Volume 2
Draft Environmental Impact Report

&

San Francisco Planning Department Case No. 2010.0493E
State Clearinghouse No. 2011022040

Draft EIR Publication Date: July 11, 2011
Draft EIR Public Hearing Date: August 11, 2011
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Written comments should be sent to the
Environmental Review Officer
1650 Mission Street, Suite 400
San Francisco, CA 94103

SAN FRANCISCO
PLANNING
DEPARTMENT

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The 34th America's Cup
&
James R. Herman Cruise Terminal and Northeast Wharf Plaza

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PD. Project Description Supporting Information
LU. Land Use Supporting Information
CP. Historical Resources Supporting Information
NO. Noise and Vibration Supporting Information
AQ. Air Quality Supporting Information
BI. Biological Resources Supporting Information
HY. Hydrology and Water Quality Supporting Information
TR. Transportation Technical Appendix

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CHAPTER 5

Environmental Setting, Impacts, and Mitigation Measures (continued)

5.7 Noise and Vibration

This section describes the existing noise environment in the project area and evaluates the potential for noise and vibration associated with implementation of the proposed America's Cup (AC34) and James R. Herman Cruise Terminal/Northeast Wharf Plaza (Cruise Terminal) projects to adversely affect established sensitive land uses or land use activities. This impact analysis evaluates the potential noise and vibration impacts of the proposed projects and identifies mitigation measures to avoid or reduce adverse impacts. This section addresses noise and vibration impacts on humans. Noise effects on marine and terrestrial wildlife as a sensitive receptor are dependent on species and a number of biological factors, and those effects are addressed in Section 5.14, Biological Resources.

5.7.1 Setting

5.7.1.1 Noise Background

Sound is characterized by various parameters that describe the rate of oscillation (frequency) of sound waves, the distance between successive troughs or crests in the wave, the speed that it travels, and the pressure level or energy content of a given sound. The sound pressure level has become the most common descriptor used to characterize the loudness of an ambient sound, and the decibel (dB) scale is used to quantify sound intensity. Because sound can vary in intensity by over one million times within the range of human hearing, a logarithmic loudness scale is used to keep sound intensity numbers at a convenient and manageable level. Since the human ear is not equally sensitive to all sound frequencies within the entire spectrum, human response is factored into sound descriptions in a process called "A-weighting," expressed as "dBA." The dBA, or A-weighted decibel, refers to a scale of noise measurement that approximates the range of sensitivity of the human ear to sounds of different frequencies. On this scale, the normal range of human hearing extends from about 0 dBA to about 140 dBA. A 10-dBA increase in the level of a continuous noise represents a perceived doubling of loudness. The noise levels presented herein are expressed in terms of dBA, unless otherwise indicated. **Table 5.7-1** shows some representative noise sources and their corresponding noise levels in dBA.[1]

Planning for acceptable noise exposure must take into account the types of activities and corresponding noise sensitivity in a specified location for a generalized land use type. Some general guidelines are as follows: sleep disturbance can occur at levels above 35 dBA; interference with human speech begins at about 60 dBA; and hearing damage can result from prolonged exposure to noise levels in excess of 85 to 90 dBA.[2]

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1 United States Department of Housing and Urban Development (HUD), *The Noise Guidebook*, 1985, http://www.hud.gov/offices/cpd/environment/training/guidebooks/noise/; divided into chapters with Chapter 1 at http://www.hud.gov/offices/cpd/environment/training/guidebooks/noise/chapter1.pdf, accessed April 19, 2011.

2 United States Environmental Protection Agency, Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety, March 1974, http://www.nonoise.org/library/levels74/levels74.htm, accessed April 19, 2011.

TABLE 5.7-1
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.

Attenuation of Noise

Line sources of noise, such as roadway traffic, attenuate (lessen) at a rate of 3.0 to 4.5 dBA per doubling of distance from the source, based on the inverse square law and the equation for cylindrical spreading of noise waves over hard and soft surfaces.

Point sources of noise,[3] including stationary mobile sources such as idling vehicles or onsite construction equipment, attenuate at a rate of 6.0 to 7.5 dBA per doubling of distance from the source, based on the inverse square law and the equations for spherical spreading of noise waves over hard and soft surfaces. For the purposes of this analysis, it is assumed that noise from line

[3] Point sources and line sources are further defined by the California Department of Transportation (Caltrans) as follows:

> Sound from a small localized source (approximating a "point" source) radiates uniformly outward as it travels away from the source in a spherical pattern. The sound level attenuates or drops off at a rate of 6 dBA for each doubling of the distance (6 dBA/DD). This decrease, due to the geometric spreading of the energy over an ever increasing area, is referred to as the inverse square law. However, highway traffic noise is not a single, stationary point source of sound. The movement of the vehicles makes the source of the sound appear to emanate from a line (line source) rather than a point when viewed over some time interval. This results in cylindrical spreading rather than the spherical spreading of a point source. (Source: Caltrans, *Technical Noise Supplement*, November 2009.)

and point sources to a distance of 200 feet attenuates at rates of between 3.0 and 6.0 dBA per doubling of distance, and the noise from line and point sources to a distance longer than 200 feet attenuates at a rate of 4.5 to 7.5 dBA per doubling of distance, to account for the absorption of noise waves due to ground surfaces such as soft dirt, grass, bushes, and intervening structures.[4]

Noise Descriptors

Time variations in noise exposure are typically expressed in terms of a steady-state energy level (L_{eq}) that represents the acoustical energy of a given measurement. L_{eq} is used to describe noise over a specified period of time, in terms of a single numerical value. The L_{eq} is the constant sound level that 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). Because community receptors are more sensitive to unwanted noise intrusion during the evening and at night, state law requires that, for planning purposes, an artificial dBA increment be added to "quiet time" noise levels to form a 24-hour noise descriptor called the day-night noise level (L_{dn}). L_{dn} adds a 10-dBA penalty during the night hours (10:00 p.m. to 7:00 a.m.). The maximum noise level (L_{max}) is the maximum instantaneous noise level measured during the measurement period of interest.

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, while the United States Environmental Protection Agency all but eliminated its noise investigation and control program in the 1970s.[5] 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. 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.[6]

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,

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4 California Department of Transportation (Caltrans), *Technical Noise Supplement*, November 2009, http://www.dot.ca.gov/hq/env/noise/pub/Technical%20Noise%20Supplement.pdf, accessed April 19, 2011.

5 The *San Francisco General Plan* Land Use Compatibility Guidelines for Community Noise, presented below in Figure 5.7-2, were created during the same era.

6 World Health Organization, Guidelines for Community Noise, Geneva, 1999, http://www.who.int/docstore/peh/noise/guidelines2.html, accessed April 19, 2011. A copy of this document is available for public review at the San Francisco Planning Department, 1650 Mission Street, Suite 400, in Case File No. 2007.0903E.

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.

5.7.1.2 Existing Noise Environment

Long-term environmental noise is primarily dependent on vehicle traffic volumes and the mix of vehicle types. The existing ambient noise environment within the project area, typical of most urban areas, is dominated by vehicular traffic on The Embarcadero and the San Francisco–Oakland Bay Bridge (Bay Bridge) as well as traffic on local roadways (autos, trucks, and buses). The San Francisco Municipal Railway (Muni) operates historic streetcars as well as light rail service along The Embarcadero that contribute to the local noise environment. Marine transport (ship and boat) noises, such as horns and engine noise, can also be audible in the project area.

The San Francisco Department of Public Health (DPH) has mapped transportation noise throughout the City and County of San Francisco, based on modeled baseline traffic volumes derived from the San Francisco County Transportation Authority travel demand model. DPH maps indicate the areas subject to noise levels over 60 dBA (L_{dn}) and the range of L_{dn} noise levels that occur on every street in San Francisco. The portions of these maps that cover the project area indicate that areas nearest the Bay Bridge portion of I-80 experiences roadway noise levels in excess of 70 dBA (L_{dn}), while noise levels along The Embarcadero are generally between 65 and 60 dBA (L_{dn}).

Ambient Noise Measurements

For the purposes of this EIR, ambient long-term (24-hour) and short-term (10-minute) noise measurement data were collected in the spring of 2011 in the project area to further characterize noise conditions at locations near AC34 event areas and the proposed James R. Herman Cruise Terminal; noise measurement locations are shown in **Figure 5.7-1**. To characterize ambient noise in the project area, measurement data were collected or compiled[7] for 11 locations where residential land uses exist near primary project elements, as shown in **Table 5.7-2**.

[7] Wilson Ihrig & Associates, *Noise and Vibration Setting Report, San Francisco Muni Historic Streetcar Service to Fort Mason*, Revised Report, April 2009.

America's Cup Project Sites
Live Sites
Noise Monitoring Locations
0
1
Mile
Angel Island
Fort Baker Pier at Cavallo Point
San Francisco Bay
Marin Headlands
Alcatraz
Treasure Island
Golden Gate Bridge
Aquatic Park
Fort Mason
Marina Green
Crissy Field
Piers 27, 29 & 29 1/2
Piers 19, 19 1/2 & 23
Piers 14-22 1/2
San Francisco-Oakland Bay Bridge
San Francisco
Presidio
Justin Herman Plaza
Pier 26
Pier 28
Piers 30-32
SWL 330
Union Square
Civic Center
Pier 80
1
2
3
4
5
6
7
8
9
10
11

SOURCE: Google Maps; ESA

Case No. 2010.0493E: AC34 / Cruise Terminal and Northeast Wharf Plaza (210317)

Figure 5.7-1
Noise Monitoring Locations

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TABLE 5.7-2
SHORT- AND LONG-TERM AMBIENT NOISE LEVEL DATA IN THE PROJECT AREA

Measurement Location	Time	Noise Levels in dBA	
		Hourly L_{eq}	L_{max}
1. 1578 Indiana Street Nearest residential receptor to Pier 80	9:30 a.m.	69.9	81.6
2. Delancey Street Housing (600 Embarcadero) Nearest residential receptor to Piers 30-32	9:55 a.m.	73.0	86.6
3. Portside Condominiums (38 Bryant Street) Nearest residential receptor to Piers 26 and 28	10:12 a.m.	68.9	80.8
4 Gateway Apartments Nearest residential receptor to Justin Herman Plaza	11:30 a.m.	63.0	ND
5. 218 Filbert Street Nearest residential receptor to Pier 19	11:36 a.m.	58.5	68.1
6. 101 Lombard Street Nearest residential receptor to Pier 27	11:17 a.m.	63.0	72.8
7. Ghirardelli Square (residential units on the upper floors) Nearest residential receptor to Aquatic Park	12:40 p.m.	65.0	83.8
8. Laguna Condominiums (residential units between North Point and Bay Streets) Nearest residential receptor to Fort Mason	12:40 p.m.	69.0	83.0
9. Marina Boulevard Residences (residential units on Marina Boulevard between Webster and Scott Streets) Nearest residential receptor to Marina Green	11:00 p.m.	63.2	71.3
10. Armistead Road Residences Nearest residential receptor to Crissy Field	24-hour	62.3	82.8
11 Cavallo Point Lodge Nearest residential receptor to Cavallo Point areas	10:48 a.m.	49.0	ND

NOTE: See Figure 5.7-1 for noise measurement locations. ND = Data not available. L_{eq} represents the constant sound level; L_{max} is the maximum noise level.

SOURCE: Environmental Science Associates, 2010 and 2011; Wilson Ihrig & Associates, *Noise and Vibration Setting Report, San Francisco Muni Historic Streetcar Service to Fort Mason*, Revised Report, April 2009.

Port of San Francisco Piers, Water Areas and Seawall Lots

Piers 29-31 Water Basin

The Piers 29-31 water basin is located between Piers 29 and 31, along The Embarcadero between Bay Street and Chestnut Street. The noise environment in this area is dominated by vehicle traffic and intermittent operations of the F-Line historic streetcars. Noise measurements taken in this area in 2011 indicate daytime hourly L_{eq} noise levels of 63 dBA at the corner of Lombard and Sansome Streets (see Table 5.7-2). Sensitive receptors in this area consist of condominiums at 101 Lombard Street, 550 feet to the southwest, as well as residences on Telegraph Hill, 900 feet or more from the piers.

Piers 27-29 and Pier 29½, and Piers 23-27 Open Water Basin

Piers 27-29 and Pier 29½ are located along The Embarcadero at the intersection of Lombard Street in the city's Northeast Waterfront neighborhood. The noise environment in this area is dominated by vehicle traffic and intermittent operations of the F-Line historic streetcars. Noise measurements taken in this area in 2011 indicate daytime hourly L_{eq} noise levels of 63 dBA at the corner of Lombard and Sansome Streets (see Table 5.7-2). Sensitive receptors in this area consist of condominiums at 101 Lombard Street and 150 to 156 Lombard Street, 550 feet to the southwest, as well as residences on Telegraph Hill, 900 feet or more from the piers. A long-term noise measurement taken at an outdoor third-floor balcony at 101 Lombard indicated an existing noise level of 61 dBA, L_{dn}.

Pier 23, Piers 19 and 19½

Pier 19, Pier 19½ and Pier 23 are located along The Embarcadero near the intersection of Front Street and The Embarcadero. The noise environment in this area is dominated by vehicle traffic and intermittent operations of the F-Line historic streetcars. Noise measurements taken in this area in 2011 indicate daytime hourly L_{eq} noise levels of 59 dBA on Filbert Street west of Sansome Street (see Table 5.7-2). Sensitive receptors in this area consist of residences on Telegraph Hill, 900 feet or more from the piers.

Piers 26-28, Piers 26-28 Water Basin, and Seawall Lot 330

Piers 26 and 28 are located along The Embarcadero within the city's Rincon Point–South Beach neighborhood. A portion of Pier 26 is located directly under the Bay Bridge. Primary noise sources in the vicinity include vehicle and Muni streetcar traffic on The Embarcadero and elevated traffic noise from the Bay Bridge. Less frequent noise sources observed include occasional aircraft and helicopter overflights. Noise measurements taken in this area in 2011 indicate daytime hourly L_{eq} noise levels of 69 dBA at the corner of The Embarcadero and Bryant Street (see Table 5.7-2). Sensitive receptors in this area consist of the Portside condominium complex on Bryant Street, just west of The Embarcadero, 300 feet to the west of the piers and across the street from Seawall Lot 330.

Piers 30-32 and Brannan Street Wharf Open Water Basin

Piers 30-32 and Brannan Street Wharf Open Water Basin (Piers 32-36) are located along The Embarcadero within the city's Rincon Point–South Beach neighborhood. Primary noise sources in the vicinity include vehicle and Muni streetcar traffic on The Embarcadero and elevated traffic noise from the Bay Bridge. Less frequent noise sources observed include occasional aircraft and helicopter overflights. Noise measurements taken in this area in 2011 indicate daytime hourly L_{eq} noise levels of 73 dBA at the corner of The Embarcadero and Brannan Street (see Table 5.7-2). Sensitive receptors in this area consist of the Delancey Street housing, just west of The Embarcadero, 250 feet from the moorings in the Brannan Street Wharf Open Water Basin.

Pier 80

Pier 80 is located on the north side of the Islais Creek Channel at the terminus of Cesar Chavez Street. Primary noise sources in the vicinity include vehicle and Muni streetcar traffic on Third Street; vehicle traffic on Cesar Chavez Street, which has a high percentage of truck traffic; and industrial operations of surrounding land uses. Noise measurements taken in this area in 2011 indicate daytime hourly L_{eq} noise levels of 70 dBA at the corner of Cesar Chavez Street and Indiana Street (see Table 5.7-2). The nearest sensitive receptors in this area consist of condominiums at the corner of Cesar Chavez Street and Indiana Street, 2,800 feet west of the pier.

America's Cup Spectator Venues

Fort Baker Pier at Cavallo Point, Marin County

Cavallo Point is located at the base of the north end of the Golden Gate Bridge, in the Marin Headlands, and occupies a section of the Fort Baker Historic District. The noise environment in this area is dominated by intermittent vehicle traffic. Noise measurements taken in this area in 2010 indicate daytime hourly L_{eq} noise levels of 49 dBA at the Cavallo Point Lodge. Sensitive receptors in this area consist of Cavallo Point Lodge, 600 feet northwest of the venue location.

Alcatraz Island

Alcatraz Island is located approximately 1.5 miles offshore from San Francisco. Alcatraz is part of the Golden Gate National Recreation Area (GGNRA) and operated by the National Park Service (NPS). Currently, Alcatraz is a major museum exhibit attraction accessible only by ferry operators. There are no sensitive noise receptors on or within 1 mile of Alcatraz.

Crissy Field

Crissy Field is a former airfield that was part of the United States Army base at the Presidio and became part of the GGNRA in the 1990s. Crissy Field is located two-thirds of a mile east of the Golden Gate Bridge and one mile west of Marina Green. The noise environment in this area is dominated by distant roadway traffic. Noise measurements taken in this area indicate daytime L_{eq} noise levels of 63 dBA at Crissy Field. The closest sensitive receptors in this area consist of residences on Armistead Drive, 1,000 feet to the west of the venue location, where noise measurements indicate peak daytime hourly L_{eq} noise levels of 67 dBA, due primarily to the presence of vehicle traffic on Doyle Drive.

Marina Green and Vicinity

Marina Green is located in San Francisco's Marina District, north of Marina Boulevard between Fort Mason on the east and the San Francisco Marina and St. Francis Yacht Club on the west. Primary noise sources in the vicinity include vehicle traffic on Marina Boulevard. Less frequent noise sources observed include occasional aircraft and helicopter overflights. Noise measurements taken in this area indicate daytime L_{eq} noise levels of 63 dBA at Marina Green. The closest sensitive receptors in this area consist of single-family residences across Marina Boulevard along the length of Marina Green, 100 feet to the west, with additional residential areas behind these.

Fort Mason

Fort Mason Center is northeast of Marina Boulevard and Marina Green. The entrance to Fort Mason Center is at the intersection of Marina Boulevard and Buchanan Street, adjacent to the high-density residential Marina District neighborhood of San Francisco. Primary noise sources in the vicinity include vehicle traffic on Marina Boulevard, Bay Street, and Laguna Street. Less frequent noise sources observed include occasional aircraft and helicopter overflights. Noise measurements taken in this area indicate daytime hourly L_{eq} noise levels of 49 dBA in the center of Fort Mason, while measurements collected at the perimeter of Fort Mason along Laguna Street indicate daytime hourly L_{eq} noise levels of 69 dBA and day-night average sound level (L_{dn}) values of 66 dBA. The closest sensitive receptors in this area consist of condominiums on Laguna Street between North Point Street and Bay Street, approximately 100 feet from the western edge of Fort Mason. Residential land uses also exist across the length of Bay Street between Van Ness Avenue and Laguna Street, approximately 100 feet from the southern edge of Fort Mason.

Aquatic Park

Aquatic Park is located at the west end of Fisherman's Wharf, starting west of Hyde Street and extending to Fort Mason just west of Van Ness Avenue. Primary noise sources in the vicinity include vehicle traffic on Beach Street and Hyde Street. Less frequent noise sources observed include occasional tour bus address systems and aircraft and helicopter overflights. Noise measurements taken in this area indicate daytime hourly L_{eq} noise levels of 65 dBA at the corner of Larkin and Beach Streets. Long-term monitoring measurements collected at Ghirardelli Square across Beach Street from Aquatic Park indicate L_{dn} values ranging from 70 to 76 dBA.

America's Cup Live Sites

Potential locations for America's Cup Live Sites include Union Square, Embarcadero, Justin Herman Plaza, and San Francisco Civic Center. These sites are located in urbanized areas and are subject to high-volume roadway noise. The existing noise environment at Justin Herman Plaza and The Embarcadero is similar to that described for Pier 1, above, as is the location of the nearest noise-sensitive receptors.

Union Square is a plaza bordered by Geary Street on the south, Powell Street on the west, Post Street on the north, and Stockton Street on the east. It is located within the central shopping, hotel, and theater district of the city. There are no residential receptors within close proximity to this proposed Live Site.

San Francisco Civic Center is bounded by Market Street on the south, Franklin Street on the west, Turk Street on the north, and Leavenworth and Seventh Streets on the east. Civic Center contains two large plazas, Civic Center Plaza and United Nations Plaza, and many of the city's largest government and cultural institutions, including City Hall. There are no residential receptors within close proximity to this proposed Live Site.

America's Cup Secondary Viewing Areas and Vicinity

There are public areas where spectators might watch the AC34 races for which no infrastructure or other project component is proposed by the project. These secondary viewing areas could include, but not be limited to, other public areas along the San Francisco waterfront, other GGNRA lands within the Presidio or Marin Headlands, the Sausalito waterfront, Angel Island, and Treasure Island/Yerba Buena Island.

Golden Gate National Recreation Area, Southern Marin County

This area is under the jurisdiction of the National Park Service and is generally referred to as the Marin Headlands. It is comprised of the southern Marin coastal and hilltop areas located from Point Bonita to the southern boundary of the City of Sausalito. Roadway and public access to these areas is limited, and consequently these areas are expected to have relatively low noise levels, with predominantly natural noise sources such as wind and wildlife with marine activity affecting the noise environment at the Bay and ocean shorelines.

Other Southern Marin County Areas

Additional potential secondary viewing areas in southern Marin County, outside the GGNRA, primarily consist of the shorelines of the cities of Sausalito and Tiburon. These areas experience more urban noise from roadway traffic and marine operations than GGNRA areas. Noise monitoring in the vicinity of the Sausalito Ferry Terminal indicates daytime hourly L_{eq} noise levels of 56 dBA.

Angel Island

Angel Island is under the jurisdiction of California State Parks. Access to the island is only available by ferry. Existing noise levels on the island are dominated by natural noise sources such as wind and wildlife, with marine activity of ferry operations affecting the noise environment at the Bay and ocean shorelines.

Treasure Island and Yerba Buena Island

Treasure Island and Yerba Buena Island are located in the center of San Francisco Bay and are accessible by the Bay Bridge. Treasure Island has a mix of residential uses to the north side of the island and light industrial uses on the south side. Yerba Buena Island has residential uses on the north side of the island and United States Coast Guard facilities on the south side. Vehicle traffic on the local roadway network dominates the noise environment on both islands. Noise from vehicle traffic on the Bay Bridge contributes appreciably to noise levels on Yerba Buena Island. Hourly noise levels vary from a low range of 45 to 49 dBA except at the top of Yerba Buena Island, where the low end of the hourly L_{eq} noise level was measured to be 54.0 dBA. This variation is attributable to the measurement location's close proximity to the Bay Bridge. The high end of the hourly L_{eq} noise levels on the islands was generally in the upper 50-dBA to mid 60-dBA range near the Bay Bridge.

Golden Gate National Recreation Area, Northern San Francisco

The most likely secondary viewing areas in the San Francisco portion of the GGNRA would be Fort Point and the Golden Gate Promenade. Access to these areas is from GGNRA parking lots in the area. The existing noise environment in this area is affected by tourist activity, marine activity, and distant vehicle traffic on the Golden Gate Bridge.

San Francisco Northern Waterfront and Hillside Locations

These secondary viewing areas would include areas of the waterfront that are not proposed for facilities, such as The Embarcadero promenade between Piers 14 and 22½. Noise levels and receptors here would be similar to those described for Pier 26. Secondary viewing areas in hillside locations would include areas such as Coit Tower, where the noise environment is described relative to the Pier 19 receptors above. Other nearby neighborhoods and surrounding elevated residential properties would include Russian Hill and Pacific Heights. These hillside locations may also represent secondary viewing areas where view sheds permit.

5.7.1.3 Vibration Background

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 are used to quantify vibration. The peak particle velocity (PPV) is defined as the maximum instantaneous peak of the vibration signal. The PPV is most frequently used to describe physical vibration impacts on buildings. Typically, groundborne vibration generated by human activities attenuates rapidly with distance from the source of the vibration. Sensitive receptors to vibration include structures (especially older masonry structures), people (especially residents, the elderly, and sick people), and vibration-sensitive equipment.

Another useful vibration descriptor is known as vibration decibels or VdBs. VdBs are generally used when evaluating human response to vibration, as opposed to structural damage (for which PPV is the more commonly used descriptor). Vibration decibels are established relative to a reference quantity, typically 1×10^{-6} inches per second.[8]

Sources of vibration in the project area primarily consist of Muni streetcars traveling along The Embarcadero. Most motor vehicles and trucks have independent suspension systems that substantially reduce if not eliminate vibration generation, barring discontinuities in the roadway.

A survey of groundborne vibration levels from streetcar operations along the F-line was conducted in 2006[9] to determine the range of vibration levels that may be expected at sensitive receptors along a proposed alignment. Vibration levels at monitoring locations along streets with high traffic volumes where there are no streetcar operations are typically less than 70 VdB. The maximum vibration level monitored along an F-line straightaway segment, such as along The Embarcadero, was 81 VdB at 25 feet.

[8] Federal Transit Administration, Transit Noise and Vibration Impact Assessment, 2006.
[9] Wilson Ihrig & Associates, *Noise and Vibration Setting Report, Historic Streetcar Service to Fort Mason*, April 2009.

5.7.1.4 Sensitive Receptors

Sensitive receptors for noise are generally considered to include hospitals, nursing homes, senior citizen centers, schools, churches, libraries, and residences. Land uses within the project area are described in detail in Section 5.2, Land Use. The sensitive receptors to each project element are inventoried in **Table 5.7-3**. Figure 5.2-1 in Section 5.2, Land Use, identifies residential land uses in the project area. Table 5.7-3 identifies the closest sensitive receptors to each AC34 event site and the proposed cruise terminal and provides the distance to each location from the project element.

TABLE 5.7-3
SENSITIVE NOISE RECEPTORS IN THE PROJECT AREA

Site	Closest Sensitive Receptor Type and Location	Distance of Closest Receptor from Site
Pier 80	Residential: 1578 Indiana Street at Cesar Chavez Street	2,800 feet
Helipad at Pier 80	Residential: 1578 Indiana Street at Cesar Chavez Street	2,800 feet
Helipad at Treasure Island	Job Corp Housing	1,100 feet
Marina Green	Residential: Marina Boulevard residences	100 feet
Aquatic Park	Residential: Ghirardelli Square residences across Beach Street	100 feet
Alcatraz Island	None	---
Crissy Field	Residential: Armistead Road residences	1,000 feet
Fort Baker Pier at Cavallo Point	Hotel: Cavallo Point Lodge	600 feet
Fort Mason	Residential: Laguna Street between North Point and Bay Streets	100 feet
Brannan Street Wharf Open Water Basin	Residential: Delancey Street housing	250 feet (from moorings)
Piers 30-32	Residential: Portside condominium tower	300 feet (from proposed team hospitality area)
Pier 26 and Pier 28	Residential: Portside condominium tower	400 feet (from proposed team/event operations area)
Piers 19 and 19 ½	Residential: 218 Filbert Street	900 feet (from proposed event and race operations center)
Pier 23	Residential: 101 Lombard Street	750 feet (from proposed event and race media center)
Piers 27-29 and 29½	Residential: 101 Lombard Street, 150-156 Lombard Street	520 feet (from proposed America's Cup Village/cruise terminal)

SOURCE: Environmental Science Associates, 2011.

5.7.2 Regulatory Framework

5.7.2.1 Federal Regulations

2006 National Park Service Management Policies

The 2006 National Park Service Management Policies set forth Soundscape Management Policies.[10] These policies are designed in accordance with the Organic Act of 1916 and strive to manage national parks in a way that will preserve them for the enjoyment of future generations. Under these policies, the National Park Service will preserve, to the greatest extent possible, the natural soundscapes of parks. Some natural sounds in the natural soundscape are also part of the biological or other physical resource components of the park. Examples of such natural sounds include:

- Sounds produced by birds, frogs, or katydids to define territories or aid in attracting mates
- Sounds produced by bats or porpoises to locate prey or navigate
- Sounds received by mice or deer to detect and avoid predators or other danger
- Sounds produced by physical processes, such as wind in the trees, claps of thunder, or falling water

The National Park Service will restore to the natural condition wherever possible those park soundscapes that have become degraded by unnatural sounds (noise), and will protect natural soundscapes from unacceptable impacts. Using appropriate management planning, superintendents will identify what levels and types of unnatural sound constitute acceptable impacts on park natural soundscapes.

The frequencies, magnitudes, and durations of acceptable levels of unnatural sound will vary throughout a park and are generally greater in developed areas. In and adjacent to parks, the National Park Service will monitor human activities that generate noise that adversely affect park soundscapes, including noise caused by mechanical or electronic devices. The National Park Service will take action to prevent or minimize all noise that through frequency, magnitude, or duration adversely affects the natural soundscape or other park resources or values, or that exceeds levels that have been identified through monitoring as being acceptable to or appropriate for visitor uses at the sites being monitored.

Director's Order #47 – Soundscape Preservation and Noise Management

Director's Orders are one of several types of written guidance created for the proper management of national parks. The key directive from Director's Order #47[11] is that where natural soundscape conditions are currently not affected by inappropriate noise sources, the objective must be to

[10] National Park Service, Management Policies, 2006, page 56, http://www.nps.gov/policy/mp2006.pdf, accessed April 22, 2011.
[11] National Park Service, Director's Order #47: Soundscape Preservation and Noise Management, approved by Robert Stanton, Director, December 2000, http://www.nps.gov/policy/DOrders/DOrder47.html, accessed April 22, 2011.

maintain those conditions. Where the soundscape is found to be degraded, the objective is to facilitate and promote progress toward the restoration of the natural soundscape.

5.7.2.2 State Regulations

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 Title 24 of the California Code of Regulations.

For limiting noise transmitted between adjacent dwelling units, the noise insulation standards specify the extent to which walls, doors, and floor-ceiling assemblies must block or absorb sound. For limiting noise from exterior sources, the noise insulation standards set forth an interior standard of 45 dBA (L_{dn}) in any habitable room. Where dwelling units are proposed in areas subject to noise levels greater than 60 dBA (L_{dn}), a demonstration of how the units have been designed to meet this interior standard is required. If the interior noise level depends upon windows being closed, the design for the structure must also specify a ventilation or air-conditioning system that provides a habitable interior environment.

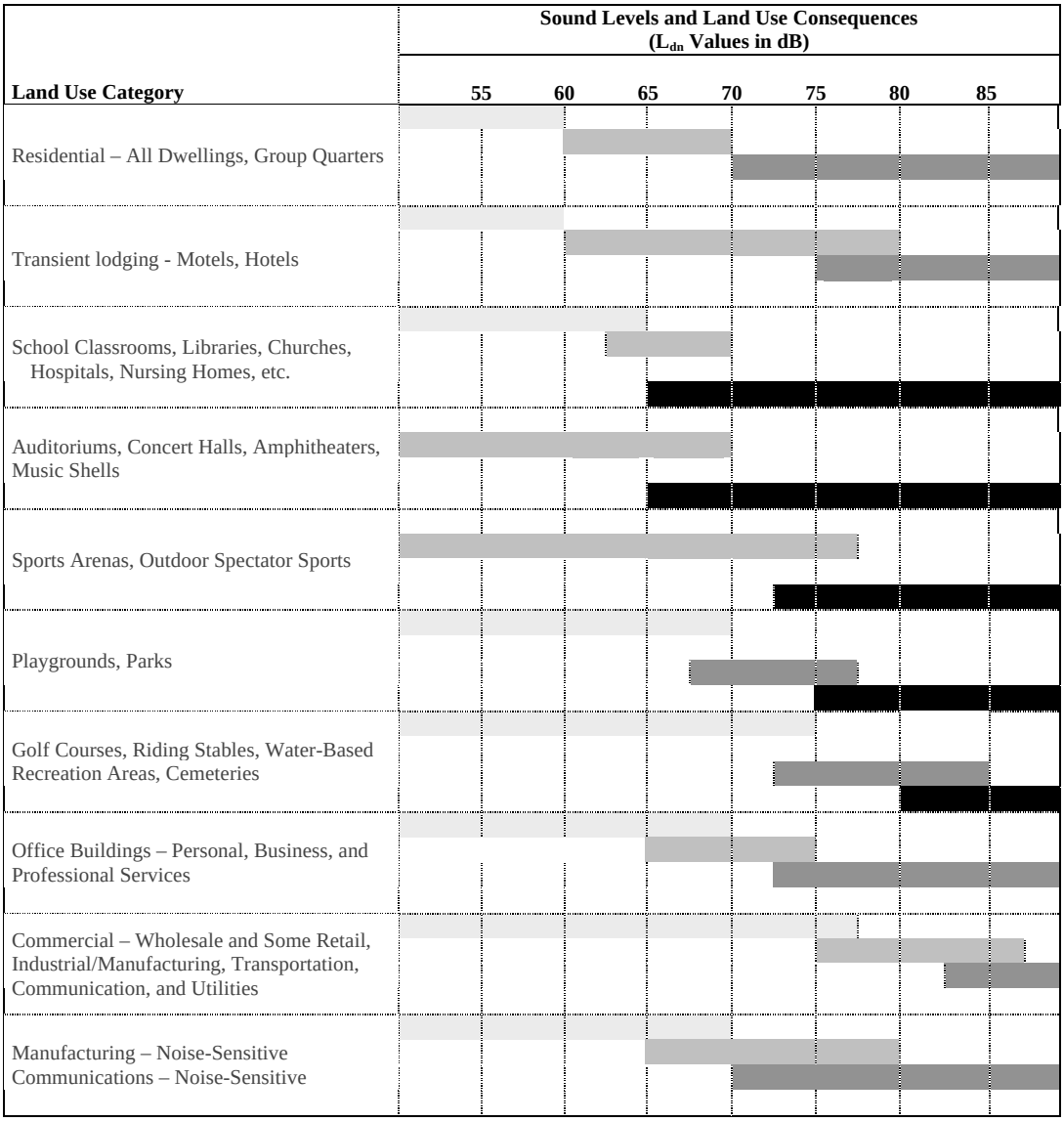
5.7.2.3 Local Regulations

San Francisco General Plan

Land Use Compatibility Guidelines for Community Noise

The Environmental Protection Element of the *San Francisco General Plan* contains Land Use Compatibility Guidelines for Community Noise.[12] These guidelines, which are similar to but differ somewhat from state guidelines promulgated by the Governor's Office of Planning and Research, indicate maximum acceptable exterior noise levels for various newly developed land uses. The City's guidelines, which are presented in **Figure 5.7-2**, indicate exterior noise levels that might be inappropriate for sensitive land uses and would therefore require additional noise insulation considerations beyond standard practices. Though this figure presents a range of noise levels that are considered compatible or incompatible with various land uses, the maximum "satisfactory" noise level is 60 dBA (L_{dn}) for residential and hotel uses; 65 dBA (L_{dn}) for school classrooms, libraries, churches, and hospitals; 70 dBA (L_{dn}) for playgrounds, parks, office buildings, retail commercial uses, and noise-sensitive manufacturing/communications uses; and 77 dBA for other commercial uses such as wholesale, some retail, industrial/manufacturing, transportation, communications, and utilities. If these uses are proposed to be located in areas with noise levels that exceed these guidelines, a detailed analysis of noise reduction requirements will normally be necessary prior to final review and approval.

[12] City and County of San Francisco, *San Francisco General Plan*, adopted on June 27, 1996, http://www.sf-planning.org/ftp/General_Plan/index.htm, accessed April 19, 2011.



Satisfactory, with no special noise insulation requirements.

New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features included in the design.

New construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design.

New construction or development should generally not be undertaken.

Case No. 2010.0493E: AC34 / Cruise Terminal and Northeast Wharf Plaza (210317)

SOURCE: San Francisco, 1996. *San Francisco General Plan*, adopted on June 27, 1996

Figure 5.7-2
San Francisco Land Use Compatibility Chart for Community Noise

Noise-Related Policies

The following policies of the *San Francisco General Plan* Environmental Protection Element that relate to noise issues are relevant to the proposed project:

> *Policy 10.1*: Promote site planning, building orientation and design and interior layout that will lessen noise intrusion. Because sound levels drop as distance from the source increases, building setbacks can play an important role in reducing noise for the building occupants…Buildings sited with their narrower dimensions facing the noise source and sited to shield or be shielded by other buildings also help reduce noise intrusion. Although walls with no windows or small windows cut down on noise from exterior sources, in most cases it would not be feasible or desirable to eliminate wall openings. However, interior layout can achieve similar results by locating rooms whose use require more quiet, such as bedrooms, away from the street noise.
>
> *Policy 10.2*: Promote the incorporation of noise insulation materials in new construction. State-imposed noise insulation standards apply to all new residential structures except detached single-family dwellings. Protection against exterior noise and noise within a building is also important in many nonresidential structures. Builders should be encouraged to take into account prevailing noise levels and to include noise insulation materials as needed to provide adequate insulation.
>
> *Policy 11.1*: Discourage new uses in areas in which the noise level exceeds the noise compatibility guidelines for that use. New development should be examined to determine whether background and/or thoroughfare noise level of the site is consistent with the guidelines for the proposed use. If the noise levels for the development site…exceed the sound level guidelines established for that use, as shown in the accompanying land use compatibility chart, then either needed noise insulation features should be incorporated in the design or else the construction or development should not be undertaken.
>
> *Policy 11.3*: Locate new noise-generating development so that the noise impact is reduced. Developments which will bring appreciable traffic into or through noise-sensitive areas should be discouraged, if there are appropriate alternative locations where the noise impact would be less. For those activities—such as a hospital—that need a quiet environment, yet themselves generate considerable traffic, the proper location presents a dilemma. In those cases, the new development should locate where this traffic will not present a problem and, if necessary, incorporate the proper noise insulation.

