** | | | |
| **Condominiums** | 308 | 0.2 | 62 |
| **Townhomes** | 26 | 0.2 | 6 |
| ***SUBTOTAL:*** | **334** | | **68** |
| **TOTAL PARKING REQUIREMENTS – RESIDENTS AND GUESTS:** | | | **586** |

[1] Based on requirements set out in City of Richmond, 2011c

**Significance:** Less Than Significant.

**Project Design Features / Mitigation:** None required.

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## Emergency Access

### Impact TRF-4: The project would not result in inadequate emergency access. (*Less than Significant, No Mitigation Required)*

Emergency vehicles would access the project site from either Dornan Drive or Brickyard Cove Road. Thus, if one roadway were blocked, the other roadway could be used to access the project site. Brickyard Cove Road adjacent to the project site and Shoreline Drive would be designed to accommodate access by fire apparatus and other emergency response vehicles. Therefore, the project would not cause a significant impact on emergency access.

**Significance:** Less Than Significant.

**Project Design Features / Mitigation:** None required.

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## Consistency with Adopted Policies, Plans or Programs Supporting Alternative Transportation

**Impact TRF-5: The 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)***

As previously described, the proposed project would expand pedestrian and bicycle networks in the project vicinity. These improvements are consistent with the City's General Plan, Bicycle Master Plan, and Pedestrian Plan.

Per the requirements of the project LDA, the project applicant would prepare and submit a Transit Access Plan to the City that evaluates the feasibility of extending existing AC Transit routes to the project site, and would consult with AC Transit. Construction of the project would not preclude transit service in the area, nor, as discussed above, would the addition of project traffic have a significant impact on the operation of intersections in the area, which could affect bus travel times.

Development of the project would not conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities nor would it otherwise decrease the performance or safety of existing facilities. By expanding and enhancing the accessibility to the Bay Trail and by emphasizing pedestrian and bicycle modes through the design of internal site circulation and external connections, the project would complement adopted policies, plans, and programs that support alternative transportation. Therefore, project impacts would be less than significant.

**Significance:** Less Than Significant.

**Project Design Features / Mitigation:** None required.

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## Construction Period Impacts

**Impact TRF-6: 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 at the project site, 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 project site 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. City-designated truck routes would be used by truck traffic for access to and from the project site; these routes include Canal Boulevard, Dornan Drive, and West Cutting Boulevard.

Per the requirements of the City Engineering Division, the project applicant 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:** Less Than Significant.

**Project Design Features / Mitigation:** None required.

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## 4.13.6 References

AC Transit, 2015. Maps and Schedules. Available at: www.actransit.org/maps/. Accessed November 2015.

Amtrak, 2014. *Capitol Corridor Performance Report 2014*.

Bay Area Rapid Transit (BART), 2015. Monthly Ridership Report, October 2015, available online at: www.bart.gov/about/reports/ridership.aspx. Accessed November 2015.

California Department of Transportation (Caltrans), 2015. 2014 Traffic Volumes on California State Highways, 2014. Available at: traffic-counts.dot.ca.gov/2014all/. Accessed November 2015.

California Department of Transportation (Caltrans), 2012. California Manual on Uniform Traffic Control Devices (MUTCD) for Streets and Highways, Part 4: Highway Traffic Signals, Chapter 4C: Traffic Control Signal Needs Studies. Available at: www.dot.ca.gov/hq/traffops/signtech/mutcdsupp/. Accessed December 2015.

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

City of Richmond, 2011a. *City of Richmond Bicycle Master Plan*. October.

City of Richmond, 2011b. *City of Richmond Pedestrian Plan*. October.

City of Richmond, 2011c. Zoning Ordinance, City of Richmond, California. Last updated and published March 2010. Available at:www.ci.richmond.ca.us/index.aspx?NID=101. Accessed December 26, 2014.

Contra Costa Transportation Authority, 2013. *Technical Procedures.*

Federal Railroad Administration, 2014. *Federal Railroad Administration Office of Safety Analysis, Crossing Inventory and Accidents Reports.* Accessed in December 2014.

Institute of Transportation Engineers (ITE), 2012. *Trip Generation Manual*. 9th Edition.

Transportation Research Board (TRB), 2000. *Highway Capacity Manual 2000*.

Transportation Research Board (TRB), 2010. *2010 Highway Capacity Manual*.

West Contra Costa Transportation Advisory Committee (WCCTAC), 2014. *Proposal for Adoption West County Action Plan for Routes of Regional Significance.*

# 4.14 Utilities and Service Systems

## 4.14.1 Introduction

This section addresses utility and service systems, such as water supply, solid and non-hazardous waste generation and disposal. Project impacts related to surface water and stormwater runoff are discussed in Section 4.8, Hydrology and Water Quality. Impacts related to electricity and natural gas supply and demand are discussed in Section 4.6, GHGs and Energy.

## 4.14.2 Environmental Setting

### Regional Setting

#### Municipal Water Supply

The East Bay Municipal Utility District (EBMUD) provides water to the project site. EBMUD's service area extends into Contra Costa and Alameda counties, from Crockett in the north to San Lorenzo in the south, and from San Francisco Bay east to Walnut Creek (EBMUD, 2011).

The 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 watershed of this river collects snowmelt from the 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 the 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.

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 February 2015 were operating at 41 percent of capacity (EMBUD, 2013; 2015c). EBMUD's system storage generally allows it to continue serving its customers during dry-year events.

#### Municipal Water Supply Plans

EBMUD's *2010 Urban Water Management Plan* (UWMP) was adopted by the EBMUD Board of Directors on June 28, 2011, to assess current and projected water usage, water supply planning, water conservation, and recycling programs over a 20-year planning horizon. The 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 UWMP, the projected water demand in 2010 for the district was 216 mgd and is anticipated to increase to 229 mgd in 2030. This projection assumes that the existing EBMUD water conservation program would reduce annual demand by 56 mgd and the

water recycling program would decrease water demand by 19 mgd (EBMUD, 2011). 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. The demand for water in EBMUD's service area is projected to increase to 247 mgd by 2040 under a 15 percent maximum customer rationing scenario (EBMUD, 2012). EBMUD has developed mitigation and adaptation strategies to deal with the changing climate and its effects on water resources (Ibid.).

In early 2014, in response to drought conditions, the EBMUD Board of Directors established a water supply action plan and requested all customers to voluntarily reduce water use by 10 percent by fixing leaks, irrigating carefully, and being mindful of indoor water use (EBMUD, 2014a; EMBUD 2014e). Specifically, the district asked customers to limit watering of outdoor landscapes to two times per week maximum and prevent excess runoff, use only hoses with shutoff nozzles to wash vehicles, use a broom or air blower to clean hard surfaces, and turn off fountains or other decorative features unless the water is recirculated. In April 2014, EMBUD declared a water supply deficiency and purchased federal water supplies from the Sacramento River through the Freeport Regional Water Facility (EBMUD, 2014b; 2014e).

In August 2014, the EBMUD Board of Directors declared a water shortage emergency, as well as adopted restrictions on water use and revised the action plan. This declaration did not set a required percentage reduction in water use, but it did make mandatory the voluntary measures describe above. It also prohibited flushing of sewers or hydrants with potable water. The declaration further defined water-saving guidelines, including taking shorter showers, reduced use of kitchen garbage disposals, upgraded plumbing and installation of water-efficient fixtures, using pool covers, serving water at restaurants only upon request, and exploration of feasible alternatives to water use during construction (EBMUD, 2014c, 2014e).

In October 2014, EBMUD acknowledged that customers had exceeded the goal of 10-percent reduction in water use, and proposed a new, four-stage, drought rate structure for the current and future droughts to encourage conservation and share dry year costs fairly among customers. Under the new rate structure, the costs to buy water increase as the stages get more severe, and within each stage as households use more water. The rate structure includes an excessive use penalty for households using excessive water, as well as a credit for very low water use. EBMUD sought public input for the new drought rate structure, which is proposed as part of EBMUD's 2016–2017 budget (EBMUD, 2014d; 2014e).

System-wide, EBMUD customers reduced water use 12 percent from February 2014 to February 2015, as compared to one year earlier (EBMUD, 2015b). The district's 2015 Water Shortage Emergency Action Plan calls for customers to voluntarily cut back water use to 15 percent below average, gives specific advice to customers about how to achieve that reduction, offers free devices and technical assistance, and implements state water use prohibitions (EBMUD, 2015a).

### Wastewater Collection and Treatment

The City of Richmond Municipal Sewer District (RMSD) is the provider of sanitary sewer services for the project site and adjacent areas. The 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. Flows are direct to the RMSD Water Pollution Control Plant (RMSD Plant), where wastewater is treated to secondary standards. The RMSD Plant has a design capacity of 16 mgd for dry weather and a hydraulic capacity of 20 mgd for wet weather conditions. The annual average daily flow in 2011 was approximately 8.1 mgd (RWQCB, 2013).

RMSD, along with the West County Wastewater District (WCWD) and the City of Richmond, are members of the West County Agency, a Joint Powers Agency (JPA). Chlorinated effluents from the RMSD Plant are combined with those from the WCSD Treatment Plant, and subsequently dechlorinated prior to discharge from the West County Agency Common Outfall into San Francisco Bay (RWQCB, 2013).

When wet weather conditions exceed the secondary treatment capacity of the RMSD Plant due to infiltration into the collection system, excess primary-treated flows are diverted to equalization basins, and blended with secondary-treatment wastewater for disinfection and dechlorination prior to discharge into the San Francisco Bay (RWQCB, 2013).

The City of Richmond plans to undertake pipe repair and replacement projects to reduce inflow and infiltration. The City has also completed a storage tank at the RMSD Plant to reduce blending events when wet weather flows exceed 40 mgd. The wet weather storage tank capacity is designed for expected inflows from a 10-year, 24-hour storm. The new storage tank provides 5 million gallons of influent storage (RWQCB, 2013; LSA, 2013; City of Richmond, 2015a; City of Richmond, 2015b).

### Solid Waste

In 2013, approximately 143,000 tons of solid waste were disposed from within 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 (126,000 tons) of this solid waste was sent to Keller Canyon Landfill; the remaining tons were disposed in much smaller amounts at various other landfills used by West Contra Costa County (CalRecycle, 2015a).

The Keller Canyon Landfill accepts municipal solid waste, non-liquid industrial waste, contaminated soil, ash, grit and sludges. 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. 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 the municipality's solid waste from landfill disposal through source reduction, recycling, and composting activities. The California Department of Resources Recycling and Recovery (CalRecycle) indicates that the WCCCIWA's diversion rate was 53 percent in 2006. Beginning with the 2007 annual reporting period, 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 2013, the most recent year for which data are available, the measured disposal rate was 3.5 PPD for residents and 14.1 PPD for employees, meeting the WCCCIWA's target rates (CalRecycle, 2015b).

## Project Site Setting

The existing water and wastewater site information below was prepared in January 2015, using utility company and municipality records as well as field data obtained during the project topographic survey (BKF, 2015).

### Water

Existing 8-inch water mains are present in Brickyard Cove Road and Dornan Drive. The Brickyard Cove Road water main increases to 12 inches just east of the project site, and the Dornan Drive main increases to 12 inches north of the intersection with Brickyard Cove Road. EBMUD records show 6-inch and 8-inch fire service pipes, two 4-inch domestic service pipes, and one 6-inch domestic service pipe, to the project site from Dornan Drive.

### Stormwater

The project site slopes from the northeast to the southwest. The extent and condition of existing on-site stormwater infrastructure is not known. Utility improvement plans from the City of Richmond indicate drainage infrastructure along Dornan Drive at the western side of the project site. A 54-inch line runs approximately 10 feet west of the centerline of Dornan Drive, although records indicate that this line is abandoned. A12-inch storm drain line exits the project site to Dornan Drive, and then continues westerly toward the Bay.

### Wastewater

A 12-inch sewer main is present in Brickyard Cove Road, and an 8-inch sewer main is present in Dornan Drive. The two mains connect to a manhole at the intersection of the two streets. Another 12-inch main connects this manhole to the Ferry Point Pump Station. The City of Richmond Sewer System Management Plan indicates that the pump station has a firm capacity[1] of 450 gallons per minute, and a design storm flow of 331 gallons per minute (RMSD, 2013).

[1] "Firm capacity" is the capacity of a pump station assuming that its largest pump is out of service.

### Solid Waste

Richmond Sanitary Service provides solid waste disposal services for the city. There are no existing uses on the project site; therefore, no solid waste haulers currently provide service to the site.

## 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.[2] A 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 of existing water supply entitlements and contracts. The governing board of the water agency must approve the assessment at a public hearing.

SB 221 requires the local water provider to provide "written verification" of "sufficient water supplies" to serve the project. Sufficiency under SB 221 differs from SB 610 in that it is determined by considering the availability of water over the past 20 years; the applicability of any urban water shortage contingency analysis prepared per Water Code Section 10632; the reduction in water supply allocated to a specific use by an adopted ordinance; and the amount of water that can be reasonably relied upon from other water supply projects, such as conjunctive use, reclaimed water, water conservation, and water transfer. In most cases, the WSA prepared under SB 610 would meet the requirement for proof of water supply under SB 221.

[2] 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 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.

### 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 UWMP 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 requires 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 greater than 5,000 square feet of irrigated area, and ornamental turf must be limited to no more than 25 percent of total irrigated area.

### City of Richmond General Plan

The City of Richmond General Plan Community Facilities and Infrastructure Element contains the following policy applicable to the proposed project 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 City of Richmond General Plan Conservation, Natural Resources, and Open Space Element contains the following policy applicable to the proposed project 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 recyling 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 City of Richmond General Plan *Energy and Climate Change* Element contains the following policy applicable to the proposed project 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 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.

## Wastewater and Stormwater 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*). NPDES Permit number CA0038539 sets for discharge requirements for the area 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).

### City of Richmond General Plan

The City of Richmond General Plan Community Facilities and Infrastructure Element contains the following action applicable to the proposed project 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.

RMSD released a Sewer Lateral Compliance Plan in 2012 (RMSD, 2012). This plan sets 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 also establishes practices for testing, repair, and replacement of defective sewer laterals.

## Solid Waste

### California Integrated Waste Management Act

Assembly Bill 939, 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, WCCCIWA was diverting approximately 53 percent of its waste stream by 2006. CalRecycle 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 WCCCIWA has met the CalRecycle's requirements.

### 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.

### City of Richmond General Plan

The City of Richmond General Plan Community Facilities and Infrastructure Element contains the following action applicable to the proposed project 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

Consistent with Appendix G of the CEQA *Guidelines*, 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.

## 4.14.5 Discussion of Impacts and Mitigation Measures

As discussed in Chapter 3, *Project Description*, the applicant has received will-serve letters from the following utility service providers, indicating that service to the project site will be available, contingent on the project's compliance with pertinent regulations governing such services:

- Richmond Municipal Sewer District – for sanitary sewer collection and treatment services and stormwater and surface drainage collection services;
- East Bay Municipal Utility District – for water service;
- Pacific Gas and Electric Company – for gas and electric services; and
- AT&T – for telephone services.

The project applicant commissioned an analysis of the existing and proposed utilities, which was completed in January 2015 (BKF, 2015). Since the applicant's utilities analysis was prepared, the proposed project has changed, as described in Chapter 3, *Project Description*, to include more condominium units, fewer townhomes, and no single family homes, with the same total residential units. Because townhomes and single family homes use more water on average than condominium (multi-family) units, the applicant's analysis still reflects and incorporates the maximum water demand and wastewater generation represented by the project, and therefore represents a conservative estimate of water utility service demand and use.

## Water

**Impact UTL-1: The project would not generate an increase in demand for water supply over existing entitlements or resources, or require or result in the construction of new water treatment facilities or expansion of existing facilities. (Criteria b. and d.) (*Less than Significant, No Mitigation Required*)**

Pursuant to Sections 10910-10915 of the California Water Code, a Water Supply Assessment (SB 610) is not required for the project. The project would not exceed the criterion that triggers an assessment with respect to residential development because it would contain fewer than 500 units, and it would not would it result in water demand equivalent to, or greater than, the amount of water required by a 500-unit project.

The project applicant's analysis of existing and proposed utilities determined that the proposed project's residential units would result in an estimated average demand of about 41,000 gallons per day (GPD), and a peak demand of approximately 74,000 gpd. This average demand would represent approximately 0.01 percent (one hundredth of 1 percent) of the overall 325 mgd existing water supply capacity of the EBMUD system, as well as approximately 0.01 percent of the 240 mgd existing capacity of the Orinda and Sobrante Water Treatment Plants, which provide treated water to the City of Richmond.

As noted above, the proposed project has changed to include more condominium units, fewer townhomes, and no single family homes, with the same total residential units; even with this change, however, the applicant's analysis still reflects and incorporates the maximum water demand represented by the project, and therefore has conservatively estimated the project water demand. Based on the per unit average demand from the applicant's analysis, **Table 4.15-1** summarizes estimates of demand for the project, for the revised residential unit mix.

**TABLE 4.14-1: ESTIMATE OF AVERAGE AND MAXIMUM RESIDENTIAL UNIT WATER DEMAND**

| Unit Type | Average Demand (gpd) | Number of Units | Average Demand (gpd)[1] | Peaking Factor | Maximum Demand (gpd) |
|---|---|---|---|---|---|
| **Condominium** | 111 | 308 | 34,188 | 1.8 | 61,538 |
| **Townhouse** | 205 | 26 | 5,330 | 1.8 | 9,594 |
| | | **TOTAL** | **39,518** | | **71,132** |

[1] Does not include water used for irrigation
Source: BKF, 2015

The project could generate additional water demand beyond that shown in Table 4.15-1 for landscape irrigation. The project would be required to adhere to EBMUD Regulations Section 31, which would reduce the total water demand for irrigation as compared to a traditional development. The applicant has received a will-serve letter from EBMUD, indicating that water service to the project site will be available (see **Appendix A**).

In a December 9, 2014, letter to the City submitted during the scoping period for this EIR (see **Appendix A**), EBMUD indicated that improvements to off-site water mains and other infrastructure may be necessary to meet the water demands of the project, as well as fire flow requirements. Off-site improvements, if they were to occur, could include upgrades to the existing underground 8-inch and 12-inch water mains below Brickyard Cove Road and Dornan Drive, a 6-inch fire service line and an 8-inch fire service line under Dornan Drive, and two 4-inch and one 8-inch domestic water service lines under Dornan Drive (BKF, 2015). To the extent that these or other improvements to off-site infrastructure are required, they would take place within rights-of-way under existing streets. 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 document. Impacts to traffic and transportation would be similar to temporary construction impacts described in Section 4.13 of this document, and less than significant.

**Significance:** Less Than Significant.

**Project Design Features / Mitigation:** None required.

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## Wastewater

**Impact UTL-2: The proposed project would not require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, exceed wastewater treatment requirements of the San Francisco Regional Water Quality Control Board, or result in a determination by the wastewater treatment provider that it has inadequate capacity to serve the project's projected demand in addition to the provider's existing commitments. (Criteria a., b., and e.) (*Less than Significant, No Mitigation Required*)**

### Dry Weather Flows

The project would be constructed entirely within an area already served by the existing water and wastewater collection and treatment systems. Estimated wastewater flows for the project are shown in **Table 4.15-2**. As shown, the project would result in an average of about 39,000 gpd, and a peak of 156,000 gpd. As stated above, the RMSD Plant has a design capacity of 16 mgd for dry weather. The annual average daily flow in 2011 was approximately 8.1 mgd.

As noted above, the proposed project has changed to include more condominium units, fewer townhomes, and no single family homes, with the same total residential units; even with this change, however, the applicant's analysis still reflects and incorporates the maximum demand represented by the project, and therefore has conservatively estimated the project wastewater generation. The applicant has received a will-serve letter from EBMUD, indicating that water service to the project site will be available (see **Appendix B**). The additional wastewater generated by the project would be accommodated within the remaining dry weather capacity of

the RMSD Plant. Based on the per unit average flow factors and demand from the applicant's analysis, **Table 4.15-2** summarizes estimates for the project, for the revised residential unit mix.