San Francisco Noise Ordinance

In San Francisco, regulation of noise is stipulated in Article 29 of the Police Code (Regulation of Noise), which states that the City's policy is to prohibit unnecessary, excessive, and offensive noises from all sources subject to police power. Sections 2907 and 2908 of Article 29 regulate construction equipment and construction work at night, while Section 2909 provides for limits on stationary-source noise from machinery and equipment. Sections 2907 and 2908 are enforced by the Department of Building Inspection, and Section 2909 is enforced by the Department of Public Health. Summaries of these and other relevant sections are presented below.

Sections Regulating Construction Noise

Sections 2907(a) and (b) of the Police Code state that it shall be unlawful for any person, including the City and County of San Francisco, to operate any powered construction equipment, regardless of age or date of acquisition, if the operation of such equipment emits noise at a level in excess of 80 dBA when measured at a distance of 100 feet from such equipment, or an equivalent sound level at some other convenient distance. Exemptions from this requirement include:

- Impact tools and equipment with intake and exhaust mufflers recommended by the manufacturers and approved by the Director of Public Works as best accomplishing maximum noise attenuation; and

- Pavement breakers and jackhammers equipped with acoustically attenuating shields or shrouds recommended by the manufacturers and approved by the Director of Public Works as best accomplishing maximum noise attenuation.

Section 2908 prohibits any person, between the hours of 8:00 p.m. of any day and 7:00 a.m. of the following day, from erecting, constructing, demolishing, excavating for, altering, or repairing any building or structure if the noise level created is in excess of the ambient noise level by 5 dBA at the nearest property line unless a special permit has been applied for and granted by the Director of Public Works.

Sections Regulating Operational Noise

Section 2909 establishes a not-to-exceed noise standard for fixed sources of noise, such as building mechanical equipment and industrial or commercial processing machinery. Unlike the state building code (Title 24) standard, which is applicable to interior living space only, the standards in Section 2909(a), (b), and (c) are applicable outdoors, at the property line of the affected use, and vary based on the residential or commercial nature of the noise generator's use. For example, the noise limits for commercial and industrial properties provide that no person shall produce or allow to be produced a noise level more than 8 dBA above the local ambient level at the property plane. For residential properties the noise limits are 5 dBA above the ambient level at any point outside of the property plane of a residential use. The noise limits for public property provide that no person shall produce a noise level more than 10 dBA above the local ambient level at a distance of 25 feet or more on public property.

As is common for noise standards, the permitted noise level for fixed residential interior noise limits identified in Section 2909(d) is lower at night than during the day. For example, maximum noise levels at any sleeping or living room in any dwelling unit located on residential property must not exceed 45 dBA between 10:00 p.m. and 7:00 a.m., and 50 dBA between 7:00 a.m. and 10:00 p.m. None of the noise limits set forth in this section apply to activity for which the City and County of San Francisco has issued a permit that contains noise limit provisions that are different from those set forth in this article. Additionally, the Directors of Public Health, Public Works, or Building Inspection, or the Entertainment Commission, or the Chief of Police may grant variances to noise regulations, over which they have jurisdiction pursuant to Section 2916.

Section 47.2 of the Police Code regulates the use of any sound amplifying equipment, whether truck-mounted or otherwise, within the City and County of San Francisco and consists of the following regulations:

1. The only sounds permitted are music or human speech.

2. Hours of operation permitted shall be between 9:00 a.m. and 10:00 p.m.; operation after 10:00 p.m. is permitted only at the location of a public event or affair of general public interest or as otherwise permitted by the Entertainment Commission.

3. Except as permitted by the Entertainment Commission, sound shall not be issued within 450 feet of hospitals, schools, churches, courthouses, public libraries, or mortuaries.

4. No sound truck with its amplifying device in operation shall traverse any one block in the City and County more than four times in any one calendar day.

5. Amplified human speech and music shall not be unreasonably loud, raucous, jarring, or disturbing to persons of normal sensitiveness within the area of audibility, nor louder than permitted in Subsections (6) and (7) hereof.

6. When the sound truck is in motion, the volume of sound shall be controlled so that it will not be audible for a distance in excess of 450 feet from its source; provided, however, that when the sound truck is stopped by traffic, the said sound amplifying equipment shall not be operated for longer than one minute at such stop.

7. Except as permitted by the Entertainment Commission for public gatherings, in all cases where sound amplifying equipment remains at one location or when the sound truck is not in motion, the volume of sound shall be controlled so that it will not be audible for a distance in excess of 250 feet from the periphery of the attendant audience.

8. No sound amplifying equipment shall be operated unless the axis of the center of any sound reproducing equipment used shall be parallel to the direction of travel of the sound truck; provided, however, that any sound reproducing equipment may be so placed upon said sound truck as to not vary more than 15 degrees either side of the axis of the center of the direction of travel and, provided further, that radial, nondirectional type of loudspeakers may be used on said sound trucks either alone or in conjunction with sound reproducing equipment placed within 15 degrees of the center line of the direction of travel.

San Francisco Entertainment Commission Permits

Section 1060.1 of the Police Code requires a permit to conduct, operate or maintain a one-time event within the City and County of San Francisco. The San Francisco Entertainment Commission was established in 2003 with the mission to regulate, promote and enhance the field of entertainment in San Francisco. The seven-member commission has powers to accept, review, and gather information to conduct hearings for entertainment-related permit applications. Additionally, the Entertainment Commission plans and coordinates the provision of City services for major events for which there is no recognized organizer, promoter, or sponsor. It is assumed that a permit in accordance with Section 1060.1 would be required for the proposed AC34 events at Marina Green, Piers 27-29, and Live Sites.

5.7.3 Impacts and Mitigation Measures

5.7.3.1 Significance Criteria

The City has not formally adopted significance standards for impacts related to noise and vibration, but generally considers that implementation of the project could have a potentially significant impact related to noise and vibration if it were to:

- Result in exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies;
- Result in exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels;
- Result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project;
- Result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project;
- For a project located within an airport land use plan area, or, where such a plan has not been adopted, in an area within two miles of a public airport or public use airport, expose people residing or working in the area to excessive noise levels;
- For a project located in the vicinity of a private airstrip, expose people residing or working in the project area to excessive noise levels; or
- Be substantially affected by existing noise levels.

Due to the nature of the proposed project, there would be no impact related to the following criteria for the reasons described below:

- ***Exposure to excessive noise levels within two miles of a public airport or private airstrip.*** The nearest airports to the proposed project are the San Francisco International and Oakland International Airports, both more than eight miles from the project area. Because the project is located more than two miles from an airport and would not involve construction of aboveground structures that could interfere with air traffic, impacts related to exposure to excessive noise levels in the vicinity of a public or private airport are not applicable to the project, and these two criteria are not discussed further.
- ***Be substantially affected by existing noise levels.*** The project would not result in the construction of land uses that would be permanently occupied by sensitive noise receptors or land uses otherwise considered noise-sensitive. Therefore, project elements and occupants (i.e., people attending the America's Cup venues and the people traveling through or working at the cruise terminal) would not be substantially affected by existing noise levels, and this criterion is not discussed further.

5.7.3.2 Approach to Analysis

Construction Noise Impacts

To assess potential short-term construction noise impacts, sensitive receptors and their relative exposure (considering topographic barriers and distance) were identified. Combined intermittent noise levels from the simultaneous operation of onsite equipment expected to be used in project construction were estimated based on equipment noise data published by the Federal Highway Administration, as shown in **Table 5.7-4**. The sources assessed were identified as likely equipment to be used in the project. An additional piece of construction equipment proposed to be used for which operational noise specifications are not available from this source is a suction dredge, which would be used for dredging operations and for which noise data was identified from a activity-specific report.[13]

TABLE 5.7-4
TYPICAL NOISE LEVELS FROM CONSTRUCTION EQUIPMENT

Construction Equipment	Noise Level (dBA, L_{eq} at 50 feet)	Noise Level (dBA, L_{eq} at 100 feet)
Off-Road Truck	88	83
Air Compressor	81	75
Concrete Mixer	85	79
Scraper	89	83
Crane, Mobile	83	77
Jackhammer	88	82
Dozer	85	78
Paver	89	83
Generator	81	75
Pile Driver (Impact)	101	95
Pile Driver (Vibratory)	96	90
Backhoe	80	74
Suction Dredge	85	79

SOURCE: Federal Transit Administration, *Transit Noise and Vibration Impact Assessment*, 2006; United States Army Corps of Engineers, *Bolinas Lagoon Ecosystem Restoration Feasibility Study*, DEIR/EIS, June 2002.

Proposed construction activities would be required to comply with the San Francisco Noise Ordinance, which prohibits construction activities between 8:00 p.m. and 7:00 a.m. and limits noise from any individual piece of construction equipment, except impact tools approved by the Department of Public Works, to 80 dBA at 100 feet. As long as construction activities that would occur under the proposed project comply with the noise ordinance, construction noise impacts from non-impact equipment would be considered less than significant. If construction activities using non-impact equipment would exceed these standards, then mitigation measures would be required. The San Francisco Noise Ordinance does not identify any quantitative standard for

[13] United States Army Corps of Engineers, *Bolinas Lagoon Ecosystem Restoration Feasibility Study*, DEIR/EIS, June 2002.

impact equipment. To assess the potential impacts related to pile driving and other impact equipment, this analysis employs the general assessment construction noise assessment methodology and criteria suggested by the Federal Transit Administration (FTA).[14] This guidance identifies a 1-hour L_{eq} of 90 dBA for daytime and 80 dBA for nighttime construction noise exposure at residential uses. Commercial and industrial land use exposure to construction noise of 100 dBA is suggested as an assessment criterion.

In addition to the above criteria, to determine if the proposed project would result in a substantial temporary increase in noise levels in the project vicinity above levels existing without the project, persistent construction equipment noise related to an increase of 10 dBA over the existing ambient noise level would represent a perceived doubling of loudness and is considered a substantial temporary increase in noise levels warranting implementation of construction noise control measures.

Operational Noise Impacts

Operational noise issues evaluated in this section include (1) noise generated by automobile, bus, and ferry traffic that would occur during operation of AC34 events and the cruise terminal; and (2) compatibility of potential future uses with San Francisco Land Use Compatibility Guidelines for Community Noise. Traffic noise modeling was completed using the Federal Highway Administration Traffic Noise Model.

Traffic noise level significance is determined by comparing the noise levels to the Land Use Compatibility Guidelines for Community Noise and by comparing the increased traffic noise levels to the Federal Interagency Committee on Noise (FICON) significance recommendations, which assess the annoyance effects of changes in ambient noise levels resulting from aircraft operations. Although the FICON recommendations were specifically developed to assess aircraft noise impacts, they are applicable to all sources of noise described in terms of cumulative noise exposure metrics such as the L_{dn}. FICON significance recommendations are provided in **Table 5.7-5**. As indicated in the table, an increase in traffic noise of 3 dBA or more would be significant where the ambient noise level is between 60 and 65 dBA L_{dn}, and an increase of 1.5 dBA or more would be significant where the ambient noise level is more than 65 dBA L_{dn}.

TABLE 5.7-5
MEASURES OF SUBSTANTIAL INCREASE FOR TRANSPORTATION NOISE EXPOSURE

Ambient Noise Level Without Project (L_{dn})	Significant Impact Assumed to Occur If the Project Increased Ambient Noise Levels By:
60-65 dB	+ 3.0 dB or more
>65 dB	+ 1.5 dB or more

SOURCE: Federal Interagency Committee on Noise, Federal Agency Review of Selected Airport Noise Analysis Issues, August 1992.

[14] U.S. Department of Transportation, Federal Transit Administration, Transit Noise and Vibration Impact Assessment, May 2006.

5.7.3.3 AC Events and Cruise Terminal Impacts and Mitigation Measures

America's Cup

Impact NO-1: Construction of the America's Cup facilities could result in exposure of persons to or generation of noise levels in excess of standards established in the *San Francisco General Plan* or San Francisco Noise Ordinance or result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project. (Less than Significant with Mitigation)

Construction activities that would be associated with the proposed AC34 project are expected to occur at various locations primarily along the waterfront over a 2–year period. The durations and types of construction activities would vary depending on the needs of the project site and may include site preparation, placement of infrastructure, placement of foundations for structures, and fabrication of structures. Demolition and construction activities at a number of the pier sites would require the use of heavy trucks, material loaders, cranes, concrete breakers, and other mobile and stationary construction equipment. Pile driving would be required for pile replacement and installation of floating boat slips, docks and wave attenuators. These activities in particular would have the potential to generate substantial noise levels depending on the duration of the activity and the proximity to sensitive receptors. More minor construction activities would be required for temporary installations, such as placement of barges and installation of hospitality and spectator areas (tents and bleachers, etc.). These construction activities would be more typical of those that commonly occur for single-day events in San Francisco Waterfront areas, such as the San Francisco Marathon and other foot-race events. These construction activities typically do not involve impact equipment or off-road diesel construction equipment.

2012 Event Facilities

Pier 80. Pier 80 would serve as the backup team bases for AC34 2012 activities. Bases for up to 12 teams would be provided and would include space for boat work, storage and maintenance facilities, as well as office space, ancillary team parking. Temporary tents would be installed to house team base operations and store equipment. A public access corridor would be created on Pier 80 adjacent to the team bases for viewing of team base operations. A helicopter barge may be stationed at the southeast corner of Pier 80 (see Impact NO-4 below for further discussion).

Two mobile cranes would be installed along the south side of Pier 80 to lift the racing yachts in and out of the water in Islais Creek Channel. A temporary floating dock would also be installed in Islais Creek Channel alongside the pier south apron adjacent to the team bases to provide temporary berthing for team boats. A separate floating dock would be installed in Islais Creek to provide temporary berthing for USA-17.

A pile driver would be required for installation of temporary berthing docks which would represent the noisiest equipment operation proposed for Pier 80. Vibratory hammers would be used unless difficult driving conditions are encountered, in which case impact hammers would

be required. As a conservative analysis, noise impacts are assessed assuming use of an impact pile driver. Other equipment would include trucks, a mobile crane to install docks, and a tugboat to maneuver barges carrying cranes and equipment.

Assuming simultaneous operation of the two noisiest pieces of construction equipment (an impact pile driver and a mobile crane) as a worst-case analysis, peak construction-related noise levels at Pier 80 would be 101.1 dBA at a distance of 50 feet.

The nearest sensitive receptor to Pier 80 consists of condominiums at 1578 Indiana Street at the corner of Cesar Chavez Street, 2,800 feet to the west of the pier. At this distance, construction-related noise would be attenuated to 66.1 dBA, not accounting for the presence of intervening structures. This 66.1-dBA contribution to the existing monitored background daytime noise level of 69.9 dBA at this receptor would result in an increase in ambient noise of 1.5 dBA. Noise levels generated at Pier 80 from impact equipment would be less than the 90-dBA criterion of the FTA during the daytime at the nearest residential receptor and therefore would represent a *less-than-significant* impact.

Marina Green and Vicinity. The America's Cup Village at Marina Green in 2012 would contain a range of facilities and services, including the AC34 operations office, a hospitality area for corporate and private functions, outdoor amphitheater event seating, and areas of sponsor displays, general merchandise, and food and beverage sales. Up to two large tents would house the operations office and hospitality functions, along with various smaller tents for other uses.

An outdoor amphitheater that would accommodate approximately 4,000 spectators would consist of bleacher-style style seating that would need to be constructed. Temporary floating docks would be installed at Marina Green for AC34 tender boats and race official boats (but could also accommodate private spectator boats).

Construction noise would be substantially greater than existing noise levels at the nearby receptor locations and would have the potential to result in significant impacts on existing sensitive receptors. The loudest construction activities, such as pile driving, would occur over a 2-week period. Once the particular construction activity was completed the associated noise would no longer be experienced by the affected receptors.

A pile driver would be required for installation of temporary berthing docks, which would represent the noisiest construction equipment operation proposed for Marina Green. Although vibratory hammers would be used to the extent feasible, this analysis conservatively assumes use of an impact pile driver. Installation of floating docks would require installation of approximately 12 piles over a 1- to 2-day period. Other equipment would include trucks, a mobile crane to install docks, and a tugboat to maneuver barges carrying cranes and equipment.

Assuming simultaneous operation of the two noisiest pieces of construction equipment (an impact pile driver and a mobile crane) as a worst-case analysis, peak construction-related noise levels at Marina Green would be 101.1 dBA at a distance of 50 feet.

The nearest sensitive receptors to Marina Green are single-family residences across Marina Boulevard, approximately 100 feet from the green and approximately 400 feet from the Bay where pile driving would occur. At this distance, construction-related noise would be attenuated to 83.0 dBA. This contribution to the existing monitored background would result in a daytime noise level of 83.1 dBA at these receptors and would result in an increase of ambient noise of 20 dBA. Noise from pile-driving activities would be less than the 90-dBA criterion of the FTA. While elevated, these construction noise levels would occur over a relatively brief period of 1 to 2 days. However, because the temporary increase in ambient noise would exceed the 10-dBA criterion, this impact would be *potentially significant*, but implementation of **Mitigation Measures M-NO-1a** (Noise Controls During Construction) and **M-NO-1b** (Pile Driving Noise-Reducing Techniques and Muffling Devices) requiring construction contractors to implement noise reduction measures for construction activities, including pile-driving activities, would reduce this impact to less than significant.

Proposed construction would be required to comply with the San Francisco Noise Ordinance, which prohibits construction activities between 8:00 p.m. and 7:00 a.m. and limits noise from any individual piece of construction equipment, except impact tools approved by the Department of Public Works, to 80 dBA at 100 feet. As indicated in Table 5.7- 4, some construction equipment has the potential to exceed this standard.

Construction noise would be substantially greater than existing ambient noise levels and would have the potential to result in temporary but significant impacts on existing sensitive receptors. The construction activities that would affect sensitive receptors at any one location would be temporary. The loudest construction activities, such as pile driving, would occur over a fraction of the total construction period for the given phase, and once the particular construction activity was completed, the associated noise would no longer be experienced by the affected receptors.

Mitigation Measures M-NO-1a (Noise Controls During Construction) and **M-NO-1b** (Pile Driving Noise-Reducing Techniques and Muffling Devices), which are identified for significant construction noise impacts, would be implemented by contractors and would decrease construction noise levels by requiring construction contractors to implement noise reduction measures for construction activities, including pile-driving activities. These mitigation measures would reduce the temporary increases in noise levels experienced during construction activities and help ensure that temporary construction noise impacts would be less than significant. Noise reduction strategies identified in these mitigation measures would reduce noise levels for stationary sources (approximately 5-dBA reduction from enclosures) and pile driving (vibratory pile drivers are 5 dBA quieter than impact drivers). Additionally, **Mitigation Measure M-BI-11a** (Impact Hammer Pile Driving Noise Reduction for Protection of Fish) identified in Section 5.14, Biological Resources, would require use of cushion blocks for impact pile driving. Noise reductions from cushion blocks vary depending on the material and range from 5 dbA for nylon to 11 dBA for wood.[15]

[15] Caltrans, Technical Guidance for Assessment and Mitigation of the Hydroacoustic Effects of Pile Driving on Fish, February 2009.

2013 Event Facilities

Piers 27-29 and Pier 29½. The proposed America's Cup Village at Piers 27-29 would serve as the focal point for AC34 activities in 2013 and a hub of hospitality, entertainment, and spectator viewing of the sailing races in 2013. The improvements required to support this use would be coordinated with the phased development of the proposed cruise terminal at Pier 27. Phase 1 would demolish the Pier 27 shed in its entirety, along with a portion of the Pier 29 shed, to create an area for a proposed expansive temporary public viewing platform. The Pier 27 Annex office building would also be demolished.

A new Pier 29 shed east and corner wall would be constructed. Phase 1 would also construct the cruise terminal core building and shell. This would include most improvements required for the cruise terminal building, with the exception of portion of the interior office space that would be left unfinished, as well as building and maritime equipment specific to cruise terminal operations.

Other permanent improvements would include repairing the Pier 29 apron and fendering; and repairing the Pier 29 marginal wharf and Piers 27-29 substructure, if needed.

Tents would be installed within open areas at the America's Cup Village. Event seating for 4,000 people would be constructed in the valley of Piers 27-29. In addition, at the east end of Piers 27-29, amphitheater seating would be installed, consisting of bleacher-style style seating for up to 2,000 people.

Proposed demolition activities would require the use of two truck cranes, one hydraulic crane, one loader, one backhoe, and one water truck. These activities would require up to 80 truck trips per week over a 4-week period.

A pile driver would be required for installation of temporary berthing docks and any needed pile replacement for seismic upgrades, which would represent the noisiest construction equipment operation proposed for Piers 27-29. Although vibratory hammers would be used to the extent feasible, this analysis conservatively assumes use of an impact pile driver. Installation of floating docks and mooring anchorings would require installation of 93 piles over a 2-week period. Additional pile driving for permanent pier replacement could occur over a period of up to 4 weeks. Other equipment would include a mobile crane to install docks and a tugboat to maneuver barges, along with cranes, other construction equipment, and trucks.

Assuming simultaneous operation of the two noisiest pieces of construction equipment (an impact pile driver and a mobile crane during floating dock installation as a worst-case analysis), peak construction-related noise levels at Piers 27-29 would be 101.1 dBA at a distance of 50 feet.

The nearest sensitive receptors to Piers 27-29 would be residential condominiums at 101 Lombard and 150 to 156 Lombard, approximately 550 feet from the pier and approximately 740 feet from the Bay where pile driving would occur. At this distance, impact construction equipment noise would be attenuated to 77.7 dBA. This contribution to the existing monitored background

daytime noise level of 63.0 dBA at these receptors would result in an increase in ambient noise of 14.8 dBA during peak pile-driving events over a 6-week period (including pier pile replacement). The presence of intervening structures would reduce this projected increase for the nearest receptors not elevated on Telegraph Hill. While noise from pile-driving activities would be noticeable to residents, daytime noise levels would be less than the 90-dBA criterion of the FTA. However, because the temporary increase in ambient noise would exceed the 10-dBA criterion, this impact would be *potentially significant*, but implementation of **Mitigation Measures M-NO-1a** (Noise Controls During Construction) and **M-NO-1b** (Pile Driving Noise-Reducing Techniques and Muffling Devices) requiring construction contractors to implement noise reduction measures for construction activities, including pile-driving activities, would reduce this impact to less than significant. Increased noise levels from pile driving would be further reduced by implementation of **Mitigation Measure M-BI-11a** (Impact Hammer Pile Driving Noise Reduction for Protection of Fish) described in Section 5.14, Biological Resources, which requires the use of cushion blocks during pile driving. Noise reductions from cushion blocks vary depending on the material and range from 5 dbA for nylon to 11 dBA for wood.[16]

Other (non-pile-driving) construction activities such as demolition activities and general building construction would be less intrusive. Truck trips to off-haul demolition wastes are estimated to require 16 trips per day or 2 truck trips per hour (one in and one out), which would not measurably increase hourly noise levels on The Embarcadero based on the Federal Highway Administration (FHWA) traffic noise model. Proposed construction would be required to comply with the San Francisco Noise Ordinance, which prohibits construction activities between 8:00 p.m. and 7:00 a.m. and limits noise from any individual piece of construction equipment, except impact tools approved by the Department of Public Works, to 80 dBA at 100 feet. Assuming two pieces of equipment operating simultaneously at the maximum noise level allowed by the ordinance, noise levels at the nearest receptor would be 68 dBA. As long as construction activities that would occur under the proposed project comply with the noise ordinance, construction noise impacts from non-impact equipment would be considered less than significant.

Pier 23. Pier 23 would serve as the media operations location for AC34 activities in 2013. Temporary structures and installations would be constructed at Pier 23 for a media center, including a 4,000-square-foot barge set on piles at the east end of Pier 23. In the Northeast Wharf Open Water Basin, approximately 1,400 linear feet of floating docks would be installed at Pier 23, which would require pile driving.

Optional improvements that may occur at Pier 23 include buildout of Americans with Disabilities Act (ADA)-accessible ancillary bulkhead office space, construction of a seismic joint between the bulkhead and pier, marginal wharf and pile repairs, and fire safety and access improvements.

The location of the nearest sensitive receptors to Pier 23 is the same as described for Pier 27 and the types of construction activities would also be similar. Therefore, temporary construction noise

[16] Caltrans, Technical Guidance for Assessment and Mitigation of the Hydroacoustic Effects of Pile Driving on Fish, February 2009.

impacts associated with improvements and installations at Pier 23 would be the same as described above for Pier 27, although of a lesser duration because no permanent structures would be constructed and because the lineal feet of floating docks would be approximately half that proposed for Pier 27, reducing pile driving duration to about 1 week.

Piers 19 and 19½. Temporary structures and installations would consist of a temporary cafeteria, a volunteer center, and ancillary office and storage. Pier 19½ would be used for truck loading, deliveries, and parking. Optional improvements that may occur at these facilities include buildout of a new north bulkhead wall, development of ADA-accessible ancillary bulkhead office space, construction of a seismic joint between the bulkhead and pier, marginal wharf and pile repairs, and fire safety and access improvements.

These construction elements would require non-impact construction activities and no pile driving would be required. Proposed construction would be required to comply with the San Francisco Noise Ordinance, which prohibits construction activities between 8:00 p.m. and 7:00 a.m. and limits noise from any individual piece of construction equipment, except impact tools approved by the Department of Public Works, to 80 dBA at 100 feet. The nearest sensitive receptors to Piers 19 and 19½ would be residential units on Telegraph Hill, approximately 900 feet from the piers. Assuming two pieces of equipment operating simultaneously at the maximum noise level allowed by the ordinance, noise levels at the nearest receptor would be 64 dBA, which would be an increase of 5.5 dBA over the existing daytime noise levels at the nearest receptor. As long as construction activities that would occur under the proposed project comply with the noise ordinance, construction noise impacts from improvements at Piers 19 and 19 ½ would be considered *less than significant*.

Piers 26 and 28 and Piers 26-28 Water Basin. Pier 26 and Pier 28 would be used for storage, parking, and regatta and team operations. Permanent improvements at these piers would be constructed to meet fire safety and other existing requirements. In addition, Piers 26-28 water areas are two of several sites being considered for distributed berthing for AC34 sponsor boats and/or private spectator boats. Should Piers 26 and 28 be used as distributed berthing sites, approximately 2,200 linear feet of floating docks as well as wave attenuators would be installed on the north and south side of Piers 26 and 28 which would require driving of approximately 49 piles. Potential apron repairs may be required at these piers to accommodate these temporary facilities.

Assuming simultaneous operation of the two noisiest pieces of construction equipment (an impact pile driver and a mobile crane during floating dock installation as a worst-case analysis), peak construction-related noise levels at Piers 26 and 28 would be 101.1 dBA at a distance of 50 feet.

The nearest sensitive receptors to Piers 26 and-28 would be residential condominiums at 38 Bryant Street, approximately 400 feet from the pier and the Bay where pile driving would occur. At this distance, construction-related noise would be attenuated to 83.0 dBA. This contribution to the existing monitored background daytime noise level of 68.9 dBA at these receptors would result in an increase in ambient noise of 14.3 dBA during peak pile-driving events over a 1-week period. While noise from pile-driving activities would be noticeable to

residents, daytime noise levels would be less than the 90-dBA criterion of the FTA. However, because the temporary increase in ambient noise would exceed the 10-dBA criterion, this impact would be *potentially significant*, but implementation of **Mitigation Measures M-NO-1a** (Noise Controls During Construction) **and M-NO-1b** (Pile Driving Noise-Reducing Techniques and Muffling Devices) requiring construction contractors to implement noise reduction measures for construction activities, including pile-driving activities, would reduce this impact to less than significant. Increased noise levels from pile driving would be further reduced by implementation of **Mitigation Measure M-BI-11a** (Impact Hammer Pile Driving Noise Reduction for Protection of Fish) in Section 5.14, Biological Resources, which requires the use of cushion blocks. Noise reductions from cushion blocks vary depending on the material and range from 5 dbA for nylon to 11 dBA for wood.[17]

Construction noise would be substantially greater than existing ambient noise levels and would have the potential to result in temporary but significant impacts on existing sensitive receptors. **Mitigation Measures M-NO-1a** (Noise Controls During Construction) and **M-NO-1b** (Pile Driving Noise-Reducing Techniques and Muffling Devices) would also further decrease construction noise levels by requiring construction contractors to implement noise reduction measures for construction activities, including pile-driving activities. These measures would reduce the temporary increases in noise levels experienced during construction activities and ensure that temporary construction noise impacts would be reduced to less-than-significant levels. Noise reduction strategies identified in these mitigation measures would reduce noise levels for stationary sources (approximately 5-dBA reduction from enclosures) and pile driving (vibratory pile drivers are 5 dBA quieter than impact drivers).

Other, non-impact construction activities would be required to comply with the San Francisco Noise Ordinance. As long as construction activities that would occur under the proposed project comply with the noise ordinance, construction noise from non-pile-driving activities would be considered less than significant.

Piers 30-32. Piers 30-32 would undergo a number of permanent upgrades and repairs to support full access and team base operations but not future development. To increase lateral capacity, large-diameter steel piles and pile caps would be installed at numerous locations and would be tied to the structure and/or constructing shear panels; this would involve driving smaller diameter piles, with connecting steel or concrete panels. Portions of the deck, soffit, piles, and rusted and broken reinforcing steel would be replaced as needed. A structure would be installed to raise the existing depressed valley between Piers 30 and 32.

A number of temporary features would be installed at Piers 30-32 and the Brannan Street Wharf Open Water Basin to provide protection from waves and increase berthing capacity at this location. Approximately 1,400 linear feet of floating wave attenuators would be installed to create a breakwater and reduce wave energy within this water basin. Anchored moorings would be installed within the water basin for temporary fasting of AC72 yachts within this water basin.

[17] Caltrans, Technical Guidance for Assessment and Mitigation of the Hydroacoustic Effects of Pile Driving on Fish, February 2009.

In order to provide sufficient water depth for boat clearance, dredging would be conducted within the Brannan Street Wharf Open Water Basin. Additionally a number of and floating docks would be installed, which would require pile driving.

Demolition activities at Piers 30- 32 would occur over a period of approximately 1 week and require the occasional use of a hoe ram (a back-hoe fitted with a hydraulic impact hammer for breaking up concrete). Noise generated by the hoe ram would be repetitive and can generate average noise levels of 85 dBA at 50 feet and a maximum noise level of 90 dBA at 50 feet.[18] The nearest residential receptors to Piers 30-32 would be the Delancey Street housing at 600 The Embarcadero, approximately 250 feet from the pier where demolition activities would occur. At this distance, noise from hoe ram activity would be 77 dBA. This contribution to the existing monitored background daytime noise level of 73.0 dBA at these receptors would result in an increase of ambient noise of 5.5 dBA during hoe ram operations over a 1-week period. The nearest commercial use to Piers 30 and 32 would be Red's Java House, which is located on the northwestern corner of Pier 30 itself and would not benefit from attenuation with distance. At this commercial location, demolition noise could be as high as 90 dBA which, while less than the FTA criterion of 100 dBA for commercial land uses, would exceed ambient noise levels by up to 17 dBA and represent a noise level that would interfere with conversation and may discourage patronage.

Dredging activities at Piers 30-32 would occur over a period of approximately 9 weeks. Noise generated by dredging has been documented to generate average noise levels of 85 dBA at 50 feet[19]. Dredging noise at the nearest residential receptors would be approximately 72.1 dBA. This contribution to the existing monitored background daytime noise level of 73.0 dBA at these receptors would result in an increase in ambient noise of 2.6 dBA during dredging operations over a 9-week period. When considered alone, noise from dredging operations would be a less-than-significant construction noise impact at the nearest residences. The nearest commercial use, Red's Java House, is located on the northwestern corner of Pier 30 and would not benefit from attenuation with distance. At this commercial location, dredging noise would be as high as 85 dBA which, while less than the FTA criterion of 100 dBA for commercial land uses, would exceed ambient noise levels by up to 12 dBA and represent a noise level that would interfere with conversation and may discourage patronage.

Pile-driving activities at Piers 30-32 would occur over a period of approximately 4 months. Assuming simultaneous operation of the two noisiest pieces of construction equipment (an impact pile driver and a mobile crane) during floating dock installation as a worst-case analysis, pile driving-related noise levels at Piers 30-32 would be 101.1 dBA at a distance of 50 feet. Pile-driving noise at the nearest sensitive receptors would be approximately 87.3 dBA. This contribution to the existing monitored background daytime noise level of 73.0 dBA at these receptors would result in an increase in ambient noise of 14.3 dBA during pile-driving operations over a 4-month period. This would be considered a temporary significant impact.

[18] Caltrans, Technical Noise Supplement, p. 8-38 November 2009.
[19] United States Army Corp of Engineers, *Bolinas Lagoon Ecosystem Restoration Feasibility Study*, DEIR/EIS, June 2002.

Construction noise would be substantially greater than existing ambient noise levels and would have the potential to result in *significant* impacts on existing sensitive receptors. The construction activities that would affect sensitive receptors at any one location would be temporary. **Mitigation Measures M-NO-1a** (Noise Controls During Construction) **and M-NO-1b** (Pile Driving Noise-Reducing Techniques and Muffling Devices) would decrease construction noise levels by requiring construction contractors to implement noise reduction measures for construction activities, including pile-driving activities. These measures would reduce the temporary increases in noise levels experienced during construction activities and ensure that temporary construction noise impacts from pile driving at residential receptors would be reduced to less-than-significant levels. Noise reduction strategies identified in these mitigation measures would reduce noise levels for stationary sources (approximately 5-dBA reduction from enclosures) and pile driving (vibratory pile drivers are 5 dBA quieter than impact drivers). Additionally, increased noise levels from pile driving would be further reduced by implementation of **Mitigation Measure M-BI-11a** (Impact Hammer Pile Driving Noise Reduction for Protection of Fish) in Section 5.14, Biological Resources, which requires the use of cushion blocks. Noise reductions from cushion blocks range from 5 dbA for nylon to 11 dBA for wood.

As described in Chapter 3, terms of use of lands under the Port's jurisdiction for the AC34 project are specified in the Host Agreement, and it is assumed that, prior to use of the Piers 30-32 by the Event Authority for construction of AC34 facilities, the Port would require the existing commercial tenants to vacate the pier and relocate elsewhere. Thus, construction impacts on commercial uses are not considered, with one exception: Red's Java House, located on the northwestern corner of Pier 30, may not be relocated, and if not, it would be subject to direct construction noise and would not benefit from attenuation with distance. At this commercial location, dredging noise would be as high as 101 dBA, which would exceed the FTA criterion of 100 dBA for commercial land uses, exceed ambient noise levels by up to 28 dBA, and represent a noise level that would interfere with conversation and may discourage patronage. As discussed earlier, however, increased noise levels from pile driving would be further reduced by implementation of **Mitigation Measure M-BI-11a** (Impact Hammer Pile Driving Noise Reduction for Protection of Fish) in Section 5.14, Biological Resources, which requires the use of cushion blocks. Noise reductions from cushion blocks range from 5 dBA to 11 dBA and would reduce construction noise to below the FTA criterion.

The potential exists for dredging and pile driving to occur simultaneously. However, pile-driving noise of 101 dBA would dominate, with the addition of 85 dBA from dredging only resulting in the addition of 0.1 dBA to the predicted noise level.

Pier 80. While Pier 80 would not host the primary team bases for AC34 2013 events, it would be used as an ancillary team base for AC34 2013. As a consequence, some or all the facilities installed at Pier 80 for AC34 2012, including tents, cranes, and floating docks, would remain in place through the AC34 2013 races and no additional construction in 2013 is foreseen.