**TABLE 4.14-2: ESTIMATE OF AVERAGE WASTEWATER FLOW**

| Unit Type | Flow Factor (gpd) | Number of Units | Total Demand (gpd) | Peaking Factor | Maximum Demand (gpd) |
|---|---|---|---|---|---|
| **Condominium** | 105 | 308 | 32,340 | 4 | 129,360 |
| **Townhouse** | 195 | 26 | 5,070 | 4 | 20,280 |
| **Groundwater Infiltration** | -- | -- | -- | -- | 2,550 |
| | | **TOTAL** | **37,410** | | **152,190** |

Source: BKF, 2015

Per **Project Design Feature AIR-1**, as part of more detailed engineering and project planning, the applicant will evaluate the condition and capacity of the pump station, to ensure this facility has sufficient capacity to convey sanitary sewage from the project site to the RMSD Plant. Data from the City indicate that the Ferry Point Pump Station is considerably underutilized in regard to capacity (City of Richmond, 2016). The Sewer System Master Plan rates the station at a firm capacity of 450 gallons per minute (gpm), which is almost 650,000 gpd. The City has been working on an internal upgrade to the pump system itself to improve its condition and reliability, which should be complete by the end of 2016. Regardless, the pump station may be required to be retrofitted or replaced in order to adequately convey project wastewater. Impacts of replacing the pump station are included and addressed throughout this EIR in the description of the total soil excavation volume that would be required for the project, as well as in the description of potential project impacts, such as impacts to noise (Section 4.10), air quality (Section 4.2), and traffic and transportation (Section 4.13), and impacts associated with the retrofit or replacement of the pump station would be less than significant.

### Wet Weather Flows

Wastewater from new development would be directed to existing facilities, which would continue to comply with all provisions of the NPDES program, as enforced by San Francisco Bay Regional Water Quality Control Board (RWQCB). The RMSD Plant has a design capacity of 20 mgd for wet weather conditions, along with a recently increased additional wet weather storage capacity of 5 million gallons with completion of the storage tank described in the regional setting, above.

The project would provide approximately 90,000 square feet of landscape areas landscaped areas between the condominium buildings, as well as 10,500 square feet of bioretention, both of which could absorb stormwater runoff and reduce stormwater flows to less than existing conditions, as further described in Section 4.8, Hydrology and Water Quality. In addition, the proposed project would not increase stormwater inflow and infiltration into the pipe network because on-site sewer pipes would be new and not subject to infiltration and inflow problems. The remainder of stormwater not absorbed on-site would be directed to a separate storm system (BKF, 2015).

**Significance:** Less Than Significant.

**Project Design Features / Mitigation:** Project Design Feature AIR-1.

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## Stormwater

**Impact UTL-3: The project would result in the construction of new stormwater drainage facilities or expansion of existing facilities, the construction of which would not cause significant environmental effects. (*Less than Significant, No Mitigation Required*)**

The project would create approximately 103,000 square feet of additional impervious surfaces at the project site. However, as stated above under impact 4.15-2, the project would provide approximately 90,000 square feet of landscape areas, as well as 10,500 square feet of bioretention, both of which could absorb stormwater runoff and reduce stormwater flows to less than existing conditions. Further information and discussion may be found in Section 4.8, Hydrology and Water Quality. Construction of these facilities, in and of themselves, would not cause significant environmental effects. The traffic, noise, and air quality impacts of construction of these drainage and retention facilities would be encompassed within the environmental effects of construction of the entire project. Please see EIR Sections 4.13, 4.10, and 4.2, respectively, for an analysis of these impacts.

**Significance:** Less Than Significant.

**Project Design Features / Mitigation:** None required.

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## Solid Waste

**Impact UTL-4: The project would be served by a landfill with sufficient permitted capacity to accommodate the project's waste disposal needs and would comply with federal, state and local statues and regulations related to solid waste. (*Less than Significant, No Mitigation Required*)**

### Construction Waste

All structures on the project site would be demolished. As indicated in Chapter 3.0, *Project Description*, the project will 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 are reused, recycled, or otherwise diverted. Approximately 1,500 cubic yards of construction waste (wood materials and other debris, amounting to approximately 19 percent of the construction/demolition debris) will be hauled off-site, to Keller Landfill or another appropriate landfill with adequate capacity. The project applicant or their contractor will prepare a Construction Waste Management Plan (required by the City prior to issuance of a

building permit for the project), describing anticipated construction and demolition waste and how the 50 percent diversion rate would be met. This plan will be submitted to the Richmond Planning and Building Services Department for review. Upon completion of project construction, a Debris Recovery Report must be submitted to indicate the actual debris that was generated from the project and its ultimate destination. Therefore, the project would result in a less than significant impact related to generation of construction debris.

#### Operation Waste

During operation, solid wastes would be generated from the new residential uses. As noted above, CalRecycle publishes both residential and business disposal rates. WCCCIWA's per resident disposal rate was 3.5 PPD in 2013. As stated in Section 4.11, the proposed project would result in an anticipated net increase in population of 640 residents. These 640 residents would generate approximately 2,240 PPD (1.1 tons), or 401 tons per year, of waste.

The receiving landfill for operational waste, Keller Canyon, had 96 percent of its permitted capacity remaining as of 2009. The landfill is anticipated to remain open until 2050. The landfill is permitted to accept 3,500 tons of waste per day. The incremental addition of approximately 1.1 tons per day is within the capacity of this facility. The additional waste quantities generated by operation of the project would not exceed landfill capacity.

**Significance:** Less Than Significant.

**Project Design Features / Mitigation:** None required.

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## Cumulative Impacts

The discussion of Utilities and Service Systems cumulative impacts is presented in Chapter 6, Other Statutory Sections, of this EIR.

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# References – Utilities and Service Systems

BKF Engineers (BKF), 2015. Memorandum, from Jason White to J. Cleve Livingston, Subject: Terminal One, City of Richmond – Existing and Proposed Utilities, January 15.

California Integrated Waste Management Board (CalRecycle), 2009. Solid Waste Facility Permit, No. 07-AA-0032, Keller Canyon Landfill, December 14.

California Integrated Waste Management Board (CalRecycle), 2015a. Jurisdiction Disposal by Facility, Disposal during 2013 for West Contra Costa Integrated Waste Management Authority. Available at: http://www.calrecycle.ca.gov/lgcentral/Reports/DRS/Destination/JurDspFa.aspx. Accessed February 3, 2015.

California Integrated Waste Management Board (CalRecycle, 2015b. Jurisdiction Diversion/Disposal Rate Summary (1995 – 2006) and (2007 – Current). Available at: www.calrecycle.ca.gov/LGCentral/reports/diversionprogram/JurisdictionDiversion.aspx and www.calrecycle.ca.gov/LGCentral/reports/diversionprogram/JurisdictionDiversionPost2006.aspx. Accessed February 3, 2015.

City of Richmond, 2015a. City of Richmond Wet Weather Storage Project: Monthly Progress Update No. 11 Period Ending January 31. Available at: www.richmond-wwstorage.org/uploads/2/8/2/7/28279353/wwsb_monthly_report_ending_013114.pdf. Accessed February 2016.

City of Richmond, 2015b. Lina Velasco, Senior Planner, City of Richmond Planning Division. Personal communication with Christy Herron, ESA. November 30, 2015.

City of Richmond, 2016. Lina Velasco, Senior Planner, City of Richmond Planning Division. Personal communication with Christy Herron, ESA. February 25, 2016.

East Bay Municipal Utility District (EBMUD), 2011. *Urban Water Management Plan 2010*, adopted June 2011.

EBMUD), 2012. *Water Supply Management Program 2040 Plan*, Final April 2012.

EBMUD, 2013. *2013 Annual Water Quality Report*, April 15, 2014.

EBMUD, 2014a, *Drought Prompts Call to Save Water* Available at: www.ebmud.com/sites/default/files/pdfs/droughtpromptscalltosavewater-03-web_0.pdf. Accessed February 2014.

EBMUD, 2014b. *Drought 2014*. Available at: www.ebmud.com/sites/default/files/pdfs/drought2014-02-web_0.pdf. Accessed February 2014.

EBMUD, 2014c. *Section 28: Water Use During Water Shortage Emergency Condition*. Available at: ebmud.com/sites/default/files/pdfs/section-28-water-use-during-water-shortage-emergency-8-12-14_1.pdf. Accessed August 12, 2014.

EBMUD, 2014d. *Drought 2014 Board Special Meetings.* Available at: www.ebmud.com/sites/default/files/pdfs/drought-2014-responding-to-drought.pdf.pdf. Accessed October 2014.

EBMUD, 2014e. Drought Response and Drought Rates. Available at: www.ebmud.com/sites/default/files/pdfs/ebmud-special-board-meeting-on-drought-castro-valley-11-19-14-no-notes.pdf. Accessed November 19, 2014.

EBMUD, 2015a. Water Supply Briefing: Water Operations Department. Available at: ebmud.com/sites/default/files/pdfs/water-supply-board-briefing-january-13-2015_1.pdf. Accessed January 13, 2015.

EBMUD, 2015b. Water Supply Briefing: Water Operations Department. Available at: ebmud.com/sites/default/files/pdfs/water-supply-board-briefing-february-10-2015.pdf. Accessed February 10, 2015.

EBMUD, 2015c. Daily Water Supply Report. Available at: ebmud.com/daily-water-supply-report. Accessed February 4, 2015.

LSA, 2013. *CEQA Initial Study / Mitigated Negative Declaration: Richmond Wet Weather Storage Project*, prepared for Carollo Engineers, Inc., October 2013.

Richmond Municipal Sewer District (RMSD), 2011. *City of Richmond Sewer Collection System Master Plan*, prepared for Veolia Water, N.A., November.

RMSD, 2012. City of Richmond Sewer Lateral Compliance Plan: Standards and Procedures.

RMSD, 2013. *Sewer System Management Plan*, Veolia Water, updated August.

San Francisco Regional Water Quality Control Board (RWQCB), 2013. Order No. R2-2013-0016, NPDES No. CA0038539, May 15.

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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 proposed project, including a "No Project" alternative, and to identify an "environmentally superior" alternative. The primary purpose of this section is to provide decision-makers and the public with a qualitative review of project alternatives that eliminate or substantially reduce any of a project's adverse environmental impacts while, at the same time, attaining most of the project objectives. Because the review of the environmental impacts of the project in Chapter 4 has determined that impacts are either less than significant or can be reduced to a less-than-significant level through the implementation of mitigation measures, the focus of the alternatives analysis in this chapter is on assessing the extent to which the project alternatives would result in eliminating or further reducing the less-than-significant impacts that have been identified in Chapter 4.

## 5.1 CEQA Requirements

The California Environmental Quality Act (CEQA) 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 DEIR assesses the direct and indirect environmental impacts that could potentially result from implementation of the project. This environmental impact analysis not only includes consideration and discussion of the project's potentially significant environmental effects, but also identifies mitigation measures which, when incorporated as part of the project, will have the effect of reducing each of the potentially significant effects of the project to a less-than-significant level. As a result, the project, with implementation of the mitigation measures identified in Chapter 4, will not have significant effects on the environment which otherwise might be avoided or substantially lessened by alternatives to the project. Nevertheless, 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. Because review of the project's environmental impacts in Chapter 4 has

determined that the impacts are either less than significant or can be reduced to a less-than-significant level through the implementation of mitigation measures, the focus of the alternatives analysis in this chapter is on assessing the extent to which the project alternatives would result in eliminating or further reducing the less-than-significant impacts that have been identified in Chapter 4.

Accordingly, this chapter presents a meaningful comparative analysis of the proposed project and the alternatives (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 proposed project to a No Project Alternative (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 Project Objectives

As stated in the first factor bulleted above, under 5.2, the selection of alternatives shall consider the basic objectives of the proposed project. As previously presented in Chapter 3, Project Description, the City's basic (primary) project objectives are to:

1. Transform a former industrial site into a new waterfront residential community compatible with surrounding development.

2. Fulfill the City of Richmond's planning goals and vision for the site and Brickyard Cove area, including preservation of Brickyard Cove as a water body of scenic interest.
3. Provide access to waterfront open space for public use, including public recreation and parks areas and a shoreline connection between the existing Bay Trail segments to the west and east of the site.
4. Generate tax revenues and employment opportunities for the City of Richmond.

In addition, the applicant's general project objectives include, but are not limited to, the following:

1. Bring to the Richmond housing market high-quality, for-sale homes that would be made available to a broad range of home buyers by providing a range of residential unit types and sizes, designed to maximize the satisfaction of market demand.
2. Bring to the Richmond housing market a type and character of housing:
    a. That is in very short supply; and
    b. That will be responsive to the demand resulting from the employment-generating land uses planned for the Richmond Bay Specific Plan area and other nearby new growth areas.
3. Reflect in the architecture of the residential buildings the Bay Area Regional style with its:
    a. Simplicity of line, form, and composition;
    b. Use of earth-tone colors and natural-looking materials;
    c. Site-oriented design tailored to the opportunities afforded by the bay front setting; and
    d. Integration of indoor and outdoor space.
4. Reflect in the design of the project sustainable site planning concepts that emphasize:
    a. The compact and efficient organization of privately-held built space;
    b. The preservation, reservation, and enhancement of open space for public use; and
    c. The substitution of common area open space for individually-held private outdoor living areas.
5. Create a residential neighborhood and waterfront park that will afford residents and visitors alike an opportunity:
    a. To access the panoramic views of the San Francisco Bay from the site's shoreline location;
    b. To engage physically as well as visually with the extraordinary waterfront and parkland environment that adjoins the project site on three of its four sides; and
    c. To connect with the natural order surrounding the site on a personal and intimate level.

6. Create a sense of place that is inspired by the ecological context in which the project site is located.

7. Incorporate a circulation system that is designed not only to provide safe and convenient access to the Terminal One residential neighborhood and waterfront park, but also to respect and complement the natural environment the project is designed to celebrate by:

    a. Deemphasizing the automobile and assigning priority to pedestrian and bicycle modes of travel;

    b. Featuring a new "destination-serving" road (Shoreline Drive) designed both to provide the public with direct access to the Terminal One Waterfront Park, with its re-purposed pier and public gardens, and to serve as a scenic entry to the Brickyard Cove neighborhoods to the east;

    c. Retaining the portion of Brickyard Cove Road directly north of the project site as a connector roadway that will enable commuter, commercial, and other through traffic to bypass the site;

    d. Creating a pedestrian and bicycle promenade through the center of the site that will tie together and integrate the public and private realms; and

    e. Establishing on-site pedestrian and bicycle pathways that will connect to and serve as extensions of both the City's existing trail network and the EBRPD's Bay Trail system.

8. Spur and support local economic growth through new capital investment and an expansion of the market for local goods and services.

9. Enhance the quality of life enjoyed by the surrounding community by converting an abandoned industrial warehouse, pier, and shoreline into a waterfront park and public gardens which will function as an extension of the Miller/Knox Regional Shoreline park.

10. Support and lift residential values in the surrounding community by building high-quality, high-amenity homes that will retain their character and appeal over time.

11. Develop a residential project that will have a positive fiscal impact on the City's annual budget by generating income to the City's general fund.

12. Make a significant contribution to the City's efforts to address its fair share of allocation of regional housing need, as projected by the Association of Bay Area Governments in its Regional Housing Need Plan.

13. Incorporate a parking program that is designed to accommodate all resident and guest parking in a podium garage where automobiles will be screened from view beneath a landscaped podium deck and behind the entry stoops and street front facades of ground level residences.

14. Provide public on-street parking on the site's new Shoreline Drive to accommodate visitors to the Terminal One Waterfront Park and Entry Plaza.

15. Maximize off-street, dedicated parking for residents and their guests to the greatest extent possible in order to preserve on-street parking for use by visitors to the waterfront park and shoreline amenities and the general public.

16. Maximize new residential opportunities to accommodate forecasted population growth within the City of Richmond.

17. Provide compact development patterns as described in the General Land Use Element (page 3.3).

## 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. All of the project impacts identified in Chapter 4, Environmental Setting, Impacts, and Mitigation Measures, would be less than significant or, with mitigation, reduced to less than significant. Because the proposed project would not result in any significant and unavoidable adverse impacts, a qualitative analysis of the advantages and disadvantages of each alternative retained for analysis in this EIR in comparison to the proposed project is presented in the following sections. This evaluation of alternatives focuses on impacts that are potentially significant and that are reduced to a less-than-significant level with the implementation of mitigation measures identified in this EIR, and especially focuses on less-than-significant impacts that are triggered by characteristics of the proposed project (as opposed to its setting).

For each alternative, the degree (severity) of adverse impacts that would be caused by the alternative are identified and compared to the proposed project. At the conclusion of these comparisons, an Environmentally Superior Alternative is identified among the project and all alternatives, taking into consideration all impacts identified. The comparison of alternatives is provided to better inform City decision-makers about the steps taken during the EIR development process and the rigor under which the proposed project was evaluated.

**Table 5-1** summarizes the project impacts that would be reduced to a less-than-significant level with the implementation of mitigation measures, as identified in Chapter 4.

**TABLE 5-1**
**PROJECT IMPACTS THAT WOULD BE LESS-THAN-SIGNIFICANT WITH MITIGATION**

| Less than Significant Project Impacts After Implementation of Mitigation Measures |
|---|
| Air Quality |
| • Impact AIR-2: Project construction would result in increased emissions of criteria air pollutants. *Mitigation Measure AIR-1* |
| Biological Resources |
| • Impact BIO-1: Construction of the project could have a substantial adverse effect either directly or through habitat modifications, on migratory birds and/or on bird species identified as special-status in local or regional plans, policies, or regulations, or by the CDFW or USFWS. *Mitigation Measures BIO-1, NOI-1.* |
| • Impact BIO-2: Construction of the project could have a substantial adverse effect either directly or through habitat modifications, on bats identified as special-status in local or regional plans, policies, or regulations, or by the CDFW or USFWS. *Mitigation Measure BIO-2* |
| • Impact BIO-4: Project construction activities, including re-surfacing of the Terminal One Pier, and any restoration of piles beneath the pier, could locally increase suspended contaminant levels and turbidity from re-suspended sediments, which could have indirect impacts on the marine environment, special-status and managed fish taxa, and spawning and foraging habitat for Pacific herring. *Mitigation Measure HYD-1* |
| • Impact BIO-5: Construction of the project could have a substantial adverse effect on Waters of the U.S. and the State (the San Francisco Bay). *Mitigation Measure HYD-1* |
| • Impact BIO-6: Project homes and other structures could result in an increased level of nighttime artificial illumination and building density in the project site, but would not substantially alter the behavior of fish, marine mammals, and birds. *Mitigation Measure BIO-3* |
| • Impact BIO-7: The project could otherwise 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, due to an increase in light and glare. *Mitigation Measure BIO-3* |
| • Impact C-BIO-1: The proposed 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 Measures BIO-1, BIO-2, BIO-3, and Mitigation Measure HYD-1* |
| Cultural Resources |
| • Impact CUL-2: Project construction could cause a substantial adverse change in the significance of an archaeological resource, including those determined to be a historical resource defined in Section 15064.5 or a unique archaeological resource defined in PRC 21083.2. *Mitigation Measure CUL-1* |
| • Impact CUL-3: Project construction could directly or indirectly destroy a unique paleontological resource or site or unique geologic feature. *Mitigation Measure CUL-2* |
| • Impact CUL-4: Project construction could disturb human remains, including those interred outside of formal cemeteries. *Mitigation Measure CUL-3* |
| Greenhouse Gases and Energy |
| • Impact GHG-1: The project would result in a substantial increase in GHG emissions. *Mitigation Measure GHG-1* |
| • Impact GHG-2: The project would conflict with the AB 32 Scoping Plan or City of Richmond's Energy and Climate Change Element Goals and Policies for reducing GHG emissions. *Mitigation Measures GHG-1, GHG-2* |
| Hazards and Hazardous Materials |
| • Impact HAZ-1: The project would include the routine transport, use and disposal of hazardous materials during construction and operation but would not create a significant hazard to the public or the environment. *Mitigation Measures HAZ-1a, HAZ-1b, HAZ-1c, HAZ-1d, HAZ-1e, and HAZ-1f* |
| • Impact HAZ-3: Development of the project would be located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and could result in a safety hazard to the public or environment through exposure to previous contamination of soil or groundwater. *Mitigation Measure HAZ-2* |
| Hydrology and Water Quality |
| • Impact HYD-1: The 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* |
| • Impact HYD-5: 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* |
| Noise |
| • Impact NOI-1: Construction of the project would result in a temporary increase in ambient noise levels. *Mitigation Measures NOI-1a, NOI-1b* |

# 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 proposed project, primary consideration was given to alternatives that would reduce impacts while still meeting most of the basic project objectives as well as the City's planning goals and objectives, such as those articulated in the Richmond General Plan 2030. Because mitigation measures are available to reduce all of the proposed project's potentially significant impacts to a less-than-significant level, consideration was given to alternatives that would eliminate or further reduce project impacts. Alternatives that would likely have the same or greater impacts as the proposed project or that would not meet most of the objectives of the project 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.