2012 and 2013 Spectator Areas

The majority of areas within each spectator venue in 2013 would be open to the general public, although certain areas and functions within some of the venues would be limited to private guests and/or sponsors and staff. Spectator/event venues would include areas at Cavallo Point, Crissy Field, Marina Green, Fort Mason, Aquatic Park, Alcatraz Island and America's Cup Live Sites at Union Square, Justin Herman Plaza, and Civic Center Plaza. Proposed bleacher seating tents/ canopies would require construction activities consisting of truck deliveries of materials and low-impact construction equipment (e.g., forklifts and power tools) to erect bleachers, and tented structures. Use of heavy-duty off-road diesel equipment is not anticipated. Consequently, construction activities at these spectator areas would reasonably be expected to conform to the San Francisco Noise Ordinance and would result in a less-than-significant construction noise impact.

Secondary Viewing Areas and Vicinity

Secondary viewing areas are public areas where spectators might watch the AC34 races but where the project does not propose infrastructure or other project components. These secondary viewing areas could include, but not be limited to, other public areas along the San Francisco waterfront, other GGNRA lands within the Presidio or Marin Headlands, the Sausalito waterfront, Angel Island, and Treasure Island/Yerba Buena Island. As there would be no infrastructure installed at these locations, there would be no construction noise impacts associated with these areas.

Impact Summary

Construction and demolition activities and pile driving associated with construction of the America's Cup facilities would not result in exposure of persons to or generation of noise levels in excess of standards established in the *San Francisco General Plan* or San Francisco Noise Ordinance. However, pile-driving operations at or near Marina Green, Piers 27-29, Pier 23, Piers 26 and 28, and Piers 30-32 would result in substantial temporary increases in ambient noise levels (i.e., greater than 10 dBA) in the project vicinity above levels existing without the project. The construction activities that would affect sensitive receptors at any one location would be temporary. **Mitigation Measures M-NO-1a** (Noise Controls During Construction) and **M-NO-1b** (Pile Driving Noise-Reducing Techniques and Muffling Devices) would decrease construction noise levels by requiring construction contractors to implement noise reduction measures for construction activities, including pile-driving activities. Implementation of **Mitigation Measures M-NO-1a** (Noise Controls During Construction) **and M-NO-1b** (Pile Driving Noise-Reducing Techniques and Muffling Devices) described below would reduce the severity of these impacts. Consequently, this impact is identified as less than significant with mitigation.

Mitigation Measure M-NO-1a: Noise Controls During Construction

The following practices shall be incorporated into the construction contract agreement documents to be implemented by the construction contractor:

- Provide enclosures and mufflers for stationary equipment, shroud or shield impact tools, and install barriers around particularly noisy activities at the construction sites

so that the line of sight between the construction activities and nearby sensitive receptor locations is blocked;

- Use construction equipment with lower noise emission ratings whenever possible, particularly for air compressors;
- Provide sound-control devices on equipment no less effective than those provided by the manufacturer;
- Locate stationary equipment, material stockpiles, and vehicle staging areas as far as practicable from sensitive receptor locations;
- Prohibit unnecessary idling of internal combustion engines; and
- Require applicable construction-related vehicles and equipment to use designated truck routes to travel to and from the project sites.

Mitigation Measure M-NO-1b: Pile Driving Noise-Reducing Techniques and Muffling Devices

The AC34 project sponsors shall require the construction contractor to use noise-reducing pile-driving techniques if nearby structures are subject to pile-driving noise and vibration. These techniques shall include 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.

Construction contractors shall be required to use construction equipment with state-of-the-art noise shielding and muffling devices. In addition, at least 48 hours prior to pile-driving activities, the project sponsors shall notify building owners and occupants within 500 feet of the project site of the dates, hours, and expected duration of such activities.

In addition, implementation of this measure shall be coordinated with **Mitigation Measure M-BI-11a** (Impact Hammer Pile Driving Noise Reduction for Protection of Fish) (see Section 5.14, Biological Resources), which requires the AC34 project sponsors to develop a sound attenuation monitoring plan to reduce noise impacts to aquatic wildlife. This plan shall incorporate best management practices to reduce noise, such as use of cushion blocks between the hammerhead and concrete piles to reduce vibration, use of vibratory drivers for the installation and removal of all steel pilings, and employment of a "soft start" technique to all pile driving to give fish and marine mammals an opportunity to vacate the area. Vibratory hammers shall be used to the maximum extent practicable.

Mitigation Measure M-BI-11a: Impact Hammer Pile Driving Noise Reduction for Protection of Fish (see Section 5.14, Biological Resources)

Impact NO-2: Operation of the America's Cup events and facilities would result in exposure of persons to or generation of noise levels in excess of standards established in the *San Francisco General Plan* or San Francisco Noise Ordinance. (Significant and Unavoidable with Mitigation)

Operation of the America's Cup events would result in the temporary introduction of both stationary and mobile noise sources. Stationary noise sources would include the operation of power generators to provide lighting and other electrical services to spectator areas and team support areas as well as the operation of public address systems and amplification equipment at spectator areas with entertainment venues. Mobile noise sources associated with AC34 events would include operation of helicopters used for AC34 2012 and AC34 2013 races to serve broadcasting and media operations as well as increased vehicle traffic on local the roadway network.

The San Francisco Noise Ordinance contains restrictions on noise from stationary sources; therefore the potential for adverse noise effects from stationary sources is addressed in this impact. Noise from mobile sources is regulated at the state and federal level and the San Francisco Noise Ordinance does not address or establish restrictions on mobile sources. Consequently, the potential impact of mobile source operations generated by AC34 events is addressed under Impact NO-4 with respect to temporary increases in ambient noise levels in the project vicinity and not in this impact, which is specific to the standards of the *San Francisco General Plan* or San Francisco Noise Ordinance.

The *San Francisco General Plan* establishes land use compatibility standards for land uses throughout the city for use in determining the compatibility of new land uses with an existing or future noise environment. The AC34 events would not develop a specified new permanent land use and, therefore, assessment of compatibility of the project with the noise standards of the *San Francisco General Plan* would not apply to AC34 project elements.

Stationary Noise Source – Generators

Supplemental power would be required at spectator and event areas where no existing electrical facilities currently exist. Power would be required for television screens, public address and entertainment systems, lighting, and other equipment uses at most spectator areas. Noise generated by portable generators for supplemental power would depend on the size of the unit and the presence of muffling devices. Three generator sizes are proposed to be used throughout the event sites. Noise specifications were obtained for all three generator sizes assuming only a weatherproof enclosure. **Table 5.7-6** presents estimated noise levels at the nearest sensitive receptor with operation of the maximum number of generators proposed for each venue at a centralized site location.

Section 2909(a)(1) of the San Francisco Police Code identifies unnecessary, excessive, and offensive noise as that which exceeds ambient noise levels at a residential property line by more than 5 dBA. As can be seen from the data in Table 5.7-6, an increase in excess of 5 dBA would occur from generator operations at Piers 27-29 and Marina Green.

TABLE 5.7-6
NOISE LEVELS WITH OPERATION OF GENERATORS DURING AC34 EVENTS

Spectator Areas/Piers	Nearest Sensitive Receptor and Distance from Generator	Existing Noise Level (dBA, L_{eq})	Existing Noise Level with Generator (dBA, L_{eq})	Increase Over Ambient Noise Level (dBA, L_{eq})
Fort Baker Pier	Cavallo Point Lodge, 1,660 feet	49.0	56.6	+ 7.6[a]
Crissy Field	Armistead Road Residences, 1,000 feet	62.3	64.1	+ 1.8
Fort Mason	Residences at Laguna and North Point Streets, 1,100 feet	68.0	68.1	+ 0.1
Marina Green	Marina Boulevard, 300 feet	63.2	71.3	**+ 8.1**
Alcatraz Island	None	---	---	---
Pier 19	218 Filbert Street, 900 feet	58.5	62.8	+ 4.3
Pier 23	218 Filbert Street, 900 feet	58.5	62.8	+ 4.3
Piers 27-29	101 Lombard Street, 500 feet	63.0	71.4	**+ 8.3**
Piers 30-32	38 Bryant Street, 500 feet	68.9	70.7	+ 1.8

NOTES: **Bold** indicates increase that exceeds ambient noise levels at a residential property line by more than 5 dBA (San Francisco Police Code Section 2909[a]]1]).

[a] Does not account for attenuation of intervening hillside.

SOURCE: Environmental Science Associates, 2011.

Table 5.7-6 also indicates that the Fort Baker venue could have an increase in noise levels in excess of 5 dBA from generator operations. The receptor closest to the Fort Baker Pier, Cavallo Point Lodge, is a commercial land use located in Marin County, outside of the jurisdiction of the City and County of San Francisco. Section 6.70 of the Marin County Code (Loud and Unnecessary Noises), restricts the creation and continuation of loud, unnecessary, or unusual noise. This ordinance, enforced by the Marin County Sheriff's Office, prohibits excessive noise levels from various sources including motor vehicles, amplification systems, and persons yelling and does not establish quantitative standards. The Marin Countywide Plan establishes a benchmark of 50 dBA, L_{eq} at residential land uses or other noise-sensitive uses for stationary noise sources for the purposes of siting and planning land uses. While the estimated generator noise level at the nearest Cavallo Lodge building would be 6.7 dBA in excess of this benchmark and 7.6 dBA above the existing noise level, the proposed generator operations would be a temporary noise source and would not establish a new permanent land use or a new "stationary noise-generating development" identified in the Marin Countywide Plan for application of this implementation measure. Additionally, the line-of-sight is interrupted between the Fort Baker pier and the lodge by an intervening hillside, which would reduce this predicted noise level by at least 5 dBA. Consequently, only generator operations at Piers 27-29 and Marina Green would have a significant noise impact with regard to the generation of noise levels in excess of standards established in an applicable general plan or noise ordinance.

Stationary Noise Sources – Amplified Sound

Entertainment venues are proposed for Crissy Field, Marina Green, Fort Mason, and Aquatic Park in 2012 and 2013 and also for Pier 27 in 2013. At Marina Green, the event stage would be located at the western end of the green and directed toward the Bay. At Pier 27, the event stage would be located on the southern portion of the pier and also directed toward the Bay. There is no indication of event stages at the other venues, but it is reasonable to assume that operation of a public address system and/or amplified music could be associated with these other venues (i.e., Crissy Field, Fort Mason, and Aquatic Park).

Section 2909 of the San Francisco Police Code establishes fixed residential interior noise limits. The standards in Section 2909(d) are applicable to interior dwelling areas with windows open except where building ventilation is achieved through mechanical systems that allow windows to remain closed. Maximum noise levels at any sleeping or living room in any dwelling unit located on residential property must not exceed 45 dBA between 10:00 p.m. and 7:00 a.m. and 50 dBA between 7:00 a.m. and 10:00 p.m. San Francisco allows deviation from these restrictions when otherwise addressed in permits issued by the City. Receptors closest to Pier 27 are generally multi-family units that can be expected to have ventilation systems and would have been constructed to Title 24 standards, and therefore a structural noise attenuation of 15 to 20 dBA can reasonably be assumed. Single-family dwellings in the areas of Marina Green, Fort Mason, and Crissy Field would generally not be expected to have ventilation systems, and therefore structural attenuation of sound with open windows would be nominal. The potential exists for amplified noise to exceed these fixed residential interior noise limits at receptors in the vicinity of Crissy Field, Marina Green, and Fort Mason during the AC34 events; therefore, this would be a *potentially significant* impact. The likelihood of this potential impact would particularly be increased if high-volume and/or low-frequency (subwoofer) amplified music were to occur in outdoor areas. **Mitigation Measures M-NO-2a** (Shielding or Acoustical Enclosures for Generators at Piers 27-29 and Marina Green) and **M-NO-2b** (Noise Control Plan for Entertainment Venues) are recommended to reduce the severity of potential noise impacts from amplified public address systems and/or music.

Impact Summary

The America's Cup events and facilities may result in exposure of persons to or generation of noise levels in excess of standards established in the *San Francisco General Plan* or San Francisco Noise Ordinance. Potentially significant noise impacts would result from generator operations at Piers 27-29 and Marina Green and from public address systems and/or amplified music at the proposed entertainment venues. Implementation of **Mitigation Measure M-NO-2a** (Shielding or Acoustical Enclosures for Generators at Piers 27-29 and Marina Green) would reduce potential noise impacts from generator operations to a less-than-significant level.

Mitigation Measure M-NO-2b (Noise Control Plan for Entertainment Venues) would address potential noise impacts from public address systems and/or amplified music to the degree feasible. However, because the variability in the source of these potential impacts (e.g., volume settings, low-frequency component of music, atmospheric effects), a quantitative analysis of noise

levels from each of these venues cannot reliably be modeled, and therefore it cannot be demonstrated that the mitigation measure would be sufficient to consistently reduce potential impacts to less-than-significant levels. Consequently, while limited to the duration of the AC34 events, this impact is conservatively identified as *significant and unavoidable* even with implementation of identified, feasible mitigation measures.

Mitigation Measure M-NO-2a: Shielding or Acoustical Enclosures for Generators at Piers 27-29 and Marina Green

The AC34 project sponsor shall provide shielding or acoustical enclosures for generators at Piers 27-29 and the Marina Green. Specification sheets for generators indicate that Level 1 sound enclosures will dampen noise levels by 5 dBA for the size of generators proposed for Piers 27-29.

Analysis of Mitigation Measure. Implementation of this would reduce the overall noise increase experienced at the nearest sensitive receptor from Piers 27-29 from 8.3 to 4.6 dBA. The noise increase experienced at the nearest sensitive receptor to Marina Green would be reduced from 8.1 to 4.4 dBA. Consequently, with mitigation, ambient noise levels at the nearest residential receptor would be less than 5 dBA above ambient levels during operation of generators.

Mitigation Measure M-NO-2b: Noise Control Plan for Entertainment Venues

The AC34 project sponsors shall develop and implement a Noise Control Plan for operations at the proposed entertainment venues to reduce the severity of potential noise impacts from public address and/or amplified music. This Noise Control Plan shall contain the following elements:

- The project sponsor shall comply with noise controls and restrictions in applicable entertainment permit requirements for designated AC34 events.

- Where not otherwise addressed in City permits, amplification levels generally shall be established commensurate with the City's fixed residential interior noise limits of 50 dBA daytime (7:00 a.m. to 10:00 p.m.) and 45 dBA nighttime (10:00 p.m. to 7:00 a.m.). Volume settings at each entertainment venue shall be identified during the first week of events using noise monitoring at the nearest residences of concern, performed by a qualified acoustical technician in association with the project sponsors. No building attenuation shall be assumed for residences that would not be expected to have mechanical ventilation systems.

- Speaker systems shall be directed toward the Bay, away from the nearest sensitive receptors to the degree feasible.

- A point of contact shall be designated by the project sponsors to respond to noise complaints and to ensure compliance with the first two measures above. This person shall work with the San Francisco Entertainment Commission to establish set-up and operational conditions appropriate to each of the venues with regard to compliance with requirements of Section 47.2 of the San Francisco Police Code.

Impact NO-3: Construction and operation of the America's Cup facilities could result in exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels. (Less than Significant with Mitigation)

There are no adopted state or local policies or standards for groundborne vibration. The average person is quite sensitive to ground motion, and levels as low as 0.50 millimeters per second (0.02 inch per second) can be detected by the human body when background noise and vibration levels are low. Vibration intensity is expressed as peak particle velocity (PPV), the maximum speed at which the ground moves while it temporarily shakes. Since groundshaking speeds are very slow, PPV is measured in inches per second. The Federal Railway Administration and the Federal Transit Administration have published guidance relative to vibration impacts. According to the Federal Rail Administration, fragile buildings can be exposed to groundborne vibration PPV levels of 0.5 inch per second without experiencing structural damage.[20] Caltrans recommends that extreme care be taken when sustained pile driving occurs within 25 feet of any building, or within 50 to 100 feet of a historic building or a building in poor condition.[21]

Groundborne vibration from construction activities that involve "impact activities," primarily pile driving and use of a hoe ram to break concrete, could produce detectable or significant vibration at nearby sensitive buildings and sensitive receptors unless proper mitigation is followed.

Building Damage

Pile-driving activities are proposed to occur intermittently along the San Francisco waterfront from 2012 to 2013. The magnitude of vibration caused by pile driving is a function of distance from the receptor or structure of concern, the type and size of pile-driving equipment, the nature of surrounding soils, and the density of underlying bedrock into which the pile is being driven. Offshore pile driving would be restricted by **Mitigation Measure M-BI-11a** (Impact Hammer Pile Driving Noise Reduction for Protection of Fish), which requires the use of vibratory hammers and cushion blocks between hammer and pile and restricts impact pile-driving activity to a 5-month period from July 1 to November 30 for offshore pile driving to reduce impacts on biological resources. Groundborne vibration from activities that involve "impact tools," especially pile driving, could produce significant vibration. Vibratory pile driving can result in PPV of up to 0.734 inch per second at a distance of 25 feet. A hoe ram can result in PPV of up to 0.089 inch per second at a distance of 25 feet. Construction vibration damage criteria published by the United States Department of Transportation (U.S. DOT) range from 0.5 inch per second for reinforced structures to 0.2 inch per second for the protection of "fragile" buildings. Consequently, only pile driving would be expected to result in vibrations significant enough to result in significant vibration impacts with respect to building damage.

Pile-driving activities would exceed the DOT criterion of 0.2 inch per second for fragile structures at distances closer than 60 feet. While most of the piles driven would be offshore for the purposes

[20] Federal Railroad Administration, *High Speed Ground Transportation Noise and Vibration Impact Assessment, Final*, 2005.

[21] Caltrans, *Transportation Related Earthborne Vibrations (Caltrans Experiences)*, Technical Advisory, Vibration TAV-02-01-R9601, February 20, 2002.

of installing floating docks and wave attenuators, piles are proposed to be installed on Piers 30-32. One existing structure within this distance would be Red's Java House, a potential contributor to the Port of San Francisco Embarcadero Historic District, which would be approximately 45 feet from the nearest proposed pile based on preliminary drawings. Other structures with potential historic importance (see Section 5.5, Cultural Resources) in the vicinity of Piers 30-32 include the Bulkhead Wharf Section 10 and Pier 28. Therefore, this impact is considered *potentially significant*. To protect existing buildings and structures from damage related to vibration, and particularly historic structures, **Mitigation Measure M-NO-3** (Pre-Construction Assessment to Minimize Structural Pile-Driving Vibration Impacts on Adjacent Historic Buildings and Structures and Vibration Monitoring) requires a monitoring program to detect ground settlement or lateral movement of structures in the vicinity of pile-driving activities. The mitigation measure requires that, in the event of unacceptable ground movement, as determined by the Port's Chief Harbor Engineer, all impact work shall cease and corrective measures shall be implemented.

Human Annoyance

Vibration levels can also result in interference or annoyance impacts at residences or other land uses where people sleep, such as hotels and hospitals. Vibration impact criteria published by U.S. DOT relative to these land uses are stated in terms of vibration decibels (VdB). For frequent events such as rapid transit rail activities, a criterion of 72 VdB has been established, while for infrequent events a criterion of 80 VdB has been established. Construction-related activity, which is temporary in nature and would be restricted to daytime hours when most people are not sleeping, is generally assessed by applying the 80 VdB criterion.

Pile driving can result in typical vibrations of 93 VdB at a distance of 25 feet, although upper-range vibrations of up to 105 VdB have been reported, depending on soil conditions. **Table 5.7-7** presents vibration levels that may be experienced from various construction equipment and activities.

TABLE 5.7-7
VIBRATION LEVELS GENERATED BY CONSTRUCTION EQUIPMENT AND ACTIVITY

Equipment	Estimated Vibration Decibels (VdB)			
	At 25 Feet	At 50 Feet	At 100 Feet	At 200 Feet
Jackhammer	79	70	61	52
Hoe Ram	87	78	69	60
Vibratory Pile Driving	105	96	87	78

SOURCE: Federal Transit Administration, Transit Noise and Vibration Impact Assessment, 2006.

Pile-driving vibrations would exceed the 80-VdB criterion for residential receptors at distances of 180 feet or closer. The closest residential receptors to waterfront areas where pile driving is proposed (refer to Impact NO-1 for distances) would be the Delancey Street residences at 250 feet from the Brannan Street Wharf Open Water Basin. All other pile-driving locations would be

farther from residential receptors than this distance. At a distance of 250 feet, vibrations from vibratory pile driving would be 75 VdB. Consequently, human annoyance impact from construction activities would be less than significant.

The proposed AC34 facilities would not introduce new operational vibration sources (e.g., impact equipment, streetcar and rail operations, and blasting activities). While AC34 events would result in temporary increases in vehicle traffic motor vehicles, including trucks, the vehicles would have rubber tires and suspension systems that isolate vibrations and, barring discontinuities in the roadway, would not be significant sources of vibration.[22] Helicopter operations associated with AC34 activities would be aerial and would not generate groundborne noise or groundborne vibration. (Helicopter noise impacts are assessed in Impact NO-4.) Marine vessel traffic would be waterborne and would not generate groundborne noise or groundborne vibration. (Marine traffic noise impacts are also assessed in Impact NO-4.) As there would be no significant sources of groundborne noise or groundborne vibration associated with AC34 facilities, the impact of AC34 event operations would be less than significant.

Impact Summary

Construction of the America's Cup facilities would not result in exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels. However, pile-driving activities could exceed the groundborne vibration criterion for fragile structures, such as Red's Java House, depending on the distance to pile-driving activities, and would be a *potentially significant* impact. Implementation of **Mitigation Measure M-NO-3** (Pre-Construction Assessment to Minimize Structural Pile-Driving Vibration Impacts on Adjacent Historic Buildings and Structures and Vibration Monitoring), as described below, would reduce this impact to a less-than-significant level.

> **Mitigation Measure M-NO-3: Pre-Construction Assessment to Minimize Structural Pile-Driving Vibration Impacts on Adjacent Historic Buildings and Structures and Vibration Monitoring**
>
> The project sponsors shall engage a qualified geotechnical engineer to conduct a pre-construction assessment of existing subsurface conditions and the structural integrity of nearby historic structures subject to pile-driving activity in the vicinity of Piers 28, Piers 30-32, Red's Java House, and Bulkhead Wharf Section 10 before a Port Building Permit is issued. If recommended by the pre-construction assessment, for structures or facilities within 60 feet of pile-driving activities, the project sponsors shall require groundborne vibration monitoring of nearby historic structures. Such methods and technologies shall be based on the specific conditions at the construction site such as, but not limited to, the pre-construction surveying of potentially affected historic structures and underpinning of foundations of potentially affected structures, as necessary.
>
> The pre-construction assessment shall include a monitoring program to detect ground settlement or lateral movement of structures in the vicinity of pile-driving activities. Monitoring results shall be submitted to the Port's Chief Harbor Engineer. In the event of

[22] U.S. DOT, Federal Transit Administration, Transit Noise and Vibration Impact Assessment, p. 7-9, May 2006.

unacceptable ground movement with the potential to cause structural damage, as determined by the Chief Harbor Engineer, all impact work shall cease and corrective measures shall be implemented to minimize the risk to the subject, or adjacent, historic structure.

Impact NO-4: Operation of the America's Cup facilities would result in a temporary and periodic increase in ambient noise levels in the project vicinity above levels existing without the project associated with increased traffic levels on weekends. (Significant and Unavoidable with Mitigation)

Operations of the America's Cup events would result in the temporary introduction of both stationary and mobile noise sources. Impacts from stationary sources are addressed in Impact NO-2, above, relative to the San Francisco Noise Ordinance, which establishes regulations with regard to stationary sources.

Mobile noise sources associated with temporary AC34 events would include (1) operation of helicopters used for AC34 2012 and AC34 2013 races to serve broadcasting and media operations, (2) increases in vehicle traffic on local the roadway network, and (3) increases in marine vessel operations. Noise from mobile sources is regulated at the state and federal level. Consequently, the potential impact of mobile source operations generated by AC34 events is addressed herein with respect to temporary increases in ambient noise levels in the project vicinity.

Mobile Source – Helicopter Noise

Helicopters would be used for AC34 2012 and AC34 2013 races to serve broadcasting and media operations. Title 21 of the State Aeronautics Act provides that areas exposed to aircraft noise levels less than the 65 dB Community Noise Equivalent Level (CNEL) for an average annual day are acceptable for residential and other noise-sensitive uses. Therefore, the 65 dB CNEL contours for race day events were modeled.

The Integrated Noise Model, Version 7.0b, was used to quantify helicopter noise exposure in the vicinity of a helipad location and along the race course. This model is the noise model approved by the Federal Aviation Administration (FAA) for quantifying fixed-wing and rotary-wing aircraft noise. The model input requires information specific to each helipad, including the total number of helicopter operations, the flight paths followed, the specific helicopter types, and the time of day at which the operations occurred.

The model works by defining a network of grid points at ground level. The cumulative noise exposure levels at all grid points are then used to develop CNEL contours for selected values (e.g., 65, 70, and 75 dB CNEL). Using the results of the grid point analysis, noise contours of equal noise exposure are then plotted. The Integrated Noise Model includes the ability to model the effects of changes in ground elevations (terrain), but does not include the ability to account for shielding or reflectivity of noise from buildings or other structures. Therefore, modeling

considered noise impacts to elevated receptor locations but does not make corrections for attenuation or reflective noise from intervening structures. Smooth bodies of water are assumed to have the same reflectivity as paved surfaces[23] and no additional attenuation was assumed for the presence of San Francisco Bay below helicopters.

Helicopter Operations and Fleet. Either an existing helipad on Treasure Island or a barge temporarily located at the end of Pier 80 in San Francisco would serve as a helipad for the helicopters to land at between races. The modeling has assumed 6 races per day for both the 2012 and 2013 competitions. Three helicopters were modeled operating on event days for the each year. One departure and one arrival to the temporary barge helipad for each race were included in the Integrated Noise Model. This totals 36 operations per day for the 2012 World Series and for the 2013 America's Cup competition (one departure and one arrival equal two operations). According to the event organizers, this analysis assumes there would be two World Series events, with each event consisting of 8 race days. The 2013 scenario would have up to six races per day and a maximum of 30 race days. The helicopter types included two Bell 206L Long Rangers and one Robinson R-44 for each year. The modeling effort assumed that all helicopter operations would occur during daytime hours.

Flight tracks for helicopter operations follow the race course and include a one-half mile buffer on either side to account for the variations of individual helicopter flights. In order to cover the race, the modeling assumed the helicopters would be flying at relatively low altitudes. The Long Rangers were modeled at 100 feet above sea level (ASL) and the Robinson-44 at 300 feet ASL at an average speed of 30 knots while in flight and including 15 minutes of hovering time per race. In order to model the hovering periods, the race course was divided into three equal segments. The helicopters were modeled hovering for 5 minutes at each of these areas.

A temporary barge helipad has been included in the modeling effort. All helicopter flights were modeled to operate from this helipad in order to determine the size of the 65 dB CNEL contour at the helipad and the noise exposure along the race course.

CNEL Contours. The average annual day helicopter operations for 2012 and 2013 would not generate noise levels equal to or greater than 65 dB CNEL over any noise-sensitive land use in proximity to the race course circuit nor, in fact, over any area at all around or below the flight track area indicated in Appendix NO. Therefore, helicopter operations around the racing circuit would result in a less-than-significant temporary increase in ambient noise levels.

The proposed temporary barge helipad would be a more intensive location of helicopter noise. The 65 dB CNEL noise contour around the barge helipad for 2012 would be approximately 0.005 square mile (approximately 3 acres) in size, generally circular in shape, and centered on the helipad. The 65 dB CNEL noise contour around the barge helipad for 2013 would be approximately 0.008 square mile (approximately 5 acres) in size, generally circular in shape, and centered on the helipad. The 2013 65 dB CNEL contour would be larger due to more race days in 2013 than in 2012.

[23] Caltrans, Technical Noise Supplement, p.2-32. November 2009.

Title 21 of the State Aeronautics Act provides that areas exposed to aircraft noise levels less than 65 dB CNEL are acceptable for residential and other noise-sensitive land uses. Therefore, to avoid a significant noise impact, the barge that would be used as a temporary helipad should be located at least 520 feet from the closest noise-sensitive land use in 2012 and at least 810 feet from the closest noise-sensitive land use in 2013. If the existing helipad on Treasure Island were to be used for interim helicopter docking during AC34 events, the closest sensitive receptor (Job Corp Housing) would be approximately 1,100 feet away. Therefore, proposed helicopter operations from a helipad at Treasure Island would be a *less-than-significant* noise impact.

If the location of the helipad were to be at Pier 80, the closest sensitive receptor would be approximately 2,800 feet away (see Table 5.7-3). Therefore, proposed helicopter operations from a helipad at Pier 80 would also be a *less-than-significant* noise impact.

Mobile Source – Marine Vessel Noise

Most recreational motorboat propulsion systems incorporate means of expelling exhaust gases through the hub of the propeller. By routing exhaust gases beneath the surface of the water, the problem of exhaust noise is completely eliminated.[24] While older boats with above-water exhaust are up to four times louder than their underwater exhaust counterparts, it is assumed that the vast majority of spectator boats (recreational, commercial charter, and large private yachts) would have underwater exhaust.

Spectator boat traffic would likely be greatest prior to commencement of the races in July and after the end of races in September, although some daily, pre- and post-race day boat trips would be likely to occur.

Unlike for vehicle traffic, there are no established noise modeling curves for distinct boat types as a linear source. Literature indicates that a 21-foot stern drive-powered boat with underwater exhaust generates an equivalent noise level (Leq) of 70.9 dBA[25] during a 10-second passby event at a distance of 25 meters. A review of residential sensitive receptors in Figure 5.7-1 shows that the closest receptor to shipping lanes of the Bay is approximately 1,600 feet from the closest possible shipping lane. At this distance, noise from a single passby event would be approximately 58.0 dBA which, given the monitored daytime urban noise environment at residential receptors near the waterfront (58.5 to 69.9 dBA; see Table 5.7-2), would be an increase of less than 3 dBA and generally unnoticeable to the human ear during daytime hours. The temporary increase in marine vessel noise would therefore represent a *less-than-significant* noise impact.

Mobile Source – Vehicle Traffic Noise

Increased vehicle traffic associated with the proposed America's Cup events would increase noise levels along existing roadways. Increases in noise from traffic on existing roadways are assessed by modeling existing and future roadway noise levels and comparing the resulting increase to standards published by FICON for noise environments of 60 dBA, L_{dn} and above (see

[24] Lanpheer, Richard A., Pleasure Motor Boat Model Noise Act, December 12, 2002.
[25] Lanpheer, Richard A., Pleasure Motor Boat Model Noise Act, December 12, 2002.

Table 5.7-5). For noise environments below 60 dBA, L_{dn}, a transportation noise increase of 5.0 dBA or greater is used as a significance threshold.

The proposed project would result in a net increase in vehicle trips at intersections during the weekday peak hour. During peak weekend events, vehicle trips at most intersections would increase, but vehicle trips at some intersections would decrease as the result of the Embarcadero Northbound Closure Scenario. Based on baseline and future traffic projections developed as part of the transportation analysis, existing and existing-plus-project noise levels were estimated for representative roadway segments within the AC34 event and spectator areas that pass near sensitive noise receptors. Modeled weekday and weekend L_{dn} traffic noise level estimates for the 20 roadway segments are presented in **Table 5.7-8**. Noise levels in Table 5.7-8 represent year 2013 events. For weekend events in 2012, all intersections would have lesser traffic volumes and therefore, lesser noise increase than that shown in Table 5.7-8. For weekday events in 2012, there would be nine intersections that would have greater traffic volumes than those in 2013. However these slight increases would be marginal and would not result in any quantitative increase (0.1 dBA or greater) along any of these roadway segments.

As shown in Table 5.7-8, weekday traffic noise level increases would be less than significant. During peak weekend events, however, significant increases in roadway noise would occur along several roadway segments. This would represent a temporary significant noise impact along these eight segments and other extensions of these roadways.

Physical noise mitigation (i.e., installation of noise barriers) does not represent a feasible mitigation measure for these temporary weekend noise impacts. Section 5.6, Transportation and Circulation, of this EIR identifies transportation-related mitigation measures, including implementation of the People Plan. **Mitigation Measure M-TR-1** (People Plan Specific Provisions)**,** which would require the People Plan to develop and implement strategies to manage traffic associated with visitors arriving by auto and to encourage use of alternate modes of transportation, would reduce but not eliminate these significant and unavoidable traffic impacts and likely not reduce potential noise impacts at most of these roadway segments, where traffic volumes would need to be reduced by half of the projected volumes for noise levels to be reduced below thresholds. Consequently, operational noise impacts during peak weekend events would be *significant and unavoidable even with mitigation*, but these impacts would be temporary, lasting only for the duration of AC34 weekend events in 2012 and 2013.

Impact Summary

Temporary increases in noise from helicopter and marine vessel operations would be less than significant. Increases in roadway traffic noise would not be significant during weekday events but would be *significant and unavoidable* during weekend peak events even with implementation of transportation mitigation measures identified in Section 5.6, Transportation and Circulation.

> **Mitigation Measure M-TR-1: People Plan Specific Provisions** (see Section 5.6, Transportation and Circulation)

TABLE 5.7-8
MODELED AC34 TRAFFIC L_{DN} NOISE LEVELS FOR 2013

Roadway Segment	Existing	Existing plus Proposed AC34 Project	dBA Difference	Significant Increase?
Weekday PM Noise Levels				
North Point Street from Stockton Street to The Embarcadero	61.3	62.0	+0.7	No
Bay Street from Stockton Street to Kearny Street	69.8	70.0	+0.2	No
Broadway between Sansome and Davis Streets	66.7	67.5	+0.8	No
The Embarcadero between North Point and Bay Streets	70.0	70.7	+0.7	No
The Embarcadero between Bay and Chestnut Streets	73.2	73.8	+0.6	No
The Embarcadero between Chestnut and Lombard Streets	72.7	73.4	+0.7	No
The Embarcadero between Lombard and Green Streets	72.7	73.3	+0.6	No
The Embarcadero between Broadway and Washington Street	73.6	73.9	+0.3	No
The Embarcadero between Brannan and Townsend Streets	73.1	73.6	+0.5	No
Fremont Street from Folsom Street to Harrison Street	61.7	61.7	0.0	No
King Street between Third and Fourth Streets	71.0	71.3	+0.3	No
Cesar Chavez Street between Third and Indiana Streets	69.6	69.6	0.0	No
25th Avenue between Lincoln Boulevard and Lake Street	64.1	65.0	+0.9	No
Lake Street between 14th and 15th Streets	55.1	58.8	+3.7	No [a]
Arguello Street between Jackson and Washington Streets	65.6	66.3	+0.7	No
Presidio Boulevard between Pacific and Jackson Streets	65.4	66.1	+0.7	No
Lombard Street Between Fillmore and Webster Streets	71.0	72.4	+1.4	No
Bay Street between Van Ness Avenue and Franklin Street	69.6	69.9	+0.3	No
Van Ness Avenue between Lombard and Greenwich Streets	70.3	71.7	+1.4	No
Van Ness Avenue between Pine and Bush Streets	70.8	72.1	+1.3	No
Weekend Midday Peak Noise Levels				
North Point Street from Stockton Street to The Embarcadero	60.7	0 (closed)	NA	No
Bay Street from Stockton Street to Kearny Street	68.1	66.3	-1.8	No
Broadway between Sansome and Davis Streets	64.6	66.1	+1.5	No
Embarcadero between North Point and Bay Streets	70.4	0 (closed)	NA	No
Embarcadero between Bay and Chestnut Streets	72.3	67.1	-5.2	No
Embarcadero between Chestnut and Lombard Streets	72.2	66.0	-6.1	No
Embarcadero between Lombard and Green Streets	71.8	64.3	-7.8	No
Embarcadero between Broadway and Washington Street	73.0	66.2	-6.7	No
Embarcadero between Brannan and Townsend Streets	71.0	70.1	-0.9	No
Fremont Street from Folsom Street to Harrison Street	58.8	58.8	0	No
King Street between Third and Fourth Streets	69.4	69.8	+0.4	No
Cesar Chavez Street between Third and Indiana Streets	67.4	68.6	+1.2	No
25th Avenue between Lincoln Boulevard and Lake Street	62.7	65.5	+2.8	**Yes**
Lake Street between 14th and 15th Streets	52.0	57.0	+5.0	**Yes**
Arguello Street between Jackson and Washington Streets	65.0	67.4	+2.4	**Yes**
Presidio Boulevard between Pacific and Jackson Streets	64.8	67.3	+2.4	**Yes**

TABLE 5.7-8 (Continued)
MODELED AC34 TRAFFIC L_{DN} NOISE LEVELS FOR 2013

Roadway Segment	Existing	Existing plus Proposed AC34 Project	dBA Difference	Significant Increase?
Weekend Midday Peak Noise Levels (cont.)				
Lombard Street between Fillmore and Webster Streets	70.7	74.6	+3.9	**Yes**
Bay Street between Van Ness Avenue and Franklin Street	68.5	70.1	+1.8	**Yes**
Van Ness Avenue between Lombard and Greenwich Streets	69.8	73.8	+4.0	**Yes**
Van Ness Avenue between Pine and Bush Streets	70.3	74.0	+3.7	**Yes**

NOTES: Road center to receptor distance is assumed to be 50 feet for values shown in this table. Noise levels were determined using the Federal Highway Administration (FHWA) traffic noise model. The average speed on these segments is assumed to be 30 miles per hour. For all other assumptions, refer to Appendix NO. The incremental increase is considered significant if the increase is more than or equal to 5 dBA, or if it is equal to or greater than 3 dBA with an ambient noise environment between 60 and 65 dBA, or if the noise increase is equal to or greater than 1.5 dBA with an ambient noise environment greater than 65 dBA.