## Existing Zoning

An "Existing Zoning" scenario was considered whereby the project site would be developed with uses consistent with the existing Coastline Commercial (C-C) zoning designation, the intention of which is to "create, preserve and enhance areas with a selective range of establishments serving water-oriented uses including: Bait shops, sail makers and ship chandlers, marine supply stores and business services" (City of Richmond, 2011). This land use scenario was not explored further, however, because the existing CC zoning designation is not consistent with the Medium Density Residential land use designation of the Richmond General Plan 2030. The City's General Plan serves as the constitution with respect to local land use, and establishes the planning and policy framework which govern developments such as the proposed project. All other local land use regulations, including zoning designations, are legally required to be consistent with the General Plan. For this reason, an Existing Zoning scenario was not carried forward for detailed analysis.

## Affordable Housing

In response to a comment submitted in 2014 for the Notice of Preparation for the Draft EIR, an "Affordable Housing" scenario was considered. Under this scenario, the developer would not pay an "in lieu" affordable housing fee pursuant to the project Land Disposition Agreement (LDA) and Section 15.04.810.063A.6 of the City's Municipal Code (Inclusionary Housing Ordinance). Instead, the developer would meet the project's inclusionary housing obligation by constructing and making available affordable units as a part of the proposed project.

Under the Inclusionary Housing Ordinance (Richmond Municipal Code Section 15.04.810.060 et seq.), a residential project can fulfill the applicable inclusionary housing requirements by making available at least 17 percent of the new total housing units (including any density bonus units) to moderate-income households at an affordable housing cost. In addition, the ordinance also makes

provision for a "Housing Density Bonus" program pursuant to California Government Code Section 65915. The City's Housing Density Bonus Program provides that when a developer agrees to construct a common interest development that will contain forty percent of the total units ("excluding any units permitted by the density bonus awarded") for "persons and families of moderate income," the development shall be awarded a density bonus equal to 35 percent of the maximum allowable residential density under the site's General Plan land use designation, applicable for the entire development (subsections A.4 and D.5.d of Richmond Municipal Code Section 15.04.810.053).

If it is assumed that the Affordable Housing scenario conforms to these provisions of the City's Inclusionary Housing and Housing Density Bonus programs, the developer would be awarded a density bonus of 141 units.[1] This density bonus would allow for development of a total of 475 units at the project site (334 proposed units and 141 density bonus units). All other aspects of this scenario would be similar to those proposed by the project, including demolition of the Terminal One Warehouse and the provision of at least 1.9 acres of new waterfront park use.

The Affordable Housing scenario would meet most of the basic objectives of the proposed project: it would transform the site into a new waterfront residential community, provide access to waterfront open space for public use, and generate tax revenues and employment opportunities for the City. The density represented by this alternative and the scale of buildings required to accommodate an additional 141 units, however, would conflict with the City's planning goals and vision for the site and the Brickyard Cove area and would increase the project's environmental impacts that are density-related. For example, the increased density of the Affordable Housing alternative could be accommodated by raising building heights or by increasing the massing of buildings over that proposed by the project or, more likely, by a combination of these two land use strategies. As a result, the view corridors that are provided by the open space elements of the proposed project and the visual connections they enable would be likely largely eliminated, and the condominium buildings would likely be further extended to the south and the townhome units would likely be replaced by additional condominium flats to capture the land use efficiencies of multi-family buildings, substantially limiting the extent to which project buildings can be designed to create a terraced transition between the Miller/Knox Regional Shoreline park (Miller/Knox park) bluff north of the project site and the shoreline. In addition, the resident population at the site would increase by approximately 42 percent (141 density bonus units /334 proposed project units), generating an increase in all environmental impacts that are related to population growth (impacts related to air quality and greenhouse gas emissions, for example). Because the Affordable Housing scenario would not meet the City's vision and goals for the Terminal One site and because this alternative would result in increased environmental impacts, it was not carried forward for more detailed analysis or comparison.

[1] The maximum allowable residential density under the Richmond General Plan 2030 Medium Density Residential land use designation is 40 units per net developable acre. The project site consists of 10.1 net developable acres. Accordingly, the maximum allowable residential density for the project site is 404 units and a 35 percent density bonus would result in an award of 141 additional units.

## Off-Site Location

Although three of the City's four basic project objectives are site-specific in character, involving the transformation of a former industrial site into a new waterfront neighborhood, the fulfillment of the City's planning goals and vision for the Brickyard Cove area, and the provision of access to the Terminal One waterfront for public use, potential off-site locations were also considered, with the goal of comparing the impacts of development of the same or a similar project at a different location within the city.

To facilitate a reasonable and meaningful comparison of an off-site location with the proposed project, the City attempted to identify locations that would meet most of the characteristics of the proposed project: that is, waterfront sites of approximately 20 acres that could accommodate both a new residential community of a scale and density comparable to the proposed project, and new open space and park uses. The City also attempted to identify sites that would have a similar General Plan land use designation and similar access to adequate infrastructure. In addition, the City focused its analysis of potential alternative locations on sites that could feasibly be brought within the applicant's control.

The following three potential off-site locations (also shown on **Figure 5-1**) were reviewed:

- *Northshore Area Site.* This site is located within the City's Northshore Change Area (CA-12), on a site near the San Francisco Bay shoreline that is east of the Whole Foods Market Distribution Center and bordered to the north and south by railroad tracks. The Northshore Area site would provide up to 20 acres and could accommodate a project comparable in size and scope to the proposed project.

  The City's land use planning goals for the Northshore Area, however, emphasize the development of low-intensity office, light industrial, and open space uses, not residential uses (City of Richmond, 2012); the site has a General Plan designation of Business/Light Industrial. A General Plan amendment (for example, to designate the site for Medium Density Residential use) would therefore be required, to allow residential uses on this site. For this reason, the City determined that this potential alternative site was not reasonably similar to the project site and that an evaluation of the impacts of a theoretical project on the site would not result in a useful comparison with the proposed project.

- *San Pablo Peninsula (Point Molate) Site.* This site would be located within the City's San Pablo Peninsula Change Area (CA-13), on a site adjacent to Point Molate Beach Park accessible by Stenmark Drive. The site's General Plan land use designation is Low Density Residential. This site would be up to 15 acres in size and could generally accommodate up to 195 units of housing (based on assumptions that the site would have up to 13 net developable acres at the maximum 15 dwelling units per acre allowed under the General Plan Low Density Residential designation), as well as the development or enhancement of up to 1.9 acres of park uses near and on the Bay waterfront, like the proposed project.

The City's goals for this site include the development of residential 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 proposed project site, and the infrastructure required could prove to be too costly to support a residential project. 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.

For these reasons, the City determined that this potential alternative site was not reasonably similar to the project site and that an evaluation of the impacts of a theoretical project on this site would not result in a useful comparison with the proposed project.

- *Richmond Bay Specific Plan Site*. This site is located within the area designated by the City for the Richmond Bay Specific Plan (within Sub-Area 4 of the Specific Plan area, adjacent to the South Richmond Marshes). The Richmond Bay Specific Plan site would be up to 20 acres in size and would potentially be able to accommodate the 334 residential units as proposed by the project. This site also affords opportunities to develop or enhance up to 1.9 acres of park uses near and on the Bay waterfront. Unlike the Northshore Area site and the San Pablo Peninsula site, this site could be readily served by infrastructure.

  The City's draft Richmond Bay Specific Plan indicates that the desired form for Sub-Area 4 includes a mix of uses, including commercial, retail, office, civic, and research and development uses as well as residential, and a residential project could be developed on this site. The feasibility of developing a project with similar goals to the proposed project in this location is foreseeable, however, because the City's specific planning process is still underway, and because this location is an active cleanup site without an approved remedial action plan that could be several years away from completion. In addition, the land uses in the draft Richmond Bay Specific Plan are anticipated to be mixed-use and at a higher intensity/density than medium density residential. Therefore, an evaluation of the impacts of a theoretical project on this site would not result in a useful comparison with the proposed project.

As discussed above, development of a similarly-sized project on any of the three identified alternative sites would be potentially feasible; however, these sites were determined to be too dissimilar from the proposed project for a meaningful comparison of impacts either because the City's land use plans for each site do not include development at the density and of the type proposed on the project site or because the backbone infrastructure is not in place to serve the demand that would result from a project of comparable size and character. No other potential shoreline sites of an appropriate size were identified by the City; therefore, comparison of the

proposed project impacts with the impacts of a reasonably similar project on a different site was determined to be infeasible at this time. Accordingly, no Off-Site Location scenario has been carried forward for detailed analysis.

## Parks / Open Space Use

In response to a comment submitted in 2014 regarding the Notice of Preparation for the Draft EIR, a "Parks/Open Space Use" scenario was considered as a potential alternative scenario. Under this scenario, the project site would be developed with parks and open space only; no residential or retail uses would be developed. A public entity (likely, the East Bay Regional Parks District [EBRPD]) would be required to fund and develop the site with the type of park and open space uses proposed under the project. Under this scenario, the existing Terminal One warehouse would be secured and left in place or would be demolished and removed from the site. Some other site elements (including the Terminal One Pier) would be resurfaced and repurposed for public use, the site would be redeveloped in its entirety as public open space/parkland with park and open space uses similar in character to those contemplated by the proposed project, and a surface parking lot would need to be constructed to accommodate park visitors. This Parks/Open Space Use scenario represents a lower-impact development than the proposed project, with no building construction (except for ancillary service uses, such as restrooms), and would result in an overall decrease in total impervious area on the site. Many impacts, such as those associated with emissions of air pollutants from vehicles and construction equipment, would be substantially less for this scenario than the proposed project. In addition, this alternative would reduce or eliminate any aesthetic impacts associated with the proposed project.

The Parks/Open Space Use scenario would not necessarily be consistent with the City's goals for infill development and development of medium-density housing within areas designated in the General Plan for such use. This scenario would also meet some, but not most, of the basic objectives of the proposed project and other General Plan (Conservation, Natural Resources and Open Space Element) goals: it would provide access to waterfront open space for public use, but would not create a new residential community nor fulfill the City's planning goals for this site.

In addition, the costs both of initially constructing the park/open space uses and of maintaining those uses over time are substantial. The project site LDA requires the applicant to assume the initial near term costs of construction and the project residents to assume the on-going long term costs of maintaining the open space/park components of the proposed project. This assumption-of-costs arrangement works only if the project includes the proposed residential land use component. If the site is limited to park and open space uses, the costs of developing and maintaining those uses will have to be assumed by the City or EBRPD. The City does not have available funds to commit to either the construction or maintenance of park/open space uses at the project site, and is not likely to have access to such funding in the foreseeable future. As a result, the parks/open space use scenario is not considered to be an economically viable alternative to the proposed project.

Because the Parks/Open Space Use alternative would not meet the City's vision and goals for the Terminal One site, and because this alternative is not economically viable in the foreseeable future, it was not carried forward for more detailed analysis or comparison.

## Brickyard Cove Road Closure

The project LDA, which describes the land use approvals anticipated to be required for the project, includes in the description of the conceptual project design "the closure of a portion of Brickyard Cove Road north of the Project site to through vehicular traffic once the shoreline road is completed, provided the closed section of Brickyard Cove Road may remain open to Bay Trail users; private residential access; parking access for Project residents, guests, and visitors; emergency vehicles; and construction-related use" (City of Richmond, 2014). Accordingly, because the proposed project does not include the closure of Brickyard Cove Road, the City considered an alternative scenario in which this closure would take place, and in which all other elements of the proposed land use plan for the project – residential unit number and mix, infrastructure, retail use, and park/open space improvements – would remain the same as the proposed project.

This scenario would meet all the basic objectives of the proposed project; it would not, however, be consistent with the applicant's and City's goals for the project and the site, including a project site design that would prioritize pedestrian and bicycle circulation over vehicular traffic, because, if the closure of Brickyard Cove Road were to take place, through-traffic would be forced to use Shoreline Drive to access locations east and west of the site, which would negatively impact the pedestrian and bicycle orientation of the road. In addition, this scenario would not reduce or avoid any of the proposed project's environmental impacts. For these reasons, this scenario was therefore not carried forward for detailed analysis or comparison.

**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**

| New Land Use | Existing Zoning | Off-site Location | Parks/Open Space Use | Affordable Housing | Brickyard Cove Road Closure |
|---|---|---|---|---|---|
| ***Meets most basic objectives?*** | **No** | **Yes** | **No** | **Yes** | **Yes** |
| ***Substantially avoids or lessens project impacts?***[1] | **No** | **No** | **Yes** | **No** | **No** |

NOTES:

1 At least one SU or LTSM impact, but not necessarily all SU impacts, would be eliminated under this alternative.

# 5.4 Description of Alternatives Selected for Analysis

Project impacts that would be less than significant with the implementation of mitigation measures are generally related to the proposed density of development. Those resource areas that are generally given more weight in the comparison of alternatives are those with long-term impacts (generally, impacts related to air quality and greenhouse gases). Impacts associated with construction (i.e., temporary or short-term impacts) are given less weight. Thus, alternatives to the project represent various means of reducing or avoiding long-term impacts, and/or variations of development density.

The City has identified the following reasonable range of alternatives to be addressed in this EIR. Each of the selected alternatives include the project assumption that the project site comprises approximately 10.1 net developable acres.

- **Alternative 1**: Reduced Project Alternative
- **Alternative 2:** Higher Intensity Project Alternative
- **Alternative 3:** No Project / No Development Alternative

**Table 5-3** presents a comparison of alternatives (and a summary of the proposed project at full buildout) carried forward for consideration and evaluation.

Both Alternative 1, Reduced Project Alternative, and Alternative 2, Higher Intensity Project Alternative, were developed in part in response to comments received by the City on the Notice of Preparation for the EIR, during the public scoping period.

**TABLE 5-3**
**DESCRIPTION OF PROPOSED PROJECT AND ALTERNATIVES SELECTED FOR EVALUATION**

| Land Use | Proposed Project | Alternative 1: Reduced Project Alternative | Alternative 2: Higher Intensity Project Alternative | Alternative 3: No Project / No Development Alternative |
|---|---|---|---|---|
| Residential Units | 334 | 101 | 404 | - |
| *Condominium Units* | *308* | *-* | *404* | - |
| *Townhomes* | *26* | *74* | *-* | - |
| *Single Family Homes* | *-* | *27* | *-* | - |
| **Estimated Total Gross New Building Space (SF)** | **558,000** | **206,000** | **660,000** | **0** |
| ***Meets most basic objectives?*** | **Yes** | **Yes** | **Yes** | **No** |
| ***Feasible?*** | **Yes** | **Yes** | **Yes** | **Yes** |
| ***Substantially avoids or lessens LTSM Impact/s?***[1] | **NA** | **Yes** | **Yes** | **Yes** |

NOTES: LTSM = Less Than Significant with Mitigation; SF = Square Feet

[1] At least one LTSM impact, but not necessarily all LTSM impacts, would be eliminated under this alternative.

## Alternative 1: Reduced Project Alternative

The Reduced Project Alternative assumes a density of residential development on the site of 10 units per acre, representing the lower end of the range for the Medium Density Residential General Plan designation. Rather than a mix of multi-family condominiums and townhomes, this alternative would include a mix of townhomes and detached, single-family residences. This alternative differs from the project LDA in that it would include single-family units and townhomes, and not a mix of single-family detached, townhouse, and condominium units.

A conceptual sketch of this alternative is shown in **Figure 5-2**. In summary, this alternative would include the following:

- Up to 27 two- to three-story, single family detached residential units (up to 3000 square feet each), and up to 74 two- to three-story attached townhome residential units (up to 2000 square feet each), for a total of 101 units;
- 1.9 acres of waterfront park uses;
- Approximately 2,000 square feet of neighborhood- and visitor-serving retail, similar to the proposed project; and
- Similar infrastructure and improvements as proposed for the project (shoreline road, Bay Trail, parks and natural/open space areas).

Although the economic feasibility of this alternative would be required to be confirmed (ability of this alternative to finance construction of the public improvements (including repurposing the Terminal One Pier and waterfront for public use) as well as the ongoing maintenance costs of the public improvements once constructed), this alternative is potentially feasible.

The Reduced Project alternative would generally meet all of the objectives of the proposed project: it would transform the site into a new waterfront residential community, help fulfill the City's planning goals and vision for the site and Brickyard Cove area, provide access to waterfront open space for public use, and generate tax revenues and employment opportunities for the City of Richmond. However, conservatively presuming that this alternative would be economically feasible, it would achieve the latter two fiscal and employment-related objects to a lesser extent than the proposed project.

In addition, under this alternative, the project homes would also generate fewer total traffic trips than the proposed project, which would result in lower emissions of both criteria air pollutants and *total* greenhouse gases. However, because this alternative would result in a smaller service population than the project, the greenhouse gas emissions effect per service population would be greater than with the proposed project. This is discussed in detail in the analysis that follows in this section. Overall, because the Reduced Project Alternative would substantially lessen a long-term impact of the proposed project and would also reduce other impacts related to the operational phase of the project, this alternative was carried forward for analysis.

## Alternative 2: Higher Intensity Project Alternative

The Higher Intensity Project Alternative assumes that a more physically dense and higher land use intensity project would be developed on the project site, and assumes a density of residential development on the site of 40 units per acre, representing the high end of the range for the Medium Density Residential General Plan designation. This alternative was developed to reflect the maximum intensity residential development possible on the project site in order to determine whether any impacts affected by density and intensity of development, such as those related to GHG emissions, would be lower under this alternative than the proposed project. Rather than the proposed project's mix of multi-family condominiums and townhomes, this alternative would include only condominiums (differing from the project LDA that describes a mix of single-family detached, townhouse, and condominium units). This alternative also assumes that the average size of condominium units would be the same as described for the proposed project.

In summary, this alternative would include the following:

- Up to 404 condominium residential units averaging 1,380 square feet in size;
- Five condominium buildings that would each be up to 35 percent larger than the buildings proposed for the project, in order to achieve the desired density;
- 1.9 acres of waterfront park uses;
- Approximately 2,000 square feet of neighborhood- and visitor-serving retail, similar to the proposed project; and
- Similar infrastructure and improvements as proposed for the project (shoreline road, Bay Trail, parks and natural/open space areas).

Although the economic feasibility of this alternative would be required to be confirmed, this alternative is potentially feasible.

The Higher Intensity Project Alternative would meet most of the objectives of the proposed project: it would transform the site into a new waterfront residential community, help fulfill the City's planning goals and vision for the site and Brickyard Cove area, provide access to waterfront open space for public use, and generate tax revenues and employment opportunities for the City of Richmond. Even though this alternative does not involve increasing the height of any of the condominium buildings above five floors over podium, because it makes adjustments in the building layout to extend four of the five condominium buildings further to the south on the site, it may marginally increase the impact on views from public vantage points. This view impact along the southern margin of the site would be partially offset by the removal of the band of townhomes that line Shoreline Drive in the project as proposed.

Under this alternative, the project homes would generate a greater number of total traffic trips than the proposed project, which would result in higher emissions of both criteria air pollutants and greenhouse gases; however, because of this alternative's increased density, it would meet

regional goals regarding GHG emissions, as discussed below. Because the Higher Intensity Project Alternative would lessen an impact of the proposed project related to GHG emissions, this alternative was carried forward for analysis.

### Alternative 3: No Project / No Development Alternative

The No Project Alternative is the circumstance under which the proposed project does not proceed. This Alternative is analyzed consistent with Section 15126.6(e) of the CEQA *Guidelines*, which states that the No Project Alternative must include the assumption that conditions at the time the Notice of Preparation of an EIR was circulated for public review would not be changed because the proposed project would not be constructed, and the events or actions that would reasonably be expected to occur in the foreseeable future if the proposed project were not approved.