[a] Because the existing noise level is less than 60 dBA, either an increase of 5 dBA or more or an increase of noise from one land use category would be required for a significant transportation noise impact.

SOURCE: ESA 2011

James R. Herman Cruise Terminal and Northeast Wharf Plaza

Impact NO-5: Construction of the James R. Herman Cruise Terminal and Northeast Wharf Plaza would not result in exposure of persons to or generation of noise levels in excess of standards established in the *San Francisco General Plan* or San Francisco Noise Ordinance. (Less than Significant)

James R. Herman Cruise Terminal

Construction of the cruise terminal would occur over two phases. Phase 1 would construct the cruise terminal core building and shell, which would accommodate proposed AC34 team hospitality suites and associated uses at the America's Cup Village during the AC34 2013 event. Potential noise impacts from this phase of construction are addressed in Impact NO-1.

After the conclusion of the AC34 race events and removal of all temporary facilities at Piers 27-29, the Port would follow with Phase 2, involving further construction and improvements to complete the cruise terminal and the wharf plaza. This would include completion of certain interior spaces (e.g., Customs and Border Protection offices), interior building equipment (e.g., screening facilities), and exterior maritime equipment (e.g., mobile gangway, bollards, and fendering) required for cruise terminal operations. These Phase 2 construction activities would not involve pile driving or other impact equipment but standard construction equipment. Further cruise terminal building improvements would primarily be in the building interior, and construction noise would be contained within the building.

Proposed construction would be required to comply with the San Francisco Noise Ordinance, which prohibits construction activities between 8:00 p.m. and 7:00 a.m. and limits noise from any individual piece of construction equipment, except impact tools approved by the Department of Public Works, to 80 dBA at 100 feet. Noise from construction activities would be shielded by the shell that was constructed in Phase 1 and noise levels at the nearest sensitive receptors located over 500 feet away would not be noticeably affected. Consequently, construction noise impacts from Phase 2 improvements at the cruise terminal would be *less than significant*.

Northeast Wharf Plaza

The cruise terminal designs would include a "piazza" feature in the southwest portion of the plaza and integrate the historic Pier 29 Belt Line office building into the park/piazza design. Hardscaping at the plaza would include a ground paver system, concrete seating/steps, and planters. The multi-use recreational space is proposed to consist of a natural turf underlain by a soil bed and base drain. Ultimately, construction activities at the plaza would be a large-scale landscaping project and would likely require operation of a few standard pieces of construction equipment such as a backhoe, trenching machine, loader, and/or a forklift. As long as construction activities comply with the noise ordinance, construction noise impacts from construction of the Northeast Wharf Plaza would be *less than significant*.

Impact Summary

Construction noise impacts of the James R. Herman Cruise Terminal (Phase 2) and Northeast Wharf Plaza projects would be restricted by the San Francisco Noise Ordinance and would be *less than significant*.

Mitigation: Not required

Impact NO-6: Operation of the James R. Herman Cruise Terminal and Northeast Wharf Plaza would not result in exposure of persons to or generation of noise levels in excess of standards established in the *San Francisco General Plan* or San Francisco Noise Ordinance. (Less than Significant)

Operation of the cruise terminal would result in an increase in mobile noise sources. No stationary noise sources (such as generators) are proposed.

Mobile noise sources associated with the cruise terminal would be associated with an increase in cruise ship size and increased vehicle traffic on the local roadway network. Noise from mobile sources is regulated at the state and federal level, and the San Francisco Noise Ordinance does not address or establish restrictions on mobile sources. The *San Francisco General Plan* establishes land use compatibility standards for land uses throughout the city for use in determining the compatibility of new land uses with an existing or future noise environment. The cruise terminal would be considered a non-noise-sensitive commercial land use for which a satisfactory noise environment would be 77.5 dBA, L_{dn} or lower. Monitoring data in this area indicate daytime

noise levels of 66.1 dBA, which would translate to an approximate L_{dn} of 67 dBA, which would be compatible for the type of land use proposed. Consequently, the James R. Herman Cruise Terminal and the Northeast Wharf Plaza would have a *less-than-significant* impact with regard to standards established in the *San Francisco General Plan* or San Francisco Noise Ordinance.

Mitigation: Not required

Impact NO-7: Construction of the James R. Herman Cruise Terminal and Northeast Wharf Plaza would not result in exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels. (Less than Significant)

Construction of the cruise terminal would occur over two phases. Phase 1 would construct the cruise terminal core building and shell, which would accommodate proposed AC34 team hospitality suites and associated uses at the America's Cup Village during the AC34 2013 event. Potential vibration impacts from this phase of construction are addressed in Impact NO-3.

After the conclusion of the AC34 race events and removal of all temporary facilities at Piers 27-29, the Port would initiate Phase 2, involving further construction and improvements to complete the cruise terminal and the wharf plaza. This would include completion of certain interior spaces (e.g., Customs and Border Protection offices), interior building equipment (e.g., screening facilities), and exterior maritime equipment (e.g., mobile gangway, bollards, and fendering) required for cruise terminal operations. These Phase 2 construction activities would not involve pile driving or other impact equipment but standard construction equipment; these activities would not be expected to result in generation of noticeable groundborne vibration. Construction activities at the plaza would be a large-scale landscaping project and would likely require operation of a few standard pieces of construction equipment such as a backhoe, trenching machine, loader, and/or forklift. Therefore, construction of the cruise terminal and wharf plaza would have a *less-than-significant* impact with regard to groundborne vibration.

Mitigation: Not required

Impact NO-8: Operation of the James R. Herman Cruise Terminal and Northeast Wharf Plaza would not result in exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels. (Less than Significant)

There would be no operational sources of groundborne vibration for either the James R. Herman Cruise Terminal or the Northeast Wharf Plaza. While existing historic streetcar operations on the F-line can generate intermittent vibration levels in excess of those of a typical urban environment, the proposed land uses would not represent sensitive vibration receptors (i.e., passengers and workers at the terminal and visitors to the plaza would not be sleeping onsite or engaging in other activities for which vibrations may be an annoyance). Therefore, operation of the James R.

Herman Cruise Terminal and Northeast Wharf Plaza would not result in exposure of persons to or generation of excessive groundborne vibration levels, and the impact would be *less than significant*.

Mitigation: Not required

Impact NO-9: Construction and operation of the James R. Herman Cruise Terminal and Northeast Wharf Plaza would not result in a temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project. (Less than Significant)

Temporary increases in ambient noise levels from construction of the cruise terminal and wharf plaza are addressed in Impact NO-5 above. From an operational standpoint, temporary noise increases would occur when ships first arrive in port while cruise ship engines are running, prior to connection to shore side power.

To determine the noise levels generated during a cruise ship arrival, monitoring was conducted outside the existing Pier 35 terminal prior to and during arrival of Crystal Symphony cruise ship on April 12, 2011. During the approach and maneuvering into port, noise levels from the ships motors or the tug boat guiding the ship were not audible to the technician and noise monitoring indicated no changes to the ambient noise level of 61.5 dBA. Once at port, noise from the ship's engines could be heard from the visible exhaust stack protruding from above the pier shed during periods of low traffic volumes on The Embarcadero. During these quiet traffic periods, ambient noise levels were monitored to be 52 dBA with engine noise audible at a distance of approximately 400 feet from the exhaust stack.

It is reasonable to assume that engine noise would occur for temporary periods at the proposed Pier 27 terminal until the ship is connected to shore side power and again prior to departures, which can occur during nighttime hours as late as 12:00 midnight. The nearest receptor would be located more than 500 feet from the Pier 27 and about 1,000 feet from the location of the engine exhaust stack of a ported cruise ship. At this distance, engine noise would be attenuated to 48 dBA. Noise data collected at the nearest receptor indicates existing hourly average ambient noise levels as low as 49.4 dBA during the midnight hour. Addition of cruise ship engine noise would result in an increase in ambient noise of 2.4 dBA, which is below the level generally perceptible by the human ear and would not be considered a significant increase in ambient noise.

Therefore, temporary noise generated by the cruise terminal would not result in a significant temporary or periodic increase in noise levels in the project vicinity above existing noise levels, and this impact would be *less than significant*.

Mitigation: Not required

Impact NO-10: Operation of the James R. Herman Cruise Terminal and Northeast Wharf Plaza would not result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project. (Less than Significant)

Permanent increases in noise levels related to long-term operation of the cruise terminal and wharf plaza would be generated by localized increases in roadway traffic. No other stationary noise sources are proposed or would result.

The proposed cruise terminal and wharf plaza would increase noise levels along existing local roadways due to increased vehicle traffic. Increases in noise from traffic on existing roadways are assessed by modeling existing and future roadway noise levels and comparing the resulting increase to standards published by FICON.

The proposed cruise terminal would result in a net increase of 3,564 standard vehicle trips per weekday and 13,799 vehicle trips per weekend day. Based on baseline and future traffic projections developed as part of the transportation analysis, existing and existing-plus-project noise levels were estimated for representative roadway segments within the cruise terminal area that pass near sensitive noise receptors. Modeled weekday L_{eq} traffic noise level estimates for the nine roadway segments are presented in **Table 5.7-9**. As shown in the table, roadside noise levels would increase by no more than 0.3 dBA with the addition of project traffic in the weekday and by no more than 0.8 dBA with the addition of project traffic on the weekend. As these increases would be less than the most stringent criterion for a significant noise increase (1.5 dBA), the proposed cruise terminal and wharf plaza would have a *less-than-significant* operational noise impact.

Impact Summary

Operation of the cruise terminal would increase noise levels in the project area by increasing roadway traffic along the local roadway network. The increase in noise levels from the cruise terminal and wharf plaza would be less than 1.5 dBA for all project scenarios. Operational noise increases associated with the cruise terminal and wharf plaza would be *less than significant*.

Mitigation: Not required

5.7.3.4 Future Long-Term Development Impacts and Mitigation Measures

Impact LT-NO: Long-term development on Port properties could result in impacts on noise. (Less than Significant with Mitigation)

The Host Agreement specifies that, in compensation for infrastructure investment by the Event Authority, the City shall enter into Disposition and Development Agreements with the Event Authority, under which the City would lease to the Event Authority Piers 30-32 for a term of 66 years and Seawall Lot 330 for a term of 75 years, and when conditions are satisfied, transfer fee title of Seawall Lot 330 to the Event Authority. In addition, the Host Agreement includes provisions that could lead to negotiations for long-term use of Piers 19, 19½, 23, 26, 28, and 29 as

TABLE 5.7-9
MODELED CRUISE TERMINAL TRAFFIC L_{EQ} NOISE LEVELS

Roadway Segment	Existing	Existing plus Proposed Project	dBA Difference, Existing vs. Existing plus Proposed Project	Significant Increase?	Cumulative plus Cruise Terminal	dBA Difference, Existing vs. Cumulative plus Cruise Terminal	Significant Increase?
Weekday AM L_{eq} Noise Levels							
Beach Street from Columbus Avenue to Jones Street	57.9	57.9	0.0	No	58.0	+0.1	No
North Point Street from Stockton Street to The Embarcadero	60.4	60.5	+0.1	No	61.6	+1.2	No
Bay Street from Stockton Street to Kearny Street	70.3	70.3	0.0	No	71.1	+0.8	No
Broadway between Sansome and Davis Streets	66.7	66.8	+0.1	No	68.0	+1.3	No
The Embarcadero between North Point and Bay Streets	67.7	68.0	+0.3	No	68.5	+0.8	No
The Embarcadero between Bay Street and Chestnut Street	72.8	73.0	+0.2	No	73.6	+0.8	No
The Embarcadero between Chestnut and Lombard Streets	72.7	73.0	+0.3	No	73.7	+1.0	No
The Embarcadero between Lombard and Green Streets	71.8	72.0	+0.2	No	73.0	+1.2	No
The Embarcadero between Broadway and Washington Street	73.6	73.6	0.0	No	74.7	+1.1	No
Weekend Midday L_{eq} Noise Levels							
Beach Street from Columbus Avenue to Jones Street	60.7	60.7	0.0	No	64.5	+3.8	**Yes**
North Point Street from Stockton Street to The Embarcadero	60.7	60.9	+0.2	No	61.2	+0.5	No
Bay Street from Stockton Street to Kearny Street	67.6	68.3	+0.7	No	69.6	+2.0	**Yes**
Broadway between Sansome and Davis Streets	64.6	65.1	+0.5	No	66.5	+1.9	No
The Embarcadero between North Point and Bay Streets	70.4	70.9	+0.5	No	71.1	+0.7	No
The Embarcadero between Bay and Chestnut Streets	72.3	73.0	+0.7	No	73.8	+1.5	**Yes**
The Embarcadero between Chestnut and Lombard Streets	72.2	73.0	+0.8	No	73.8	+1.6	**Yes**
The Embarcadero between Lombard and Green Streets	71.8	72.6	+0.8	No	73.5	+1.7	**Yes**
The Embarcadero between Broadway and Washington Street	73.0	73.4	+0.4	No	74.6	+1.6	**Yes**

NOTE: Road center to receptor distance is assumed to be 50 feet for values shown in this table. Noise levels were determined using the Federal Highway Administration (FHWA) traffic noise model. The average speed on these segments is assumed to be 30 miles per hour. The incremental increase is considered significant if the increase is more than or equal to 5 dBA, or if it is equal to or greater than 3 dBA with an ambient noise environment between 60 and 65 dBA, or if the noise increase is equal to or greater than 1.5 dBA with an ambient noise environment greater than 65 dBA.

SOURCE: ESA 2011

well as long-term development of marinas at the Brannan Street Wharf Open Water Basin and Rincon Point Open Water Basin after conclusion of the AC34 race events.

The Host Agreement directs that any such future development plans and uses allowed under the Transfer Agreement would be required to undergo separate environmental review to comply with CEQA, when site-specific development program details are proposed. Consequently, impacts associated with these potential future development rights are addressed at a conceptual level. As described in Chapter 3, potential development of the sites could include a variety of land uses for seven pier locations and a 250-unit residential building at Seawall Lot 330, totaling over 1.3 million square feet of development.

Construction Noise Impacts

As described above in Table 5.7-3, all of the potential sites for long-term development are located in proximity to sensitive receptors, which consist primarily of adjacent or nearby residential uses. Depending on the specific location and nature of the proposed developments at each of these sites, construction activities would likely result in exposure of sensitive receptors to construction-related noise. Proposed construction activities would be required to comply with the San Francisco Noise Ordinance, which prohibits construction activities between 8:00 p.m. and 7:00 a.m. and limits noise from any individual piece of construction equipment, except impact tools approved by the Department of Public Works, to 80 dBA at 100 feet. As long as construction activities that would occur under the proposed project comply with the noise ordinance, construction noise impacts from non-impact equipment would be considered less than significant. In the absence of project-specific construction information, however, there is a potential that construction activities using non-impact equipment would exceed these standards, and **Mitigation Measure M-LT-NOa** (Mitigation of Noise from Long-Term Development on Port Properties) would be required, including measures similar to those identified in **Mitigation Measure M-NO-1a** (Noise Controls during Construction).

In addition, if pile driving were to be necessary for any construction activity, construction noise levels would be higher than would occur with non-impact construction equipment, as indicated in Table 5.7-4. Again, depending on the specific location and nature of the pile driving at any of the development sites, pile driving could result in noise levels exceeding the FTA criterion of 90 dBA for daytime construction noise exposure at residential uses. Implementation of measures similar to **Mitigation Measure M-NO-1b** (Pile Driving Noise-Reducing Techniques and Muffling Devices), in addition to **Mitigation Measure M-NO-1a** (Noise Controls During Construction), would be required to reduce the noise impacts to less-than-significant levels. These measures are generally implemented as mitigation by the City and County of San Francisco through the CEQA process for projects in which pile driving would occur within 300 feet of sensitive receptors. Therefore, construction noise impacts of future long-term development would be less than significant with mitigation.

Vibration Impacts During Construction

Similar to the discussion in Impact NO-3 above, construction activities, specifically pile driving or other impact activities, associated with long-term development could result in potentially

significant vibration impacts. Implementation of mitigation measures similar to **Mitigation Measure M-NO-3** (Pre-Construction Assessment to Minimize Structural Pile-Driving Vibration Impacts on Adjacent Historic Buildings and Structures and Vibration Monitoring) would reduce such impacts to less-than-significant levels. Therefore, vibration impacts during construction of future long-term development would be considered less than significant with mitigation.

Operational Noise Impacts

The potential development of over 1.3 million square feet of residential, retail/commercial, office (maritime or general), and entertainment and assembly/ commercial uses at Port properties identified in the Host Agreement (see Chapter 3) would be expected to generate vehicle trips that would have the potential to increase noise levels on local roadways. The transportation analysis prepared for this EIR estimates that the buildout of the assumed long-term development scenario would add 1,000 vehicle trips to the local roadway network. Given that the proposed cruise terminal would generate over 13,000 vehicle trips per day on the same roadway network and was determined to result in a less-than-significant project impact with regard to increases in roadway noise, it can be assumed that buildout under the long-term development scenario would also be have a less-than-significant traffic noise impact, as it would generate far fewer vehicle trips.

However, long-term development could include installation of stationary operational noise sources, such as pump stations, compressors, and ventilation systems. Depending on the need for and location of such noise sources and the proximity to sensitive receptors, on a conceptual level, noise from these sources could be a *potentially significant* impact. Implementation of standard noise and vibration control mitigation measure would reduce the impact to less-than-significant level.

Noise Impacts Associated with Residential Development of Seawall Lot 330

In June 2011, the City and County of San Francisco adopted an updated Housing Element that established noise mitigation requirements for new residential development in areas exceeding a noise exposure level exceeding 75 dBA, Ldn. Proposed residential development of Seawall Lot 330 could occur in an area where City noise exposure maps indicate that noise levels exceed this threshold. Additionally, noise levels along The Embarcadero could further increase with cumulative development. Consequently, **Mitigation Measure M-LT-NOb** is required by the Housing Element to reduce noise exposure of future residents consistent with City policy. Implementation of this mitigation measure would reduce noise exposure impacts to a less-than-significant level, as determined by the EIR for the 2004 and 2009 Housing Element.

> **Mitigation Measure M-LT-NOa: Mitigation of Noise from Long-Term Development on Port Properties**
>
> ***Noise Controls During Construction.*** The following practices shall be incorporated into the construction contract agreement documents to be implemented by the construction contractor:
>
> - Provide enclosures and mufflers for stationary equipment, shroud or shield impact tools, and install barriers around particularly noisy activities at the construction sites

so that the line of sight between the construction activities and nearby sensitive receptor locations is blocked;

- Use construction equipment with lower noise emission ratings whenever possible, particularly for air compressors;
- Provide sound-control devices on equipment no less effective than those provided by the manufacturer;
- Locate stationary equipment, material stockpiles, and vehicle staging areas as far as practicable from sensitive receptor locations;
- Prohibit unnecessary idling of internal combustion engines; and
- Require applicable construction-related vehicles and equipment to use designated truck routes to travel to and from the project sites.

Pile Driving Noise-Reducing Techniques and Muffling Devices. The project sponsors shall require the construction contractor to use noise-reducing pile-driving techniques if nearby structures are subject to pile-driving noise and vibration. These techniques shall include 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.

Construction contractors shall be required to use construction equipment with state-of-the-art noise shielding and muffling devices. In addition, at least 48 hours prior to pile-driving activities, the project sponsors shall notify building owners and occupants within 500 feet of the project site of the dates, hours, and expected duration of such activities.

Pre-Construction Assessment to Minimize Structural Pile Driving Vibration Impacts to Adjacent Buildings and Structures and Vibration Monitoring. The project sponsors shall consult with the Port's Chief Harbor Engineer and if recommended by the Port engage a qualified geotechnical engineer to conduct a pre-construction assessment of existing subsurface conditions and the structural integrity of nearby historic structures subject to pile-driving activity before a Port Building Permit is issued. If recommended by the Port or the geotechnical engineer, for structures or facilities within 60 feet of pile-driving activities, the project applicant shall require groundborne vibration monitoring of nearby historic structures. Such methods and technologies shall be based on the specific conditions at the construction site such as, but not limited to, the pre-construction surveying of potentially affected historic structures and underpinning of foundations of potentially affected structures, as necessary.

The pre-construction assessment shall include a monitoring program to detect ground settlement or lateral movement of structures in the vicinity of pile-driving activities. Monitoring results shall be submitted to the Port's Chief Harbor Engineer. In the event of unacceptable ground movement, as determined by the Chief Harbor Engineer, all impact work shall cease and corrective measures shall be implemented to minimize the risk to the subject, or adjacent, historic structures.

Stationary Operational Noise Sources. All utility and industrial stationary noise sources (e.g., pump stations, electric substation equipment, etc.) shall be located away from noise-

sensitive receptors, be enclosed within structures with adequate setback and screening, be installed adjacent to noise-reducing shields, or constructed with some other adequate noise attenuating features to achieve acceptable regulatory noise standards for industrial uses as well as to achieve acceptable levels at the property lines of nearby residences or other sensitive uses, as determined by the San Francisco Land Use Compatibility Guidelines for Community Noise. Once the stationary noise sources have been installed, noise levels shall be monitored to ensure compliance with local noise standards. If stationary noise sources exceed the applicable noise standards, an acoustical engineer shall be retained by the project sponsors to install additional noise attenuation measures in order to meet the applicable noise standards.

Mitigation Measure M-LT-NOb: Mitigation of Interior and Exterior Noise from New Residential Development of Seawall Lot 330

For new residential development located along streets with noise levels above 75 dBA Ldn, the Planning Department shall require the following:

1. The Planning Department shall require the preparation of an analysis that includes, at a minimum, a site survey to identify potential noise-generating uses within two blocks of the project site, and including at least one 24-hour noise measurement (with maximum noise level readings taken at least every 15 minutes), prior to completion of the environmental review. The analysis shall demonstrate with reasonable certainty that Title 24 standards, where applicable, can be met, and that there are no particular circumstances about the proposed project site that appear to warrant heightened concern about noise levels in the vicinity. Should such concerns be present, the Department may require the completion of a detailed noise assessment by person(s) qualified in acoustical analysis and/or engineering prior to the first project approval action, in order to demonstrate that acceptable interior noise levels consistent with those in the Title 24 standards can be attained; and

2. To minimize effects on development in noisy areas, for new residential uses, the Planning Department shall, through its building permit review process, in conjunction with noise analysis required above, require that open space required under the Planning Code for such uses be protected, to the maximum feasible extent, from existing ambient noise levels that could prove annoying or disruptive to users of the open space. Implementation of this measure could involve, among other things, site design that uses the building itself to shield on-site open space from the greatest noise sources, construction of noise barriers between noise sources and open space, and appropriate use of both common and private open space in multi-family dwellings, and implementation would also be undertaken consistent with other principles of urban design.

5.7.3.5 Cumulative Impacts

Impact C-NO: Project-related traffic, in combination with other past, present, and reasonably foreseeable future projects, would result in significant and unavoidable adverse cumulative noise impacts. (Significant and Unavoidable with Mitigation)

Cumulative Construction Impacts

Table 5.1-1 in Section 5.1 presents a list of projects to be considered in the analysis of cumulative impacts. Projects indicated as potentially under construction within the same time frame as the construction activities of the America's Cup venues or the cruise terminal would include Brannan Street Wharf (which would be near Pier 32 improvements), the extension of F-line streetcars to Fort Mason, developments at Seawall Lot 351, 8 Washington Street, 921 Front Street, and 717 Battery Street, and renovations to San Francisco Marina.

All construction activity within San Francisco would be required to comply with the San Francisco Noise Ordinance, which prohibits construction activities between 8:00 p.m. and 7:00 a.m. and limits noise from any individual piece of construction equipment, except impact tools approved by the Department of Public Works, to 80 dBA at 100 feet. As long as construction activities that would occur under the proposed project comply with the noise ordinance, cumulative construction noise impacts would be considered less than significant.

Cumulative construction impacts from simultaneous operation of impact equipment including pile drivers and hoe-rams could occur, particularly if adjacent projects are constructed at the same time such as Brannan Street Wharf and the proposed America's Cup improvements to Piers 30-32. However, because construction activities for the proposed project would be temporary and intermittent, the contribution to the cumulative context would not be significant. The largest project contribution to ambient noise during construction would come from pile driving; however, **Mitigation Measures M-NO-1a** (Noise Controls During Construction) and **M-NO-1b** (Pile Driving Noise-Reducing Techniques and Muffling Devices) would reduce pile-driving noise impacts to less-than-significant levels. Consequently, concurrent construction activity for the AC34 facilities and cruise terminal would not make a cumulatively considerable contribution to a cumulative noise impact. Temporary cumulative construction impacts would therefore be considered *less than significant*.

Groundborne vibration associated with construction of the AC34 improvement areas and the cruise terminal would be less than significant with mitigation at the nearest sensitive receptors. Due to the localized nature of vibration impacts, cumulative groundborne vibration impacts would arise, and be contributed to, from only those projects within the immediate vicinity of the project area. Cumulative groundborne vibration effects would be further isolated to activities in close proximity of the individual pieces of vibration-producing construction equipment at each construction site within the vicinity of the project sites. The nearest pile driving to potentially occur simultaneously adjacent to pile driving occurring for the proposed AC34 project would be that occurring on Brannan Street Wharf, adjacent to pile proposed for Piers 30-32. However, in the event that pile-driving activities were to occur concurrently for the AC34 and Brannan Street

Wharf projects, implementation of **Mitigation Measure M-NO-3** (Pre-Construction Assessment to Minimize Structural Pile-Driving Vibration Impacts on Adjacent Historic Buildings and Structures and Vibration Monitoring) above would require a monitoring program to detect ground settlement or lateral movement of structures in the vicinity of pile-driving activities and implementation of corrective measures if unacceptable ground movement is detected. Assuming implementation of this mitigation measure, the AC34 project's contribution to cumulative vibration impacts would be *less than significant*.

Cumulative Operational Impacts

There would be no permanent land use installations related to the provisions for the AC34 project, and cumulative operational impacts would therefore be the result of the James R. Herman Cruise Terminal and Northeast Wharf Plaza operations in conjunction with other development in the Pier 27 area. Operational noise impacts of the cruise terminal would primarily result from increased traffic on the local roadway network. The traffic data used to estimate the cumulative scenario noise increases are shown in Table 5.7-9 and reflect traffic operations of cumulative development. Significant cumulative increases in ambient roadside noise levels are predicted to occur at six of the nine road segments analyzed for the weekend midday scenario only. There would be no quantifiable contribution from cruise terminal vehicle trips at one of these roadway segments (Beach Street from Columbus Avenue to Jones Street), which would therefore mean that the Cruise Terminal project's contribution to the cumulative impact would not be considerable (i.e., less than significant). However, the remaining five segments would experience a significant cumulative increase in noise levels due to the contribution from cruise terminal vehicle trips during weekends, midday. The five intersections are as follows: Bay Street from Stockton Street to Kearny Street; The Embarcadero between Bay and Chestnut Streets; The Embarcadero between Chestnut and Lombard Streets; The Embarcadero between Lombard and Green Streets; and The Embarcadero between Broadway and Washington Street. Thus, the Cruise Terminal project's contribution to cumulative operational roadway noise along these five segments would be cumulatively considerable, and because there are no feasible mitigation measures for these traffic increases (see Section 5.6, Transportation and Circulation), their collective impacts would be cumulatively *significant and unavoidable*.

Mitigations:

- **Mitigation Measure M-NO-1a: Noise Controls During Construction**
- **Mitigation Measure M-NO-1b: Pile Driving Noise-Reducing Techniques and Muffling Devices**
- **Mitigation Measure M-NO-3: Pre-Construction Assessment to Minimize Structural Pile-Driving Vibration Impacts on Adjacent Historic Buildings and Structures and Vibration Monitoring**

5.8 Air Quality

This section discusses the regulatory framework for air quality management and the existing air quality conditions in the area and analyzes the potential for the proposed 34th America's Cup (AC34) and the James R. Herman Cruise Terminal and Northeast Wharf Plaza (Cruise Terminal) projects to affect existing air quality conditions, both regionally and locally, due to activities that emit criteria and non-criteria air pollutants. It also analyzes the types and quantities of emissions that would be generated on a temporary basis due to proposed construction activities and temporary operations of the America's Cup races, and over the long term due to proposed operation of the cruise terminal and long-term development rights. The analysis determines whether those emissions are significant in relation to applicable air quality standards and identifies mitigation measures addressing significant impacts. Finally, the section provides an analysis of cumulative air quality impacts. Emissions of greenhouse gases resulting from the proposed projects and their potential impacts on climate change and the state's goals for greenhouse gas emissions pursuant to Assembly Bill 32 are presented and discussed in Section 5.9, Greenhouse Gas Emissions.

The analysis in this section is based on a review of existing air quality conditions in the region and air quality regulations administered by the United States Environmental Protection Agency (U.S. EPA), the California Air Resources Board (CARB), and the Bay Area Air Quality Management District (BAAQMD). This analysis includes methodologies identified in the updated BAAQMD *CEQA Air Quality Guidelines* (May 2011).

5.8.1 Setting

5.8.1.1 Climate and Meteorology

The project area is located within the San Francisco Bay Area Air Basin. The air basin's moderate climate steers storm tracks away from the region for much of the year, although storms generally affect the region from November through April. San Francisco's proximity to the onshore breezes stimulated by the Pacific Ocean provide for generally very good air quality in the project area. These winds are the result of the presence of the Golden Gate to the west of the project area.

Temperatures in the project area average in the mid-50s annually, generally ranging from the low 40s on winter mornings to mid-70s during summer afternoons. Daily and seasonal oscillations of temperature are small because of the moderating effects of the nearby Bay. In contrast to the steady temperature regime, rainfall is highly variable and confined almost exclusively to the "rainy" period from November through April. Precipitation may vary widely from year to year as a shift in the annual storm track of a few hundred miles can mean the difference between a very wet year and drought conditions.

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 regionally. The project area lies within the Peninsula climatological subregion. Marine air traveling through the Golden Gate is a dominant weather factor affecting dispersal of

air pollutants within the region. Wind measurements collected on the San Francisco mainland indicate a prevailing wind direction from the west and an average annual wind speed of 10.6 miles per hour.[1] Increased temperatures create the conditions in which ozone formation can increase.

5.8.1.2 Ambient Air Quality – Criteria Air Pollutants

Table 5.8-1 presents a summary of air quality monitoring results collected in San Francisco for the period 2005 to 2009 by the BAAQMD. **Table 5.8-2** lists the state and federal ambient air quality standards and current attainment status for each criteria air pollutant.

Ozone

Ozone is a secondary air pollutant produced in the atmosphere through a complex series of photochemical reactions involving reactive organic gases (ROG, also sometimes referred to as volatile organic compounds or VOC by some regulating agencies) and nitrogen oxides (NOx). The main sources of ROG and NOx, often referred to as ozone precursors, are combustion processes (including motor vehicle engines) and the evaporation of solvents, paints, and fuels. In the Bay Area, automobiles are the single largest source of ozone precursors. Ozone is referred to as a regional air pollutant because its precursors are transported and diffused by wind concurrently with ozone production through the photochemical reaction process. Ozone causes eye irritation, airway constriction, and shortness of breath and can aggravate existing respiratory diseases such as asthma, bronchitis, and emphysema. The nearest air quality monitoring station to the project area is located on Arkansas Street, approximately 1.5 miles southwest of Pier 32. Table 5.8-1 shows that, according to published data, the most stringent applicable standards (state 1-hour standard of 9 parts per hundred million [pphm] and the federal 8-hour standard of 8 pphm) were not exceeded in San Francisco between 2005 and 2009.

Carbon Monoxide (CO)

CO is an odorless, colorless gas usually formed as the result of the incomplete combustion of fuels. The single largest source of CO is motor vehicles; the highest emissions occur during low travel speeds, stop-and-go driving, cold starts, and hard acceleration. Exposure to high concentrations of CO reduces the oxygen-carrying capacity of the blood and can cause headaches, nausea, dizziness, and fatigue; impair central nervous system function; and induce angina (chest pain) in persons with serious heart disease. Very high levels of CO can be fatal. As shown in Table 5.8-1, the more stringent state CO standards were not exceeded between 2005 and 2009. Measurements of CO indicate hourly maximums ranging between 15 to 25 percent of the more stringent state standard, and maximum 8-hour CO levels that are approximately 30 percent of the allowable 8-hour standard.

[1] http://www.wrcc.dri.edu/htmlfiles/westwinddir.html#CALIFORNIA, accessed on June 1, 2011.

TABLE 5.8-1
SUMMARY OF SAN FRANCISCO AIR QUALITY MONITORING DATA (2005–2009)

Pollutant	Most Stringent Applicable Standard	Number of Days Standards Were Exceeded and Maximum Concentrations Measured[a]				
		2005	2006	2007	2008	2009
Ozone						
- Days 1-Hour Standard Exceeded		0	0	0	0	0
- Maximum 1-Hour Concentration (pphm)	>9 pphm[b]	6	5	6	8	7
- Days 8-Hour Standard Exceeded		0	0	0	0	0
- Maximum 8-Hour Concentration (pphm)	>7 pphm[c]	5	5	5	7	6
Carbon Monoxide (CO)						
- Days 1-Hour Standard Exceeded		0	0	0	0	ND
- Maximum 1-Hour Concentration (ppm)	>20 ppm[b]	2.9	2.9	2.7	5.7	ND
- Days 8-Hour Standard Exceeded		0	0	0	0	0
- Maximum 8-Hour Concentration (ppm)	>9 ppm[b]	2.1	2.1	1.6	2.3	2.9
Suspended Particulates (PM_{10})						
- Days 24-Hour Standard Exceeded[d]		0	3	2	0	0
- Maximum 24-Hour Concentration ($\mu g/m^3$)	>50 $\mu g/m^3$ [b]	46	**61**	**70**	41	36
Suspended Particulates ($PM_{2.5}$)						
- Days 24-Hour Standard Exceeded[e]		0	3	5	0	1
- Maximum 24-Hour Concentration ($\mu g/m^3$)	>35 $\mu g/m^3$ [c]	44[e]	**54**	**45**	29	**36**
- Annual Average ($\mu g/m^3$)	>12 $\mu g/m^3$ [b]	9.5	9.7	8.7	9.8	ND
Nitrogen Dioxide (NO_2)						
- Days 1-Hour Standard Exceeded		0	0	0	0	0
- Maximum 1-Hour Concentration (pphm)	>25 pphm[b]	7	11	7	6	6
Sulfur Dioxide (SO2)						
- Days 24-Hour Standard Exceeded		0	0	0	0	ND
- Maximum 24-Hour Concentration (ppb)	>40 ppb[b]	7	6	6	4	ND

NOTES:
Bold values are in excess of applicable standard. "ND" indicates that data is not available.
ppm = parts per million; pphm = parts per hundred million; ppb=parts per billion;
$\mu g/m^3$ = micrograms per cubic meter
ND = No data or insufficient data.