Under the No Project/No Development alternative, the project would not be constructed, and the site would remain in the same state as its current condition, with the warehouse structure and other former foundations and hardscape remaining in place. Residential units would not be constructed at the site, the retail element would not be constructed, the Terminal One waterfront park proposed under the project would not be developed, and the new portion of the Bay Trail would not be constructed.

This alternative would not meet any of the objectives of the proposed project: it would not transform the site into a new waterfront residential community with park and public access improvements, nor would it help fulfill the City's planning goals and vision for the site and Brickyard Cove area or generate tax revenues and employment opportunities for the City. This alternative would, however, avoid all of the project's impacts that would be less than significant with the implementation of mitigation.

## 5.7 Comparative Analysis of the Alternatives

This section presents a discussion of the comparative environmental effects of each alternative compared to the effects of the proposed project.

As permitted by CEQA, the significant effects of the alternatives are discussed in this EIR in less detail than are the effects of the proposed project (CEQA *Guidelines* Section 15126.6[d]). Unless otherwise indicated, the impacts associated with the proposed project and each alternative are for year 2018, the anticipated year for completion of project construction. All impacts are described after implementation of any applicable mitigation measures identified in Chapter 4.

# Comparison of Impacts Identified for the Proposed Project and Alternatives

## Alternative 1: Reduced Project Alternative

The Reduced Project alternative would result in the construction of up to 27 two- to three-story, single-family detached residential units and 74 two- to three-story attached townhome units. A conceptual sketch of this alternative is shown in **Figure 5-2**. This alternative would include the waterfront park, but would include less open space, park, and landscaped areas than the project; all other aspects of this alternative would be the same as the proposed project (Bay Trail Loop, Shoreline Drive, retail, etc.). Under this alternative, buildings constructed on the site would be no more than three stories, lower in height than the up to five-story buildings that are proposed to be constructed above a single-story parking podium for the project. The homes constructed as part of this alternative would also generate fewer total traffic trips than the proposed project, as shown in **Table 5-4**, which would result in lower emissions of both criteria air pollutants and greenhouse gases, as shown in **Table 5-5**.

Because no underground parking podiums would be required to be constructed as part of this alternative, the construction period would be shorter and the area of disturbance or excavation on the site would be smaller; for these reasons, other impacts, such as impacts to hydrology and water quality and noise, would still occur but would be less severe than they would be for the project.

**TABLE 5-4**
**REDUCED PROJECT ALTERNATIVE AUTOMOBILE TRIP GENERATION ESTIMATES**

| Land Use | ITE Code | Units [a] | AM Peak Hour | | | PM Peak Hour | | | Daily Total |
|---|---|---|---|---|---|---|---|---|---|
| | | | In | Out | Total | In | Out | Total | |
| Single-Family | 210 [b] | 27 DU | 7 | 22 | 29 | 20 | 12 | 32 | 315 |
| Multi-Family | 220 [c] | 74 DU | 8 | 30 | 38 | 30 | 16 | 46 | 492 |
| Restaurant | 932 [d] | 2 KSF | 12 | 10 | 22 | 12 | 8 | 20 | 250 |
| ***Total Alternative 1 Automobile Trips*** | | | **27** | **62** | **89** | **62** | **36** | **98** | **1,057** |
| Proposed Project | | | 46 | 146 | 192 | 147 | 80 | 227 | 2,470 |
| ***Difference*** | | | **-19** | **-84** | **-103** | **-85** | **-44** | **-129** | **-1,413** |

a. DU = dwelling unit. KSF = 1,000 square feet
b. ITE Trip Generation (2012; 9th Edition) land use category 210 – Single-Family Detached Housing:
Daily: Ln(T) = 0.92Ln(X) + 2.72
AM Peak Hour: T = 0.70(X) + 9.74; Enter = 25%; Exit = 75%
PM Peak Hour: Ln(T) = 0.90Ln(X) + 0.51; Enter = 63%; Exit = 37%
Where T = trips generated, X = Dwelling Units
c. Although the current plan calls for for-sale units (ITE Code 230), ITE Code 220, which has a higher trip generation rate, was used to provide a conservative estimate for the residential component of the project in the event that conversion to rental occurs.
ITE Trip Generation (2012; 9th Edition) land use category 220 - Apartment:

**TABLE 5-4**
**REDUCED PROJECT ALTERNATIVE AUTOMOBILE TRIP GENERATION ESTIMATES**

| Land Use | ITE Code | Units [a] | AM Peak Hour | | | PM Peak Hour | | | Daily Total |
|---|---|---|---|---|---|---|---|---|---|
| | | | In | Out | Total | In | Out | Total | |

AM: (T) = 0.51 (X); Enter = 20%, Exit = 80%
PM: (T) = 0.62 (X); Enter = 65%, Exit = 35%
Daily: (T) = 6.65 (X)
Where X = dwelling unit, T = number of automobile trips

d. ITE Trip Generation (2012; 9th Edition) land use category 932 – High-Turnover (Sit Down) Restaurant:
Daily: T = 127.15(X)
AM Peak Hour: T = 10.81(X); Enter = 55%; Exit = 45%
PM Peak Hour: T = 9.85(X); Enter = 60%; Exit = 40%
Where T = trips generated, X = 1000 square feet leasable area

Source: *ITE Trip Generation, 9th Edition, 2012;* Appendix E.

**TABLE 5-5**
**REDUCED PROJECT ALTERNATIVE AVERAGE DAILY POLLUTANT EMISSIONS (POUNDS PER DAY) WITHOUT MITIGATION**

| | ***Pounds Per Day*** | | | | ***Metric Tons (MT) / MT/Year*** |
|---|---|---|---|---|---|
| | **ROG** | **$NO_x$** | **Exhaust $PM_{10}$** | **Exhaust $PM_{2.5}$** | **GHGs ($CO_2e$)** |
| ***Unmitigated Construction Emissions*** | | | | | |
| Construction Emissions from Alternative | 8.1 | 31.2 | 1.8 | 1.7 | 644 MT |
| *BAAQMD Construction Threshold* | 54 | 54 | 82 | 54 | NA |
| Exceeds BAAQMD Threshold? | No | No | No | No | NA |
| *Proposed Project* | 16.6 | 33.6 | 1.9 | 1.8 | 934 MT |
| ***Unmitigated Operational Emissions*** | | | | | |
| Operational Emissions from Alternative [a] | 8.1 | 7.5 | 1.9 | 1.9 | 1,130 MT/Year |
| Operational Emissions by Service Population from Alternative (217 residents/employees) | | | | | 5.2 MT/SP/YR |
| *BAAQMD Operational Threshold* | 54 | 54 | 82 | 54 | 1,100 MT/Yr, 4.6 MT [b] |
| Exceeds Threshold? | No | No | No | No | Yes / Yes |
| *Proposed Project* | 18.0 | 18.0 | 12.9 | 4.1 | 2,803 |

a Includes mobile sources, area sources, and natural gas combustion. Mobile sources are motor vehicles and trucks. Area sources include landscape maintenance (equipment used for these activities such as gasoline-powered lawnmowers and blowers), maintenance application of paints and other interior and exterior surface coatings, and increased use of consumer products that result in emissions of ROG. Natural gas combustion is for space and water heating.

b 4.6 MT = Service Population Threshold, 4.6 metric tons of $CO_2e$/SP/yr.

Note: Columns may not total precisely due to rounding.

SOURCE: ESA (Appendix B)

The following discussion summarizes impacts that would occur under the Reduced Project alternative in comparison to the impacts that would occur under the proposed project.

## Impacts

### *Aesthetics*

***The Reduced Project alternative would result in less-than-significant (no mitigation required) aesthetics impacts, the same as identified with the proposed project although the alternative would have less building heights and mass.*** Development under this alternative would be up to three stories, rather than the proposed project's up-to-five stories above podium, reducing the project's effects on scenic vistas and resources. Considering publically accessible views where the proposed project would most adversely affect the view of scenic resources, this alternative would affect views of the uppermost part of Mount Tamalpais and part of the Marin Hills ridgeline in simulation S1 (Brickyard Cove Road) to a substantially lesser degree with the removal of two building stories. Also, like the project, this alternative would create a new shoreline roadway (Shoreline Drive), and a new waterfront park (the Terminal One Waterfront Park) that would afford the public unobstructed, panoramic views of San Francisco Bay, from the East Bay Hills in the northeast to the Marin Hills in the northwest. This alternative will also result is impacts to visual quality/character (vi), and light and glare, to a lesser degree than with the proposed project.

### *Air Quality*

***The Reduced Project alternative would result in less-than-significant (with mitigation) construction and operational impacts, the same as identified with the proposed project although the alternative would have less development.*** This alternative assumes implementation of the same mitigation measure to address construction emissions as the proposed project. With regard to operational emissions, the Reduced Project alternative would generate substantially fewer daily vehicle trips compared to the project (1,057 compared to 2,470), as summarized in Table 5-4, and generally lower emissions of criteria pollutants, as summarized in Table 5-5. Like the proposed project, with mitigation the alternative would avoid significant and unavoidable construction and operational exceedance of ROG, $NO_x$ and PM.

### *Biological Resources*

***The Reduced Project alternative would result in less-than-significant (with mitigation) biological resources impact, the same as identified with the proposed project although the alternative could have less construction activity.*** The Reduced Project alternative would involve less development (i.e., less grading and excavation) than the project, and would generally result in fewer and less severe impacts to biological resources. As with the project, the Reduced Project alternative could result in impacts to nesting birds and roosting bats depending on the time of year construction activities would occur. Therefore, the Reduced Project Alternative would result in the same potentially significant impacts related to nesting birds and roosting bats, although the severity of these impacts would be less. Like the proposed project, with mitigation the alternative would avoid significant and unavoidable impacts.

Because the Reduced Project alternative would involve less development than the proposed project, water quality-related impacts to the marine environment, special-status and managed fish taxa, and spawning and foraging habitat for Pacific herring would be less severe, and would be similarly mitigated with the implementation of project Mitigation Measure HYD-1. Impacts related to bird collisions with buildings as described for the project would be less severe for the Reduced Project alternative, because the single-family homes and townhomes built under the alternative would be smaller and lower to the ground than the condominium buildings proposed for the project.

Overall, development of this Reduced Project alternative would have less intensive development as compared to the project. Like the proposed project, with mitigation the alternative would avoid significant and unavoidable impacts to biological resources.

### *Cultural Resources*

***The Reduced Project alternative would result in less-than-significant (with mitigation) cultural resources impacts, the same as identified with the proposed project although the alternative could have less construction activity.*** There are no known cultural resources on the project site. The Reduced Project alternative could result in adverse effects to cultural resources that might be uncovered during construction, requiring mitigation similar to that described for the project. Because the Reduced Project alternative would involve less development (i.e., less grading and excavation) as compared to the project. Like the proposed project, with mitigation, the alternative would avoid significant and unavoidable cultural resources impacts.

### *Geology, Soils, and Mineral Resources*

***The Reduced Project alternative would result in less-than-significant (no mitigation required) geology and soils impacts, the same as identified for the proposed project although the alternative would have less ground disturbance.*** The Reduced Project alternative includes lower-rise buildings and no underground parking unlike the project, and therefore would involve somewhat less excavation. It would however disturb essentially the same area of the site when compared with the project. As with the project, a design-level geotechnical investigation would be performed for the Reduced Project alternative, which would specify site-specific requirements that would reduce or avoid potential impacts related to seismically-induced ground shaking, lateral spreading, subsidence, liquefaction, collapse, and expansive soils. Overall, like the proposed project the Reduced Project alternative would result in less-than-significant geology and soils impacts associated with construction and operation.

### *Climate Change and Greenhouses Gas Emissions*

***The Reduced Project alternative would conservatively result in a significant and unavoidable climate change and GHG emissions impacts, different than the less-than-significant (no mitigation required) impacts identified with the proposed project, although the alternative would generate less total GHG emissions annually.*** The Reduced Project alternative was analyzed for potential effects related to greenhouse gas emissions (GHGs) and energy (see **Appendix B**). The results are presented in **Table 5-5**, above.

The amount of total operational greenhouse gas emissions of this alternative is less than for the project (2,803 total MT [metric tons]/year for the project versus 1,130 MT/year for this alternative).

The Reduced Project alternative would develop fewer residential units and the same amount of commercial space as the project, and would therefore result in a smaller service population of approximately 217 people (209 residents, assuming an average of 2.3 people per single family household and 2.1 people per townhome,[2] and a 4 percent vacancy factor, and 8 retail workers). Under the Reduced Project alternative, therefore, the ratio of MT $CO_2$e e per year to service population is higher than under project conditions (5.2 as compared to the project's ratio of 4.3), and the impact would be more severe.

Like the proposed project, this alternative would exceed the Bay Area Air Quality Management District (BAAQMD) threshold for project operations of 1,100 MT of $CO_2$e/year. Unlike the proposed project, the Reduced Project alternative would result in emissions of GHGs that would also exceed the BAAQMD MT $CO_2$e/service population/year threshold of 4.6; therefore, because this alternative would exceed both thresholds, it would result in a significant impact that would not occur under the proposed project.

Mitigation measures that would reduce the *total* estimated emissions of GHGs from this alternative by approximately 3 percent (approximately 31 MT $CO_2$e/year to below the 1,100 $CO_2$e/year threshold) would be required to reduce this impact to a less-than-significant level. Recommended Measure GHG-2 as identified in this EIR for the project could be implemented with the alternative and potentially achieve this level of reduction in total emissions, however, this analysis presumes the impact to be unavoidable since the effectiveness of a set of emissions reduction measures with this alternative cannot be known at this time. Modifications that increase the service population (or substantially reduce the total emissions without lowering the service population) would effectively lower the per capita ratio. Further, because the impact would be significant, this alternative is also conservatively considered in conflict with regulatory plans adopted for the purpose of reducing GHG emissions.

The energy demands of this alternative were estimated to be less than that of the project and thus would result in a less-than-significant impact like that identified for the proposed project.

In summary, although the Reduced Project alternative would result in a lower average daily production of air pollutant emissions in pounds per day when compared to the proposed project (see Air Quality), the alternative would exceed the BAAQMD $CO_2$e /year thresholds (GHG emissions) for both project operations and per service population, resulting in a significant impact that would not occur under the proposed project. The is conservatively considered significant and unavoidable. (Further discussion of the BAAQMD service population relative to the comparison of this alternatives environmental superiority compared to the project and the other alternatives is discussed under *Environmentally Superior Alternative* further in this chapter.)

[2] The conservative assumption of an average of 2.3 persons per household for single family housing on the site is generally consistent with persons per household in the city as a whole and in Census Tract 3780.

### Hazards and Hazardous Materials

***The Reduced Project alternative would result in less-than-significant (with mitigation) hazards and hazardous materials impacts, the same as identified with the proposed project although the alternative could have more ground moving activity.*** The Reduced Project alternative would have lower-rise buildings and no underground parking unlike the project, and therefore could involve somewhat less excavation as compared to the project, including within areas of the site where there may be soils affected by chemical contamination. The alternative would be subject to the same potential hazards risk and conditions as the project. Also like the proposed project, with mitigation, the alternative would avoid significant and unavoidable hazards and hazardous materials impacts.

### Hydrology and Water Quality

***The Reduced Project alternative would result in less-than-significant (with mitigation) hydrology and water quality impacts, the same as identified with the proposed project although the alternative could have more new impervious area.*** The Reduced Project alternative would involve construction and earthmoving activities that could affect water quality and alter drainage patterns in a similar fashion as the proposed project; however, the Reduced Project alternative is likely to result in a larger area of impervious surfaces on the site than the project, resulting in a higher volume of runoff and requiring larger stormwater treatment areas. In addition, site infrastructure under this alternative would be subject to the same flood hazard conditions, including flood hazards related to sea level rise, as compared to the project. Adherence to the same project design features and regulatory requirements would ensure the alternative would have less-than-significant impacts to hydrology and water quality.

### Land Use and Planning

***The Reduced Project alternative would result in less-than-significant (no mitigation required) land use and planning impacts, the same as identified for the proposed project.*** The project includes an amendment to the site zoning (re-zoning application) to incorporate the proposed Planned Area Plan, among other approvals (see Chapter 3, Project Description). The Reduced Project alternative would also require a re-zoning application, to change the site zoning (likely to Planned Area District, similar to the proposed project). Like the proposed project, this alternative would be consistent with the City's vision and goals for this part of the Brickyard Cove area, and the District No. 1 Brickyard Cove Area Special Features Overlay. Overall, the Reduced Project alternative would result in less-than-significant land use and planning impacts like those identified for the project. However, this alternative would not be as supportive toward meeting the City's Regional Housing Needs Assessment (RHNA) goals and its General Plan Housing Element goals and policies since the alternative would have few units/less density, as compared to the project.

### Noise

***The Reduced Project alternative would result in less-than-significant (with mitigation) construction and operational noise impacts, the same as identified with the proposed project***

***although the alternative would have less development.*** Because the Reduced Project alternative's peak hour trips are less than those of the project (89/98 AM/PM peak hour trips for the alternative compared to 192/227 AM/PM peak hour trips for the project), the alternative would generate less traffic noise than the proposed project. In addition, construction activity would be less with this alternative; therefore the duration of construction noise would be reduced, as compared to the project. Like the proposed project, with mitigation the alternative would avoid significant and unavoidable construction and operational noise impacts.

### *Population, Housing and Employment*

***The Reduced Project alternative would result in e less-than-significant (no mitigation required) impacts to population, housing, and employment, the same as identified with the proposed project although the alternative would have less residential population.*** As with the project, no displacement of housing or people would occur with the Reduced Project alternative. Overall growth with this alternative would be substantially less than with the project (a residential population of 209 people compared to the project residential population of 640). Less population growth largely results in reductions in other effects (e.g., utility and public service demands). Also, no aspect of the alternative would result in undue growth associated with infrastructure improvements that would induce growth, similar to the proposed project. Further, because this alternative would have less development as compared to the proposed project, it would not be as supportive toward meeting RHNA and the City's Housing Element goals.

### *Public Services and Recreation*

***The Reduced Project alternative would result in less-than-significant (no mitigation required) impacts to public services and recreation, the same as those identified for the proposed project although the alternative would have less development.*** As previously discussed for this alternative, there would be less development and on-site population as compared to the project, resulting in lower demand for police, fire and emergency services, schools, and parks and recreation. A somewhat smaller total area of parks and open space area would be provided for this alternative as compared to the project. Overall, the Reduced Project alternative would result in less-than-significant impacts to public services and recreation, as compared to those identified for the project.

### *Transportation and Traffic*

***The Reduced Project alternative would result in less-than-significant (no mitigation required) transportation and traffic impacts, the same as identified with the proposed project although the alternative would have less development.*** As discussed in Section 4.13, Transportation and Traffic, of this EIR, the proposed project would not result in significant impacts related to increased traffic, and no mitigation would be required. Traffic trips under the Reduced Project alternative would be less than for the project (89/98 AM/PM peak hour trips for the alternative compared to 192/227 AM/PM peak hour trips for the project), and the less-than-significant traffic impacts of the project would not become any more severe under this alternative. Overall, the

Reduced Project alternative would have fewer peak hour vehicle trips and would result in less-than-significant impacts related to transportation and traffic, as identified with the project.

### *Utilities and Service Systems*

***The Reduced Project alternative would result in less-than-significant (no mitigation required) impacts to utilities and service system, the same as identified for the proposed project although the alternative would have less development.*** As noted above, the Reduced Project alternative would result in fewer overall residential units and a reduced residential population increase when compared with the project. As such, the demand for water, wastewater treatment, stormwater treatment, and solid waste disposal is expected to be similar, though slightly reduced, compared with the project. Overall, the Reduced Project alternative would have less-than-significant impacts related to utilities and services systems, as identified for the project.