[a] Number of days exceeded is for all days in a given year, except for particulate matter. PM10 and PM2.5 are monitored every six days and therefore the number of days exceeded is out of approximately 60 annual samples.
[b] State standard, not to be exceeded.
[c] Federal standard, not to be exceeded.
[d] Based on a sampling schedule of one out of every six days, for a total of approximately 60 samples per year.
[e] Federal standard was reduced from 65 $\mu g/m^3$ to 35 $\mu g/m^3$ in 2006.

SOURCE: BAAQMD, Bay Area Air Pollution Summary, 2005 – 2009. Available online at: http://www.baaqmd.gov/Divisions/Communications-and-Outreach/Air-Quality-in-the-Bay-Area/Air-Quality-Summaries.aspx and http://www.arb.ca.gov/adam/cgi-bin/db2www/adamtop4b.d2w/start and http://www.arb.ca.gov/adam/topfour/topfour1.php

TABLE 5.8-2
STATE AND FEDERAL AMBIENT AIR QUALITY STANDARDS AND ATTAINMENT STATUS

Pollutant	Averaging Time	State (SAAQs[a])		Federal (NAAQS[b])	
		Standard	Attainment Status	Standard	Attainment Status
Ozone	1 hour	0.09 ppm	**N**	NA	See Note c
	8 hour	0.07 ppm	U[d]	0.075 ppm	**N**/Marginal
Carbon Monoxide (CO)	1 hour	20 ppm	A	35 ppm	A
	8 hour	9 ppm	A	9 ppm	A
Nitrogen Dioxide (NO_2)	1 hour	0.18 ppm	A	0.100 ppm	U
	Annual	0.030 ppm	NA	0.053 ppm	A
Sulfur Dioxide (SO_2)	1 hour	0.25 ppm	A	0.075	A
	24 hour	0.04 ppm	A	0.14	A
	Annual	NA	NA	0.03 ppm	A
Particulate Matter (PM_{10})	24 hour	50 μg/m³	**N**	150 μg/m³	U
	Annual[e]	20 μg/m³ [f]	**N**	NA	NA
Fine Particulate Matter ($PM_{2.5}$)	24 hour	NA	NA	35 μg/m³	**N**
	Annual	12 μg/m³	**N**	15 μg/m³	A
Sulfates	24 hour	25 μg/m³	A	NA	NA
Lead	30 day	1.5 μg/m³	A	NA	NA
	Cal. Quarter	NA	NA	1.5 μg/m³	A
Hydrogen Sulfide	1 hour	0.03 ppm	U	NA	NA
Visibility-Reducing Particles	8 hour	See Note g	A	NA	NA

NOTES:
A = Attainment; **N** = Nonattainment; U = Unclassified; NA = Not Applicable, no applicable standard; ppm = parts per million; μg/m³ = micrograms per cubic meter.

[a] SAAQs = state ambient air quality standards (California). SAAQS for ozone, carbon monoxide (except Lake Tahoe), sulfur dioxide (1-hour and 24-hour), nitrogen dioxide, particulate matter, and visibility-reducing particles are values that are not to be exceeded. All other state standards shown are values not to be equaled or exceeded.

[b] NAAQs = national ambient air quality standards. NAAQS, other than ozone and particulates, and those based on annual averages or annual arithmetic means, are not to be exceeded more than once a year. The 8-hour ozone standard is attained when the three-year average of the fourth highest daily concentration is 0.08 ppm or less. The 24-hour PM10 standard is attained when the three-year average of the 99th percentile of monitored concentrations is less than the standard. The 24-hour PM2.5 standard is attained when the three-year average of the 98th percentile is less than the standard.

[c] The United States Environmental Protection Agency (U.S. EPA) revoked the national 1-hour ozone standard on June 15, 2005.

[d] This state 8-hour ozone standard was approved in April 2005 and became effective in May 2006.

[e] State standard = annual geometric mean; national standard = annual arithmetic mean.

[f] In June 2002, The California Air Resources Board (CARB) established new annual standards for PM2.5 and PM10.

[g] Statewide visibility-reducing particle standard (except Lake Tahoe Air Basin): Particles in sufficient amount to produce an extinction coefficient of 0.23 per kilometer when the relative humidity is less than 70 percent. This standard is intended to limit the frequency and severity of visibility impairment due to regional haze and is equivalent to a 10-mile nominal visual range.

SOURCE: Bay Area Air Quality Management District (BAAQMD), Standards and Attainment Status, 2010, http://hank.baaqmd.gov/pln/air_quality/ambient_air_quality.htm, accessed March 3, 2011; and U.S. EPA National Ambient Air Quality Standards, 2010, http://www.epa.gov/air/criteria.html, accessed March 3, 2011.

Particulate Matter (PM10 and PM2.5)

Particulate matter is a class of air pollutants that consists of heterogeneous solid and liquid airborne particles from man-made and natural sources. Particulate matter is measured in two size ranges: PM10 for particles less than 10 microns in diameter, and PM2.5 for particles less than 2.5 microns in diameter. In the Bay Area, motor vehicles generate about one-half of the air basin's particulates, through tailpipe emissions as well as brake pad and tire wear. Wood burning in fireplaces and stoves, industrial facilities, and ground-disturbing activities such as construction are other sources of such fine particulates. These fine particulates are small enough to be inhaled into the deepest parts of the human lung and can cause adverse health effects. According to the CARB, studies in the United States and elsewhere "have demonstrated a strong link between elevated particulate levels and premature deaths, hospital admissions, emergency room visits, and asthma attacks," and studies of children's health in California have demonstrated that particle pollution "may significantly reduce lung function growth in children." The CARB also reports that statewide attainment of particulate matter standards could prevent thousands of premature deaths, lower hospital admissions for cardiovascular and respiratory disease and asthma-related emergency room visits, and avoid hundreds of thousands of episodes of respiratory illness in California.[2]

Among the criteria pollutants that are regulated, particulates appear to represent a serious ongoing health hazard. As long ago as 1999, the BAAQMD was reporting, in its *CEQA Air Quality Guidelines*, that studies had shown that elevated particulate levels contribute to the death of approximately 200 to 500 people per year in the Bay Area. Compelling evidence suggests that PM2.5 is by far the most harmful air pollutant in the San Francisco Bay Area Air Basin in terms of the associated impact on public health. A large body of scientific evidence indicates that both long-term and short-term exposure to PM2.5 can cause a wide range of health effects (e.g., aggravating asthma and bronchitis, causing visits to the hospital for respiratory and cardiovascular symptoms, and contributing to heart attacks and deaths).[3]

Table 5.8-1 shows that exceedances of the state PM10 standard have routinely occurred in San Francisco. It is estimated that the state 24-hour PM10 standard of 50 micrograms per cubic meter (μg/m^3) was exceeded on up to 70 days per year between 2005 and 2009.[4] The BAAQMD began monitoring PM2.5 concentrations in San Francisco in 2002. The federal 24-hour PM2.5 standard was not exceeded until 2006, when the standard was lowered from 65 μg/m^3 to 35 μg/m^3. It is estimated that the state 24-hour PM2.5 standard was exceeded on up to 54 days per year between 2005 and 2009. The state annual average standard was not exceeded between 2005 and 2009.

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2 California Air Resources, Board, "Recent Research Findings: Health Effects of Particulate Matter and Ozone Air Pollution," November 2007, http://www.arb.ca.gov/research/health/fs/pm_ozone-fs.pdf, accessed July 1, 2011. A copy of this document is available for public review at the San Francisco Planning Department, 1650 Mission Street, Suite 400, in Case File No. 2007.0903E.

3 BAAQMD, *BAAQMD CEQA Guidelines, California Environmental Quality Act Air Quality Guidelines*, May 2011, p. 5.2, http://www.baaqmd.gov/~/media/Files/Planning%20and%20Research/CEQA/BAAQMD%20CEQA%20Guidelines%20May%202011.ashx, accessed May 16, 2011.

4 PM10 is sampled every sixth day; therefore, actual days over the standard can be estimated to be six times the numbers listed in the table.

Nitrogen Dioxide (NO_2)

NO_2 is a reddish brown gas that is a byproduct of combustion processes. Automobiles and industrial operations are the main sources of NO_2. Aside from its contribution to ozone formation, NO_2 can increase the risk of acute and chronic respiratory disease and reduce visibility. NO_2 may be visible as a coloring component on high pollution days, especially in conjunction with high ozone levels. Table 5.8.1 shows that the current standard for NO_2 is being met in the Bay Area. In 2010, the U.S. EPA implemented a new 1-hour NO_2 standard presented in Table 5.8-2. Currently, the CARB is recommending that the Bay Area air basin be designated as an attainment area for the new standard.[5]

The U.S. EPA has also established requirements for a new monitoring network to measure NO_2 concentrations near major roadways in urban areas with a population of 500,000 or more. Sixteen new near-roadway monitoring sites will be required in California, three of which will be in the Bay Area. These monitors are required to be deployed by January 2013. The new monitoring data may result in a need to change area designations in the future. The CARB will revise the area designation recommendations, as appropriate, once the new monitoring data become available.

Sulfur Dioxide (SO_2)

SO_2 is a colorless acidic gas with a strong odor. It is produced by the combustion of sulfur-containing fuels such as oil, coal, and diesel. SO_2 has the potential to damage materials and can cause health effects at high concentrations. It can irritate lung tissue and increase the risk of acute and chronic respiratory disease.[6,7] Table 5.8.1 shows that the state standard for SO_2 is being met in the Bay Area, and pollutant trends suggest that the air basin will continue to meet this standard for the foreseeable future.

In 2010, the U.S. EPA implemented a new 1-hour SO_2 standard presented in Table 5.8-2. The U.S. EPA anticipates initially designating areas based on 2008-2010 monitoring data, or refined dispersion modeling results if provided by the state by June 2012. Similar to the new federal standard for NO_2, the U.S. EPA has established requirements for a new monitoring network to measure SO_2 concentrations to be operational by January 2013.[8] The new monitoring data may result in a need to change area designations in the future.

Lead

Leaded gasoline (phased out in the United States beginning in 1973), paint (on older houses, cars), smelters (metal refineries), and manufacture of lead storage batteries have been the primary sources of lead released into the atmosphere. Lead has a range of adverse neurotoxic health

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5 CARB, Recommended Area Designations for the 2010 Nitrogen Dioxide Standards, Technical Support Document, January 2011, http://www.airquality.org/plans/federal/no2/NO2Enclosure_1.pdf

6 BAAQMD, *CEQA Guidelines*, p. B-2.

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

8 U.S. EPA, Fact Sheet: Revisions to the Primary National Ambient Air Quality Standard, Monitoring Network, and Data Reporting Requirements for Sulfur Dioxide, http://www.epa.gov/air/sulfurdioxide/pdfs/20100602fs.pdf

effects, which puts children at special risk. Some lead-containing chemicals cause cancer in animals. Lead levels in the air have decreased substantially since leaded gasoline was eliminated. Ambient lead concentrations are only monitored on an as-warranted, site-specific basis in California. On October 15, 2008, the U.S. EPA strengthened the national ambient air quality standard for lead by lowering it from 1.5 $\mu g/m^3$ to 0.15 $\mu g/m^3$. The U.S. EPA revised the monitoring requirements for lead in December 2010. These requirements focus on airports and large urban areas resulting in an increase in 76 monitors nationally.[9]

5.8.1.3 Toxic Air Contaminants

Toxic air contaminants (TACs) are air pollutants that may lead to serious illness or increased mortality, even when present in relatively low concentrations. Potential human health effects of TACs include birth defects, neurological damage, cancer, and death. There are hundreds of different types of TACs with varying degrees of toxicity. Individual TACs vary greatly in the health risk they present; at a given level of exposure, one TAC may pose a hazard that is many times greater than another.

TACs do not have ambient air quality standards, but are regulated by the BAAQMD using a risk-based approach. This approach uses a health risk assessment to determine what sources and pollutants to control as well as the degree of control. A health risk assessment is an analysis in which human health exposure to toxic substances is estimated and considered together with information regarding the toxic potency of the substances, to provide quantitative estimates of health risks.[10]

In addition to monitoring criteria pollutants, both the BAAQMD and CARB operate TAC monitoring networks in the San Francisco Bay Area Air Basin. These stations measure 10 to 15 TACs, depending on the specific station. The TACs selected for monitoring are those that have traditionally been found in the highest concentrations in ambient air and therefore tend to produce the most significant risk. The nearest BAAQMD ambient TAC monitoring station to the project area is the station at 16th and Arkansas Streets in San Francisco. **Table 5.8-3** shows ambient concentrations of carcinogenic TACs measured at the Arkansas Street station, and the estimated cancer risks from a lifetime exposure (70 years) to these substances is also reported in the table. When TAC measurements at this station are compared to ambient concentrations of various TACs for the Bay Area as a whole, the cancer risks associated with mean TAC concentrations in San Francisco are similar to those for the Bay Area as a whole. Therefore, the estimated average lifetime cancer risk resulting from exposure to TAC concentrations monitored at the San Francisco station do not appear to be any greater than for the Bay Area as a region.

[9] U.S. EPA, Fact Sheet Revisions to Lead Ambient Air Quality Monitoring Requirements, http://www.epa.gov/air/lead/pdfs/Leadmonitoring_FS.pdf, accessed March 3, 2011.

[10] In general, a health risk assessment is required if the BAAQMD concludes that projected emissions of a specific air toxic compound from a proposed new or modified source suggest a potential public health risk; then the applicant is subject to a health risk assessment for the source in question. Such an assessment generally evaluates chronic, long-term effects, calculating the increased risk of cancer as a result of exposure to one or more TACs.

TABLE 5.8-3
ANNUAL AVERAGE AMBIENT CONCENTRATIONS OF CARCINOGENIC TOXIC AIR CONTAMINANTS MEASURED AT BAAQMD MONITORING STATION, 10 ARKANSAS STREET, SAN FRANCISCO[a]

Substance	Concentration	Cancer Risk per Million[b]
Gaseous TACs	**(ppb)**	
Acetaldehyde	0.39	2
Benzene	0.18	17
1,3-Butadiene	0.036	14
para-Dichlorobenzene	0.15	10
Carbon Tetrachloride	0.094	25
Formaldehyde	2.69	20
Perchloroethylene	0.02	0.8
Methylene Chloride	0.12	0.4
Chloroform	0.015	0.4
Trichloroethylene	0.01	0.1
Particulate TACs	**(ng/m³)**	
Chromium (Hexavalent)	0.059	9
Total Risk for All TACs		**89.7**

NOTES:
TACs = toxic air contaminants; BAAQMD = Bay Area Air Quality Management District; ppb = part per billion; ng/m³ = nanograms per cubic meter.

[a] All values are from BAAQMD 2008 monitoring data for the Arkansas Street station, except for Formaldehyde and Hexavalent Chromium, which are statewide averages for the year 2008.

[b] Cancer risks were estimated by applying published unit risk values to the measured concentrations.

SOURCE: California Air Resources Board, *Ambient Air Toxics Summary-2008*, available online at: http://www.arb.ca.gov/adam/toxics/sitesubstance.html

Diesel Particulate Matter (DPM)

The CARB identified diesel particulate matter (DPM) as a toxic air contaminant in 1998, primarily based on evidence demonstrating cancer effects in humans. The exhaust from diesel engines includes hundreds of different gaseous and particulate components, many of which are toxic. Mobile sources such as trucks and buses are among the primary sources of diesel emissions, and concentrations of DPM are higher near heavily traveled highways. The estimated cancer risk from exposure to diesel exhaust is much higher than the risk associated with any other toxic air pollutant routinely measured in the region. The risk from DPM as determined by the CARB declined from 750 in one million in 1990 to 570 in one million in 1995; by 2000, CARB estimated the average statewide cancer risk from DPM at 540 in one million.[11,12]

[11] CARB, *California Almanac of Emissions and Air Quality - 2009 Edition*, Table 5-44 and Figure 5-12, http://www.arb.ca.gov/aqd/almanac/almanac09/chap509.htm, accessed May 16, 2011.

[12] This calculated cancer risk value from ambient air exposure in the Bay Area can be compared against the lifetime probability of being diagnosed with cancer in the United States, from all causes, which is more than 40 percent (based on a sampling of 17 regions nationwide), or greater than 400,000 in one million, according to the American Cancer Society. (American Cancer Society, "Lifetime Probability of Developing or Dying from Cancer," last revised July 13, 2009, available online at http://www.cancer.org/docroot/CRI/content/CRI_2_6x_Lifetime_Probability_ of_Developing_or_Dying_From_Cancer.asp)

Recent air pollution studies have shown an association between respiratory and other non-cancer health effects and proximity to high traffic roadways. The CARB community health risk assessments and regulatory programs have produced air quality information about certain types of facilities for consideration by local authorities when siting new residences, schools, day care centers, parks and playgrounds, and medical facilities (i.e., sensitive land uses). Sensitive land uses deserve special attention because children, pregnant women, the elderly, and those with existing health problems are especially vulnerable to the non-cancer effects of air pollution. There is also substantial evidence that children are more sensitive to cancer-causing chemicals.[13]

In 2000, the CARB approved a comprehensive Diesel Risk Reduction Plan to reduce diesel emissions from both new and existing diesel-fueled vehicles and engines. The regulation is anticipated to result in an 80-percent decrease in statewide diesel health risk in 2020 as compared with the diesel risk in 2000. Additional regulations apply to new trucks and to diesel fuel. Despite these reductions, the CARB recommends that proximity to sources of DPM emissions be considered in the siting of new sensitive land uses. The CARB notes that these recommendations are advisory and should not be interpreted as defined "buffer zones," and that local agencies must balance other considerations, including transportation needs, the benefits of urban infill, community economic development priorities, and other quality of life issues. With careful evaluation of exposure, health risks, and affirmative steps to reduce risk where necessary, the CARB's position is that infill development, mixed use, higher density, transit-oriented development, and other concepts that benefit regional air quality can be compatible with protecting the health of individuals at the neighborhood level.[14]

Roadway-Related Pollutants

Motor vehicles are responsible for a large share of air pollution, especially in California. Vehicle tailpipe emissions contain diverse forms of particles and gases and also contribute to particulates by generating road dust and through tire wear. Epidemiologic studies have demonstrated that people living in proximity to freeways or busy roadways have poorer health outcomes, including increased asthma symptoms and respiratory infections and decreased pulmonary function and lung development in children. Air pollution monitoring conducted in conjunction with epidemiologic studies has confirmed that roadway-related health effects vary with modeled exposure to particulate matter and nitrogen dioxide. In traffic-related studies, the additional non-cancer health risk attributable to roadway proximity was seen within 1,000 feet of the roadway and was strongest within 300 feet.[15] As a result, the CARB recommends that new sensitive land uses not be located within 500 feet of a freeway or urban roads carrying 100,000 vehicles per day.

[13] California Air Resources Board, *Air Quality and Land Use Handbook: A Community Health Perspective,* April 2005 (hereinafter "ARB Air Quality and Land Use Handbook"*).* Available at http://www.arb.ca.gov/ch/handbook.pdf.
[14] Ibid.
[15] Ibid.

5.8.1.4 Sensitive Receptors

Air quality does not affect every individual in the population in the same way, and some groups are more sensitive to adverse health effects than others. Population subgroups sensitive to the health effects of air pollutants include the elderly and the young; population subgroups with higher rates of respiratory disease, such as asthma and chronic obstructive pulmonary disease; and populations with other environmental or occupational health exposures (e.g., indoor air quality) that affect cardiovascular or respiratory diseases. Land uses and facilities such as schools, children's day care centers, hospitals, and nursing and convalescent homes are considered to be more sensitive than the general public to poor air quality because the population groups associated with these uses have increased susceptibility to respiratory distress. Parks and playgrounds are considered moderately sensitive to poor air quality because persons engaged in strenuous work or exercise also have increased sensitivity to poor air quality; however, exposure times are generally far shorter in parks and playgrounds than in residential locations and schools, which typically reduces overall exposure to pollutants. Residential areas are considered more sensitive to air quality conditions compared to commercial and industrial areas because people generally spend longer periods of time at their residences, with associated greater exposure to ambient air quality conditions.[16] The BAAQMD defines sensitive receptors as children, adults, and seniors occupying or residing in residential dwellings, schools, colleges and universities, day care, hospitals, and senior-care facilities. Workers are not considered sensitive receptors because all employers must follow regulations set forth by the Occupation Safety and Health Administration (OSHA) to ensure the health and well-being of their employees.[17]

The closest sensitive receptors to each project site are inventoried in **Table 5.8-4**. As shown in Table 5.8-4, sensitive receptors include residential uses east of The Embarcadero, between Townsend and Harrison Streets, and between Washington and Bay Streets. Residential uses are also concentrated south and west of Fort Mason and south of Marina Green.

Although event spectators are not considered sensitive receptors relative to the BAAQMD's definition, this EIR analyzes and reports health risk impacts on America's Cup spectators at primary viewing areas. The general locations of spectator receptors are shown in **Figure 5.8-1**. Primary viewing locations include Fort Baker Pier at Cavallo Point, Crissy Field, Marina Green, Fort Mason, Aquatic Park, Alcatraz Island, and Piers 27-29 (which would serve as the America's Cup Village in 2013).

[16] The factors responsible for variation in exposure are also often similar to factors associated with greater susceptibility to air quality health effects. For example, poorer residents may be more likely to live in crowded substandard housing and be more likely to live near industrial or roadway sources of air pollution.

[17] BAAQMD, Recommended Methods for Screening and Modeling Local Risks and Hazards, May 2011, page 12.

TABLE 5.8-4
SENSITIVE RECEPTORS IN THE PROJECT AREA

Project Site	Receptor Type and Location	Distance from Project Area
Pier 80 (includes helipad at the southeast corner of Pier 80)	Residential: Cesar Chavez Street at Indiana Street	2,800 feet
Helipad at Treasure Island	Job Corp Housing	1,100 feet
Marina Green	Residential: Marina Boulevard residences	100 feet
Aquatic Park	Residential: upper-level apartments at 2765 Hyde Street	200 feet
Alcatraz Island	None	
Crissy Field	Residential: Lendrum Court	1,000 feet
Cavallo Point	Hotel: Cavallo Point Lodge	600 feet
Fort Mason	Residential: Laguna Street between North Point and Bay Streets	100 feet
Brannan Street Wharf Open Water Basin	Residential: Delancey Street Housing	220 feet from moorings
Piers 30-32	Residential: Portside Condominium Tower	300 feet from team hospitality area
Pier 26 and Pier 28	Residential: Portside Condominium Tower	400 feet from team/event operations area
Piers 19 and 19½	Residential: 218 Filbert Street	900 feet from event and race operations center
Pier 23	Residential: 101 Lombard Street	750 feet from event and race media center
Piers 27-29 and 29½ (includes James R. Herman Cruise Terminal and Northeast Wharf Plaza)	Residential: 101 Lombard Street	500 feet from America's Cup Village/James R. Herman Cruise Terminal and Northeast Wharf Plaza
Piers 29-31 Water Basin (spectator berthing)	Residential: 101 Lombard Street	500 feet from berthing areas
Northeast Wharf Open Water Basin (spectator berthing)	Residential: 101 Lombard Street	900 feet from berthing areas
Rincon Point Open Water Basin (spectator berthing)	Residential: None within 1,000 feet	
Piers 26-28 Water Basin (spectator berthing)	Residential: Portside Condominium Tower, Bryant Street	300 feet from berthing areas
Live Sites: Justin Herman Plaza	Residential: Gateway Apartments, Drumm and Washington Streets	560 feet

SOURCE: ESA, 2011

5.8.2 Regulatory Framework

5.8.2.1 Federal Regulations

The 1970 Clean Air Act (last amended in 1990) requires 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 will be controlled in order to achieve all standards by the deadlines specified in the act. These ambient air quality standards are intended to protect the public health and welfare, and they specify the concentration of pollutants (with an adequate margin of safety) to which the public can be exposed without adverse health effects. They are designed to protect those segments of the public most susceptible to respiratory distress, including asthmatics, the very young, the elderly, people weak from other illness or disease, or persons engaged in strenuous work or exercise. Healthy adults can tolerate occasional exposure to air pollution levels that are somewhat above ambient air quality standards before adverse health effects are observed.

The current attainment status for the San Francisco Bay Area Air Basin, with respect to federal standards, is summarized in Table 5.8-2. In general, the Bay Area Air Basin experiences low concentrations of most pollutants when compared to federal standards, except for particulate matter (PM_{10} and $PM_{2.5}$), for which standards are exceeded periodically (see Table 5.8-1).

In June 2004, the Bay Area was designated as a marginal nonattainment area of the national 8-hour ozone standard.[18] The U.S. EPA lowered the national 8-hour ozone standard from 0.80 to 0.75 parts per million (ppm) effective May 27, 2008. The U.S. EPA has indicated it would issue final designations based upon the new 0.75-ppm ozone standard by March 2011, although no updated information was available at the time of preparation of this EIR.[19] The Bay Area Air Basin is in attainment for other criteria pollutants, with the exception of the 24-hour standards for PM_{10} and $PM_{2.5}$, for which the Bay Area is designated as "Unclassified" and "Nonattainment," respectively. "Unclassified" is defined by the Clean Air Act Amendments as any area that cannot be classified, on the basis of available information, as meeting or not meeting the national primary or secondary ambient air quality standard for the pollutant.

5.8.2.2 State Regulations

Although the federal Clean Air Act established national ambient air quality standards, individual states retained the option to adopt more stringent standards and to include other pollution sources. California had already established its own air quality standards when federal standards were established, and because of the unique meteorological problems in California, there is considerable diversity between the state and national ambient air quality standards, as shown in

[18] "Marginal nonattainment area" means an area designated marginal nonattainment for the 1-hour national ambient air quality standard for ozone.

[19] U.S. EPA, *Fact Sheet for Extension of Deadline for Promulgating Designations for the 2008 Ozone National Ambient Air Quality Standards*, http://www.epa.gov/air/ozonepollution/pdfs/fs20100106des.pdf, accessed May 16, 2011.

SOURCE: Google Maps; ESA; Environ

Case No. 2010.0493E: AC34 / Cruise Terminal and Northeast Wharf Plaza (210317)

Figure 5.8-1
Approximate Location of Sensitive Receptors

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Table 5.8-2. California ambient standards tend to be at least as protective as national ambient standards and are often more stringent.

In 1988, California passed the California Clean Air Act (California Health and Safety Code Sections 39600 et seq.), which, like its federal counterpart, called for the designation of areas as attainment or nonattainment, but based on state ambient air quality standards rather than the federal standards. As indicated in Table 5.8-2, the Bay Area Air Basin is designated as "nonattainment" for state ozone, PM_{10}, and $PM_{2.5}$ standards. The Bay Area Air Basin is designated as "attainment" for most other pollutants listed in the table.

The California Clean Air Act requires that air districts in which state air quality standards are exceeded prepare a plan that documents reasonable progress towards attainment. A three-year update is required. In the Bay Area, this planning process is incorporated into the BAAQMD Clean Air Plan, as discussed in Section 5.8.2.3, Local Regulations, below under Regional Air Quality Planning.

5.8.2.3 Local Regulations

Regional Air Quality Planning

The BAAQMD is the regional agency responsible for air quality regulation within the San Francisco Bay Area Air Basin. The BAAQMD regulates air quality through its planning and review activities and has permit authority over most types of stationary emission sources. The BAAQMD can require stationary sources to obtain permits, and can impose emission limits, set fuel or material specifications, or establish operational limits to reduce air emissions. The BAAQMD regulates new or expanding stationary sources of toxic air contaminants.

For state air quality planning purposes, the Bay Area is classified as a serious nonattainment area for ozone. The "serious" classification triggers various plan submittal requirements and transportation performance standards. One such requirement is that the BAAQMD updates the *Clean Air Plan* (CAP) every three years to reflect progress in meeting the air quality standards and to incorporate new information regarding the feasibility of control measures and new emission inventory data. The Bay Area's record of progress in implementing previous measures must also be reviewed. On September 15, 2010, the BAAQMD adopted the most recent revision to the CAP—the 2010 CAP. The goals of the 2010 CAP are 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 PM_{10} and $PM_{2.5}$, TACs, and greenhouse gases (GHGs) 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 2009–2012 timeframe.

In June 2010, BAAQMD issued its *CEQA Air Quality Guidelines*, replacing former guidelines adopted in December 1999, and adopted new thresholds of significance (BAAQMD Thresholds) to assist lead agencies in determining when potential air quality impacts would be considered significant under CEQA. Updated in May 2011,[20] 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. The analysis herein uses the BAAQMD Thresholds and the *CEQA Air Quality Guidelines* to determine the proposed project's significance with respect to air pollutant emissions.

Local Air Quality Planning

San Francisco General Plan Air Quality Element

The *San Francisco General Plan* (General Plan) includes the 1997 Air Quality Element.[21] The objectives specified by the City include the following:

> *Objective 1*: Adhere to state and federal air quality standards and regional programs.
>
> *Objective 2*: Reduce mobile sources of air pollution through implementation of the Transportation Element of the General Plan.
>
> *Objective 3*: Decrease the air quality impacts of development by coordination of land use and transportation decisions.
>
> *Objective 4*: Minimize particulate matter emissions from road and construction sites.
>
> *Objective 5*: Link the positive effects of energy conservation and waste management to emission reductions.

San Francisco Construction Dust Control Ordinance

San Francisco Health Code Article 22B and San Francisco Building Code Section 106.A.3.2.6, which collectively comprise the Construction Dust Control Ordinance, require that all site preparation work, demolition, or other construction activities within San Francisco that have the potential to create dust or to expose or disturb more than 10 cubic yards or 500 square feet of soil comply with specified dust control measures whether or not the activity requires a permit from the Department of Building Inspection (DBI).

Pursuant to Health Code Article 22B, Section 1247, all departments, boards, commissions, and agencies of the City and County of San Francisco — including the Port of San Francisco — that authorize construction or improvements on land under their jurisdiction under circumstances where no building, excavation, grading, foundation or other permits are required to be obtained under the San Francisco Building Code shall adopt rules and regulations to ensure that the same dust control requirements that are set forth in this article are followed.

[20] Bay Area Air Quality Management District, *California Environmental Quality Act Air Quality Guidelines*, updated May 2011.

[21] San Francisco Planning Department, Air Quality Element of the *San Francisco General Plan*, July 1997, updated in 2000.

Dust suppression activities may include watering of all active construction areas sufficiently to prevent dust from becoming airborne; increased watering frequency may be necessary whenever wind speeds exceed 15 miles per hour. Reclaimed water must be used if required by Article 21, Section 1100 et seq. of the San Francisco Public Works Code. If not required, reclaimed water should be used whenever possible. Contractors shall provide as much water as necessary to control dust (without creating runoff in any area of land clearing and/or earth movement). During excavation and earth-moving activities, contractors must wet sweep or vacuum the streets, sidewalks, paths, and intersections where work is in progress at the end of the work day. Inactive stockpiles (where no disturbance occurs for more than seven days) greater than 10 cubic yards or 500 square feet of excavated materials, backfill material, import material, gravel, sand, road base and soil must be covered with a 10-millimeter (0.01-inch) polyethylene plastic (or equivalent) tarp, braced down, or other equivalent soil stabilization techniques must be used.

For project sites greater than one-half acre in size, the ordinance requires that the project sponsor submit a Dust Control Plan for approval by the San Francisco Health Department. Interior-only tenant improvements, even if over one-half acre, that will not produce exterior visible dust are exempt from the site-specific Dust Control Plan requirement.

San Francisco Health Code Provisions

The City and County of San Francisco adopted Article 38 of the San Francisco Health Code in 2008, requiring that an Air Quality Assessment be prepared for new residential projects of ten or more units located in proximity to high-traffic roadways, as mapped by the Department of Public Health, to determine whether residents would be exposed to potentially unhealthful levels of $PM_{2.5}$.

San Francisco Clean Construction Ordinance

The San Francisco Board of Supervisors adopted the Clean Construction Ordinance in 2007, which became effective in 2009. The Clean Construction Ordinance is implemented for public works projects in the City of San Francisco or City-financed construction projects. The ordinance amended the Administrative Code to add Section 6.25 to require City contractors to adopt clean construction practices including use of biodiesel fuels and emission controls. The ordinance also requires departments that are authorized to award contracts to compare bids on the basis that the work will be performed using cleaner off-road diesel equipment and biodiesel fuel. The proposed projects would be subject to the Clean Construction Ordinance.

5.8.3 Impacts and Mitigation Measures

5.8.3.1 Significance Criteria

The City has not formally adopted significance standards for impacts related to air quality, but generally considers that implementation of the project could have a potentially significant impact related to air quality if it were to:

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

- Violate any air quality standard or contribute substantially to an existing or projected air quality violation;
- Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is in nonattainment under an applicable federal or state ambient air quality standard (including releasing emissions that exceed quantitative thresholds for ozone precursors);
- Expose sensitive receptors to substantial pollutant concentrations; or
- Create objectionable odors affecting a substantial number of people.

As described above, the BAAQMD issued CEQA Air Quality Guidelines,[22] including Air Quality CEQA Thresholds of Significance, in June 2010 and updated them in May 2011. These guidelines provide reference thresholds for considering whether a project would have a significant air quality impact. The guidelines, published for assessing impacts relative to these thresholds, also provide recommended procedures for evaluating potential air quality impacts during the environmental review process. Additionally, the BAAQMD has adopted new risk and hazard exposure thresholds for the siting of new sensitive receptors that apply to projects for which the Notice of Preparation (NOP)was issued*)* and environmental analysis began subsequent to May 1, 2011. However, neither the proposed AC34 events nor the proposed cruise terminal would permanently locate a new sensitive receptor, and this threshold is not applicable to the proposed projects. The following analysis has been conducted in accordance with BAAQMD's *CEQA Air Quality Guidelines* (May 2011).

AC34 Event and Cruise Terminal Construction Impact Criteria

Under the BAAQMD CEQA thresholds, a project would have a significant air quality impact if it would result in average daily construction-related emissions of ROG, NOx, or $PM_{2.5}$ (non-inclusive of fugitive dust[23]) of 54 pounds (25 kilograms) average daily emissions or greater. There is a separate emission threshold for PM_{10} (non-inclusive of fugitive dust[24]) of 82 pounds (37 kilograms) average daily emissions. The thresholds for PM_{10} and $PM_{2.5}$ are inclusive only of construction exhaust emissions. BAAQMD guidance regarding construction-related emission of fugitive dust identifies implementation of best management practices as its threshold of significance.[25] The BAAQMD *CEQA Air Quality Guidelines* identify a list of eight "Basic Construction Mitigation Measures Recommended for All Proposed Projects" and consider implementation of these measures as meeting the best management practices requirements for fugitive dust emissions.[26]

[22] BAAQMD, *CEQA Air Quality Guidelines*, May 2011, http://www.baaqmd.gov/~/media/Files/Planning%20and%20Research/CEQA/BAAQMD%20CEQA%20Guidelines%20May%202011.ashx.
[23] Fugitive dust consists of very small liquid and solid particulate matter that is suspended in the air by the wind and human activities. Fugitive dust originates primarily from the soil.
[24] Fugitive dust is PM suspended in the air by the wind and human activities. It originates primarily from the soil and is not emitted from exhaust pipes, vents, or stacks.
[25] BAAQMD, *CEQA Air Quality Guidelines*, Table 2-1.
[26] BAAQMD, *CEQA Air Quality Guidelines*, Table 8-2.

The 2010 BAAQMD CEQA thresholds indicate that a project would also have a significant air quality impact if construction activities would result in an incremental increase in localized annual average concentrations of $PM_{2.5}$ exceeding 0.3 micrograms per cubic meter ($\mu g/m^3$) within a 1,000-foot radius from the property line of the construction area or a receptor. A project would also have a significant air quality impact if it would expose persons to substantial levels of TACs (including DPM), such that the probability of contracting cancer for the Maximally Exposed Individual (MEI)[27] exceeds 10 in one million or if it would expose persons to TACs such that a non-cancer Hazard Index of 1.0 would be exceeded. A Hazard Index is a summation of the non-cancer hazard quotients for all chemicals to which an individual is exposed.

AC34 Event and Cruise Terminal Operational Impact Criteria

For the AC34 event and Cruise Terminal project impact operational analyses, the 2011 BAAQMD *CEQA Air Quality Guidelines* include various thresholds and tests of significance. For ROG, NOx, and $PM_{2.5}$, a net increase equal to or greater than 10 tons per year (maximum annual) or 54 pounds average daily emissions is considered significant, while for PM_{10} a net increase equal to or greater than 15 tons per year (maximum annual) or 82 pounds average daily emissions is considered significant.