## Alternative 2: Higher Intensity Project Alternative

The Higher Intensity Project alternative would result in the construction of up to 404 condominium units in five buildings up to five stories in height (over a single-story podium) and up to 35 percent larger than the project condominium buildings. A conceptual sketch of this alternative is shown in **Figure 5-3**. This alternative would include the waterfront park, and would include a smaller amount of open space, park, and landscaped area as the project; all other aspects of this alternative would be the same as the proposed project (Bay Trail Loop, Shoreline Drive, retail, etc.). Under this alternative, the condominium buildings constructed on the site would extend farther south toward the shoreline than the condominium buildings proposed for the project, and would be greater in height (four and five stories) closer to the shoreline than the two- and three-story townhomes proposed for this area of the site under the project. The homes constructed as part of this alternative would also generate a higher number of total traffic trips than the proposed project, as shown in **Table 5-6**, which would result in higher emissions of both criteria air pollutants and greenhouse gases, as shown in **Table 5-7**.

Because the total number of residential units for this alternative would be greater and because, as shown on Figure 5-3, large areas of surface parking would be required for this alternative, the construction period would be longer; for these reasons, other impacts, such as impacts to hydrology and water quality and noise, would generally be somewhat more severe than they would be for the project.

**TABLE 5-6**
**HIGHER INTENSITY PROJECT ALTERNATIVE AUTOMOBILE TRIP GENERATION ESTIMATES**

| Land Use | ITE Code | Units [a] | AM Peak Hour | | | PM Peak Hour | | | Daily Total |
|---|---|---|---|---|---|---|---|---|---|
| | | | In | Out | Total | In | Out | Total | |
| Multi-Family | 220 [b] | 404 DU | 41 | 165 | 206 | 163 | 88 | 251 | 2,687 |
| Restaurant | 932 [c] | 2 KSF | 12 | 10 | 22 | 12 | 8 | 20 | 250 |

**TABLE 5-6**
**HIGHER INTENSITY PROJECT ALTERNATIVE AUTOMOBILE TRIP GENERATION ESTIMATES**

| Land Use | ITE Code | Units [a] | AM Peak Hour | | | PM Peak Hour | | | Daily Total |
|---|---|---|---|---|---|---|---|---|---|
| | | | In | Out | Total | In | Out | Total | |
| ***Total Alternative 2 Automobile Trips*** | | | **53** | **175** | **228** | **175** | **96** | **271** | **2,937** |
| Proposed Project | | | 46 | 146 | 192 | 147 | 80 | 227 | 2,470 |
| ***Difference*** | | | **+7** | **+29** | **+36** | **+28** | **+16** | **+44** | **+467** |

a. DU = dwelling unit. KSF = 1,000 square feet
b. Although the current plan calls for for-sale units (ITE Code 230), ITE Code 220, which has a higher trip generation rate, was used to provide a conservative estimate for the residential component of the project in the event that conversion to rental occurs.
ITE Trip Generation (2012; 9th Edition) land use category 220 - Apartment:
AM: (T) = 0.51 (X); Enter = 20%, Exit = 80%
PM: (T) = 0.62 (X); Enter = 65%, Exit = 35%
Daily: (T) = 6.65 (X)
Where X = dwelling unit, T = number of automobile trips
c. ITE Trip Generation (2012; 9th Edition) land use category 932 – High-Turnover (Sit Down) Restaurant:
Daily: T = 127.15(X)
AM Peak Hour: T = 10.81(X); Enter = 55%; Exit = 45%
PM Peak Hour: T = 9.85(X); Enter = 60%; Exit = 40%
Where T = trips generated, X = 1000 square feet leasable area
Source: *ITE Trip Generation, 9th Edition, 2012;* Appendix E.

**TABLE 5-7**
**HIGHER INTENSITY PROJECT ALTERNATIVE AVERAGE DAILY POLLUTANT EMISSIONS (POUNDS PER DAY) WITHOUT MITIGATION**

| | ***Pounds Per Day*** | | | | ***Metric Tons (MT) / MT/Year*** |
|---|---|---|---|---|---|
| | **ROG** | **$NO_x$** | **Exhaust $PM_{10}$** | **Exhaust $PM_{2.5}$** | **GHGs ($CO_2e$)** |
| ***Unmitigated Construction Emissions*** | | | | | |
| Construction Emissions from Alternative | 19.4 | 34.4 | 1.9 | 1.8 | 1,020 MT |
| *BAAQMD Construction Threshold* | 54 | 54 | 82 | 54 | NA |
| Exceeds BAAQMD Threshold? | No | No | No | No | NA |
| *Proposed Project* | 16.6 | 33.6 | 1.9 | 1.8 | 934 MT |
| ***Unmitigated Operational Emissions*** | | | | | |
| Operational Emissions from Alternative [a] | 21.7 | 22 | 1.0 | 1.0 | 3,375 MT/Year |
| Operational Emissions by Service Population from Alternative (745 residents/employees) | | | | | 4.5 MT/SP/YR |
| *BAAQMD Operational Threshold* | 54 | 54 | 82 | 54 | 1,100 MT/Yr, 4.6 MT [b] |
| Exceeds Threshold? | No | No | No | No | Yes / No |
| *Proposed Project* | 18.0 | 18.0 | 12.9 | 4.1 | 2,803 |

a Includes mobile sources, area sources, and natural gas combustion. Mobile sources are motor vehicles and trucks. Area sources include landscape maintenance (equipment used for these activities such as gasoline-powered lawnmowers and blowers), maintenance application of paints and other interior and exterior surface coatings, and increased use of consumer products that result in emissions of ROG. Natural gas combustion is for space and water heating.

b 4.6 MT = Service Population Threshold, 4.6 metric tons of $CO_2e$/SP/yr.

Note: Columns may not total precisely due to rounding.

SOURCE: ESA (Appendix B)

The following discussion summarizes impacts that would occur under the Higher Intensity Project alternative in comparison to the impacts that would occur under the proposed project.

## Impacts

### *Aesthetics*

***The Higher Intensity Project alternative would result in less-than-significant (no mitigation required) aesthetics impacts, the same as identified with the proposed project although the alternative would have more building mass towards the shoreline.*** Development under the Higher Intensity Project alternative would include the construction of condominium buildings that would extend farther south than the condominium buildings proposed as part of the project (under this alternative, condominium buildings 2, 3, and 4 would extend up to approximately 100 feet further south). No townhomes would be built under this alternative; the condominium buildings would extend into the area of the site designated for townhomes under the proposed project. Project buildings would also not "step down" towards the shoreline as for the proposed project – all parts of the condominium buildings would be 4 and 5 stories.

As discussed in Section 4.1, Aesthetics, construction of the project buildings would affect scenic vistas and resources, especially in regards to views of the shoreline, but the impact would be ultimately less than significant, as views of the shoreline and San Francisco Bay would not be substantially obstructed by the project buildings. The Higher Intensity Project alternative would likewise result in impacts to aesthetics, as the condominium buildings have the potential to obstruct views of the Bay, shoreline, and other resources, to a greater extent than the proposed project. For example, in the view from the Miller/Knox park ridge above the site (the location for which simulation S2 in Section 4.1 was created), the larger buildings under this alternative would likely obstruct slightly more of the view of the Bay and shoreline than the proposed project. This would also likely be the case for the view from the Miller/Knox park bench (the location for which simulation S3 was created). Under this alternative, in the view to the east from the fishing pier at Ferry Point (the location for which simulation S5 was created), the condominium buildings would obstruct somewhat more of the view of the East Bay Hills, but views of these hills would still remain largely unobstructed from that viewpoint. Therefore, similar to the proposed project, the Higher Intensity Project alternative would not result in substantial obstruction of views, and overall, the Higher Intensity Project alternative would have similar, less-than-significant adverse impacts to aesthetics as compared to the aesthetics impacts identified for the project.

### *Air Quality*

***The Higher Intensity Project alternative would result in less-than-significant (with mitigation) construction and operational impact, the same as identified with the proposed project although the alternative would have more development.*** This alternative assumes implementation of the same mitigation measure to address construction emissions as the proposed project. With regard to operational emissions, the Higher Intensity Project alternative would generate somewhat more daily vehicle trips compared to the project (2,687 compared to 2,470), as summarized in Table 5-6, and generally higher emissions of criteria pollutants, as summarized in Table 5-7 that would

still be below the significance threshold. Like the proposed project, with mitigation the alternative would avoid significant and unavoidable construction and operational exceedance of ROG, $NO_x$ and PM.

### *Biological Resources*

***The Higher Intensity Project alternative would result in less-than-significant (with mitigation) biological resources impacts, the same as those identified with the proposed project although the alternative could have more construction activity.*** The Higher Intensity Project alternative would involve more development (i.e., more grading and excavation) than the project, and would generally result in the potential for more severe impacts to biological resources. As with the project, the Higher Intensity Project alternative could result in impacts to nesting birds and roosting bats depending on the time of year construction activities would occur. Therefore, the Higher Intensity Project Alternative would result in the same potentially significant impacts related to nesting birds and roosting bats. , though the impacts could similarly be mitigated to a less-than-significant level with the implementation of the project mitigation measures addressing these impacts.

Because the Higher Intensity Project alternative would involve more development than the proposed project, water quality-related impacts to the marine environment, special-status and managed fish taxa, and spawning and foraging habitat for Pacific herring would be somewhat more severe, but would be similarly mitigated with the implementation of project Mitigation Measure HYD-1. Impacts related to bird collisions with buildings as described for the project would also be somewhat more severe for the Higher Intensity Project alternative, because the condominium buildings built under the alternative would be larger than the buildings proposed for the project. The alternative would comply with the City's Tree Protection Ordinance for any trees that may be removed or replaced. Overall, like the proposed project, with the implementation of the mitigation measures proposed for the project, the Higher Intensity Project alternative would avoid significant and unavoidable impacts to biological resources impacts.

### *Cultural Resources*

***The Higher Intensity Project alternative would result in less-than-significant (with mitigation) cultural resources impacts, the same as those identified with the proposed project although the alternative could have more construction activity.*** There are no known cultural resources on the project site. The Higher Intensity Project alternative could result in adverse effects to cultural resources that might be uncovered during construction, requiring mitigation similar to that described for the project. Because the Higher Intensity Project alternative would involve more development (i.e., more grading and excavation) than the project, the Higher Intensity Project alternative would result in somewhat more severe potentially significant impacts as compared to the project. Overall, like the proposed project, with mitigation, the alternative would avoid significant and unavoidable cultural resources impacts.

### *Geology, Soils, and Mineral Resources*

***The Higher Intensity Project alternative would result less-than-significant (no mitigation required) geology and soils impacts, the same as identified for the proposed project although the alternative could have more ground disturbance.*** The Higher Intensity Project alternative would involve more grading and excavation than the project, thereby exposing more area to soil erosion when compared with the project. As with the project, a design-level geotechnical investigation would be performed for the Higher Intensity Project alternative, thereby reducing potential impacts related to seismically-induced ground shaking, lateral spreading, subsidence, liquefaction, collapse, and expansive soils to a less-than-significant level. Overall, the Higher Intensity Project alternative would result in greater grading and excavation and overall soil disturbance, as compared to the project. However, like the project, the alternative would result in a less-than-significant impact associated with geology and soils..

### *Climate Change and Greenhouses Gas Emissions*

***The Higher Intensity Project alternative would result in less-than-significant (no mitigation required) impacts to climate change and GHG emissions, the same as identified with the proposed project although the alternative would have more development.*** The Higher Intensity Project alternative was analyzed for potential effects related to greenhouse gas emissions (GHGs) and energy (see **Appendix B**). The results are presented in **Table 5-7**, above.

The amount of total operational greenhouse gas emissions of this alternative is more than for the project (2,803 total MT/year for the project versus 3,375 MT/year for this alternative). The Higher Intensity Project alternative would develop more residential units and the same amount of commercial space as the project, and would therefore result in a larger service population of approximately 745 people (737 residents, assuming an average of 1.9 people per condominium unit,[3] a 4 percent vacancy factor, and 8 retail workers). Under the Higher Intensity Project alternative, therefore, the ratio of MT $CO_2e$ per year to service population is only slightly higher than under project conditions (4.5 as compared to the project's ratio of 4.3).

Like the proposed project, this alternative would exceed the BAAQMD threshold for *total* project operations of 1,100 MT of $CO_2e$/year. Also like the proposed project, this alternative would result in emissions of GHGs that would not exceed the BAAQMD MT $CO_2e$/service population/year threshold of 4.6; therefore, like the project, this alternative would have a less-than-significant impact. Recommended Measure GHG-2 as identified in this EIR would reduce potential greenhouse gas emissions impacts from this alternative. Also, because the impact would be less-than-significant, this alternative is also considered consistent with regulatory plans adopted for the purpose of reducing GHG emissions.

The energy demands of this alternative were estimated to be somewhat greater than that of the project but would result in approximately the same less-than-significant impacts. Overall, the Higher Intensity Project alternative would result in greater development, as compared with the

[3] Consistent with the persons per household rate presented in Section 4.11, Population, Housing, and Employment, of this EIR.

project. However, like the project, with mitigation, the alternative would avoid significant and unavoidable construction and operational noise impacts. This alternative would also generate GHG emissions from construction and operation than identified for the project, but, like the project, these emissions levels would not result in a significant and unavoidable impact.

### *Hazards and Hazardous Materials*

***The Higher Intensity Project alternative would result in less-than-significant (with mitigation) hazards and hazardous materials impacts, the same as identified with the proposed project although the alternative could have more ground moving activity.*** The Higher Intensity Project alternative would involve more grading and excavation than the project, including within areas of the site where there may be soils affected by chemical contamination. The alternative would be subject to the same potential hazards risk and conditions as the project, and would implement the mitigation measures identified for the project to ensure less-than-significant impacts.

### *Hydrology and Water Quality*

***The Higher Intensity Project alternative would result in less-than-significant (with mitigation) hydrology and water quality impacts, the same as identified with the proposed project although the alternative could have more new impervious area.*** The Higher Intensity Project alternative would involve construction and earthmoving activities that could affect water quality and alter drainage patterns in a similar fashion as the proposed project. The Higher Intensity Project alternative is also likely to result in a larger area of impervious surfaces on the site than the project, resulting in a higher volume of runoff and requiring larger stormwater treatment areas. In addition, site infrastructure under this alternative would similarly be subject to the same flood hazard conditions, including flood hazards related to sea level rise, as the project. Adherence to the same project design features and regulatory requirements would ensure less-than-significant impacts.

### *Land Use and Planning*

***The Higher Intensity Project alternative would result in less-than-significant (no mitigation required) land use and planning impacts, the same as identified with the proposed project.*** The project includes an amendment to the site zoning (re-zoning application) to incorporate the proposed Planned Area Plan, among other approvals (see Chapter 3, Project Description). The Higher Intensity Project alternative would also require a re-zoning application, to change the site zoning (likely to Planned Area District, similar to the proposed project). Like the proposed project, this alternative would be consistent with the City's vision and goals for this part of the Brickyard Cove area, and the District No. 1 Brickyard Cove Area Special Features Overlay. Overall, the Higher Intensity Project alternative would result in less-than-significant land use and planning impacts, similar to that identified for the project.

### *Noise*

***The Higher Intensity Project alternative would result in less-than-significant (with mitigation) construction noise impacts, the same as identified with the proposed project although the***

***alternative would have more development.*** Because the Higher Intensity Project alternative's peak hour trips are slightly greater than those of the project (228/271 AM/PM peak hour trips for the alternative compared to 192/227 AM/PM peak hour trips for the project), the alternative would generate somewhat more traffic noise than the proposed project. In addition, construction activity would be greater with this alternative; therefore the duration of construction noise would be increased, as compared to the project. Like the proposed project, with mitigation the alternative would avoid significant and unavoidable construction and operational noise impacts.

### *Population, Housing and Employment*

***The Higher Intensity Project alternative would result in less-than-significant (no mitigation required) impacts to population, housing, and employment, the same as identified with the proposed project.*** As with the project, no displacement of housing or people would occur from the Higher Intensity Project alternative. Overall growth with this alternative would be more than with the project (a residential population of 737 people compared to the project residential population of 640). This increased population growth could result in slightly higher demand for utility and public services, but would not be likely to cause additional impacts in these areas. Also, no aspect of the alternative would result in undue growth associated with infrastructure improvements that would induce growth, similar to the proposed project.

### *Public Services and Recreation*

***The Higher Intensity Project alternative would result in less-than-significant (no mitigation required) impacts to public services and recreation, the same as identified with the proposed project although the alternative would have more development.*** As previously discussed for this alternative, there would be more development and on-site population than the project, which would result in somewhat higher demand for police, fire and emergency services, schools, and parks and recreation. A somewhat smaller total area of parks and open space area would be provided for this alternative, as compared to the project. Overall, the Higher Intensity Project alternative would result in less-than-significant impacts to public services and recreation, as identified for the project.

### *Transportation and Traffic*

***The Higher Intensity Project alternative would result in less-than-significant (no mitigation required) impacts to transportation and traffic, the same as identified with the proposed project although the alternative would have more development.*** As discussed in Section 4.13, Transportation and Traffic, of this EIR, the proposed project would not result in significant impacts related to increased traffic, and no mitigation would be required. Traffic trips under the Higher Intensity Project alternative would be greater than for the project (228/271 AM/PM peak hour trips for the alternative compared to 192/227 AM/PM peak hour trips for the project); the less-than-significant traffic impacts of the project would not become any more severe under this alternative, with this increase of 36 /44 AM/PM peak hour trips. Overall, the Higher Intensity Project alternative would result in somewhat more peak hour vehicle trips. However, like the

project, the alternative would result in less-than-significant impacts related to transportation and traffic.

### *Utilities and Service Systems*

***The Higher Intensity Project alternative would result in less-than-significant (no mitigation required) impacts to utilities and service systems, the same as identified with the proposed project although the alternative would have more development.*** The Higher Intensity Project alternative would result in more residential units and a higher residential population increase compared with the project. As such, the demand for water, wastewater treatment, stormwater treatment, and solid waste disposal is expected to be somewhat higher, as compared with the project, but the impact would not be significant. Like the project, the Higher Intensity Project alternative would result in less-than-significant impacts related to utilities and services systems.

## Alternative 3: No Project / No Development Alternative

The No Project / No Development alternative assumes that the existing project site remains as it is and no development takes place. Accordingly, this alternative proposes that the existing Terminal One Warehouse, Terminal One Pier, and other site features remain as they are.

The following discussion summarizes a comparison between the potential effects of the No Project / No Development alternative and the proposed project. Because the alternative poses no changes or activity compared to existing baseline conditions, no impacts would result. The discussion does identify where beneficial effects could occur with implementation of the proposed project and that would not be realized under the No Project / No Development alternative.

### *Aesthetics*

***The No Project / No Development alternative would result in no impacts to aesthetics, compared to the less-than-significant impact (no mitigation required) identified with the proposed project.*** The No Project/No Development alternative would result in no change to the existing views as seen from each viewpoint location discussed and evaluated in Section 4.1, Aesthetics, of this EIR. No visual impacts or other changes related to aesthetic resources would result from this alternative, as no changes would occur. Under the No Project/No Development alternative, however, the existing Terminal One Warehouse structure would not be demolished, and would continue to somewhat obstruct views of the shoreline from several viewpoints. Under the proposed project, this obstruction would be removed, and a new Shoreline Drive and park would be introduced, creating and improving views to the shoreline and the Bay. While these beneficial effects that would occur with the proposed project would not occur with this alternative, the No Project / No Development alternative would have no impacts to aesthetics.

### Air Quality

***The No Project / No Development alternative would result in no impacts to air quality, compared to the less-than-significant (with mitigation) impacts identified with the proposed project.*** No development would occur with the No Project / No Development alternative. Therefore, none of the adverse effects related to air quality resulting from demolition, construction, or operations activities on the project site would occur with this alternative, as compared to the project. The No Project / No Development alternative would have no impacts related to air quality.

### Biological Resources

***The No Project / No Development alternative would result in no impacts to biological resources, compared to the less-than-significant (with mitigation) impacts identified with the proposed project.*** No development would occur with the No Project / No Development alternative. Therefore, none of the project's impacts related to biological resources would occur with this alternative.

### Cultural Resources

***The No Project / No Development alternative would result in no impacts to cultural resources, compared to the less-than-significant (with mitigation) impacts identified with the proposed project.*** No cultural resources have been discovered at the project site. No development would occur with the No Project / No Development alternative. Therefore, no potential degradation or loss of unknown historic, archaeological, and paleontological resources would occur with this alternative since no ground disturbance or demolition would occur.

### Geology, Soils, and Mineral Resources

***The No Project / No Development alternative would result in no impacts to geology and soils, compared to the less-than-significant (no mitigation required) impacts identified with the proposed project.*** As noted in Section 4.5, Geology, Soils, and Mineral Resources, of this EIR, development on the project site could be affected by seismically induced ground shaking, spreading, subsidence, liquefaction or collapse. Under the No Project/No Development alternative, the building code and design parameters required for modern construction, which are designed to protect against such risks, would not be employed for the existing structure on the project site (Terminal One Warehouse), nor would the structure be removed, thereby leaving this older building subject to, and posing to people, a greater degree of risks that under the proposed project. However, this alternative would no introduce new people to the site. Overall, while certain beneficial aspects that would occur with the proposed project would not occur with this alternative, the No Project/No Development alternative would have no impact.

### Climate Change and Greenhouse Gas Emissions

***The No Project / No Development alternative would result in no impacts to climate change and greenhouse gas emissions, compared to the less-than-significant (no mitigation required) impact identified with the proposed project.*** The No Project/No Development alternative would

not result in construction activity or any changes to the land uses existing on the project site. Therefore, no increase in greenhouse gas (GHG) emissions and energy use associated with construction and operation of development would occur. The alternative would have no impact.

### Hazards and Hazardous Materials

***The No Project / No Development alternative would result in no impacts related to hazards and hazardous materials, compared to the less-than-significant (with mitigation) impacts identified with the proposed project***. The No Project /No Development alternative would not result in any development or changes to the project site. With development of the project, existing underground contamination at the site would be remediated; under the No Project / No Development alternative, construction excavation activities would not take place, and existing underground contaminants would not be at risk of being released, but site cleanup would also not take place. Overall, while certain beneficial effects that would occur with the proposed project would not occur with this alternative, the No Project / No Development alternative would have no impacts related to hazards and hazardous materials.

### Hydrology and Water Quality

***The No Project / No Development alternative would result in no impacts to hydrology and water quality, compared to the less-than-significant (with mitigation) impacts identified with the proposed project.*** No development and no changes to the existing hydrologic conditions on the project site would occur under the No Project/No Development alternative. Under this alternative, the addition of fill at the site and associated increase in site elevation would not take place as it would under the proposed project, and therefore the site could remain vulnerable to flooding related to sea level rise; however, no homes or recreational facilities would be constructed under this alternative that would be at risk from such flooding. Overall, while certain beneficial aspects that would occur with the proposed project would not occur with this alternative, the No Project/No Development alternative would have no impacts related to hydrology and water quality.

### Land Use and Planning

***The No Project / No Development alternative would result in no land use and planning impacts, compared to the less-than-significant (no mitigation required) impacts identified with the proposed project.*** The No Project/No Development alternative would not result in any changes to the existing land uses or zoning designation of the project site. Under this alternative, rezoning of the site to make the zoning consistent with the underlying General Plan land use designation would not take place as it would under the proposed project, and therefore the existing inconsistency between the site's zoning and General Plan designations would remain; however, the site is not currently being used and would continue to remain vacant under this alternative. Overall, while certain beneficial land use and planning aspects that would occur with the proposed project would not occur with this alternative, the No Project / No Development alternative would have no impact related to land use and planning.

### Noise

***The No Project / No Development alternative would result in no noise impacts, compared to the less-than-significant (with mitigation) impacts identified with the proposed project.*** The No Project/No Development alternative would not result in construction activity or any changes to the land uses existing on the project site. Therefore, none of the noise effects associated with construction and operation of the project would occur with the No Project/No Development alternative. The alternative would have no impacts to noise.

### Population, Housing, and Employment

***The No Project / No Development alternative would result in no impacts to population, housing, or employment, compared to the less-than-significant (no mitigation required) impacts identified with the proposed project.*** The No Project/No Development alternative would not result in new development. As with the project, no displacement of housing or people would occur with the No Project / No Development alternative. No population growth would occur under the No Project/No Development alternative. Also, no aspect of the alternative would result in undue growth associated with infrastructure improvements that would induce growth, similar to the proposed project. Therefore, the alternative would have no adverse impact related to population, housing, and employment.

### Public Services and Recreation

***The No Project / No Development alternative would result in no impacts to public services and recreation, compared to the less-than-significant (no mitigation required) impacts identified with the proposed project.*** The No Project/No Development alternative would not result in any changes to existing conditions with respect to demand for public services or recreation. Under this alternative, the creation of the waterfront park and other parks and open space areas would not take place as it would under the proposed project, and therefore this beneficial impact would not take place. The No Project / No Development alternative would have no impacts related to public services and recreation.

### Transportation and Traffic

***The No Project / No Development alternative would result in no impacts to transportation and traffic, compared to the less-than-significant (no mitigation required) identified with the proposed project.*** The No Project/No Development alternative would not result in any new development or changes to the land use activity to generate new peak hour vehicle trips or affect current transportation and traffic patterns. The alternative would have no impact related to transportation and traffic.

### Utilities and Service Systems

***The No Project / No Development alternative would result in no impacts to utilities and service systems, compared to the less-than-significant (no mitigation required) impacts identified with the proposed project.*** The No Project/No Development alternative would not result in any changes to existing conditions with respect to demand for utilities and service systems. Under this

alternative, the installation and/or retrofit of new utility infrastructure would not take place as it would under the proposed project. Regardless, the No Project / No Development alternative would have no impact related to utilities and service systems.

## Overall Comparison of Proposed Project with Alternatives

The analysis of the alternatives is summarized and compared in two tables: **Table 5-8** provides a summary of impact levels within all environmental topic areas. Overall, this table shows that the Reduced Project alternative would reduce most of the project's impacts with one exception, and that the Higher Intensity alternative would increase the degree of most impacts identified with the proposed project, but would not result in a significant.

**Table 5-9** summarizes the ability of each alternative to meet the City's objectives for the proposed project. The tables provide a ready means for the reader to review and compare the alternatives with each other, and with the project as proposed.

Table 5-9 indicates that the No Project / No Development alternative would not have the ability to meet the objectives of the proposed project. The Reduced Project alternative would have the ability to meet all of the objectives of the proposed project, although to a lesser degree for objectives pertaining to local economic benefits and job creation. Lastly, the Higher Intensity Project alternative would meet all of the objectives of the proposed project.

# 5.7 Environmentally Superior Alternative

Based on the evaluation described in this section, the No Project / No Development alternative and the Reduced Project alternative would both be environmentally superior to the proposed project.

The No Project / No Development alternative would be the most environmentally superior alternative with the fewest environmental impacts. However, the No Project / No Development alternative does not meet any of the basic objectives of the project.

CEQA requires that that a second alternative be identified when the "No Project" alternative is the environmentally superior alternative (CEQA *Guidelines*, Section 15126.6(e)). Therefore, the **Reduced Project** alternative would be the Environmentally Superior Alternative for the purpose of this analysis, even though it would result in a new significant impact to GHG emissions *per service population*, and consequently a new significant impact regarding consistency with regulatory plans adopted for the purpose of reducing GHG emissions (discussed in more detail, below), neither of which would occur under the proposed project. All other LTSM impacts of the proposed project would either remain the same or be further reduced under this alternative. Further, the Reduced Project alterative would meet most of the objectives of the proposed project, but to a lesser degree in instances where the size of the project contributes to local economic factors (employment, tax revenues, etc.) or aims to align with the City's housing provision goals.

### *New Significant GHG Impacts*

The Reduced Project would result in ***new*** significant GHG emissions impacts due to the smaller development program and the resulting reduced service population relative to the project, which specifically affects (increases) the GHG service population threshold. Despite this, this alternative is still considered the environmentally superior alternative, primarily because most other quantifiable effects would be reduced.

The GHG service population threshold or "efficiency metric" as developed by the (BAAQMD considers the emission rates needed to accommodate growth, while allowing for consistency with the goals of AB 32 (i.e., 1990 GHG emissions levels by 2020). Service population is determined by adding the number of residents and employees estimated for an area at a given point in time. Use of the service population threshold favors high-density residential, office, and mixed use land use projects that tend to generate high service population. This is because a project's emissions are divided by the service population and, the larger the service population, the lower a project's reported emissions by service population are.

Overall, the City as lead agency preparing this EIR, recognizes the differences in this particular impact resulting with the service population threshold for the Reduced Project alternative and is making a judgment of "superiority" as required in CEQA. Overall, this alternative will generate less total GHG emissions. The fact that it has higher emissions per service population does not, in the judgement of the City, indicate that this alternative is more detrimental to the environmental given the intent of the service population threshold.

In considering the alternatives analysis provided in this chapter, CEQA's substantive mandate is as follows: "public agencies should not approve projects as proposed if there are feasible alternatives or feasible mitigation measures available which would substantially lessen the significant environmental effects" of the project (CEQA Statute, Public Resources Code, Section 21002). With the Terminal One project, feasible mitigation measures have been determined to be available to reduce all potentially significant environmental impacts of the project to less-than-significant levels. So long as these identified mitigation measures are either incorporated into the project or made a condition of project approval, the availability of feasible alternatives becomes somewhat of a less important consideration, as they would not substantially lessen or avoid significant environmental effects of the project.

**TABLE 5-8**
**ALTERNATIVES IMPACT SUMMARY AND COMPARISON**

| Impact | Alternative 1: Reduced Project | Alternative 2: Higher Intensity Project | Alternative 3: No Project / No Development | Proposed Project |
|---|---|---|---|---|
| Aesthetics | Less than Significant ⇩ | Less than Significant ⇧ | No Impact [a] | Less than Significant |
| Air Quality | Less than Significant with Mitigation ⇩ | Less than Significant with Mitigation ⇧ | No Impact | Less than Significant with Mitigation |
| Biological Resources | Less than Significant with Mitigation ⇩ | Less than Significant with Mitigation ⇧ | No Impact | Less than Significant with Mitigation |
| Cultural Resources | Less than Significant with Mitigation ⇩ | Less than Significant with Mitigation ⇧ | No Impact | Less than Significant with Mitigation |
| Geology, Soils, and Minerals | Less than Significant | Less than Significant | No Impact [a] | Less than Significant |
| Greenhouse Gases and Energy | Significant and Unavoidable | Less than Significant ⇧ | No Impact | Less than Significant |
| Hazards and Hazardous Materials | Less than Significant with Mitigation ⇩ | Less than Significant with Mitigation ⇧ | No Impact [a] | Less than Significant with Mitigation |
| Hydrology and Water Quality | Less than Significant with Mitigation ⇩ | Less than Significant with Mitigation ⇧ | No Impact [a] | Less than Significant with Mitigation |
| Land Use and Planning | Less than Significant | Less than Significant | No Impact [a] | Less than Significant |
| Noise | Less than Significant with Mitigation ⇩ | Less than Significant with Mitigation ⇧ | No Impact | Less than Significant with Mitigation |
| Population and Housing | Less than Significant | Less than Significant | No Impact | Less than Significant |
| Public Services and Recreation | Less than Significant | Less than Significant | No Impact | Less than Significant |
| Transportation and Traffic | Less than Significant | Less than Significant | No Impact | Less than Significant |
| Utilities and Service Systems | Less than Significant | Less than Significant | No Impact | Less than Significant |

NOTES: ⇧/⇩ - The impact is more/less severe than compared to the proposed project.

The color gradients in the table are a visual representation of the significance findings with the lightest or absence of color representing the least amount of impact, and the darkest shade representing a severe impact.

[a] Reflects improved site conditions that would occur under the project but not under the alternative.

**TABLE 5-9**
**ABILITY OF ALTERNATIVES TO SATISFY PROJECT OBJECTIVES**

| Project Objective | Alternative 1: Reduced Project | Alternative 2: Higher Intensity | Alternative 3: No Project/No Development |
|---|---|---|---|
| 1. Transform a former industrial site into a new waterfront residential community compatible with surrounding development. | **Meets objective ⇩** | **Meets objective** | Does not meet objective |
| 2. Fulfill the City of Richmond's planning goals and vision for the site and Brickyard Cove area, including preservation of Brickyard Cove as a water body of scenic interest. | **Meets objective** | Does not meet objective | Does not meet objective |
| 3. Provide access to waterfront open space for public use, including public recreation and parks areas and a shoreline connection between the existing Bay Trail segments to the west and east of the site. | **Meets objective** | **Meets objective** | Does not meet objective |
| 4. Generate tax revenues and employment opportunities for the City of Richmond. | **Meets objective ⇩** | **Meets objective ⇧** | Does not meet objective |

NOTES: ⇧/⇩ - The alternative is more/less aligned with the objective.

# 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. Terminal One Land Disposition Agreement. August 6, 2014.

# CHAPTER 6
# Other Statutory Sections

Consistent with CEQA *Guidelines* Section 15126.2, this section discusses significant and unavoidable impacts, significant irreversible environmental changes, growth-inducing impacts, cumulative impacts, and impacts found to be less than significant.

## 6.1 Significant and Unavoidable Adverse Impacts

The proposed project would not result in any significant and unavoidable impacts. All impacts identified in Chapter 4, Environmental Setting, Impacts, and Mitigation Measures, would be either less than significant or, with mitigation, reduced to less-than-significant levels.

## 6.2 Significant Irreversible Environmental Changes

Pursuant to Section 15126.2(c) of the CEQA *Guidelines*, an EIR must consider any significant irreversible environmental changes that would be caused by the proposed project should it be implemented. Section 15126.2(c) states:

> *"Uses of nonrenewable resources during the initial and continued phases of the project may be irreversible since a large commitment of such resources makes removal or nonuse thereafter unlikely. Primary impacts and, particularly, secondary impacts (such as highway improvement which provides access to a previously inaccessible area) generally commit future generations to similar uses. Also irreversible damage can result from environmental accidents associated with the project. Irretrievable commitments of resources should be evaluated to assure that such current consumption is justified."*

Resources that would be permanently and continually consumed by implementation of the proposed 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. Construction activities related to the proposed 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 the proposed 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. It is also possible that new technologies or systems would emerge, or would become more cost-effective or user-friendly, and would further reduce the project reliance upon nonrenewable energy resources.

The CEQA *Guidelines* also require a discussion of the potential for irreversible environmental damage caused by an accident associated with the proposed project. Completion of the proposed project with residential and waterfront land uses would not involve the routine use, transport, storage, or disposal of hazardous wastes other than small amounts of construction chemicals and household cleaners by residents of the site. Therefore, the potential for the completed project to cause significant irreversible environmental damage from an accident or upset of hazardous materials would be less than significant.

## 6.3 Growth-Inducing Impacts

The CEQA *Guidelines* require that an EIR evaluate the growth-inducing impacts of a proposed action (Section 15126.2[d]). A growth-inducing impact is defined by the CEQA *Guidelines* as:

> *[T]he ways in which the proposed project could foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment. Included in this are projects which would remove obstacles to population growth.... It must not be assumed that growth in any area is necessarily beneficial, detrimental, or of little significance to the environment.*

A project can have direct and/or indirect growth-inducement potential. Direct growth inducement could result if a project involved construction of new housing. A project can have indirect growth-inducement potential if it would establish substantial new permanent employment opportunities (e.g., commercial, industrial or governmental enterprises) or if it would involve a substantial construction effort with substantial short-term employment opportunities and indirectly stimulate the need for additional housing and services to support the new employment demand. Similarly, under CEQA, a project would indirectly induce growth if it would remove an obstacle to additional growth and development, such as removing a constraint on a required public service. Increases in population could tax existing community service facilities, requiring construction of new facilities that could cause significant environmental effects. The CEQA *Guidelines* also require analysis of the characteristics of projects that may encourage and facilitate other activities that could significantly affect the environment, either individually or cumulatively.

The timing, magnitude, and location of land development and population growth is based on various interrelated land use and economic variables. Key variables include regional economic trends, market demand for residential and non-residential uses, land availability and cost, the availability and quality of transportation facilities and public services, proximity to employment centers, the supply and cost of housing, and regulatory policies or conditions. Because general plans define the location, type, and intensity of growth, they are the primary means of regulating development and growth in California.

The growth inducing impacts analysis addresses the potential of the project for growth inducement in the project vicinity or broader area. Under CEQA, a project is generally considered to be growth-inducing if it results in any one of the following:

1. Extension of urban services or infrastructure into a previously unserved area;

2. Extension of a transportation corridor into an area that may be subsequently developed; or
3. Removal of obstacles to population growth (such as provision of major new public services to an area where those services are not currently available).

## 6.3.1 Extension of urban services or infrastructure

Although on-site infrastructure improvements may occur as part of the proposed project, the site is within an urban setting, and the project infrastructure would improve and upgrade the existing systems that connect to existing city infrastructure and not require any major expansions of infrastructure. The project is within a fully developed area and infrastructure would not be extended to any undeveloped areas. Hence, the proposed project would be infill and redevelopment of the site rather than a growth-inducing development.

## 6.3.2 Extension of transportation corridor

The project site is surrounded by urban development and an adjacent street system. As an infill development, the project would not extend transportation corridors into undeveloped areas resulting in growth inducing impacts.

## 6.3.3 Removal of obstacles to population growth

The project involves redevelopment of a vacant site that was previously used for industrial uses. The project would demolish the existing structures and provide residential units on the site. The site is fully bound by developed properties and parks/open space uses, and the redevelopment of the site would not facilitate population growth on any other property.

Section 15126.2(d) of the CEQA *Guidelines* states that an EIR should discuss "the ways in which the project could foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment." Growth can be induced in a number of ways, including through the elimination of obstacles to growth, through the stimulation of economic activity within the region, or through precedent-setting action. CEQA requires a discussion of how a project could increase population, employment, or housing in the areas surrounding the project as well as an analysis of the infrastructure and planning changes that would be necessary to implement the project.

Section 4.13, *Population and Housing*, analyzes the project's overall effect on population and housing, including growth-inducing considerations. The project would result in the addition of 334 new residential units. Assuming an average of 1.9 persons per household for multifamily condominium flats (308 units), and 2.1 persons per household for attached townhomes (26 units), consistent with persons per household in the city as a whole and in Census Tract 3780, current housing market trends, and population as allocated to Traffic Analysis Zones in the Contra Costa Countywide Travel Demand Model, the project could result in an increase in residential population of about 640 people.[1] This increase would be a very small part of population growth

[1] Calculation: (1.9 persons x 308 condominium units) + (2.1 persons x 26 townhome units) = 640 residents (rounded)

of about 31,000 residents already anticipated in the City of Richmond between 2015 and 2040, as projected by the Association of Bay Area Governments (ABAG, 2013). The population growth within the project site would constitute 2 percent of the projected growth within the City, and 0.2 percent of projected growth within Contra Costa County, for the period between 2015 and 2040. The project's 334 units would not be anticipated to have a measurable impact on housing demand.

The project's location is anticipated to attract households with a high proportion of working adults who value the site's close-in regional location with good accessibility to workplaces elsewhere in the East Bay, and San Francisco. Thus, from the regional perspective, the project would add housing in an urban, infill location, adding to the housing supply in the East Bay, and marginally affecting the distribution of household and population growth within the region.

In addition to the residential development proposed, the project would construct approximately 2,000 square feet (sf) of new non-residential (neighborhood- and visitor-serving) uses. The project's proposed non-residential uses are not expected to have much, if any, growth inducing impact because they would represent a relatively very small amount of retail uses. Accordingly, the project is not likely to trigger major employment or business growth with the Richmond area or elsewhere.

Projects that are characterized as having significant impacts associated with the inducement of growth are frequently those that would remove obstacles to additional growth, such as the expansion of sewer or water facilities that would permit construction of more development in the service area covered by the new facilities. The project would not remove obstacles to additional growth in this manner, as it would be undertaken in a developed urban area that currently is served by all utilities and services. Similarly, if a project would overburden existing infrastructure so as to require construction of new facilities that could result in significant impacts, then the project may be deemed to have a significant growth-inducing impact. As discussed in the Section 4.14, Utilities and Service Systems, the project would not require such additional public service facilities.

## 6.3.4 Conclusions

The proposed project is not likely to encourage (or induce) other development in the surrounding area; regardless, the collective impacts of any such growth have been considered in the Richmond General Plan 2030 EIR (General Plan EIR), and/or have been assessed in this EIR's consideration of cumulative impacts.