For CO emissions, an increase would be considered significant if it leads to or contributes to CO concentrations exceeding the state ambient air quality standard, although quantification would not be required if a project is consistent with the local congestion management program and plans and traffic volumes at affected intersections are below 44,000 vehicles per hour or 24,000 vehicles per year in tunnel-like conditions.

Under the 2010 BAAQMD thresholds, project operations would also have a significant air quality impact if they would result in an incremental increase in localized annual average concentrations of $PM_{2.5}$ exceeding 0.3 micrograms per cubic meter.

Additionally, a project would also have a significant air quality impact if project operations would expose persons to substantial levels of TACs, such that the probability of contracting cancer for the MEI exceeds 10 in one million or if the project would expose persons to TACs such that a non-cancer Hazard Index of 1.0 would be exceeded.

Cumulative Impact Criteria

The 2011 BAAQMD *CEQA Air Quality Guidelines* state that if the individual emissions from a project would result in an increase in ROG, NOx, $PM_{2.5}$, or PM_{10} that exceeds the project-level significance criteria, then the project would also be considered to contribute considerably to a significant cumulative effect. Cumulative air quality impacts relative to emissions of $PM_{2.5}$ and TACs are new concepts contained in BAAQMD's updated thresholds.

[27] The Maximally Exposed Individual is the person with the highest exposure in a given population.

With regard to cumulative impacts from $PM_{2.5}$, a significant cumulative air quality impact would occur if localized annual average concentrations of $PM_{2.5}$ would exceed 0.8 micrograms per cubic meter at any receptor from project operations in addition to existing emission sources and cumulative emissions sources within a 1,000-foot radius of the property line of the source or receptor.

With regard to cumulative impacts from TACs, a significant cumulative air quality impact would occur if the probability of contracting cancer for the MEI would exceed 100 in one million or if the project would expose persons to TACs such that a non-cancer chronic Hazard Index of 10.0 would be exceeded at any receptor as a result of project operations, in addition to existing emission sources and cumulative emissions sources within a 1,000-foot radius of the project site.

However, a project's construction or operational impacts would be considered to result in a considerable contribution to an identified cumulative health risk impact if the project's construction or operation activities would exceed the project-level health risk significance thresholds identified above.

5.8.3.2 Approach to Analysis

The air quality impact analysis is organized to address potential impacts from the AC34 events and the Cruise Terminal project separately. Construction and operational emissions are assessed individually as recommended by BAAQMD guidance. Cumulative air quality impacts are discussed with regard to the near-term cumulative construction and operational impacts of the AC34 venues and pier improvements including near-term construction-related effects of the cruise terminal. The cruise terminal would be completed and in operation after the AC34 events end, and long-term (year 2035) operational cumulative impacts are assessed only with respect to the cruise terminal.

Evaluation of air quality impacts from operational and construction air emission sources of the proposed projects under the BAAQMD *CEQA Air Quality Guidelines* requires the quantification of the estimated mass emissions of criteria air pollutants such as ROG, NO_x, PM_{10}, and $PM_{2.5}$. In addition, an evaluation of potential human health effects from the emission of specific toxic air contaminants (TACs) present in the ROG or PM emissions is also required. The following sections describe the emissions estimation, air dispersion modeling, and risk characterization methodologies that were used to evaluate project-related emissions.

Analytical Approach for Construction Emissions

Construction exhaust emissions of criteria air pollutants and toxic air contaminants (TACs, in order to evaluate health risks and hazards) were estimated by first collecting extensive information on all of the different types of air emissions sources involved in project construction and the level of activity anticipated from these sources during each phase of construction. This information was then combined with emission factors applicable to each source type to generate

criteria pollutant emission estimates. Estimated emissions (and associated human health risk impacts) were then compared to BAAQMD significance thresholds.[28]

Emission factors for construction equipment used for water-based construction activities (e.g., pile driving and removal, installation and removal of temporary docks and wave attenuators) were taken from the California Air Resources Board (CARB) OFFROAD 2007 model except for tugboats and other on-water equipment for which emission factors were taken from the San Francisco Bay Seaport Emissions Inventory and the Port of San Francisco Emissions Inventory.[29] Emissions from land-based construction activities such as building demolition, temporary team base construction, and demolition and construction of the cruise terminal "cold shell" at Piers 27-29 were estimated using equipment types and hours of operations supplied by the project sponsor and exhaust emission factors from the OFFROAD model. On-road vehicle emissions for construction were based on the following data: numbers and types of vehicles (worker vehicles, equipment delivery trucks) and number of trips anticipated for these vehicles. Vehicle emission factors were taken from the CARB's EMFAC 2007. Further details on the methodology and assumptions used for assessing construction emissions are provided in Appendix AQ.

Analytical Approach for Operational Emissions - AC34 Project

AC34 operation emissions were estimated based on activity data provided by the project sponsor. Emissions from spectator and other boats, boat lifts, generators, and other power equipment to be used at race venues were estimated from these activity levels and applicable emission factors derived from the OFFROAD model. Emissions from trucks that would be used to deliver supplies and equipment for race events were estimated based on numbers of trips for each truck type at each race venue as supplied by the project sponsor and trip emissions generated by the CARB's EMFAC 2007 BURDEN model. Emissions from increased traffic from spectators and the relocation of the Bauer Transportation warehouse from Pier 27 to Pier 50 were also estimated using EMFAC2007 BURDEN model. The analysis also accounted for incremental cruise ship hoteling[30] emissions at Pier 27 resulting from the removal of the shore-side power system installed at Pier 27 in 2010. Details are provided in Appendix AQ.

Emissions associated with helicopters frequenting the helipad during AC34 races were estimated using data provided by the project sponsor and Emissions and Dispersion Modeling System (EDMS) software, developed by the United States Federal Aviation Administration (EDMS Version 5.1, 2008, Office of Environment and Energy, Federal Aviation Administration). Total criteria air pollutant emissions (including those emitted in-flight) were evaluated for the project-wide emissions inventory; however, only TAC emissions above BAAQMD trigger levels that are expected to occur on or near the helipad were included for the risk assessment as a screening

[28] BAAQMD, *California Environmental Quality Act Air Quality Guidelines*, May 2011.
[29] Bay Planning Coalition, SF Bay Area Seaports Air Emissions Inventory: Port of San Francisco 2005 Emissions Inventory, prepared by Moffatt & Nichol and ENVIRON, June 2010.
[30] Hoteling refers to the period of time a cruise ship is at dock and generating its own power for lighting, heating and other necessary functions while at port in the absence of shoreside power.

analysis using EDMS indicated TAC emissions from helicopters at flight altitudes are of sufficient distance from ground-level receptors not to cause more than trace level exposure.

Analytical Approach for Operational Emissions – Cruise Terminal Project

Cruise Terminal project operational emissions were estimated based on projected ship call data provided by the Port of San Francisco. Shore power is assumed to be unavailable in 2012 and 2013 due to construction and AC34-related activities at Pier 27. Cruise ship and assist tug emissions were estimated using the same methods as applied in a previous Port study.[31] Onsite and offsite on-road vehicle emissions were based on projected numbers of vehicle trips as estimated in the transportation analysis and trip emissions generated by the EMFAC 2007 BURDEN model. These estimates account for the projected increase in total annual passenger volume in future years. Further details on assumptions used for the analysis are included in Appendix AQ.

Analytical Approach for Health Risks and Hazards

For the evaluation of risks and hazards, the cancer risk and chronic non-cancer analyses are based on diesel particulate matter (DPM) concentrations and speciated[32] Total Organic Gases (TOGs) emissions from diesel exhaust. Under California regulatory guidelines, DPM is used as a surrogate measure of carcinogen exposure for the mixture of chemicals that make up diesel exhaust as a whole.

There is currently no acute non-cancer toxicity value available for DPM. Thus, speciated components of diesel Reactive Organic Gases (ROGs) provided by the BAAQMD were included in the acute non-cancer hazard analysis. Air toxic TOG components from gasoline exhaust were also included in the acute non-cancer analysis.

Assessment of health risks related to use of diesel-powered construction equipment was conducted by performing a project-specific air quality dispersion analysis and risk assessment. BAAQMD has prepared screening tables that assume a standardized set of construction equipment and state that they "should not be used to estimate health risks from construction of non-standard or particularly complicated projects." Because improvements related to the America's Cup races would require the use of pile drivers, tugboats, bucket dredges, service boats, and other high-powered non-standardized diesel equipment, a project-specific health risk assessment was performed.

To evaluate TAC and $PM_{2.5}$ impacts from the proposed projects as compared to BAAQMD significance thresholds, near-field air dispersion modeling of DPM, TOG, and $PM_{2.5}$ from AC34 and cruise terminal construction and operational emission sources was conducted using the U.S. EPA's American Meteorological Society/Environmental Protection Agency Regulatory

[31] Moffatt & Nichol, SF Bay Area Seaports Air Emissions Inventory – Port of San Francisco 2005 Emissions Inventory, prepared for the Bay Planning Coalition by Moffatt & Nichol and ENVIRON International Corp., June 2010.

[32] Speciation refers to identifying the components of a class of compounds (in this case TOG) and including for analysis only those compounds that contribute to increased cancer or health risk.

Model (AERMOD), version 11059,[33] as recommended by the BAAQMD *CEQA Air Quality Guidelines*. Two sources, AC34 Live Site venues and potential future fill removal locations associated with the BCDC Special Area Plan amendments, were evaluated separately using the U.S. EPA's AERSCREEN model because their exact locations were undetermined at the time of this analysis (discussed later in this section). Air dispersion modeling applications used meteorological data from the Mission Bay meteorological site operated by the BAAQMD to provide the most representative data set for this analysis.

The ambient concentrations obtained through dispersion modeling were subsequently used in the risk assessment to quantify cancer and non-cancer health risk impacts and to evaluate $PM_{2.5}$ impacts. Air dispersion models such as AERMOD require a variety of inputs such as source parameters, meteorological parameters, topography information, and receptor parameters; each of these inputs is discussed in Appendix AQ.

Neither the America's Cup venues nor the James R. Herman Cruise Terminal/Northeast Wharf Plaza would be considered a new sensitive receptor (i.e., a residential land use, day care facility, hospital, or other locations where children or the infirm could reasonably be expected to dwell or occupy for extended periods of time).[34] Event spectators are not considered sensitive receptors; however, for purposes of the America's Cup analysis, health risk impacts on spectators at primary viewing areas are analyzed and reported in this EIR. The general locations of spectator receptors are shown in Figure 5.8-1. Primary viewing locations include Fort Baker Pier at Cavallo Point, Crissy Field, Marina Green, Fort Mason, Aquatic Park, Alcatraz Island, and Piers 27-29 (which would serve as the America's Cup Village in 2013). This conservative analysis assumes that the maximally exposed receptor would be present for the duration of all AC34 event activities. Primary viewing locations were selected as receptors as spectators are expected to be at those locations for longer durations than at secondary viewing areas (see Section 5.1 for description of secondary viewing areas) and/or along The Embarcadero promenade.

5.8.3.3 AC34 Event and Cruise Terminal Impacts and Mitigation Measures

America's Cup

Construction Impacts

Impact AQ-1: Construction of the America's Cup facilities would not result in localized construction dust-related air quality impacts. (Less than Significant)

As described in Chapter 3, the AC34 project would include demolition of several structures at Piers 27-29 in preparation for construction of the cold shell of the cruise terminal and the America's Cup Village in 2013; in addition, preparation of team bases at Piers 30-32 would

[33] U.S. Environmental Protection Agency, *User's Guide for the AMS/EPA Regulatory Model (AERMOD)*, Office of Air Quality Planning and Standards, Emissions Monitoring and Analysis Division, Research Triangle Park, North Carolina, EPA-454/B-03-001, September 2004.

[34] BAAQMD, *Recommended Methods for Screening and Modeling Local Risks and Hazards,* May 2011, page 12, available at http://www.baaqmd.gov/~/media/Files/Planning%20and%20Research/CEQA/BAAQMD%20Modeling%20Approach.ashx.

require removal of portions of the deck, soffit, piles, and various structures in order to complete the permanent upgrades and repairs sufficient to support the AC34 events. Project-related demolition and other construction activities at these and other project sites may cause wind-blown dust that could generate particulate matter into the atmosphere. Dust can be an irritant and cause watering eyes or irritation to the lungs, nose, and throat. Demolition, excavation, and other construction activities can cause wind-blown dust to add to particulate matter in the local atmosphere. Although there are federal standards for air pollutants and state and regional air quality control plans, air pollutants continue to have impacts on human health throughout the country. The California Environmental Protection Agency has found that particulate matter exposure can cause health effects at levels lower than national standards. The current health burden of particulate matter demands that, where possible, public agencies take feasible available actions to reduce sources of particulate matter exposure. According to the CARB, reducing ambient particulate matter concentrations from 1998 to 2000 levels in San Francisco would prevent over 200 premature deaths.

For fugitive dust emissions, the BAAQMD *CEQA Air Quality Guidelines* recommend following the current best management practices approach, which has been a pragmatic and effective approach to control fugitive dust emissions. The guidelines note that individual measures have been shown to reduce fugitive dust by anywhere from 30 percent to more than 90 percent and conclude that projects that implement construction best management practices will reduce fugitive dust emissions to less-than-significant levels.

The San Francisco Board of Supervisors approved a series of amendments to the San Francisco Building and Health Codes generally referred to as the Construction Dust Control Ordinance (Ordinance 176-08, effective July 30, 2008) with the intent of reducing the quantity of dust generated during site preparation, demolition, and construction work in order to protect the health of the general public and of onsite workers; minimizing public nuisance complaints; and avoiding orders to stop work by the Department of Building Inspection (DBI).

As discussed in Section 5.8.2, Regulatory Framework, above, the Construction Dust Control Ordinance requires that all site preparation, demolition, or other construction activities within San Francisco that have the potential to create dust or expose or disturb more than 10 cubic yards or 500 square feet of soil comply with specified dust control measures whether or not the activity requires a permit from DBI. Additionally, all departments, boards, commissions, or agencies of the City and County of San Francisco that authorize construction or improvements on land under their jurisdiction must adopt rules and regulations to ensure that the same dust control requirements are followed. The ordinance further requires that all applicants for a building, demolition, excavation or grading permits for projects that exceed half an acre in size be required to submit a dust control plan for approval by the San Francisco Health Department.

Site-specific Dust Control Plans under the Construction Dust Control Ordinance require the project sponsor to carry out the following tasks:

- Submit a map to the Director of Public Health showing all sensitive receptors within 1,000 feet of the site;

- Wet down areas of soil at least three times per day;
- Provide an analysis of wind direction and install upwind and downwind particulate dust monitors;
- Record particulate monitoring results;
- Hire an independent third party to conduct inspections and keep a record of those inspections;
- Establish shut-down conditions based on wind, soil migration, etc.;
- Establish a hotline for surrounding community members who may be potentially affected by project-related dust;
- Limit the area subject to construction activities at any one time;
- Install dust curtains and windbreaks on the property lines, as necessary;
- Limit the amount of soil in hauling trucks to the size of the truck bed and securing with a tarpaulin;
- Enforce a 15-mile-per-hour speed limit for vehicles entering and exiting construction areas;
- Sweep affected streets with water sweepers at the end of the day;
- Install and utilize wheel washers to clean truck tires;
- Terminate construction activities when winds exceed 25 miles per hour; and
- Apply soil stabilizers to inactive areas and sweep adjacent streets to reduce particulate emissions.

The ordinance also requires that the project sponsor designate an individual to monitor compliance with dust control requirements.

The requirements set forth in Article 22B of the San Francisco Health Code are more stringent and, therefore, at least as effective at controlling fugitive dust emissions as the BAAQMD-identified best management practices and include additional requirements for third-party inspections and monitoring of compliance with the ordinance; therefore, compliance with the Construction Dust Control Ordinance would reduce project-generated construction dust to a less-than-significant level.

Impact Summary

Construction of the America's Cup facilities would result in emission of fugitive dust that would be reduced to a *less than significant* level through compliance with the City and County of San Francisco's Construction Dust Control Ordinance.

Mitigation: Not required

Impact AQ-2: Construction of the America's Cup facilities would result in emission of criteria pollutants and precursors that would violate an air quality standard or contribute substantially to an existing or projected air quality violation. (Significant and Unavoidable with Mitigation)

A number of temporary and some permanent facilities would be constructed in preparation for the America's Cup events at various locations as described in Chapter 3, Project Description.

Demolition of existing structures would occur at Piers 27-29 and Piers 30-32 in 2012. Installation of temporary floating docks would occur at Piers 30-32, Pier 80, and Marina Green for the AC34 2012 events. Other construction activities in 2012 would include construction of the new cruise terminal building "cold shell" and paving/concrete improvements at Piers 27-29, and installation of the team base at Piers 30-32 and/or Pier 80. Emissions would also result from construction and erection of facilities at spectator locations. For the AC34 2013 events, construction of temporary floating docks and/or wave attenuators would occur at several locations (e.g., Piers 30-32, 32-36, 27-29, 26-28, 23, and 1; Piers 9-15 water basin; Rincon Point Open Water Basin; Piers 17-19; and Fort Mason). Mooring anchoring would be installed at Brannan Street Wharf Open Water Basin and Piers 27-29, and dredging would occur at Brannan Street Wharf Open Water Basin and Pier 28. The team base would remain at Piers 30-32. In addition, all temporary floating docks, wave attenuators, the communications barge, associated pilings and mooring anchoring, and the Pier 80 and Piers 30-32 team bases would be removed in 2013 after completion of the AC34 events. Phase 2 buildout of the new cruise terminal at Piers 27-29 would also start at the end of 2013 for proposed operation of the new cruise terminal in 2014, the impacts of which are addressed in Impacts AQ-9 and AQ-10, below, relative to the Cruise Terminal project.

Criteria and ozone precursor pollutant (NOx, ROG, PM_{10}, $PM_{2.5}$) emissions from construction equipment exhaust would incrementally add to the regional atmospheric loading of these pollutants during project construction. The BAAQMD *CEQA Air Quality Guidelines* recommend the quantification of project-related criteria pollutant exhaust emissions from construction, separate from operational emissions, and comparison with significance thresholds included in the guidelines. Daily engine exhaust emissions from construction activities associated with the proposed project are compared with emission BAAQMD significance thresholds in **Table 5.8-5**. Emissions were estimated separately for construction scheduled to occur in 2012 and 2013 and then combined. Total construction emissions were divided by the number of construction days to derive average daily emissions for comparison against BAAQMD significance threshold levels. The BAAQMD construction significance thresholds for criteria pollutants are established in terms of average daily emissions, and this is how emissions are reported in Table 5.8-5.

The emissions presented in Table 5.8-5 would be generated by many different construction sources including off-road construction equipment such as loaders, backhoes, pile drivers, and cranes; in-water construction sources such as assist tugs, barges and dredge equipment; and on-road trucks. The predominant source of emissions would be off-road equipment, which would generate approximately double the emissions of in-water construction sources at most locations, except those where dredging would occur; in dredging locations, in-water construction would be the predominant emissions source. At all locations, emissions from on-road trucks would be substantially lower than emissions from either off-road or water sources.

TABLE 5.8-5
AC34 AVERAGE DAILY CONSTRUCTION-RELATED EMISSIONS

	Average Daily Construction Emissions (pounds/day)			
	ROG	**NOx**	**PM10**	**PM2.5**
Cruise Terminal Phase I and AC34 Construction				
Demolition at Piers 27-29	0.2	1.3	0.1	0.05
Shell Construction Piers 27-29	16	90	7	6
AC34 Venue Construction	8	69	4	3
Total[a]	24	160	10	10
BAAQMD Threshold	54	54	82	54
Above Threshold?	No	Yes	No	No

NOTES:

[a] The total emissions may not sum precisely due to rounding of subtotals.

SOURCE: ENVIRON, 2011

Construction of the America's Cup facilities would result in emission of criteria pollutants and precursors that, with the exception of NOx, would be at levels below the BAAQMD thresholds of significance. However, the estimated construction emissions of NOx would exceed the BAAQMD significance threshold, resulting in a significant air quality impact.

Impact Summary

Construction of the America's Cup facilities would result in emission of NOx that would exceed BAAQMD thresholds of significance, a *significant* impact. Implementation of **Mitigation Measure M-AQ-2a** (Construction Vehicle Emissions Minimization) and **M-AQ-2b** (Off-Road Construction Equipment), requiring use of off-road equipment that meets the most stringent U.S. EPA standards, as available, and the requirements specified under the Clean Construction Ordinance would reduce the severity of the impact. However, as discussed below, the ability of the mitigation measures to reduce the impact to less than significant depends on the feasibility of implementing the measures.

A discussion of available mitigation and associated feasibility of implementation is presented with the mitigation measures below. The results indicate that limited emission reduction would be expected due to lack of available feasible mitigation. Therefore, this impact would remain *significant and unavoidable with mitigation*.

Mitigation Measure M-AQ-2a: Construction Vehicle Emissions Minimization

To reduce construction vehicle emissions, the project sponsors shall incorporate the following into construction specifications:

- Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes (as required by the California airborne toxics control measure, Title 13, Section 2485 of California Code of Regulations [CCR]). Clear signage shall be provided for construction workers at all access points.

- All construction equipment shall be maintained and properly tuned in accordance with manufacturer's specifications. All equipment shall be checked by a certified mechanic and determined to be running in proper condition prior to operation.

- The project sponsor shall ensure that construction contract specifications include a requirement that on-road diesel trucks used to transport spoils consist of 2007 or newer model-year trucks with factory-built engines. All on-road diesel trucks shall be required to have emission control labels as specified in 13 CCR 2183(c). The construction contract specifications shall require that the contractor submit to the Environmental Review Officer (ERO) a comprehensive inventory of all on-road trucks used to haul spoils. The inventory shall include each vehicle's license plate number, the engine production year, and a notation of whether the truck is in possession of an emission control label as defined in 13 CCR. The contractor shall update the inventory and submit it monthly to the ERO throughout the duration of the project.

Mitigation Measure M-AQ-2b: Off-Road Construction Equipment

The project sponsors shall ensure that construction contract specifications include a requirement that all off-road construction equipment used for AC34 improvements be equipped with Tier 3 (Tier 2 if greater than 750 hp) diesel engines or better to the extent feasible. The following types of equipment [35] were identified as available for rental or are candidates for retrofitting, due to their expected operating modes (i.e., fairly constant use at high revolution per minute):

- Excavators
- Backhoes
- Rubber-Tired Dozers
- Concrete Boom Pumps
- Concrete Trailer Pumps
- Concrete Placing Booms
- Soil Mix Drill Rigs
- Soldier Pile Rigs
- Shoring Drill Rigs

All diesel generators used for project construction shall meet Tier 4 emissions standards to the extent feasible.

To the extent that the above listed types of equipment are used for project construction, those equipment types shall be required to meet NOx emission standards equivalent to Tier 3 (Tier 2 if greater than 750 horsepower) engines, if feasible.

Should it be determined by the construction contractor or its subcontractors that compliance with the emissions control requirements of this mitigation measure is infeasible for any of the above-listed construction equipment, the construction contractor shall demonstrate an alternative method of compliance that achieves an equivalent reduction in the project's fleetwide NOx emissions. If alternative means of compliance with the emissions exhaust requirements are further determined to be infeasible, the construction contractor shall document, to the satisfaction of the Environmental Review Officer, that the contractor has complied with this mitigation measure to the extent feasible and indicate why full compliance with the mitigation measure is infeasible.

[35] http://tier3rental.com/

Analysis of Mitigation Measure M-AQ-2b: The U.S. EPA has established a schedule for emission improvements to new nonroad (or off-road) diesel engines in 1994 for engines over 37 kilowatts (kW) (50 horsepower). The resulting 1998 regulation introduced Tier 1 standards for equipment under 37 kW and increasingly stringent Tier 2 and Tier 3 standards for all equipment with phase-in schedules from 2000 to 2008. The Tier 1-3 standards are met through advanced engine design, with no or only limited use of exhaust gas after treatment (oxidation catalysts). Tier 3 standards for NOx and TOG are similar in stringency to the 2004 standards for highway engines; however, Tier 3 standards for PM were never adopted.

The Tier 4 standards require that emissions of PM and NOx be further reduced by about 90 percent. Such emissions reduction can be achieved through the use of control technologies—including advanced exhaust gas after-treatment—similar to those required by the 2007-2010 standards for highway engines. However, Tier 4 equipment is not yet widely available for off-road equipment and in December 2010, CARB amended its In-Use Off-Road Diesel Vehicle Regulation which has delayed the original implementation by four years, making the first compliance deadline January 1, 2014 (for large fleets). Construction emissions estimated in Impact AQ-2 assume a statewide average fleet mix of construction equipment that includes a relatively small percentage of "tiered" construction equipment, reflecting the recent implementation schedule of the Regulation and the existing fleet of "non-tiered" equipment.

For the purposes of this mitigation measure, "feasibility" refers to the availability of newer equipment in the subcontractor's fleet that meets these standards, or the availability of rental equipment that meets these standards. It should be noted that for specialty equipment types that represent the source of the majority of emissions (e.g., impact and vibratory pile drivers, tug boats, dredging equipment, cranes and service boats,) it may not be feasible for construction contractors to rent or modify their current, older equipment. Therefore, this mitigation measure would likely be infeasible for these equipment types, and reduction of NOx emissions by the 66 percent necessary to reduce AC34 construction emissions to less-than-significant levels is not expected, given that Tier 3 reductions in NOx emissions are reported to be approximately 40 percent depending on engine size. Consequently, this temporary construction impact is identified *as significant and unavoidable*.

Impact AQ-3: Construction of the America's Cup facilities would expose sensitive receptors to substantial concentrations of toxic air contaminants or respirable particulate matter ($PM_{2.5}$). (Significant and Unavoidable with Mitigation)

Assessment of health risks related to use of diesel-powered construction equipment was conducted by performing a project-specific air quality dispersion analysis and risk assessment as described in Section 5.8.3.2, Approach to Analysis, above. The primary construction emissions of concern, DPM and $PM_{2.5}$, would be emitted by diesel-powered construction equipment. Equipment used to improve piers would include pile drivers, cranes, tug boats to maneuver

barges, and service boats. Dredging equipment would generate emissions in the vicinity of Piers 30-32 and loaders and backhoes would generate emissions in the vicinity of Piers 27-29.

For the purposes of analyzing health risks and hazards from construction emissions, it was assumed that there would be no AC34 event spectators present during construction activities and that the only sensitive receptors exposed to construction emissions would be existing sensitive receptors, which in the project area are residential receptors west and south of project venues. Potential health risk and hazard impacts on spectators as receptors are addressed in Impact AQ-5, which addresses operational emissions.

The results of the risk assessment are presented in **Table 5.8-6** below. This table indicates that incremental cancer risks would be 4 in one million at residential receptors nearest the construction activity.

TABLE 5.8-6
MAXIMUM LIFETIME EXCESS CANCER RISK, CHRONIC AND ACUTE NON-CANCER HAZARD QUOTIENT, AND $PM_{2.5}$ CONCENTRATIONS FOR AC34 CONSTRUCTION

Endpoint	AC34 Construction	BAAQMD Threshold
Residential Receptors		
Lifetime Excess Cancer Risk[a]	4.0	10
Chronic Hazard Index[a]	0.007	1
Acute Hazard Index[a,b]	10	1
$PM_{2.5}$ Concentration[a] [$\mu g/m^3$]	0.03	0.3

NOTES:
BAAQMD = Bay Area Air Quality Management District; µg/m3 = micrograms per cubic meter; PM = particulate matter

[a] The location of each maximum may not be in the same location, therefore values are not additive.
[b] Since construction and operational activities would not be occurring at the same time, the acute hazard index should not be added across categories.

SOURCE: ENVIRON, 2011

As shown in Table 5.8-6, the AC34 event would not result in construction emissions that would exceed the BAAQMD's significance thresholds for cancer risk, chronic hazards, or $PM_{2.5}$ concentrations at sensitive receptors. However, the incremental acute hazard index associated with AC34 construction activities for the MEI sensitive receptor (resident receptor) is estimated to be 10.0, which would exceed the threshold of 1.0 and would primarily be due to acrolein from construction equipment diesel exhaust. With respect to the acute hazard index, the resident-MEI also represents the MEI for all receptors that were evaluated. The estimated acute hazard index is conservative due to the lack of project-specific construction phasing. The exact timing and duration of construction activities at any one time is unknown. Therefore, the emissions for acute risks are estimated based on maximum 1-hour emissions. Because, the maximum 1-hour

concentration assumes the maximum number of equipment operating at any one time it represents a worst-case analysis and therefore is a highly conservative. Realized acute risks are anticipated to be much lower.

Sensory irritation is the primary adverse effect associated with acute, low level exposures to acrolein. The irritative effects of acrolein are noticeable at low levels of exposure (≤0.25 ppm) and become more pronounced with increasing concentration; brief exposure causes irritation of the eyes and nose.[36]

Implementation of **Mitigation Measures M-AQ-2a** (Construction Vehicle Emissions Minimization) and **M-AQ-2b** (Off-Road Construction Equipment) **a**nd requirements of the Clean Construction Ordinance, as applicable, would reduce the impacts from standardized construction equipment for which "tiered" equipment is available.

To the extent that the types of equipment listed in **Mitigation Measure M-AQ-2b** (Off-Road Construction Equipment) are used for project construction, those equipment types would be required to meet emission standards for non-methane hydrocarbons, including acrolein, equivalent to Tier 3 (Tier 2 if greater than 750 hp) engines, if feasible. Feasibility is defined in the analysis of **Mitigation Measure M-AQ-2b** (Off-Road Construction Equipment), and as discussed here, this mitigation measure would likely be infeasible for these equipment types, and the reduction of acrolein emissions by 90 percent (necessary to reduce AC34 construction emissions to a less-than-significant levels) is not likely to be obtained. Consequently, construction-related emissions of acrolein are identified as significant and unavoidable.

Impact Summary

Construction activity related to America's Cup facilities would result in emissions of acrolein in excess of the BAAQMD's acute hazard index for sensitive receptors. Increased cancer risk and localized concentrations of $PM_{2.5}$ would be below thresholds. Even with the most updated emission control for all construction equipment, assuming it were available for all equipment types, a reduction of acrolein emission by the 90 percent necessary to reduce impacts to less than significant would not be achieved, and therefore this impact would be *significant and unavoidable with mitigation.*

> **Mitigation Measure M-AQ-2a: Construction Vehicle Emissions Minimization** (see above)
>
> **Mitigation Measure M-AQ-2b**: **Off-Road Construction Equipment** (see above)

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[36] California Office of Environmental Health Hazard Assessment, Draft TSD for Noncancer REL's, Acrolein Reference Exposure Levels, December 2008.

Operational Impacts

Impact AQ-4: Operations of the America's Cup facilities would violate an air quality standard or contribute substantially to an existing or projected air quality violation. (Significant and Unavoidable with Mitigation)

Operations of the America's Cup events during 2012 and 2013 would involve a wide variety of activities, both on water and on land, as well as helicopter activities. On-water activities would include boat and yacht trips (e.g., race-sponsored spectator vessels, race support vessels, small and large private spectator boats, and assist tugs). Boat lifts would be used at several locations. On-land activities would include generators and other equipment used at race-sponsored viewing sites and on-road vehicle trips. Helicopters would be used for broadcasting and media operations and would follow each race route. In addition, the increase in cruise ship emissions at Pier 27 during 2013 associated with the loss of the shore power hookup (which would be relocated and disconnected until completion of the AC34 events at Piers 27-29) during the America's Cup are included in the AC34 operational emissions total. No existing emissions were assumed for the AC34 event itself, as all emissions associated with the event were assumed to be new, additional emissions.

Criteria and ozone precursor pollutant (ROG, CO, NOx, PM_{10}, and $PM_{2.5}$) emissions associated with these activities were estimated for 2012 and 2013 using methods and data sources described previously and in Appendix AQ. Emissions for 2012 and 2013 were summed and divided by the total number of days of race operations to determine daily average emissions that were then compared with BAAQMD *CEQA Air Quality Guidelines* threshold levels as presented in **Table 5.8-7**. Because a variety of activities would occur throughout the AC34 event period, the number of days of "race operations" in each year was determined on the basis of the length of time that major operations are scheduled to take place (assumed to be 20 days in 2012 and 50 days in 2013 for vessel and on-road traffic and 80 days in 2012 and 90 days in 2013 for other sources), not simply the number of days on which actual races are scheduled.

As shown in Table 5.8-7, estimated average daily emissions of ROG, NOx, PM_{10}, and $PM_{2.5}$ would exceed the BAAQMD significance thresholds. Over 90 percent of daily PM and daily ROG emissions shown in Table 5.8-7 are attributable to operation of private spectator and race-support vessels. Daily emissions of NOx have substantial contributions from all sources except assist tugs.

Annual emissions from AC34 operations in 2012 and 2013 were also tabulated and compared to the BAAQMD threshold levels shown in Table 5.8-7. Emissions of ROG, NOx, PM_{10}, and $PM_{2.5}$ are predicted to exceed the BAAQMD significance thresholds. As per the above discussion of daily average emissions, over 90 percent of the annual ROG and particulate emissions would be generated by private spectator and race-support vessel operations.

America's Cup operations would result in emission of criteria pollutants and precursors that could exceed BAAQMD thresholds of significance for NOx, ROG, PM_{10}, and $PM_{2.5}$; this would be a significant air quality impact.

TABLE 5.8-7
AC34 AVERAGE DAILY AND MAXIMUM ANNUAL OPERATIONAL EMISSIONS

	Average Daily Emissions (pounds/day)			
	ROG	**NOx**	**PM10**	**PM2.5**
Race Operations				
Race Sponsored Vessels	9	102	4	4
Race Support Vessels	875	104	155	143
Small Private Vessels	1,272	198	212	195
Large Private Vessels	22	244	10	10
Assist Tugs	0	1	0	0
Other Sources[a]	21	174	5	5
Shoreside Power Temporary Decommissioning (2013)	4	94	2	2
Overall Spectator Traffic	30	62	4	4
Total Overall (2012+2013)	2,233	979	392	362
BAAQMD Threshold	54	54	82	54
Above Threshold?	Yes	Yes	Yes	Yes

	Maximum Annual Emissions (short tons/year)			
	ROG	**NOx**	**PM10**	**PM2.5**
2012 Race Operations				
Race Sponsored Vessels	1	6	0	0
Race Support Vessels	37	4	6	6
Small Private Vessels	83	12	13	12
Large Private Vessels	0	0	0	0
Assist Tugs	0	0	0	0
Other Sources[a]	1	8	0	0
Spectator Traffic	2	4	0	0
2012 Total	124	35	20	18
BAAQMD Threshold	10	10	15	10
Above Threshold?	Yes	Yes	Yes	Yes
2013 Race Operations				
Race Sponsored Vessels	1	17	1	1
Race Support Vessels	157	19	28	26
Small Private Vessels	200	32	34	31
Large Private Vessels	5	54	2	2
Assist Tugs	0	0	0	0
Other Sources[a]	4	31	1	1
Shoreside Power Temporary Decommissioning (2013)	1	21	0	0
Spectator Traffic	5	10	1	1
2013 Total	372	183	67	62
BAAQMD Thresholds	10	10	15	10
Above Threshold?	Yes	Yes	Yes	Yes

NOTES:
BAAQMD = Bay Area Air Quality Management District

[a] Other sources include boat lifts, generators, helicopters, and truck trips.

SOURCE: ENVIRON, 2011

The CARB implemented the Commercial Harbor Craft Regulation in January 2009 to reduce emissions of DPM and oxides of nitrogen (NOx) from diesel engines used on commercial harbor craft operated in California Regulated Waters. California Regulated Waters are all internal waters, estuarine waters, ports, and coastal waters within 24 nautical miles of the California coast. The regulation includes requirements for new and in-use (existing) engines as well as monitoring, recordkeeping, and reporting requirements. This regulation does not apply to privately operated non-commercial vessels. Consequently, accelerated attainment of compliance schedule dates by vessels operated by the Event Authority represent the most meaningful available avenue for potential mitigation.

Impact Summary

Operational emissions of the America's Cup races would result in criteria pollutant emissions that would exceed BAAQMD significance criteria, a *significant* impact. These operational emissions would be temporary and limited to the duration of the AC34 events in 2012 and 2013. **Mitigation Measure M-AQ-4** (Emission Controls for Race-Sponsored Spectator Vessels) would reduce emissions of ROG, NOx, PM_{10}, and $PM_{2.5}$ from those presented in Table 5.8-7. However, this measure would only apply to commercial, race-sponsored vessels that would be under the contract authority of the Event Authority and could not be implemented on private vessels. Race-sponsored spectator vessels would be regulated at the state and federal levels, rendering implementation of mitigation measures for emissions reductions from these vessels infeasible. As discussed in more detail in **Mitigation Measure M-AQ-4** (Emission Controls for Race-Sponsored Spectator Vessels), the percent reduction needed to avoid a significant impact for ROG, NOx, and particulate matter would not be attainable. Because the predominant source of the emissions would be from private and race-support vessels for which emissions control is regulated at the state and federal levels, a reduction to levels below the significance thresholds would not be possible. Therefore, this impact, while limited to the duration of the few months in 2012 and 2013 when the AC34 events are scheduled, is considered *significant and unavoidable with mitigation*.

> **Mitigation Measure M-AQ-4: Emission Controls for Race-Sponsored Spectator Vessels**
>
> The project sponsor shall require all contracts for race-sponsored spectator vessels to meet U.S. EPA Tier 3 or better engine standards for marine diesel engines, as feasible. Tier 3 and Tier 4 engines would reduce ROG and NOx emissions by approximately 42 percent over Tier 1 engines and PM emissions by 78 percent over Tier 1 engine emissions.[37]
>
> Should it be determined by the project sponsor that availability of vessels with Tier 3 or Tier 4 engines for use as race-sponsored spectator vessels renders this mitigation measure infeasible, this lack of availability must be demonstrated, to the satisfaction of the Environmental Review Officer, indicating that the project sponsor has complied with this mitigation measure to the extent feasible and why full compliance with the mitigation measure is infeasible.

[37] California Air Resources Board, Airborne Toxic Control Measure for Diesel Engines on Commercial Harborcraft Operated within California Waters and 24 Nautical Miles of the California Baseline, http://www.arb.ca.gov/regact/2007/chc07/rev93118.pdf

Analysis of Mitigation Measure M-AQ-4: For the purposes of this mitigation measure, "feasibility" refers to the availability of commercial ships that meet Tier 3 and Tier 4 standards that are available for lease to the project sponsor. It should be noted that it is likely that ships used for race-sponsored spectator vessels would be limited to those locally available within the San Francisco Bay Area so as to avoid additional emission impacts associated with bringing distant berthed vessels into use. Therefore, this mitigation measure would likely have limited feasibility. As a result, the reduction of ROG emissions by 98 percent, NOx emissions by 94 percent, and $PM_{2.5}$ emissions by 85 percent as necessary to reduce AC34 construction emissions to less-than-significant levels is not reasonably attainable, and this impact is identified as significant and unavoidable.

This measure would only apply to commercial, race-sponsored vessels that would be under the contract authority of the project sponsor and could not be implemented on private vessels outside of the existing implementation schedule for marine diesel engines. Even so, the emissions reduction needed to avoid significant criteria air pollutant impacts would not be attainable because the predominant source of the emissions would be from private and race-sponsored spectator vessels for which emissions control is regulated at the state and federal levels. Therefore, reductions to levels below the significance thresholds would not be possible and this impact would be *significant and unavoidable with mitigation*.

Impact AQ-5: Operation of the America's Cup facilities would expose sensitive receptors to substantial concentrations of toxic air contaminants or respirable particulate matter ($PM_{2.5}$). (Significant and Unavoidable with Mitigation)

For the evaluation of risks and hazards, the cancer risk and chronic non-cancer analyses are based on diesel particulate matter (DPM) concentrations and speciated TOG emissions from diesel exhaust. Sources include boat and yacht trips (race-sponsored spectator vessels, race support vessels, small and large private spectator boats, and assist tugs), boat lifts, generators and other equipment used at race-sponsored viewing sites, passenger vehicle traffic, and helicopter operations. In addition, the increase in cruise ship emissions at Pier 27 during 2012 and 2013 associated with the loss of the shore power hookup during the America's Cup are included in the risk assessment.

Increased cancer and health risks were calculated for both residential and non-residential (spectator) receptors. Non-residential receptors include areas the public may potentially have repeated access to during the AC34 events and include race-sponsored spectator locations. Although event spectators are not considered sensitive receptors relative to the BAAQMD definition, for purposes of the America's Cup, health risk impacts on spectators at primary viewing areas are analyzed and reported in this EIR. The general locations of spectator receptors are shown in Figure 5.8-1. Primary viewing locations include Fort Baker Pier at Cavallo Point, Crissy Field, Marina Green, Fort Mason, Aquatic Park, Alcatraz Island, and Piers 27-29 (which would serve as the America's Cup Village in 2013). This conservative analysis assumes that the maximally exposed spectator would be present for the duration of all AC34 event activities.

Primary viewing locations were selected for analysis, as spectators are expected to be at those locations for longer durations than at secondary viewing areas (see Section 5.1, Impact Overview, for description of these areas) and/or along the Promenade Park. As a further conservative analysis, spectator receptors were assumed to be present for the full duration of every event through both the 2012 and 2013 races.

Table 5.8-8 presents the incremental cancer risk, the acute hazard index, and $PM_{2.5}$ concentrations associated with AC34 operations, all of which would exceed BAAQMD thresholds as a result of AC34 operational emissions. Additional details regarding the location and magnitude of predicted health risks during AC34 operations are included in a series of example tables in Appendix AQ.

TABLE 5.8-8
MAXIMUM LIFETIME EXCESS CANCER RISK, CHRONIC AND ACUTE NON-CANCER HAZARD QUOTIENT, AND $PM_{2.5}$ CONCENTRATIONS FOR AC34 OPERATIONS AND 2013 LOSS OF SHORESIDE POWER

Endpoint	Operational	BAAQMD Threshold
a) Residential Receptors		
Lifetime Excess Cancer Risk[a]	22	10
Chronic Hazard Index[a]	0.12	1
Acute Hazard Index[a]	3.3	1
$PM_{2.5}$ Concentration[a] [$\mu g/m^3$]	2.8	0.3
b) All Receptors (Residential and Spectator)		
Lifetime Excess Cancer Risk[a]	72	10
Chronic Hazard Index[a]	0.3	1
Acute Hazard Index[a,b]	3	1
$PM_{2.5}$ Concentration[a] [$\mu g/m^3$]	3.7	0.3

NOTES:
BAAQMD = Bay Area Air Quality Management District; µg/m3 = micrograms per cubic meter; PM = particulate matter

[a] The location of each maximum may not be in the same location, therefore values are not additive.

SOURCE: ENVIRON, 2011

Specifically, the estimated values for the spectator MEIs would be an increase in incremental cancer risk of 72 in one million, relative to a threshold of 10 in one million; an acute hazard index of 3.3 in one million, relative to an acute hazard index threshold of 1; and a predicted $PM_{2.5}$ concentration of 3.7 ug/m^3 relative to a $PM_{2.5}$ threshold of 0.3 ug/m^3. The MEIs for each of these risk values are not in the same location as different sources (marine vessels vs. boat lifts) are not equally distributed. The corresponding values for the resident-MEIs are 22 in a million, 3.3, and 2.8 ug/m^3, respectively. The predominant source contributing to these relatively high risk values are off-road equipment (such as boat lifts), marine vessels, and gasoline-powered boats. No receptors would exceed the chronic hazard index threshold of 1.

The magnitudes of the cancer risks for AC34 operations at the MEIs (72 for the spectator-MEI; 22 for the resident-MEI) are influenced by the age-sensitivity factor of 10, which is included to represent exposure of resident child receptor up to the age of 2 and represents a conservative analysis based on BAAQMD guidance.

Based on the separate, screening-level analysis for the AC34 "*Live Sites*", the maximum excess cancer risk for a receptor located 5 meters from the generators would be 31 in a million, which exceeds the single-source threshold of 10 in a million. Conversely, the screening-level analysis for the helipad indicates that the risks associated with helicopter emissions near the helipad would be well below (i.e., less than 25 percent of) the risk thresholds, assuming it would be located at Pier 80 or Treasure Island as proposed by the project.

AC34 operations are predicted to exceed BAAQMD risk and hazard criteria for incremental cancer risk, acute hazard indices, and localized $PM_{2.5}$ concentrations and would therefore represent a significant impact on local receptors. Construction and operations of AC34 (as well as the cruise terminal) would require the permanent relocation of existing tenants. Of the existing tenants at Pier 27, only Bauer Transportation would represent a localized pollutant source as the result of operations of diesel-powered transport vehicles. The relocation of the Bauer Transportation facility from Pier 27 to Pier 50 would reduce diesel emissions and their associated risks for receptors in the vicinity of the site of Pier 27, though it would increase emissions in the vicinity of Pier 50. Risks associated with both locations were modeled in AERMOD assuming 50 round trips per day. Removal of the facility at Pier 27 would result in a net decrease of emissions; hence it would not result in additional cancer risks. Based on the analysis, Bauer Transportation operations emissions in its new location generate a localized cancer risk of 5.1 in one million, an acute hazard index of 0.01, a chronic hazard index of 0.001, and $PM_{2.5}$ concentrations of 0.006, which are below the BAAQMD's project level thresholds at the maximally exposed sensitive receptor.

Impact Summary

Based on conservative assumptions, operations of the proposed America's Cup races and events would result in incremental cancer risks, acute hazard indices, and localized $PM_{2.5}$ concentrations in excess of significance thresholds adopted by the BAAQMD and would represent a significant impact on localized air quality. **Mitigation Measure M-AQ-4** (Emission Controls for Race-Sponsored Spectator Vessels) would reduce emissions from race-sponsored vessels, and **Mitigation Measure M-AQ-5** (Clean Diesel Engines for Temporary Power), below, would reduce emissions from diesel generators. However, identified mitigation measures would not reduce the predicted impact to a less-than-significant level, and therefore, the impact would be *significant and unavoidable with mitigation*.

Mitigation Measure M-AQ-5: Clean Diesel Engines for Temporary Power

The project sponsor shall ensure that all diesel generators at AC34 event and viewing locations will conform to a level of performance equivalent to a Tier 4 interim, or Tier 2/ Tier 3 (as applicable, depending on power rating) engine fitted with a Level 3 Verified Diesel Emissions Control (VDEC), which would reduce diesel particulate emissions by at

least 85 percent. Alternatively, natural gas or gasoline-powered generators may be used in lieu of diesel generators, thus eliminating DPM emissions from generators, as feasible.

Should it be determined by the project sponsor that "tiered" diesel engine generators or natural gas or gasoline-powered generators would not provide the necessary power demands required, this lack of availability must be demonstrated to the satisfaction of the Environmental Review Officer, indicating that the project sponsor has complied with this mitigation measure to the extent feasible and why full compliance with the mitigation measure is infeasible.

Mitigation Measure M-AQ-4: Emission Controls for Race-Sponsored Spectator Vessels (see above)

Impact AQ-6: Construction and operation of the America's Cup facilities would not conflict with or obstruct implementation of applicable air quality plans. (Less than Significant)

The most recently adopted air quality plan for the San Francisco Bay Area Air Basin is the *Bay Area 2010 Clean Air Plan* (CAP). The CAP is a road map showing how the San Francisco Bay Area will achieve compliance with the state ozone standards as expeditiously as practicable and how the region will reduce transport of ozone and ozone precursors to neighboring air basins. The goals of the 2010 CAP are 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 PM_{10}, $PM_{2.5}$, TACs, and GHGs 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 2009–2012 timeframe. The control strategies of the CAP include 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 Metropolitan Transportation Commission (MTC), local governments, transit agencies, and others.

Determining Consistency with the CAP

The current BAAQMD *CEQA Air Quality Guidelines* identify a three-step methodology for determining a project's consistency with the current CAP. If the responses to the following three questions can be concluded in the affirmative, then BAAQMD considers the project to be consistent with air quality plans prepared for the Bay Area.

The first question to be assessed in this methodology is "does the project support the goals of the Air Quality Plan?" Currently, the 2010 CAP. The goals of the 2010 CAP are to (1) reduce emissions and decrease ambient concentrations of harmful pollutants; (2) safeguard public health by reducing exposure to air pollutants that pose the greatest health risk, with an emphasis on protecting the communities most heavily impacted by air pollution; and (3) reduce greenhouse gas (GHG) emissions to protect the climate. The proposed AC34 event would not conflict with

the efforts of the CAP to achieve its goals. The 2010 CAP seeks to achieve its goals via a series of control measures. These include revised measures in the three traditional control measure categories: Stationary Source Measures, Mobile Source Measures, and Transportation Control Measures. In addition, the CAP identifies two new categories of control measures: Land Use and Local Impact Measures, and Energy and Climate Measures. The temporary air quality impacts of the AC34 events over 80 days in 2012 and 90 days in 2013 would not hinder the long-term air quality planning goals of the 2010 CAP.

The second question to be assessed in this consistency methodology is "does the project include applicable control measures from the CAP?" The 2010 CAP contains 55 control measures aimed at reducing air pollution in the Bay Area. Projects that incorporate all feasible air quality plan control measures are considered consistent with the CAP.

With regard to implementation of TCMs, the City has developed a Draft "People Plan,"[38] a plan describing a safe, reliable, and efficient traffic and transportation scheme to facilitate the movement of thousands of visitors on any day to and from the America's Cup events. The People Plan includes:

- Effective public transportation service to the public areas including the on-shore venue and the on-the-water spectator areas during the event
- A program for managing parking spaces in and around the venue as provided in the Space Plan for the Event Authority, the Event Authority affiliates, competitors, the media, the event sponsors, and hospitality guests
- A program for managing public parking lots and facilities that may also include the additional operation of a shuttle service (if public transportation alternatives are determined to be inadequate to transport spectators from the parking facilities to the on shore spectator areas)
- An appropriate communication strategy to provide the public and AC34 event visitors advance information on special transportation arrangements and recommendations for access to race events

Transit-related mitigation measures, including specific provisions of the People Plan, are identified in Section 5.6, Transportation and CirculationThe People Plan examines alternatives for transportation to event venues oriented to minimize private automobile use, and plans for expanded transportation access by multiple modes that connect visitors to AC34 events, as well as serve residents and workers in the affected areas who may not attend AC34 events. The People Plan would include temporary transit enhancements along the F-Line Embarcadero corridor, and temporary transit service to locations including Fort Mason and Crissy Field. The People Plan would also examine the need for possible partial street closures to encourage pedestrian and bicycle access, and satellite parking locations with connections to public transit. Major event areas would include secure bicycle parking facilities. The People Plan would also examine water-

[38] City and County of San Francisco, America's Cup People Plan for the 2012 and 2013 Regattas on the San Francisco Bay, March 2011.

oriented transportation service, including ferry and excursion access to potential event viewing locations such as Treasure Island and Angel Island.

In addition, the AC34 project would include implementation of a Sustainability Plan, which would promote sustainability activities throughout the event life cycle, including construction, staging and long-term development phases, and would consider factors such as local employment, carbon reduction and waste reduction, sustainable food policies, transport, and sourcing.

Additionally, the *San Francisco General Plan*, San Francisco Planning Code, and City Charter implement various Transportation Control Measures identified in the 2010 CAP through the City's Transit First Program, bicycle parking requirements, transit development impact fees applicable to commercial uses, and other actions. Secured bicycle parking and increased frequency of existing transit service are incorporated into the People Plan to be implemented as part of the AC34 project. Mitigation measures identified in Section 5.6, Transportation and Circulation, include implementation of a transit operating plan to provide additional transit service to accommodate peak transit demands during the AC34 events.

In light of the above, the project would be considered to implement all feasible CAP control measures.

The third question to be assessed in this consistency methodology is "would the project disrupt or hinder implementation of any control measures from the CAP?" Examples of how a project may cause the disruption or delay of control measures include a project that precludes an extension of a transit line or bike path, or proposes excessive parking beyond parking requirements. As discussed above with respect to the second question, the People Plan examines alternatives for transportation to event venues oriented to minimize private automobile use, and plans for expanded transportation access by multiple modes that connect visitors to AC34 events, as well as serving residents and workers in the affected areas who may not attend AC34 events. The People Plan would include temporary transit enhancements along the F-Line Embarcadero corridor, and temporary transit service to locations including Fort Mason and Crissy Field. Therefore, the AC34 project would promote public transit and would not hinder the extension of a transit line or bike path, or propose excessive parking beyond parking requirements.

The proposed AC34 project would support the goals of the 2010 CAP and would include applicable transportation control measures and) mitigation measures to reduce temporary air pollutant impacts to the maximum extent feasible, and would not hinder implementation of the 2010 CAP. Thus, the project would be considered consistent with the 2010 CAP. Therefore, the project's effects relative to the goals of the 2010 CAP would also be less than significant.

Impact Summary

The proposed project would not conflict with the goals of the 2010 CAP, would include applicable control measures from the CAP, and would not disrupt or hinder implementation of any control measures from the CAP. Consequently the proposed project would not be considered

to conflict with the primary goals of the 2010 CAP, would its impact on implementation of applicable air quality plans would be *less than significant.*

Mitigation: Not required

Impact AQ-7: Construction and operation of the America's Cup facilities would not create objectionable odors affecting a substantial number of people. (Less than Significant)

AC34 events would occur across the San Francisco northeast and northern waterfronts. Spectators and participants would be present at the venues only temporarily and would not be considered sensitive receptors with regard to existing odor sources along the waterfront. The BAAQMD identifies odor sources to include such land uses as wastewater treatment plants, landfills, confined animal facilities, composting stations, food manufacturing plants, refineries, and chemical plants. Of these sources, the only such land use that exists along or near the northern or northeast waterfronts would be the North Point Wet Weather Facility at The Embarcadero and Bay Street. This facility does not handle sewage but provides primary treatment of water collected during rainstorms in the north part of San Francisco. It would not be a source of odors, particularly since the AC34 events would take place during the dry season when this plant would not be in operation.

Construction for pier repair and erection of venues would require the use of diesel-powered equipment that may have an odiferous component. Diesel equipment emissions would be temporary, occur during daytime hours, and be located at the shoreline and downwind of sensitive receptors. The emissions would therefore be unlikely to result in nuisance odor impacts.

Dredging of Bay mud would occur at Rincon Point and Brannan Street Wharf Open Water Basins. Bay muds contain organic material that may decompose and generate odors while placed on the barges awaiting offsite transport. Once the mud is relocated below water, the source of odor would be eliminated and any temporary odor impacts would cease. The extent of odor impacts from dredged material would depend on, among other things, the organic content of the soil and the meteorological conditions while dredged material is stored on the barges, and the proximity of sensitive receptors to the barge. Given the temporary residence time on the barge, potential odor impacts from dredged materials would be less than significant.

From an operational standpoint, the only activity that potentially may be a source of odors associated with AC34 would be the collection of solid wastes and compostable materials generated at the event. As described in Chapter 3, a Waste Management Plan has been prepared for AC34 events that addresses the management of discarded materials from both support activities and spectator-related activities. This plan would ensure that waste management would be integrated within the overall event planning not only to provide options for recycling, composting, and waste reduction but also to ensure efficiency in waste handling and collection. While there would be a potential for odor generation if organic waste materials are collected in

large-scale compactors in the vicinity of spectator venues, collection of wastes at a minimum frequency of once per week would transfer these materials offsite and avoid odor impacts.

Impact Summary

Construction and operations of AC34 facilities and events would have minimal potential to generate odors. Project sites are generally located downwind of sensitive receptors, and any odor emissions from construction activities, such as diesel equipment or from dredging operations, would be of limited duration. The Waste Management Plan incorporated into the AC34 project and regular collection and removal of wastes from spectator venues would minimize the potential for odors from collection of solid wastes. Therefore, the impact associated with objectionable odors would be *less than significant*.

Mitigation: Not required

Impact AQ-8: Operation of the America's Cup facilities would not result in an increase in localized carbon monoxide concentrations in excess of state or federal standards. (Less than Significant)

AC34 events would generate vehicle trips that may result in localized increases in traffic volumes and potentially congested intersections. BAAQMD *CEQA Air Quality Guidelines* provide screening criteria for assessing potential CO impacts. A proposed project would result in a less-than-significant impact on localized CO concentrations if it is consistent with the County's congestion management program and would not increase traffic volumes at any intersection to 44,000 vehicles per hour or 24,000 vehicles per hour in a tunnel or urban canyon created by buildings.

The proposed AC34 project would implement a People Plan that examines alternatives for transportation to event venues oriented to minimize private automobile use, and plans for expanded transportation access by multiple modes that would connect visitors to AC34 events, as well as serve residents and workers in the affected areas who may not attend AC34 events. The People Plan includes temporary transit enhancements along the F-Line Embarcadero corridor, and temporary transit service to locations including Fort Mason and Crissy Field. Implementation of this plan would ensure the project's consistency with congestion management efforts within the city.

The intersection with the highest approach volume for any scenario in the transportation analysis is Lombard Street at Divisidero Street, for which peak hourly intersection approach volume is 8,592. Because this volume is substantially less than even the most stringent criterion (24,000 vehicles per hour), CO concentrations are considered to be less than significant.

Impact Summary

The analysis in Section 5.6, Transportation and Circulation, indicates that intersection volumes at all intersections analyzed would be less than 24,000 vehicles per hour. Additionally, through implementation of the People Plan, the project would be considered consistent with the County's Congestion Management Plan. Therefore, the project's CO impact would be *less than significant*.

Mitigation: Not required

James R. Herman Cruise Terminal and Northeast Wharf Plaza

Construction Impacts

Impact AQ-9: Construction of the James R. Herman Cruise Terminal and Northeast Wharf Plaza would not result in localized, construction dust-related air quality impacts. (Less than Significant)

Project-related demolition and other construction activities may cause wind-blown dust that could generate particulate matter into the atmosphere, as discussed in Impact AQ-1 relative to construction of facilities for the America's Cup.

For fugitive dust emissions, BAAQMD *CEQA Air Quality Guidelines* recommend following the current best management practices approach, which has been a pragmatic and effective approach to the control of fugitive dust emissions. The guidelines note that individual measures have been shown to reduce fugitive dust by anywhere from 30 percent to more than 90 percent and conclude that projects that implement construction best management practices will reduce fugitive dust emissions to a less than significant level.

The Construction Dust Control Ordinance has been enacted in San Francisco to reduce the quantity of dust generated during site preparation, demolition, and construction work in order to protect the health of the general public and of onsite workers. The ordinance requires that all site preparation, demolition, or other construction activities within San Francisco that have the potential to create dust or expose or disturb more than 10 cubic yards or 500 square feet of soil comply with specified dust control measures whether or not the activity requires a permit from DBI. Additionally, all departments, boards, commissions, or agencies of the City and County of San Francisco that authorize construction or improvements on land under their jurisdiction must adopt rules and regulations to ensure that the same dust control requirements are followed. Pursuant to the Construction Dust Control Ordinance, the Port would be required to prepare a dust control plan.

Site-specific Dust Control Plans under the Construction Dust Control Ordinance require the project sponsor to carry out the following tasks:

- Submit a map to the Director of Public Health showing all sensitive receptors within 1,000 feet of the site;

- Wet down areas of soil at least three times per day;
- Provide an analysis of wind direction and install upwind and downwind particulate dust monitors;
- Record particulate monitoring results;
- Hire an independent third party to conduct inspections and keep a record of those inspections;
- Establish shut-down conditions based on wind, soil migration, etc.;
- Establish a hotline for surrounding community members who may be potentially affected by project-related dust;
- Limit the area subject to construction activities at any one time;
- Install dust curtains and windbreaks on the property lines, as necessary;
- Limit the amount of soil in hauling trucks to the size of the truck bed and securing with a tarpaulin;
- Enforce a 15-mile-per-hour speed limit for vehicles entering and exiting construction areas;
- Sweep affected streets with water sweepers at the end of the day;
- Install and utilize wheel washers to clean truck tires;
- Terminate construction activities when winds exceed 25 miles per hour; and
- Apply soil stabilizers to inactive areas and sweep adjacent streets to reduce particulate emissions.

The ordinance requires that the project sponsor designate an individual to monitor compliance with dust control requirements.

The requirements set forth in Article 22B of the San Francisco Health Code are as effective at controlling fugitive dust emissions as the BAAQMD-identified best management practices and include additional requirements for third-party inspections and monitoring of compliance with the ordinance; therefore, compliance with the Construction Dust Control Ordinance would reduce project-generated construction dust to a less-than-significant level.

Impact Summary

Construction of the James R. Herman Cruise Terminal and Northeast Wharf Plaza would result in emission of fugitive dust, but the impact would be reduced to *less than significant* through compliance with the City and County of San Francisco's Construction Dust Control Ordinance.

Mitigation: Not required

Impact AQ-10: Construction of the James R. Herman Cruise Terminal and Northeast Wharf Plaza would result in emission of criteria pollutants and precursors that would violate an air quality standard or contribute substantially to an existing or projected air quality violation. (Significant and Unavoidable with Mitigation)

Construction of the Cruise Terminal project at Pier 27-29 would occur in two phases. Phase 1 work would occur in 2012 and would consist of demolition of existing structures, paving and concrete improvements, and construction of the cruise terminal building "cold shell" in preparation for the America's Cup events. The Phase 1 construction activities are accounted for in the AC34 2012 construction activities (see Table 5.8-5). Phase 2 would consist of final buildout of the cruise terminal building. Phase 2 work would occur in 2013 after completion of AC34 events.

Phase 2 construction activities would include completion of certain interior spaces (e.g. Customs and Border Protection offices), interior building equipment (e.g., screening facilities), and exterior maritime equipment (e.g., mobile gangway, bollards, and fendering) required for cruise terminal operations. The Northeast Wharf Plaza would also be constructed, including hardscape and landscape improvements and proposed ancillary structures for commercial and recreational services over a 2.5-acre area. These activities would involve the operation of standard construction equipment, and emissions were calculated using the URBEMIS2007 model, assuming a 12-month construction period in 2013, as indicated by the Port. Calculations assumed fine grading activities for the 2.5-acre Northeast Wharf Plaza and general building construction activities for a 92,000-square-foot structure. Paving and architectural coating activities were also included in the calculation.

Construction of the cruise terminal building at Pier27 would require the temporary decommissioning of shore side power. The increase in cruise ship emissions at Pier 27 during 2012 construction activities associated with the loss of the shore power hookup (which would be disconnected and relocated until completion of the cruise terminal) are also included in the construction total (year 2013 emissions are in the AC34 operational emissions total estimated in Impact AQ-4).

Criteria and ozone precursor pollutant (NOx, ROG, PM_{10}, $PM_{2.5}$) emissions from construction equipment exhaust would incrementally add to the regional atmospheric loading of these pollutants during project construction. The BAAQMD's *CEQA Air Quality Guidelines* recommend the quantification of project-related criteria pollutant exhaust emissions from construction activities, and comparison with significance thresholds included in the guidelines. Daily engine exhaust emissions from construction activities associated with the Phase 2 of the cruise terminal and 2012 decommissioning of shoreside power are compared with emission thresholds in **Table 5.8-9**.

Phase 2 construction of the Cruise Terminal project and 2012 decommissioning of shoreside power would result in emissions of NOx that would exceed BAAQMD thresholds of significance. Emissions of ROG, PM_{10}, and $PM_{2.5}$ would be below significance thresholds. Because these significant NOx emissions are primarily attributable to the loss of shoreside power for which no mitigation is available, this impact is considered significant and unavoidable. However, mitigation is available for the construction equipment component of these emissions as described in Impact AQ-2.

TABLE 5.8-9
PHASE 2 CRUISE TERMINAL AND WHARF PLAZA
AVERAGE DAILY CONSTRUCTION-RELATED EMISSIONS

	Average Daily Construction Emissions (pounds/day)			
	ROG	**NOx**	**PM10**	**PM2.5**
Cruise Terminal				
Building interior construction	18	32	2	2
Shoreside power decommissioning; 2012	4	114	2	2
Total	22	146	4	4
BAAQMD Threshold	54	54	82	54
Above Threshold?	No	Yes	No	No

SOURCE: ESA, 2011

Impact Summary

Phase 2 construction of the Cruise Terminal project would emit NOx above BAAQMD thresholds of significance, and therefore the impact in relation to air quality standards would be *significant*. Implementation of the Clean Construction Ordinance and **Mitigation Measures M-AQ-2a** (Construction Vehicle Emissions Minimization**)** and **M-AQ-2b** (Off-Road Construction Equipment**)** would further reduce construction exhaust emissions. However, NOx emissions associated with decommissioning of shoreside power would be unmitigatable and would exceed BAAQMD significance thresholds. Therefore, this impact is *significant and unavoidable*.

Mitigation Measure M-AQ-2a: Construction Vehicle Emissions Minimization (see above)

Mitigation Measure M-AQ-2b: **Off-Road Construction Equipment** (see above)

Impact AQ-11: Construction resulting from the amendments to the Bay Conservation and Development Commission (BCDC) Special Area Plan would not result in emission of criteria pollutants and precursors that would violate an air quality standard or contribute substantially to an existing or projected air quality violation. (Less than Significant)

Proposed amendments to the Bay Conservation and Development Commission (BCDC) Special Area Plan (SAP) for the AC34 and Cruise Terminal projects that may be considered in BCDC's public process would include possible removal of fill within Port properties. These sites include dilapidated piers, wharfs, and remnant pilings that were constructed with creosote-treated wood that have no current maritime uses. The emissions were assumed to be similar to construction emissions for 1,200 feet of floating dock. Construction-related average daily emissions from fill removal activities are estimated to be 1.4 pounds per day of ROG, 15.0 pounds per day of NOx, and 0.6 pounds per day of both PM_{10} and $PM_{2.5}$. Fill removal would result in emission of criteria

pollutants and precursors that would be at levels below the BAAQMD thresholds of significance and result in a *less than significant* impact.

Mitigation: Not required

Impact AQ-12: Construction of the James R. Cruise Terminal and Northeast Wharf Plaza would not expose sensitive receptors to substantial concentrations of toxic air contaminants or respirable particulate matter ($PM_{2.5}$). (Less than Significant)

Construction of the Cruise Terminal project at Piers 27-29 would occur in two phases. Phase 1 work would occur in 2012 and consist of demolition of existing structures, paving and concrete improvements, and construction of the cruise terminal building "cold shell" in preparation for the America's Cup events. Phase 2 would consist of final buildout of the cruise terminal building. Phase 1 work would occur in 2012 and Phase 2 work would occur in 2013 after completion of AC34 events. These activities would involve the use of standard diesel-powered construction equipment as well as pile drivers and tug boats that would emit DPM and $PM_{2.5}$ that would incrementally add to cancer risks and localized $PM_{2.5}$ concentrations. It is assumed that no Cruise Terminal project construction activities would occur during the 2012 or 2013 AC34 events, and therefore construction emissions would only affect the nearest residential receptors, not AC34 spectators.

DPM and $PM_{2.5}$ emissions from construction equipment exhaust would incrementally add to cancer risks and localized $PM_{2.5}$ concentrations. Construction of the cruise terminal building at Pier 27 would require the temporary decommissioning of shore side power. The increase in risks and hazards from cruise ship emissions at Pier 27 during 2012 construction activities associated with the loss of the shore power hookup (which would be disconnected and relocated until completion of the cruise terminal) are also included in the construction total (year 2013 risk and hazard increases are considered in the assessment of AC34 operational risks estimated in Impact AQ-5).

As summarized in **Table 5.8-10**, no risk thresholds would be exceeded at the resident-MEI as a result of emissions associated with the construction of the cruise terminal. (Note that the MEI locations vary depending on the risk threshold evaluated [cancer, noncancer, or $PM_{2.5}$].)

Mitigation: Not required

TABLE 5.8-10
MAXIMUM LIFETIME EXCESS CANCER RISK, CHRONIC AND ACUTE NON-CANCER HAZARD QUOTIENT, AND $PM_{2.5}$ CONCENTRATIONS FOR CRUISE TERMINAL AND 2013 LOSS OF SHORESIDE POWER

Endpoint	Cruise Terminal Construction	Impact from Loss of Shoreside Power	Total Risks and hazards (Construction and additional year of Shoreside Power)	BAAQMD Threshold
Residential Receptors				
Lifetime Excess Cancer Risk	0.5	0.63	1.1	10
Chronic Hazard Index	0.001	0.001	0.002	1
Acute Hazard Index	0.1	0.25	0.35	1
$PM_{2.5}$ Concentration [$\mu g/m^3$]	0.005	0.008	0.013	0.3

NOTES:
BAAQMD = Bay Area Air Quality Management District; µg/m3 = micrograms per cubic meter; PM = particulate matter

SOURCE: ENVIRON, 2011

Impact AQ-13: Construction resulting from amendments to the Bay Conservation and Development Commission (BCDC) Special Area Plan (SAP) associated with fill removal would not expose sensitive receptors to substantial concentrations of toxic air contaminants or respirable particulate matter ($PM_{2.5}$). (Less than Significant)

Proposed amendments to the BCDC Special Area Plan (SAP) for the AC34 and Cruise Terminal projects that may be considered in BCDC's public process would include possible removal of fill within Port properties. These sites include dilapidated piers, wharfs, and remnant pilings that were constructed with creosote-treated wood that have no current maritime uses. Because the specific locations for the proposed future BCDC fill removal sites have not been confirmed, risks associated with a generic site were evaluated using the AERSCREEN model. The emissions were assumed to be similar to construction emissions for 1,200 feet of floating dock. Based on the screening analysis, the maximum risk found to be 8 in a million at a distance of approximately 5 meters from the source, which is less than 10 in a million. Maximum risks associated with the proposed future BCDC fill removal sites were found to be less than 10 in a million. It is important to note that these results are based on a screening-level analysis with conservative assumptions; more site specific data may reduce this risk estimate.

Impact Summary

Construction of the Cruise Terminal project would result in emissions of toxic air contaminants and respirable particulate matter ($PM_{2.5}$) that would be below BAAQMD significance thresholds, and therefore the impact on sensitive receptors would be *less than significant*.

Mitigation: Not required

Operational Impacts

Impact AQ-14: Operation of the James R. Herman Cruise Terminal and Northeast Wharf Plaza would not violate an air quality standard or contribute substantially to an existing or projected air quality violation. (Less than Significant)

Cruise terminal operations include cruise ship operations while in port, associated assist tug activity, transport of passengers to and from the terminal, and truck trips associated with delivery of supplies to the visiting ships. Cruise ship operations consist of transiting into the Bay, maneuvering to dockside (with tug assist), and hoteling while in port. Propulsion power from the ship's engines is required during transiting and maneuvering. No propulsion power is required while the ship is in port, but substantial amounts of electrical power are required to meet the hoteling load (for air conditioning, electrical needs, and other purposes). The required hoteling power can be generated using the ship's engines. Alternatively, shore power from the City's electrical grid can be used if the shore power hookup is available and the ship is fitted to use it. Shore power is currently available at Pier 27. Due to AC34 construction activities, this shore power hookup would not be available during 2012 and 2013 but would be available again starting in 2014. The loss of shoreside power during AC34 events was included in the emissions estimates for the AC34 project.

No changes in cruise ship operations described above are proposed as part of the project, other than the relocation of the cruise terminal from Pier 35 to Pier 27. In addition, the proposed project would include an upgrade to the current shoreside power at Pier 27 from 12 megawatts to 20 megawatts, such that, compared to existing conditions, not only would a greater number of ships use shoreside power when in port, but also larger ships would have the ability to use shoreside power when in port. Therefore, operational air quality impacts of the Cruise Terminal project would be *less than significant*.

Impact Summary

Operation of the Cruise Terminal project would result in continuation of emissions of criteria pollutants and ozone precursors associated with cruise ship operations at the existing cruise terminal. The proposed project would not result in an increase in ship calls and therefore would not result in a net increase in regional criteria air pollutant emissions. The proposed project would, however, increase the capability and percentage of ships using shoreside power for future cruise ship operations when in port, thereby reducing long-term air pollutant emissions. Thus, the operational impact of the project would be *less than significant*.

Mitigation: Not required

Impact AQ-15: Operation of the James R. Herman Cruise Terminal and Northeast Wharf Plaza would not expose sensitive receptors to substantial concentrations of toxic air contaminants or respirable particulate matter ($PM_{2.5}$). (Less than Significant)

Cruise terminal operations include cruise ship operations while in port, associated assist tug activity, transport of passengers to and from the terminal, and truck trips associated with delivery of supplies to the visiting ships. These activities require the operation of diesel engines, which would increase localized DPM and $PM_{2.5}$ concentrations at Pier 27 and reduce localized emissions at Pier 35. Although, the proposed project would not result in an increase in ship calls, moving operations to this site could increase localized concentrations of DPM and $PM_{2.5}$ for sensitive receptors located in the vicinity of Pier 27 (and a reduction in exposure of emissions for sensitive receptors located in the vicinity of Pier 35). Sensitive receptors at both cruise terminal locations are buffered by surrounding commercial and office land uses.