# 6.3 Cumulative Impacts

CEQA Statute (Public Resources Code) Section 21083(b)(2) states that a significant effect on the environment includes the possible effects of a project "that are individually limited but cumulatively considerable." As defined by CEQA, "cumulatively considerable" means that the incremental effects of an individual project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects. Stated another way, "a cumulative impact is created as a result of a combination of the project evaluated in the EIR together with other projects causing related impacts" (CEQA *Guidelines* Section 15130(a)(1)). The CEQA *Guidelines* require that:

- Cumulative impacts shall be discussed when they may be significant;
- The discussion may be more general than that for the individual project impacts, but that the discussion should reflect the potential extent, severity, and probability of the impact;
- The cumulative impact analysis may be based on either a list of past, present, and probable future projects or a summary of projections from an adopted General Plan or other adopted planning document; and
- Reasonable options for mitigating or avoiding the project's contribution to significant cumulative impacts shall be discussed, noting that for some cumulative impacts the only feasible mitigation may involve the adoption of ordinances or regulations rather than the imposition of conditions on a project-by-project basis.

## 6.3.1 Methodology

This EIR uses a combination of a plan-based approach and a list-based approach to determine whether any significant cumulative impact would occur. From a plan-based perspective, the technical analysis for each resource area considered the project for consistency or conflict with the assumptions and projections of the Richmond General Plan 2030 and other applicable planning documents identified in Section 6.3.2. From a list-based perspective, project impacts were analyzed in combination with the impacts of the other projects identified in Section 6.3.2.

In reaching a conclusion for each resource area, the following considerations were made: (i) the geographic scope of the cumulative impact area for that resource; (ii) the time frame within which project-specific impacts could interact with the impacts of other projects; (iii) whether a significant adverse cumulative condition presently exists to which project impacts could contribute; (iv) the significance of the incremental project-specific contribution to cumulative conditions; (v) whether the incremental project-specific impact to an existing adverse cumulative condition is cumulatively considerable; and finally, (vi) whether additional mitigation is available to reduce the project's cumulatively considerable contribution to an existing cumulative impact. If a resource area has no project-specific impacts, the project could not contribute to any existing adverse cumulative impacts.

The analysis of cumulative impacts for each resource area analyzed in Sections 4.1 through 4.14 of this document is set forth in Section 6.3.3.

### Specific Projects

A list of development projects within the cumulative study area (generally defined as the area identified in the City's General Plan as the Southern Shoreline, which is bounded by the I-580 freeway) was identified and is presented in **Table 4.0-1**, in Section 4.0, Environmental Setting, Impacts, and Mitigation Measures. The list includes existing, approved, and pending projects that are anticipated to be either under construction or operational by the time of the completion of the proposed project. Because the area within which a cumulative effect can occur varies by resource area, for the purpose of this analysis, the geographic scope also varies according to the resource being evaluated. For example, traffic and noise impacts tend to be localized while air quality and biological resources impacts are typically widespread.

Table 4.0-1 does not include all projects that would contribute to cumulative impacts along with the proposed project; rather, it includes a number of concurrent projects in the area to demonstrate the scope and nature of development in the Southern Shoreline area.

## 6.3.2 Plans Considered in the Cumulative Analysis

To determine the effects of projects that may not be well defined or are unforeseen, this analysis considered the planning documents including, but not limited to, the following:

- Richmond General Plan 2030;
- Contra Costa Congestion Management Program;
- Berkeley Global Campus Long Range Development Plan;
- Draft Richmond Bay Specific Plan;
- East Bay Regional Parks District (EBRPD) Master Plan 2013 and Miller/Knox Regional Shoreline LUPA Update process; and
- Bay Area 2010 Clean Air Plan.

These adopted plans have been prepared by local agencies to meet the requirements of State and federal law, and provide comprehensive, long-term visions for physical development within the region. For example, the City's General Plan includes specific goals and policies to preserve and enhance existing development and to provide for orderly and appropriate new development until approximately the year 2030. City land use and development actions and approvals must be consistent with the General Plan.

## 6.3.3 Summary of General Development Trends in the City and the Cumulative Study Area

The City's Southern Shoreline area includes areas south of I-580, the site of the future Berkeley Global Campus, regional open space such as the Miller/Knox Regional Shoreline, the Port of Richmond, and neighborhoods including Point Richmond and Marina Bay. A major overall trend in this part of the city over the past few decades and one that is reflected in larger planning efforts

such as the Berkeley Global Campus and Richmond Bay plans described below is the redevelopment of former industrial sites with commercial, office, residential, and other uses.

Development trends in the City as a whole and for the Southern Shoreline area are summarized below.

### City of Richmond General Plan 2030

The City of Richmond General Plan 2030 anticipates growth demands in the city will be addressed through infill development in the Downtown area, development of underutilized brownfield parcels within the City's industrial areas, and development along commercial corridors. As estimated in the General Plan, more than 1,200 acres of vacant and underutilized land could be used for infill development within the City.

The General Plan anticipates development within stable areas, conservation areas, and 16 "change areas." These "change areas" would undergo the most drastic change in land uses and would be the focus of development and redevelopment efforts. Many of the stable areas in the city consist of residential neighborhoods. Priority conservation areas in the city include areas with significant natural habitat, open space, and parks and recreational resources.

The General Plan Objectives focus on issues related to physical development, growth, and conservation of resources in the City. The plan presents strategies and specific implementing actions to achieve the community's overarching vision and long-term goals. It provides a basis for determining whether specific development proposals and public projects align with the community's vision and long term goals. City departments, other public agencies, and private developers are encouraged to design projects that will improve community character and quality of life in accordance with particular values and principles defined in the General Plan. Additionally, the General Plan sets forth a basis for developing more detailed plans and implementing programs such as capital improvement plans, the Zoning Ordinance, facilities plans, community needs assessments and specific plans.

"Buildout" defines full development under the General Plan. The City is characterized by a large amount of underutilized land, which means it is unlikely that the City would build out within the plan horizon of 20 years (to 2030). Between 1980 and 2005, the City captured 8.4 percent of regional growth. ABAG projects that, for the General Plan buildout period, Richmond will capture 10.9 percent of regional growth; the EIR prepared for the General Plan assumes that, because one of the primary goals of the General Plan is to stimulate higher intensity development within the City, this proportion could reach 13 percent. Growth projections are focused on areas in which development is likely to occur, such as within the 16 change areas defined by the General Plan. Land uses in the remaining areas of the city would mostly remain stable.

### Berkeley Global Campus Long Range Development Plan

The Berkeley Global Campus is located on an approximately 134-acre site about 2.5 miles east of the project site. The campus site, which is owned by the University of California (UC), is situated in the South Shoreline waterfront area of the City and is accessed via I-580. The Final EIR for the

Berkeley Global Campus Long Range Development Plan was adopted by the UC Board of Regents during their meeting held in Sacramento on May 14 and 15, 2014.

The Berkeley Global Campus encompasses properties for use by both LBNL and UC Berkeley and institutional or industry counterparts for research and development focused on energy, environment, and health. The campus will provide up to 5.4 million gross square feet of research, development, and support space for and employee population of up to 10,000. Design principles for buildout of the campus feature preservation of the site's significant natural open spaces, including coastal grasslands and marshes. Areas within the campus designated for Research, Education and Support land uses comprise approximately 108 acres. Areas within the campus designated for Natural Open Space land uses, including the Western Stege Marsh and coastal grasslands, total approximately 25 acres.

### Richmond Bay Specific Plan

The Richmond Bay Specific Plan area is located south of I-580 in the Southern Shoreline area and encompasses two change areas : the Regatta/Marina Bay Change Area (CA-15), and the Southern Gateway Change Area (CA-16). The Regatta/Marina Bay Change Area includes a mix of large-scale office, light industrial, and commercial development, totaling about 240 acres in size. The Southern Gateway Change Area contains several large parcels with industrial and office uses, including the Campus Bay Business Park and the Harbor Front track; this area is about 170 acres in size. The Richmond Bay Specific Plan establishes four potential neighborhoods within the Plan Area, as distinct sub-areas, with a total of approximately 5.7 million sf of R&D/Business/Service uses, 720,000 square feet of retail (ground floor) uses, 4,080 residential units, and 145 acres of open space throughout all four sub-areas.

### Residential Development

A number of residential development projects have been developed and are proposed in the city's Southern Shoreline area. These projects are in various stages of development; some have been partially constructed, and some may be constructed simultaneously with the proposed project, depending upon when permits are approved. The Brickyard Cove neighborhood located east of the project site includes marinas and residential development established in the 1970s, 1980s, and 1990s. These developments include Sea Cliff Estates, Brickyard Landing condominium complex, and waterfront single-family homes along Sandpiper Spit, Sanderling Island, and South Mallard Drive, as well as the recently approved, 60-unit Bottoms residential project.

All residential developments have the same type of impacts, such as temporary and permanent increases in traffic, air emissions, and changes in the visual landscape.

## 6.3.3 Areas of Potential Cumulative Impacts

## Aesthetics

This section summarizes the more detailed discussion of cumulative impacts to aesthetics (Impact C-AES-1) presented in Section 4.1, Aesthetics, of this EIR. The analysis area for evaluation of

cumulative impacts on aesthetics is primarily the southern part of the Point Richmond area (south of the Dornan Drive/Garrard Boulevard Tunnel) within the City of Richmond, because this area is physically separated from the rest of the City. Conceivably, a view from shoreline locations further south along Richmond's southern shoreline or even further south (Point Isabel or the Albany Bulb) could include the proposed project; however, these views would appear distant and disconnected.

In the EIR for the Richmond General Plan 2030, the City found that development activities associated with the proposed General Plan would not result in significant adverse aesthetic impacts for CEQA purposes, and that, with mitigation, impacts to scenic vistas and the visual character and quality of the City at the programmatic level of the General Plan process would be mitigated to a less-than-significant level.

Regarding new sources of light and glare, the City Richmond is primarily built out, and a significant amount of ambient light and glare from urban uses already exists. However, the General Plan EIR acknowledged that changing urbanized conditions throughout implementation of the General Plan could result in different distributions of potential light and nighttime glare impacts. The City's General Plan, ordinances, and discretionary permit and Design Review process each have components designed to protect and enhance the visual character of the City while embracing the changes that will normally take place in an urbanized area. Accordingly, the City found that the visual quality of the City will improve and will not be the subject of "substantial degradation" as the General Plan is implemented over time, with implementation of General Plan EIR mitigation measures (City of Richmond, 2012).

The proposed project, in conjunction with other cumulative past, present or reasonably foreseeable future development in the area (primarily, the Bottoms Property Residential project and the ongoing Miller/Knox Regional Shoreline Land Use Plan Amendment), could result in changes to scenic vistas, views of scenic resources (the surrounding hills and the Bay), visual conditions (visual character and quality), and light and glare. However, the combined effect that would occur relative to existing conditions would not be significant primarily because the effects related to aesthetics would be localized and would not combine with other sources to contribute to view obstructions, light or glare. Moreover, as with past projects, all current and future projects would be subject to the policies and actions in the City's General Plan, as well as the requirements of relevant City ordinances, discretionary permits, and the Design Review process, each of which has components designed to protect and enhance visual character.

The project, combined with other cumulative development in the area, would not result in cumulative adverse changes that would substantially degrade the existing aesthetic conditions of the project site or its surroundings; therefore, impacts to aesthetics resulting from the proposed project, combined with other past, present, or reasonably foreseeable future projects, would not result in a cumulative impact to which the proposed project would have a cumulatively considerably contribution.

## Agriculture and Forestry Resources

The cumulative context for agriculture and forest resources consists of the project site in addition to all areas of the City of Richmond, including all cumulative growth therein. The General Plan EIR identified impacts related to the loss of prime and non-prime agricultural lands. Construction of the project would result in no impacts to agricultural or forestry resources or to lands designated for such use. Therefore, the project would not contribute to any cumulatively significant impacts related to agricultural or forestry resources. (Agriculture and Forestry Resources is discussed in Section 4.9, Land Use and Planning, as a topic that would have no impact and therefore is not further evaluated in this EIR.)

## Air Quality

The cumulative context for air quality is regional, and includes projects and development that would take place within the Bay Area Air Basin. As determined in the General Plan EIR, development associated with the General Plan buildout would result in significant and unavoidable impacts, and cumulative impacts, to air quality.

Regional air quality impacts are by their very nature cumulative impacts. Emissions from past, present, and future projects contribute to adverse regional air quality impacts on a cumulative basis. According to the BAAQMD, in the case of criteria pollutants, no single project would be sufficient in size, by itself, to result in emissions that are considered significant (BAAQMD, 2009). Instead, a project's individual emissions contribute to existing cumulatively significant adverse air quality impacts. As such, significance thresholds for the regional air quality impacts are designed to establish cumulatively considerable contributions. Therefore, if a project exceeds the identified significance thresholds for criteria pollutants, its emissions would be cumulatively considerable and would result in significant adverse air quality impacts to the region's existing air quality conditions. Conversely, if a project does not exceed the identified significance thresholds for criteria pollutants, its emissions would not be cumulatively considerable.

As described in the discussion of Air Quality Impact AIR-2 in Section 4.2, Air Quality, emissions of oxides of ROG, NOx, $PM_{10}$ and $PM_{2.5}$ due to the construction and operation of the proposed project would be below BAAQMD CEQA thresholds of significance. These thresholds are based on the federal Clean Air Act New Source Review Program, under which BAAQMD requires that new stationary sources of pollutants must offset a portion of their emissions above a specified threshold, to ensure that these new sources do not cause or contribute to a violation of an air quality standard. Thus, the BAAQMD CEQA thresholds for regional criteria pollutants represent emissions levels at which new sources would not contribute to an air quality violation or result in a considerable net increase in criteria air pollutants, within the context of existing and future cumulative air quality conditions. Thus, while the region is in non-attainment for pollutants including ozone, $PM_{10}$ and $PM_{2.5}$, because the project would not exceed the applicable CEQA thresholds with respect to criteria pollutants, the BAAQMD judges that the project would not make a considerable contribution to cumulative air quality impacts, and the cumulative impact of the project would be less than significant.

As discussed in Section 4.2, Air Quality, sensitive residential receptors within 1,000 feet of the project boundaries are located approximately 575 feet east of the project site on South Mallard Drive and Sanderling Island. The Brickyard Cove residential community is 1,000 feet northeast of the project site. While diesel-powered construction equipment would generate Diesel Particulate Matter (DPM), which has been identified by the State of California as a toxic air contaminant (TAC), these sensitive receptors are located sufficiently far enough from the project site that this would not be a significant health risk. A construction health risk screening table developed by the BAAQMD (BAAQMD, 2010b) indicates that for residential development of a 16-acre site, a distance of 150 meters (482 feet) is sufficient to ensure that construction-related impacts from increased cancer risk and localized $PM_{2.5}$ concentrations would be less than significant. Furthermore, construction-related $PM_{2.5}$ exhaust emissions, which would represent the daily emissions of both DPM and $PM_{2.5}$, total approximately 3 percent of the threshold for $PM_{2.5}$, indicating a relatively modest emission rate. Moreover, the construction period is relatively short (estimated to be 18 months; most of the heavy equipment use would be during the first year), which would limit long-term (i.e., cancer) health risks, which are a function of pollutant concentration and duration of exposure. Consequently the project would be expected to have a less-than-significant cumulative impact with regard to exposing sensitive receptors to increased health risk from construction activities.

Overall, the project, as mitigated, combined with other past, present, or reasonably foreseeable future projects, would not result in a cumulative impact to which the proposed project would have a cumulatively considerably contribution.

## Biological Resources

This section summarizes the more detailed discussion of cumulative impacts presented in Section 4.3, Biological Resources, of this EIR (Impact C-BIO-1). The geographic scope of potential cumulative impacts on biological resources encompasses the sensitive natural communities, species occurrences, and habitats within the Terminal One project site as well as biologically linked areas sharing Central San Francisco Bay and its waters. The General Plan EIR did not identify significant or cumulative impacts to biological resources.

This analysis evaluates whether the impacts of the proposed project, together with the impacts of cumulative development, 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 in Section 4.3, Biological Resources). This analysis then considers whether the incremental contribution of the proposed project to this cumulative impact would be considerable.

Past projects within this context, including the development of residential, commercial, and industrial areas and infrastructure, have already caused substantial adverse cumulative changes to biological resources within the project site. For this reason, natural communities near Point Richmond and Brickyard Cove are limited to open space areas such as those preserved as part of Miller/Knox park. Areas on the shoreline that were industrial or have revegetated naturally over

time support a different suite of species than once existed. Therefore, the effects of past projects have already caused an adverse significant cumulative effect on biological resources. With the addition of current and proposed projects, there is an existing significant cumulative impact *without* the project.

The majority of projects considered for cumulative impacts listed in Table 4.0-1, including the Bottoms residential project, Berkeley Global Campus, Richmond Bay Specific Plan, and other projects within the City's Southern Shoreline area involve the land-based redevelopment of previously developed areas, or involve dredging, pile driving, pier improvements, or increased boat traffic in Richmond. Many of these areas 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 waterbirds 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 project site and vicinity, there could be cumulative impacts on sensitive biological resources located throughout the Bay. For example, the proposed project might affect birds that use not only the project site's foraging and nesting habitats but also other habitats distant from the project site; 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 tidal marsh restoration efforts intended to provide a net benefit to biological resources.

With the implementation of **Mitigation Measures BIO-1 through BIO-3** and **Mitigation Measure HYD-1**, the impact analysis has shown that the project would result in less-than-significant impacts on biological resources within and in the vicinity of the project site. When considered within the existing condition of biological resources in the project site and Central Bay in the context of past, present and reasonably foreseeable similar projects, the project would add only a minor, incremental contribution to habitat loss, degradation, and direct and indirect impacts to special-status species. The project's contribution would not be considered cumulatively considerable because it would, like other cumulative projects, implement adopted mitigation measures and be required to comply with an established regulatory framework. Additionally, future projects would be required to demonstrate that they would not have significant effects on these biological resources, although it is possible that some projects may be approved even though they would have significant, unavoidable impacts on biological resources.

Overall, impacts to biological resources resulting from the proposed project, combined with other past, present, or reasonably foreseeable future projects, would not result in a cumulative impact to which the proposed project would have a cumulatively considerably contribution.

## Cultural and Paleontological Resources

The cumulative context for cultural resources is planned developments within the city that could potentially affect archaeological or historical resources. As determined by the General Plan EIR,

development associated with the General Plan buildout would result in potentially significant impacts, and cumulative impacts, to known and unknown historical and archeological resources. The project would not affect known significant cultural resources and thus would not contribute to any significant cumulative impacts to known cultural resources. In addition, no known historical, archaeological, or paleontological resources were identified on the project site, and therefore the project would not contribute to this cumulative impact. To the extent that construction activities unearth previously undiscovered resources, implementation of **Mitigation Measures CUL-1** through **CUL-3** would ensure their proper identification and treatment and the impact would be less than significant. As such, impacts to cultural resources resulting from the proposed project, combined with other past, present, or reasonably foreseeable future projects, would not result in a cumulative impact to which the proposed project would have a cumulatively considerably contribution.

## Geology, Soils and Mineral Resources

This section summarizes the more detailed discussion of cumulative impacts to geology, soils, and mineral resources (Impact C-GEO-1) presented in Section 4.5, Geology, Soils, and Mineral Resources, of this EIR. The geographic area considered for the assessment of cumulative impacts related to geology, soils, and seismic hazards effects 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. The General Plan EIR noted that build-out would increase the potential for new development to be located in areas subject to seismic hazards such as groundshaking, liquefaction, or landsliding, thereby increasing the associated risks to persons and property, but did not identify cumulative impacts related to geology, soils and seismicity.

Development of the 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. The proposed project, as well as all other future projects in the region, would be constructed in accordance with the most current version of California Building Code (CBC) seismic safety requirements and recommendations contained in each site-specific geotechnical report as required prior to approval of a building permit. Therefore, future development would be constructed to more current standards which could potentially provide greater protection than those of older structures within the region. Moreover, the impact of the risks associated with exposure to potential geological and soils hazards is generally localized to site-specific conditions and would not affect the immediate vicinity surrounding the project site. Therefore, impacts to area geology and soils resulting from the proposed project, combined with other past, present, or reasonably foreseeable future projects, would not result in a cumulative impact to which the proposed project would have a cumulatively considerably contribution.

The cumulative context for mineral resources consists of the project site in addition to all areas of the City of Richmond, including all cumulative growth therein. Implementation of the project would not result in project-level or cumulative impacts to mineral resources. According to the California Geological Survey and the General Plan EIR, no mineral resource deposits have been

identified in the vicinity of the project site. Implementation of the project would have no impact on the availability of either known or unknown mineral resources.

## Greenhouse Gas Emissions and Energy

Both the BAAQMD and 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 and CAPCOA, 2008). Therefore, the evaluation of project-level GHG impacts assessed whether the project would make a considerable contribution to cumulative climate change effects and determined that, with mitigation, the impact would be less than significant. As such, the analysis in Section 4.6, Climate Change and Greenhouse Gas Emissions, represents the cumulative GHG impact with respect to CEQA.

With regard to energy usage, the California Public Utilities Commissions' Long Term Procurement Plan (LTPP) proceedings were established to ensure a safe, reliable, and cost-effective electricity supply in California. A major component of the LTPP proceeding addresses the overall long-term need for new system reliability resources, including the adoption of system resource plans. These resource plans will allow the California Public Utilities Commission to comprehensively assess the impacts of state energy policies on the need for new resources. As discussed in Section 4.6, several aspects of the project 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. The project components would help reduce the project's overall energy demand and the project would result in less-than-significant individual impacts. Therefore, impacts to energy resources resulting from the proposed project, combined with other past, present, or reasonably foreseeable future projects, would not result in a cumulative impact to which the proposed project would have a cumulatively considerably contribution.

## Hazards and Hazardous Materials

The cumulative geographic context for hazardous materials for the project consists of the project site in addition to areas along the city's Southern Shoreline area, including all cumulative growth therein. Potentially adverse environmental effects associated with the use, storage, transportation, and disposal of hazardous materials are generally site-specific in occurrence, although long-term impacts could be greater in extent. The General Plan EIR did not identify any significant or cumulative impacts with respect to hazards and hazardous materials.

The project itself would not require substantial quantities of hazardous materials. In general, impacts related to hazardous materials are site-specific and would only combine with impacts of other projects through limited mechanisms: releases through routine transport of hazardous materials and waste to or from the project site, releases of hazardous materials through accidental upset conditions to the sewer or nonhazardous waste landfill, and accidents that require hazardous materials emergency response capabilities. In addition, impacts would generally be mitigated by

the implementation of the City's Municipal Code, as well as EPA, Fed/OSHA, DOT, Cal/OSHA, and CUPA permitting processes. Therefore, the project, including implementation of **Mitigation Measures HAZ-1a** through **HAZ-1f** and **HAZ-2**, combined with other past, present, or reasonably foreseeable future projects, would not result in a cumulative impact to which the proposed project would have a cumulatively considerably contribution.

## Hydrology and Water Quality

The cumulative geographic context for hydrology and water quality for the project consists of the project site in addition to other areas within the watershed south of the border created by I-580 and the Miller/Knox park bluffs and hills, 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. Although there are uncertainties in the amounts of increases, if any, in project-related water quality loading, the project's impact would be mitigated by Contra Costa County Clean Water Program and the NPDES MS4 permit requirements established by the Regional Water Quality Control Board. Furthermore, implementation of project design features would ensure that the project maintains pre-project stormflow levels. Therefore, the project would not contribute to a cumulative impact with respect to increases in impervious surface, thereby increasing flood hazard, erosion or sedimentation. Further, these drainage control requirements also would apply to all other current and future development projects that would change drainage patterns and/or flow rates through introduction of new impervious surfaces.

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, Regional Water Quality Control 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 RWQCB 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** would ensure that the project includes water quality best management practices during construction.

Impacts related to flooding and sea level rise are generally confined to the site; as described in Section 4.8, Hydrology and Water Quality, the project would include design features, such as grading to increase the elevation of the site, that would protect against up to three feet of sea level rise. Therefore, the project, combined with other past, present, or reasonably foreseeable future projects, would not result in a cumulative impact to which the proposed project would have a cumulatively considerably contribution.

## Land Use and Planning

The geographic context considered for cumulative land use and planning impacts includes other reasonably foreseeable future development projects in the project site vicinity (generally, within about 0.5 miles) that, when combined with the project, could result in cumulative impacts. The General Plan EIR did not identify any significant or cumulative impacts with respect to land use and planning. As discussed in Section 4.10, Land Use and Planning, the project would result in less-than-significant impacts with respect to physically dividing an established community or conflicting with any land use plan, policy or regulation adopted for purposes of avoiding or mitigating an environmental effect.

Areas in the vicinity of the project site are generally built out with a mix of residential and open space land uses. Although redevelopment of the project site would increase the intensity of commercial and residential uses on the site, other development projects are dispersed geographically throughout the vicinity such that they would not combine with the project to result in cumulative impacts related to physical division of any established community.

As described in Section 4.10, the site's zoning designation would be amended under the project to ensure consistency with the underlying General Plan land use designation. With regards to consistency with plans and policies, future development within the project vicinity similarly is required to be consistent with the respective General Plan and zoning designations, and other applicable land use plans and requirements. As such, the project would not combine with other developments to result in a significant cumulative land use impact associated with conflicts with plans and policies.

Overall, the project, combined with other past, present, or reasonably foreseeable future projects, would not result in a cumulative impact to land use and planning to which the proposed project would have a cumulatively considerably contribution.

## Noise

This section summarizes the more detailed discussion of cumulative impacts related to noise (Impacts C-NOI-1 and C-NOI-2) presented in Section 4.10, Noise, of this EIR. The geographic scope of analysis for cumulative noise and vibration impacts encompasses sensitive receptors within approximately 500 feet of the proposed project site. Beyond 500 feet, the contributions of noise from other projects would be greatly attenuated through both distance and intervening structures. Other cumulative project activities that could contribute to cumulative construction noise include construction activities associated with improvements to Miller/Knox park, including Ferry Point. Other potential cumulative projects are sufficiently distant such that they would not meaningfully contribute to construction noise impacts. The General Plan EIR identified several significant and cumulative impacts with respect to noise.

Improvements to Miller/Knox park may involve the isolated operation of trucks, loaders, excavators or bulldozers to transport and distribute materials to stabilize the shoreline and open

the lagoon to the bay. Operation of this equipment could combine with construction activities of the proposed project and result in increased ambient noise levels at receptors near the project site.

Receptors to the north of the Miller/Knox park are located over 3,800 feet away from the project site. At this distance, noise from construction on the project site would be attenuated to such a degree as to not meaningfully contribute to increased ambient noise levels. Similarly, receptors to the east of Miller/Knox park are separated from the park's lagoon area by hills and separated from Ferry Point by approximately 2,300 feet. At this distance, noise from construction activities at the lagoon and Ferry Point would be attenuated to such a degree as to not meaningfully contribute to increased ambient noise levels. To demonstrate this effect, noise from a bulldozer at 50 feet would be 87 dBA, while at 2,300 and 3,800 feet away the noise levels would be attenuated to 48 and 43 dBA, respectively, well below monitored daytime ambient noise levels in the area presented in **Table 4.10-1** (in Section 4.10, Noise). Consequently, the proposed project combined with cumulative construction noise in the vicinity of the project site would not result in a considerable contribution to existing cumulative impacts with regard to temporary or periodic increase in ambient noise levels in the project vicinity during construction.

Operational noise impacts of the proposed project would primarily result from increased traffic on the local roadway network. Cumulative plus project traffic data was used to estimate the cumulative operational noise increases shown in **Table 4.10-5** (in Section 4.10, Noise). Significant cumulative increases in ambient roadside noise levels are not predicted to occur at the three road segments analyzed: as can be seen from the table, a cumulative increase in noise levels along Brickyard Cove Road would exceed 5 dBA which would be the only roadway to experience a cumulatively significant noise increase. However, the project's contribution to this cumulative increase would be 0.7 dBA (59.4 dBA - 58.7 dBA) which would not be a perceptible increase and would not be a cumulatively considerable contribution to the overall cumulative noise increase predicted along Brickyard Cove Drive. Consequently, the proposed project's cumulative roadside noise impact would be less than significant.

Overall, the project, combined with other past, present, or reasonably foreseeable future projects, would not result in a cumulative impact to noise to which the proposed project would have a cumulatively considerably contribution.

## Population and Housing

The cumulative setting for population and housing includes development allowed in the City of Richmond by the General Plan, as well as Contra Costa County, and the Bay Area Region. The General Plan EIR assumes that there will be population growth in the city, including infill and redevelopment. The General Plan EIR identified the need for higher-intensity development within the City.

The consideration of whether the proposed project would induce substantial population growth, directly or indirectly, such that additional infrastructure is required, is inherently a cumulative consideration, as it considers the proposed project growth relative to past, present and future

trends and plans. The analysis in Section 4.11, Population and Housing, in Chapter 4 of this Draft EIR is based on projections, which take into account cumulative growth through 2040 for the geographic context described above.

Overall, the project's less-than-significant individual impacts, combined with past, present and other foreseeable development in the area, would not combine to have a cumulative impact with respect to population and housing, to which the project could have a cumulatively considerable contribution.

## Public Services and Recreation

The cumulative context for public services is development within the service area of each public service provider. The General Plan EIR indicated the build-out under the General Plan would lead to increased demand for fire protection, police protection, and schools in the City and additional staff and equipment could be required to maintain acceptable levels of service. As discussed in Section 4.12, Public Services, the project would result in an increase in calls for police and fire service, but the increase would not result in the need for new or expanded fire and police stations in order to maintain adequate response times. Redevelopment of the site would result in increased tax revenues and school impact fees to pay for police, fire, and public school services and the impacts to public services from the project would be less than significant. Further, other cumulative projects similarly would increase tax revenues and pay impact fees. Therefore, when project impacts are combined with past, present, and other reasonably foreseeable development in the area, there would not be a significant cumulative impacts to fire or police protection services or schools to which the proposed project could have a cumulatively considerable contribution.

The geographic context considered for cumulative impacts to parks and recreational resources impacts is the City, including all cumulative growth therein. The City requires that private developers proposing residential subdivisions within the City either dedicate land for park facilities or pay a fee in lieu of providing parkland. The dedication of land or the payment of in lieu fees, in combination with the policies in the General Plan, would ensure that impacts related to the deterioration of existing parks and recreation facilities would not occur. The project would include a substantial amount of parks, open space, and recreational areas, including the Terminal One waterfront park, thus adding public open space, parkland amenities and related improvements. The project would also connect segments of the existing Bay Trail that extend along Brickyard Cove Road and through Miller/Knox park. Therefore, the project, when combined with past, present, and other foreseeable development in the area, would not result in a cumulative impact to these resources to which the project could have cumulatively considerable contribution.

## Transportation and Traffic

This section summarizes the more detailed discussion of cumulative impacts related to transportation and traffic presented in Section 4.13, Transportation and Traffic, of this EIR. The cumulative scenario for the project would take place in its operational phase (i.e., construction of

the project components would have already been completed). The Cumulative (2040) No Project traffic volume forecasts were developed using the Contra Costa Transportation Authority (CCTA) Countywide Travel Demand Model and existing traffic volumes. The main inputs to the 2040 forecasting process are the model outputs from the CCTA Model and the existing traffic counts. The most recent version of the CCTA Model is based on Association of Bay Area Government (ABAG) *Projections 2013* (i.e., Plan Bay Area). The 2040 Model land use database was updated to be consistent with the General Plan and to reflect the recently approved Bottoms Property Residential Development, as well as anticipated buildout of the proposed Richmond Bay Specific Plan, the Berkeley Global Campus, and the Richmond Ferry Terminal. There are no changes planned for the roadway network serving the project, and therefore, the existing roadway and intersection configurations (i.e., number of lanes, and traffic control) were used as the context for the cumulative analyses.

Overall, existing traffic volumes are expected to increase in the study area by approximately one to two percent per year. AM and PM peak-hour year 2040 cumulative traffic volumes are shown in **Figure 4.13-9** (no project) and **Figure 4.13-10** (plus project) in Chapter 4.13, Transportation and Traffic.

### *Intersection Operations*

Intersection LOS calculations were completed with the traffic volumes and roadway network described above. **Table 4.13-7** (in Section 4.13, Transportation and Traffic) summarizes intersection operations under 2040 conditions at the 11 study intersections. As indicated in this table, the majority of study intersections would continue to operate at the same LOS, but would experience slightly more delay, as under Cumulative (2040) No Project Conditions with the addition of project generated trips. All study intersections would continue to operate at LOS D or better during the AM and PM peak hours, except the I-580 Eastbound Ramps/Canal Boulevard (#2) and East Standard Avenue/I-580 Eastbound On-Ramp/Castro Street (#10) intersections. Both intersections would operate at LOS F during the PM peak hour under 2040 conditions with or without the proposed project. The impact at these two intersections is not considered significant because the project-generated traffic would not increase average intersection delay by more than five seconds. None of the unsignalized study intersections would meet the peak-hour signal warrant under Cumulative (2040) Plus Project conditions. Therefore, project impacts at area intersections would not contribute considerably to any significant cumulative impacts.

### *Congestion Management Plan (CMP) Facilities*

According to the *2014 Proposal for Adoption West County Action Plan for Routes of Regional Significance*, the only Route of Regional Significance near the project is I-580. The established Multi-modal Traffic Service Objective (MTSO) for I-580 is to maintain a Delay Index of 2.5 or less. **Table 4.13-8** (in Section 4.13, Transportation and Traffic) presents the year 2040 Delay Index on I-580 with and without the proposed project based on the results of the CCTA Model. The Delay Index on I-580 is expected to remain below the established MTSO of 2.5. Therefore, project impacts on I-580 would not contribute considerably to any significant cumulative impacts on a Route of Regional Significance.

Overall, the year 2040 cumulative plus project impacts on intersections and CMP facilities would be less than cumulatively considerable. Therefore, the project, when combined with past, present, and other foreseeable development in the area, would not contribute considerably to any cumulative impact.

### Utilities and Service Systems

The cumulative impact area for utility and service systems includes the City of Richmond and the service areas of the local utility providers. The East Bay Municipal Utility District (EBMUD) provides water for parts of Alameda and Contra Costa counties, 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, and 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 in Section 4.14, Utilities and Service Systems, the construction and operation of the project would have less-than-significant impacts related to water and wastewater treatment facilities, stormwater facilities, water supply, and solid waste disposal. These determinations are based on will serve letters provided by the utility providers, as well as the various facilities' projected and permitted capacities which also consider anticipated growth in the respective service areas. With implementation of project design features, 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.

Overall, the project's less-than-significant individual impacts, combined with past, present, and other foreseeable development in the area, would not result in a considerable contribution to existing cumulative impacts.

## 6.4 Impacts Found Not to Be Significant

The environmental effects of the project are identified and discussed in detail in Chapter 4, Environmental Setting, Impacts, and Mitigation Measures. All identified significant environmental impacts of the project can be mitigated to less-than-significant levels with implementation of the mitigation measures identified in this EIR.

# References – Other Statutory Sections

Association of Bay Area Governments (ABAG), 2013a. *Bay Area Plan Projections 2013.* December 2013.

Bay Area Air Quality Management District (BAAQMD), 2012a. CEQA Air Quality Guidelines. Adopted June 2011, updated May 2012. Available at: www.baaqmd.gov.

California Air Pollution Control Officers Association (CAPCOA), 2008. CEQA and Climate Change.

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# CHAPTER 7
# Report Preparation

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| Rachel Danielson | Biological Resources |
| Elizabeth Hill | Biological Resources |
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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 |
| AB 939 | Assembly Bill 939 |
| ABAG | Association of Bay Area Governments |
| ACHP | Advisory Council on Historic Preservation |
| ACM | Asbestos Containing Materials |
| AISC | American Institute of Steel Construction |
| AM | weekday morning |
| ARDTP | Archaeological Research Design and Treatment Plan |
| ASCE | American Society of Civil Engineers |
| BAAQMD | Bay Area Air Quality Management District |
| BART | Bay Area Rapid Transit |
| BAU | Business-as-usual |
| Bay Plan | San Francisco Bay Plan |
| BCDC | San Francisco Bay Conservation and Development Commission |
| BFE | Base Flood Elevation |
| BMP | Best Management Practice |
| 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 Chagne Area |
| CAA | Clean Air Act |
| CAAQS | California Ambient Air Quality Standard |
| CAD | computer-assisted drafting |
| CalARP | California Accidental Release Prevention |
| CalEEMod | California Emissions Estimator Model |

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|---|---|
| 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 |
| CAPCOA | California Air Pollution Control Officers Association |
| CARB | California Air Resources Board |
| 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 |
| CCFPD | Contra Costa County Fire Protection District |
| CDFW | California Department of Fish and Wildlife |
| CDMG | California Division of Mines and Geology |
| 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 |
| 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 Plan District |
| EDD | Employment Development Department |
| EFH | Essential Fish Habitat |
| EIR | Environmental Impact Report |
| e.g. | For example |
| ESA | Environmental Science Associates |
| ESA | Endangered Species Act |
| ESU | evolutionary significant unit |
| EV | Environmental Vision |
| 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 |

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|---|---|
| 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 |
| HAP | Hazardous Air Pollutant |
| HAPC | habitat area of particular concern |
| HCM | Highway Capacity Manual |
| HCP | Habitat Conservation Plan |
| HEG | Hall Equities Group |
| HEPA | High efficiency particulate air (filter) |
| HFC | Hydrofluorocarbons |
| 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 |
| in/sec | Inches per second |
| IPM | integrated pest management |
| JPA | Joint Powers Attorney |
| KH | Kwan Hemni |
| 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 |

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|---|---|
| LCFS | Low Carbon Fuel Standard |
| LDA | Land Disposition Agreement |
| LID | Low Impact Development |
| LOS | Level of Service |
| LSA | LSA Associates, Inc. |
| LTMS | Long Term Management Strategy Management Plan |
| LUPA | Land Use Plan Agreement |
| LUST | Leaking Underground Storage Tank |
| LVW | Loaded Vehicle Weight |
| M | Richter Magnitude |
| 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 |
| Miller/Knox park | Miller/Knox Regional Shoreline park |
| mgd | Million Gallons per Day |
| MLLW | Mean Lower Low Water |
| MM | Modified Mercalli Intensity Scale |
| MM | Multiple Family Residential, Medium Density |
| 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 |
| 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, a million Watts |
| MWh | Megawatt hour |
| M-29 | Multiple Family Residential, allowing up to 29 units per acre |
| $N_2O$ | nitrous oxideNA Not Applicable/Data Not Available |

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|---|---|
| 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 |
| 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 |
| NTR | National Toxics Rules |
| NWIC | Northwest Information Center |
| $O_3$ | Ozone |
| OEHHA | Office of Environmental Health Hazard Assessment |
| 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 |
| PCB | Polychlorinated Biphenyls |
| PCN | Pre-construction Notification |
| PFC | Perfluorocarbons |
| PG&E | Pacific Gas & Electric Company |
| 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 |
| PV | photovoltaic |

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|---|---|
| PPV | Peak Particle Velocity |
| PRC | Public Resources Code |
| PSM | Process Safety Management |
| 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 |
| 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 |
| RTPs | Regional Transportation Plan |
| RWQCB | Regional Water Quality Control Board |
| R-10 | Single Family Residential |
| 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 |
| SFEP | San Francisco Estuary Project |
| SFO | Special Features Overlay |
| SH | Single Family Residential, High Density |
| SHPO | State Historic Preservation Officer |
| SIP | State Implementation Plan |
| SLC | State Lands Commission |
| SLR | single-lens reflex |
| SMARA | California Surface Mining and Reclamation Act |
| SMP | Soil Management Plan |

| | |
|---|---|
| $SO_2$ | Sulfur Dioxide |
| SPP | Steam Power Plant |
| SSOs | Sewer system overflows |
| SRRE | Source Reduction and Recycling Element |
| 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 |
| UC | University of California |
| ULL | Urban Limit Line |
| 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 |
| UST | Underground Storage Tank |
| UWMP | Urban Water Management Plan |
| WCCCIWA | West Contra Costa County Integrated Waste Management Authority |
| WCCTAC | West Contra Costa County Transportation Advisory Committee |
| WCWD | West County Wastewater District |
| WCWTP | Walnut Creek Wastewater Treatment Plant |
| WDRs | Waste Discharge Requirements |
| 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 |