As discussed previously, the CARB implemented the Commercial Harbor Craft Regulation in January 2009 to reduce emissions of DPM and oxides of nitrogen (NOx) from diesel engines used on commercial harbor craft operated in California Regulated Waters. California Regulated Waters are all internal waters, estuarine waters, ports and coastal waters within 24 nautical miles of the California coast. The regulation includes requirements for new and in-use (existing) engines as well as monitoring, recordkeeping, and reporting requirements. These requirements will result in a gradual reduction in emissions associated with the cruise terminal and associated risk and hazards.

As summarized in **Table 5.8-11**, no risk thresholds would be exceeded at the resident-MEI as a result of emissions associated with operations at the cruise terminal.

The change in cruise-generated passenger vehicle traffic associated with the new terminal would largely consist of shifting the existing cruise terminal traffic to different roadway segments. The volume of traffic (assuming 80 calls per year and an estimated 3,000 trips per call) averages to 660 additional trips per day; the net new traffic would be less than 660 trips per day. This magnitude of additional daily traffic is much lower than the existing traffic volumes on affected roadways, such that there would be negligible increase in risks.

TABLE 5.8-11
MAXIMUM LIFETIME EXCESS CANCER RISK, CHRONIC AND ACUTE NON-CANCER HAZARD QUOTIENT, AND $PM_{2.5}$ CONCENTRATIONS FOR CRUISE TERMINAL

Endpoint	Cruise Terminal Operation	BAAQMD Threshold
Residential Receptors		
Lifetime Excess Cancer Risk	4.1	10
Chronic Hazard Index	0.001	1
Acute Hazard Index	0.2	1
$PM_{2.5}$ Concentration [$\mu g/m^3$]	0.01	0.3

NOTES:
BAAQMD = Bay Area Air Quality Management District; μg/m3 = micrograms per cubic meter; PM = particulate matter

SOURCE: ENVIRON, 2011

Impact Summary

Operations of the Cruise Terminal project would result in the relocation of emissions of toxic air contaminants and respirable particulate matter ($PM_{2.5}$) from Pier 35 to Pier 27. The relocated emissions associated with the cruise terminal operations would expose new sensitive receptors to toxic air contaminates and respirable particulate mater that would be below BAAQMD significance thresholds, and the impact on sensitive receptors in the vicinity of Pier 27 would be considered *less than significant*.

Mitigation: Not required

Impact AQ-16: Construction and operation of the James R. Herman Cruise Terminal and Northeast Wharf Plaza would not conflict with or obstruct implementation of applicable air quality plans. (Less than Significant)

The current BAAQMD three-step methodology for determining a project's consistency with the current CAP was outlined in Impact AQ-7. If the responses to three specific questions can be concluded in the affirmative, then BAAQMD considers the project to be consistent with air quality plans prepared for the Bay Area.

The first question to be assessed in this methodology is "does the project support the goals of the Air Quality Plan?" Currently, the "Air Quality Plan" is considered to be the 2010 CAP. The proposed Cruise Terminal project would result in short-term construction-related criteria air pollutant emissions. However, these emissions would be relatively minor and limited to the project's construction period. The proposed project would not result in an increase in operational criteria pollutants, but existing sources of air pollutants would be relocated from Pier 35 to Pier 27, resulting in a decrease in localized health risks for sensitive receptors located in the vicinity of the existing cruise terminal location and an equivalent increase in health risks for sensitive receptors in the vicinity of Pier 27. Increased emissions associated with the proposed project would be related primarily to temporary construction impacts. As the proposed project would not result in a substantial, long-term increase in emissions, the project would be considered to support the primary goals of the 2010 CAP and would be considered to consistent with the 2010 CAP.

The second question to be assessed in this consistency methodology is "does the project include applicable control measures from the CAP?" The 2010 CAP contains 55 control measures aimed at reducing air pollution in the Bay Area. Projects that incorporate all feasible air quality plan control measures are considered consistent with the CAP.

With regard to implementation of Transportation Control Measures, the *San Francisco General Plan*, San Francisco Planning Code, and City Charter implement various Transportation Control Measures identified in the 2010 CAP through the City's Transit First Program, transit development impact fees applicable to commercial uses, and other actions. Additionally, cruise

passengers, the majority of whom would not be local residents, would overwhelmingly use public transit within the city. In light of the above, the project would be considered to implement all feasible CAP control measures.

The third question to be assessed in this consistency methodology is "does the project disrupt or hinder implementation of any control measures from the CAP?" Examples of how a project may cause the disruption or delay of control measures include projects that would preclude the extension of a transit line or bike path, or projects that propose excessive parking beyond parking requirements. The cruise terminal and wharf plaza would be located along the waterfront shoreline and would not preclude the extension of either transit or a bike path. There is existing bus service and F-Line streetcar service existing in front of the project site. The Embarcadero promenade, which adjoins the project site, allows for bicycle travel. The majority of cruise passengers would not be local residents and would overwhelmingly use public transit within the city. Therefore, the Cruise Terminal project would not hinder implementation of the 2010 CAP.

For the reasons described above, the Cruise Terminal project would be considered consistent with the 2010 CAP. Therefore, the project's impact relative to the goals of the 2010 CAP would be *less than significant*.

Impact Summary

The Cruise Terminal project would be consistent with the applicable air quality plan (2010 Clean Air Plan) based on the criteria set forth by the BAAQMD. Therefore, the project's impact with respect to conflicting or obstructing in implementation of the 2010 CAP would be *less than significant*.

Mitigation: Not required

Impact AQ-17: Construction and operation of the James R. Herman Cruise Terminal and Northeast Wharf Plaza would not create objectionable odors affecting a substantial number of people. (Less than Significant)

Cruise terminal workers and passengers as well as visitors to the Northeast Wharf Plaza would not be considered sensitive receptors with regard to existing odor sources along the waterfront. The BAAQMD identifies odor sources as including such land uses as wastewater treatment plants, landfills, confined animal facilities, composting stations, food manufacturing plants, refineries, and chemical plants. Of these sources, the only such land use to exist along or near the northern or northeast waterfronts would be the North Point Wet Weather Facility at The Embarcadero and Bay Street. This facility does not handle sewage but provides primary treatment of water collected during rainstorms in the north part of San Francisco[39] and would not be a source of odors.

[39] http://sfwater.org/mto_main.cfm/MC_ID/14/MSC_ID/117/MTO_ID/225

Construction of the remainder of the cruise terminal and the wharf plaza would require the use of a modest amount of diesel-powered equipment that may have an odiferous component. Diesel equipment emissions would be temporary, would occur during daytime hours, and would be located at the shoreline and downwind of sensitive receptors. The emissions therefore would be unlikely to result in nuisance odor impacts.

The Pier 27 cruise terminal (which currently receives a percentage of incoming cruise ship calls) and wharf plaza are not land uses typically associated with odor generation and would have a less-than-significant impact with regard to generation of objectionable odors affecting a substantial number of people.

Impact Summary

The Cruise Terminal project would not be sensitive receptors or generators of odor emissions, and the impact with regard to generation of objectionable odors affecting a substantial number of people would be *less than significant*.

Mitigation: Not required

Impact AQ-18: Operation of the James R. Herman Cruise Terminal and Northeast Wharf Plaza would not result in carbon monoxide concentrations in excess of state or federal standards. (Less than Significant)

The cruise terminal would generate vehicle trips that may result in localized increases in traffic volumes that could potentially congest intersections. The BAAQMD *CEQA Air Quality Guidelines* provide screening criteria for assessing potential CO impacts. A proposed project would result in a less-than-significant impact on localized CO concentrations if it is consistent with the County's congestion management program and would not increase traffic volumes at any intersection to 44,000 vehicles per hour or 24,000 vehicles per hour in a tunnel or urban canyon created by buildings.

The *San Francisco General Plan*, San Francisco Planning Code, and City Charter implement various Transportation Control Measures identified in the 2010 CAP through the City's Transit First Program, bicycle parking requirements, transit development impact fees applicable to commercial uses, and other actions. Implementation of these plans would ensure the project's consistency with congestion management efforts within the city.

The intersection with the highest approach volume for any scenario in the transportation analysis is The Embarcadero at Mission Street, for which the peak hourly intersection approach volume is 4,158 vehicles. Because this volume is substantially less than even the most stringent criterion (24,000 vehicles per hour), CO concentrations are considered to be less than significant.

Cruise ships would also be a source of CO emissions during maneuvering and idling. Given the fact that shoreside power is not available at the existing Pier 35 terminal, relocating ship emissions to Pier 27 where shoreside power would be available would result in an overall reduction in CO emissions and localized concentrations of CO.

Impact Summary

The analysis in Section 5.6, Transportation and Circulation, indicates that intersection volumes at all intersections analyzed would be less than 24,000 vehicles per hour. Additionally, the project would be considered consistent with the County's Congestion Management Plan by implementing the City's Transit First Program, bicycle parking requirements, transit development impact fees applicable to commercial uses, and other actions. CO emissions from cruise ship operations would likely decrease with implementation of the project's proposed upgrade to the shoreside power at Pier 27. Therefore, the project's CO impact would be *less than significant*.

Mitigation: Not required

Pier 27 Shed Variant

A project variant was evaluated under which construction of the Pier 27 cruise terminal would not be completed until after the end of the 2014 cruise season. Under this variant, AC34 construction at Pier 27 would include only construction of temporary floating docks and other features as needed for the race and demolition of all or part of the existing Pier 27 shed. Construction of the new cruise terminal would occur after the race is completed, i.e., in late 2013 through 2014. Thus, shore power would not be available at Pier 27 from 2012 through 2014, adding to the incremental construction-related emissions of the project. Air quality impacts under this variant are attributable to both the AC34 and Cruise Terminal projects and are therefore presented separately.

This evaluation focuses on construction impacts associated with this variant, as operational impacts would be the same as those described for the proposed Cruise Terminal project. Additionally, construction under this variant would be required to comply with the Construction Dust Control Ordinance, and construction-related fugitive dust impacts would also be the same as those described for the proposed Cruise Terminal project.

Impact AQ-19: Construction of the Pier 27 Shed Variant would result in emission of criteria pollutants and precursors that would violate an air quality standard or contribute substantially to an existing or projected air quality violation. (Significant and Unavoidable with Mitigation)

Construction-related criteria air pollutant emissions resulting from the AC34 event construction emissions under this project variant are shown in **Table 5.8-12**. These emissions also assume the

TABLE 5.8-12
AC34 AVERAGE DAILY CONSTRUCTION-RELATED EMISSIONS
UNDER THE PIER 27 SHED VARIANT

	Average Daily Emissions (pounds/day)			
	ROG	**NOx**	**PM10**	**PM2.5**
Cruise Terminal Phase 1				
Demolition at Piers 27-29	0.2	1	0	0
AC34 Race				
AC34 race construction	8	66	3	3
Temporary decommissioning of shoreside power; 2013	3	78	1	1
Total	11	146	5	5
BAAQMD Threshold	54	54	82	54
Above Threshold?	No	Yes	No	No

SOURCE: ENVIRON, 2011

loss of shoreside power for one year as the result of AC34 event operations. Similar to the proposed project, average daily NOx emissions would exceed the BAAQMD threshold of significance.

Cruise terminal construction emissions under this project variant are shown in **Table 5.8-13**. These emissions also assume the loss of shoreside power for two years as the result of delayed construction of the cruise terminal. Average daily NOx emissions would also exceed the BAAQMD threshold of significance.

TABLE 5.8-13
CRUISE TERMINAL AND NORTHEAST WHARF PLAZA
AVERAGE DAILY CONSTRUCTION-RELATED EMISSIONS
UNDER THE PIER 27 SHED VARIANT

	Average Daily Emissions (pounds/day)			
	ROG	**NOx**	**PM10**	**PM2.5**
Cruise Terminal Phase 2				
Shell construction at Piers 27-29	23	127	9	9
Building interior construction	18	32	2	2
Shoreside power temporary decommissioning 2014	4	114	2	2
Total	45	273	13	13
BAAQMD Threshold	54	54	82	54
Above Threshold?	No	Yes	No	No

SOURCE: ENVIRON, 2011; ESA 2011

Impact Summary

Under the Pier 27 Shed Variant, construction activities would result in emission of NOx that would exceed the BAAQMD thresholds of significance for NOx. Implementation of **Mitigation Measures M-AQ-2a** (Construction Vehicle Emissions Minimization) **and M-AQ-2b** (Off-Road Construction Equipment) and the Clean Construction Ordinance would reduce construction exhaust emissions, but as discussed above under Impact AQ-2, implementation of these measures may not be feasible. Therefore, this impact would be *significant and unavoidable with mitigation*.

> **Mitigation Measure M-AQ-2a: Construction Vehicle Emissions Minimization** (see above)
>
> **Mitigation Measure M-AQ-2b: Off-Road Construction Equipment** (see above)

Impact AQ-20: Construction of Pier 27 Shed Variant would expose sensitive receptors to substantial concentrations of toxic air contaminants or respirable particulate matter ($PM_{2.5}$). (Significant and Unavoidable with Mitigation)

For the Pier 27 Shed Variant, construction impacts were evaluated assuming all cruise terminal construction (including the construction of the cold shell) would occur after the AC34 events. A two year delay in cruise terminal construction will result in a marginal decrease in emissions due to improvements of the construction equipment inventory, these marginally reductions would not result in a quantitative reduction in the risk estimated in Table 3.8-6 for construction of the "cold shell" of the terminal building. While the sum of maximum cancer risks and sum of incremental $PM_{2.5}$ concentrations for AC34 construction and cruise terminal construction would be below their respective thresholds, the acute health index for acrolein would continue to be significant and unavoidable.

The additional year of shore side power decommissioning that would occur in this variant would result in an additional localized cancer risk of 0.63 in one million, an acute HI of 0.25, a chronic HI of 0.001, and $PM_{2.5}$ concentrations of 0.008, which by themselves would be below the BAAQMD's project level thresholds at the maximally exposed sensitive receptor. Even with implementation of **Mitigation Measure M-AQ-2a** (Construction Vehicle Emissions Minimization) and **Mitigation Measure M-AQ-2b** (Off-Road Construction Equipment), this variant would result in an incremental increase in the acute hazard index compared to the proposed AC34 and Cruise Terminal projects which would further exceed the acute health index threshold of 1. Therefore, this impact would be *significant and unavoidable.*

> **Mitigation Measure M-AQ-2a**: **Construction Vehicle Emissions Minimization** (see above)
>
> **Mitigation Measure M-AQ-2b: Off-Road Construction Equipment** (see above)

5.8.3.4 Future Long-Term Development Impacts and Mitigation Measures

Impact LT-AQ: Long-term development on Port properties under the Host Agreement could result in construction and operational air pollutant emissions. (Significant and Unavoidable with Mitigation)

The Host Agreement specifies that in compensation for infrastructure investment by the Event Authority, the City shall enter into Disposition and Development Agreements with the Event Authority, under which the City would lease to the Authority Piers 30-32 for a term of 66 years, and Seawall Lot 330 for a term of 75 years, and when conditions are satisfied, transfer fee title of Seawall Lot 330 to the Event Authority. In addition, the Host Agreement includes provisions that could lead to negotiations for long-term use of Piers 19, 23, 26, 28, and 29 as well as the open water basins at Rincon Point and Brannan Street Wharf after conclusion of the AC34 race events.

The Host Agreement directs that any such future development plans and uses allowed under the Transfer Agreement would be required to undergo environmental review to comply with CEQA when site-specific development program details are proposed. Because site-specific development projects are yet to be proposed, impacts associated with these future development rights are analyzed conceptually. As described in Chapter 3, potential development of the sites could include a variety of land uses for seven pier locations and a 250-unit residential building at Seawall Lot 330, totaling approximately 1.4 million square feet of development.

In addition, the Rincon Point Open Water Basin at Piers 14-22½ and the Brannan Street Wharf Open Water Basin at Piers 32-36 may be proposed for recreational marinas as part of future long-term development proposals. Marinas typically involve a range of waterside facilities, including breakwaters or other barriers to attenuate waves, piers and/or floating docks for boat berthing, gangways and other pedestrian access facilities, and boat launch ramps, and would require dredging. Any future marina proposal(s) would require detailed design studies and future project-specific environmental review and permitting.

To assess potential impacts of long-term development uses under the Host Agreement, each potential land use was compared, relative to its size, to screening criteria developed by the BAAQMD for determining potential construction-related and operational criteria pollutant impacts. For risk and hazard impacts, BAAQMD screening distances for construction health risk were used along with a conservative estimate of the distance to the nearest sensitive receptor. Operational risk and hazard impacts were estimated based on a likelihood of the proposed use requiring a stationary source (such as a generator) and the distance to sensitive receptors. Seawall Lot 330 is proposed for residential use, which would be a sensitive receptor in an area of high traffic volumes and is therefore conservatively identified as having a potentially significant air quality impact with regard to exposure of persons to substantial pollutant concentrations. The results of this comparison are presented below in **Table 5.8-14**.

As can be seen from this table, construction-related criteria pollutant impacts would be potentially significant for development proposed for Piers 30-32, Seawall Lot 330, and potentially the proposed maritime uses at Pier 19½ and the open water basins. Because construction of

TABLE 5.8-14
SCREENING LEVEL CRITERIA POLLUTANT IMPACT ESTIMATES FOR LONG-TERM DEVELOPMENT USES UNDER THE HOST AGREEMENT

Site	Residential	Retail / Commercial	Office (Maritime or General)	Entertainment & Assembly / Commercial	Maritime	Exceeds Construction/ Operational Impact Screening Criteria for Criteria Pollutants?	Exceeds Construction/ Operational Impact Screening Criteria for Risks and Hazards?
Landside Development (Square Feet)							
Pier 26[a]		15,000		60,000		No/No	No/No
Pier 28[b]		6,700	76,000	37,000		No/No	No/No
Piers 30–32[c]		220,000	370,000	20,000	Cruise Ship Berth(s)	Yes/Yes	Yes/Yes
Seawall Lot 330	250					Yes/No	Yes/Yes
Pier 19		6,700		73,000		No/No	No/No
Pier 19½					50,000[d]	Unknown/No	No/Yes
Pier 23		6,700	87,000	37,000		No/No	No/No
Pier 29		6,700		37,000		No/No	No/No
Waterside Development							
Brannan Street Wharf Open Water Basin[e]					12 acres of Marina (950'x550')	Unknown/No	Yes/Yes
Rincon Point Open Water Basin					23 acres of Marina (750'x1350')	Unknown/No	No/Yes

NOTES:
[a] Use is predominantly entertainment/assembly. Therefore, total area is compared to screening criteria for "place of worship," which is the closest land use type and which also would generate an assembly of persons in bulk for a given event.
[b] Use is predominantly office and compared to screening criteria for "general office" land use.
[c] Uses are primarily a mix of commercial and office. Therefore, total area is compared to the more stringent screening criteria for commercial uses.
[d] Assumes sightseeing (non-commuter) ferry use, which is not in screening table. However, using the Institute of Transportation Engineers (ITE) trip generation rate of 20.93 daily trips per acre for marina land uses indicates that operational criteria pollutant emissions would likely be less than significant.
[e] Assumes the ITE trip generation rate of 20.93 daily trips per acre for marina land uses, resulting in 251 trips per day.

SOURCE: ESA 2011

marinas may require dredging and use of tug boats and other non-standardized equipment, use of screening tables or URBEMIS modeling to estimate construction emissions would not produce accurate results, particularly without project-specific information. The only long-term development use likely to result in significant criteria air pollutant impact from operational emissions would be the office and retail uses at Piers 30-32. These screening criteria are based on emission levels that BAAQMD identifies as a cumulatively considerable contribution, and may be used to assess cumulative criteria air pollutant impacts as well as project-level impacts.

All of the potential sites for long-term development are located in proximity to sensitive receptors, which consist primarily of adjacent or nearby residential uses. Specifically, Piers 30-32, Seawall Lot 330, and the Pier 32-36 future marina would be within 100 meters of a sensitive receptor, and given the size of these building sites, would be within screening distances that trigger analysis of potential construction-related risk and hazard impacts. It is also reasonable to assume that cruise ship use and a residential tower may require an emergency standby generator that would be a potential source of DPM emissions and have associated risk and hazard impacts. Marina uses may also include fueling tanks that can be with a source of emissions, depending on the fuel.

There is also a relatively high amount of stationary sources of hazardous emissions in the Northeast Waterfront area (see Section 5.8.3.6, Cumulative Impacts). Therefore, the introduction of sensitive receptors in this area at Seawall Lot 330 would have the potential to result in significant cumulative risk and hazard impacts as well as project-level risk and hazard impacts.

With respect to long-term impacts, the potential development of over 1.3 million square feet of residential, retail/commercial, office (maritime or general), and entertainment and assembly/commercial uses at Port properties identified in the Host Agreement (see Chapter 3) would be expected to generate vehicle trips that would have the potential to increase criteria air pollutants. Development of 610,000 square feet of commercial/retail land uses at Piers 30-32 would potentially result in a significant air quality impacts from mobile emissions of criteria air pollutants. Thus, in the absence of specific development proposals for any of the sites listed in Table 5.8-13, the analysis of long-term development options based on BAAQMD screening criteria indicates that air quality impacts would exceed BAAQMD significance thresholds and would therefore be considered significant. The feasibility or effectiveness of mitigation measures identified below is unknown at this time; therefore, the air quality impacts associated with long-term development would be considered *significant and unavoidable with mitigation*.

Potential development of new land uses at Port properties identified in the Host Agreement would generate vehicle trips that may result in localized increases in traffic volumes that could congest intersections. Under BAAQMD *CEQA Air Quality Guidelines* screening criteria for assessing potential CO impacts, a project would result in a less-than-significant impact on localized CO concentrations if it is consistent with the County's Congestion Management Program and would not increase traffic volumes at any intersection to 24,000 vehicles per hour. Cumulative (Year 2030) traffic data for the project area indicate that the maximum peak hourly intersection approach volume is 4,158 vehicles. It is reasonable to assume that development of these Host Agreement properties would not result in even a doubling of traffic volumes at the busiest intersections and that localized CO concentrations at the busiest intersections would remain below state and federal standards and have a less-than-significant air quality impact with respect to localized CO concentrations.

Development types proposed at Port properties identified in the Host Agreement are not those identified by BAAQMD as those typically associated with generation of odors (e.g., wastewater treatment plants, landfills), and odor generation impacts would not be considered a potential impact of this potential development. As discussed in Impact AQ-15, there are no substantial

existing odor sources in this area, and the introduction of sensitive receptors in this area at Seawall Lot 330 would have a less than significant air quality impact with respect to odor impacts to new receptors.

Each of the development projects to occur at Port properties identified in the Host Agreement would undergo a separate environmental analysis under CEQA and would have to demonstrate consistency with the Clean Air Plan (CAP) in effect at the time. Currently, such a consistency determination requires an assessment of whether a project supports the goals of the 2010 CAP, whether the project includes applicable control measures from the CAP, and whether the project would disrupt or hinder implementation of any control measures from the CAP. The CAP is an evolving document that is likely to include new control measures in future iterations; therefore, consistency would need to be evaluated at the time of each proposal. Additionally as there are no project-specific details, it cannot be determined what, if any, applicable control measures are proposed. Given this lack of specificity, this analysis of long-term development options identifies a *potentially significant* impact with regard to conflicting with or obstructing implementation of the CAP.

Mitigation Measure M-LT-AQ: Future Long-Term Development Air Quality Mitigation

Motor Vehicle Trip Reduction. Potential operational criteria pollutant impacts identified for Piers 30-32 are based on default trip generation numbers associated with land uses embedded in emissions models used by the BAAQMD. These trip generation estimates do not reflect the high availability of transit in San Francisco or the City's Transit First Program. This potential impact may be mitigated by existing efforts of the City to reduce vehicle travel and may be further mitigated by implementation of transportation demand measures. Transportation demand management strategies that may be incorporated as mitigation include those identified in Section 5.6, Transportation and Circulation, of this EIR.

Construction Criteria Pollutant and Health Risk Controls. Criteria pollutant emissions from construction activities may include use of Tier 3 and Tier 4 construction equipment, which will be more widely available in future years.

Appropriate mitigation measures shall be identified to incorporate into the construction specifications to reduce construction vehicle emissions. Examples of mitigation measures that might be incorporated into construction specifications could include the following:

- For projects between 2011 and 2015, use Tier 3 equipment with best available control technology where feasible. For projects conducted after 2015, use Tier 4 equipment or interim Tier 4 equipment equipped with best available control technology where such equipment exists.
- Use temporary power provided by the local utility provide instead of diesel generators; where it is not possible to plug into the electric grid, use Tier 3 diesel generators and air compressors.
- Use concrete batched from local plants to limit concrete trucks' travel time and the amount of diesel exhaust emitted.

- Minimize idling times by either shutting equipment and vehicles off when not in use or limiting the maximum idling time to 5 minutes or less (as required by the California airborne toxics control measure, Title 13, Section 2485 of California Code of Regulations [CCR]). Provide clear signage of idling rules for construction workers at all access points.

- Use on-road haul trucks model year 2007 or later.

- Maintain and properly tune construction equipment in accordance with manufacturer's specifications. Have all equipment checked by a certified mechanic to determine that equipment is running in proper condition prior to operation.

Operational Risk and Hazard Reduction for New Stationary Sources. Reduction in operational risks and hazards from new stationary sources (namely required emergency/standby generators) may be reduced by implementation of best available control technology for toxic air contaminants (TBACT) on new stationary sources, which is required for all new stationary sources that would exceed the threshold cancer risk increase of 10 in one million. To the extent feasible, generators with Tier 4 compliant engines may be implemented to achieve a reduction in DPM emissions of 80 to 90 percent.

Operational Risk and Hazards for New Sensitive Receptors. For the potential operational impacts on residents of the proposed dwelling units at Seawall Lot 330, available mitigation may include building design and ventilation requirements. Article 38 of the San Francisco Health Code requires that proposed residential projects located near high-volume roadways be subject to air quality modeling conducted to determine if annual average concentrations of $PM_{2.5}$ from roadway sources within 500 feet of a project site would exceed a concentration of 0.2 micrograms per cubic meter (annual average). If this standard is exceeded, Article 38 requires that the project applicant design the project to minimize air pollutants indoors or install a filtered air supply system, with high-efficiency filters. An example of such requirements may include the following:

- The project sponsor shall submit a ventilation plan for the proposed buildings. The ventilation plan shall show that the building ventilation systems remove at least 80 percent of the PM2.5 pollutants from habitable areas. The ventilation system shall be designed by an engineer certified by the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE). The engineer shall provide a written report documenting that the system offers the best available technology to minimize outdoor to indoor transmission of air pollution. In addition to installation of an air filtration system, the project sponsor shall present a plan that ensures ongoing maintenance for the ventilation and filtration systems. The project sponsor shall also ensure the disclosure to buyers and renters regarding the findings of the analysis and inform occupant's proper use of any installed air filtration system.

5.8.3.5 Cumulative Impacts

America's Cup

Impact C-AQ-1: The proposed AC34 project, in combination with other past, present, and reasonably foreseeable future projects, would result in significant adverse cumulative impacts on air quality. (Significant and Unavoidable with Mitigation)

Cumulative Construction Impacts

Criteria Air Pollutants and Precursors. As indicated in Table 5.1-3, several other construction projects are likely to occur in the vicinity of the AC34 project sites. Construction emissions from the proposed projects in combination with emission from those projects listed on Table 5.1-3 in the project vicinity with overlapping construction schedules would result in a cumulative, construction-related air quality impact. Projects that would have a high likelihood of occurring simultaneously with AC34 project construction would include Pier 36/Brannan Street Wharf, Downtown Ferry Terminal Project, and improvement projects at Pier 24, Pier 22½, Piers 15 and 17, Piers 19 through 23, and Piers 31-33.

Construction-related criteria pollutant impacts of the AC34 events were quantified in Impact AQ-2 and would exceed the thresholds established by BAAQMD to identify a cumulatively considerable contribution to air quality impacts. Therefore, given the air basin's nonattainment status relative to ozone and PM_{10} and $PM_{2.5}$, construction-related emissions of criteria pollutants from AC34 improvements would be considered a *significant* cumulative air quality impact.

Toxic Air Contaminants and Respirable Particulate Matter. Construction projects that would have a high likelihood of occurring simultaneously with AC34 project construction would include Pier 36/Brannan Street Wharf, Downtown Ferry Terminal Project, and improvement projects at Pier 24, Pier 22½, Piers 15 and 17, Piers 19 through 23, and Piers 31-33. Specifically, localized construction-related health risk and hazard impacts of Pier 36/Brannan Street Wharf were also determined in its associated EIR to be significant and unavoidable. Consequently, construction emissions of the AC34 project would have the potential to further contribute to this significant impact.

Construction of the AC34 facilities would result in an increase in the acute hazard index above the BAAQMD's project-level threshold of 1.0. The project alone would increase the acute hazard index to 10. Other nearby sources may also result in acute risks that together would exceed the cumulative acute hazard index of 10. The proposed project's contribution to significant acute risks would be cumulatively considerable. These risks would be reduced by implementation of **Mitigation Measures M-AQ-2a** (Construction Vehicle Emissions Minimization) and **M-AQ2b** (Off-Road Construction Equipment), but emissions from construction activities associated with AC34 would not be anticipated to be reduced below the project-level thresholds, resulting in a considerable contribution to a significant and unavoidable cumulative health risk impact.

Given the proximity of the Pier 30-32 America's Cup facility improvements to the Pier 36/ Brannan Street Wharf project site and health risk associated with The Embarcadero roadway, there is the potential that cumulative construction emissions would exceed the BAAQMD's significance criteria for cumulative impacts, which are 100 in one million cancer risk, non-cancer hazard index of 10, and a $PM_{2.5}$ concentration of 0.8 micrograms per cubic meter. Therefore, the proposed AC34 project could result in a cumulatively considerable contribution to localized health risk and hazard impacts, resulting in *a significant and unavoidable* cumulative air quality impact.

Cumulative Operational Impacts

Criteria Air Pollutants and Precursors. Similarly, operational emissions from the proposed AC34 project would combine with emission from those projects listed on Table 5.1-3 in the project vicinity and result in a cumulative, operational air quality impact. Specifically, development projects such as the Exploratorium relocation, 8 Washington Street, 921 Front Street, and 717 Battery Street would result in generation of substantial new vehicle trips in the project vicinity. Even though temporary AC34 operational emissions would occur in 2012 and 2013, operational emissions quantified in Impact AQ-4 would exceed the thresholds established by the BAAQMD to identify a cumulatively considerable contribution to air quality. Therefore, given the air basins nonattainment status relative to ozone and PM_{10} and $PM_{2.5}$, operational emissions of criteria pollutants would be considered a *significant* cumulative air quality impact.

Toxic Air Contaminants and Respirable Particulate Matter. There are multiple types of sources within a 1,000-foot boundary around the project area to be considered when evaluating cumulative health risk impacts on offsite receptors. These sources include onsite and offsite stationary sources, roadways, and ferry terminal operations. The highest cancer risk for an offsite sensitive receptor from AC34 operations is 21 in one million (21 in one million for the highest resident risk within the study boundary). According to stationary source screening health risk data provided by the BAAQMD, there are more than 113 stationary sources in the cumulative risk study area with non-zero risks of up to 671 in one million. These sources are scattered in clusters throughout the cumulative risk study area, such that no one receptor is within 1,000 feet of all stationary sources. At least 75 sources have screening risks exceeding 10 in one million (including 8 that exceed the cumulative threshold of 100 in one million), of which approximately 68 sources are listed as diesel emergency generators. Although the BAAQMD provides a screening method for scaling risk contributions from diesel generators by distance, many offsite stationary sources are situated in clusters adjacent or close to residential receptors such that distance attenuation would likely not decrease their individual risks below 10 in one million. As a result, there are several locations where risk from stationary sources alone would exceed the 100 in one million cumulative risk threshold.

According to a cumulative risk evaluation conducted for a concurrent nearby development project at 8 Washington Street,[40] risk associated with existing roadway traffic in the vicinity of

[40] Case Number 2007.0030E, *8 Washington Street Draft Environmental Impact Report*, available at http://www.sf-planning.org/

both the 8 Washington Street and AC34 projects is on the order of 71 in one million, including a 58 in one million risk from traffic along The Embarcadero alone. Additionally, risk from ferry operations was estimated to range from 2 to 30 in one million based on a comparative analysis of other ferry and port studies. The sum of the risks associated with roadway emissions (71 in one million), stationary sources (greater than 100 in one million) and project contribution of AC34 operations (21 in one million), would exceed the 100 in one million increased cancer risk significance criteria of the BAAQMD. Given that the proposed project would result in an operational increased cancer risk exceeding the project-level threshold of 10 in one million, the AC34 project would result in a cumulatively considerable contribution to localized health risk and hazard impacts, resulting in a *significant and unavoidable* cumulative air quality impact.

Cumulative Air Quality Impact Summary

The proposed AC34 project would result in both construction-related and operational cumulative air quality impacts with regard to regional emissions of criteria pollutants and their precursors in an air basin designated as nonattainment for ozone and particulate matter. Emissions of ROG, NOx, $PM_{10,}$ and $PM_{2.5}$ would all exceed significance thresholds established by the BAAQMD to identify a cumulatively considerable contribution to air quality impacts in the region. These cumulative criteria pollutant impacts would be *significant and unavoidable*.

The proposed AC34 project would result in both construction-related and operational cumulative air quality impacts with regard to localized emissions that would increase cancer risks, health indices, and concentrations of $PM_{2.5}$. These emissions, when combined with other emissions in the project areas, would exceed the 100 in a million cumulative operational risk threshold and result in a significant cumulative impact with regard to local risks and hazards.

Mitigation measures for cumulative impacts would be the same as those identified for significant unavoidable Impacts AQ-2, AQ,-4, and AQ-5. Although AC34 events would be temporary, they are identified as contributing to a significant cumulative air quality operational impact.

Mitigation Measure M-AQ-2a: Construction Vehicle Emissions Minimization (see above)

Mitigation Measure M-AQ-2b: Off-Road Construction Equipment (see above)

Mitigation Measure M-AQ-4: Emission Controls for Race-Sponsored Spectator Vessels (see above)

Mitigation Measure M-AQ-5: Clean Diesel Engines for Temporary Power (see above)

James R. Herman Cruise Terminal and Northeast Wharf Plaza

Impact C-AQ-2: The proposed Cruise Terminal project, in combination with other past, present, and reasonably foreseeable future projects, would result in significant adverse cumulative impacts on air quality. (Significant and Unavoidable with Mitigation)

Cumulative Construction Impacts

Criteria Air Pollutants and Precursors. As indicated in Table 5.1-3, several other construction projects are likely to occur in the vicinity of Pier 27, the proposed cruise terminal site. Construction emissions from the proposed projects in combination with emissions from those projects listed on Table 5.1-3 in the project vicinity with overlapping construction schedules would result in a cumulative, construction-related air quality impact. Projects that would have a high likelihood of occurring simultaneously with Cruise Terminal project construction would include Pier 36/Brannan Street Wharf, Downtown Ferry Terminal Project, and improvement projects at Pier 24, Pier 22½, Piers 15 and 17, Piers 19 through 23, and Piers 31-33.

Construction-related criteria pollutant impacts of the James R. Herman Cruise Terminal and Northeast Wharf Plaza were quantified in Impact AQ-10 and Table 5.8-9 and would exceed the NOx threshold established by the BAAQMD to identify a cumulatively considerable contribution to air quality impacts, primarily as the result of the decommissioning of shoreside power for which no mitigation is available. Therefore, construction-related emissions of criteria pollutants from the James R. Herman Cruise Terminal and Northeast Wharf Plaza would be considered a - significant cumulative air quality impact.

Toxic Air Contaminants and Respirable Particulate Matter. Nearby construction projects that would have a potential likelihood of occurring simultaneously with Cruise Terminal project construction would include improvement projects at Piers 15 and 17, Piers 19 through 23, and Piers 31-33.

Construction-related health risk and hazard impacts of the Cruise Terminal project were quantified in Impact AQ-11. Cruise terminal construction would not exceed the BAAQMD's project-level thresholds and would therefore not result in a considerable contribution to cumulative health risks. The cruise terminal's construction emissions would be less than cumulatively considerable.

Cumulative Operational Impacts

Criteria Air Pollutants and Precursors. Operational emissions from the proposed Cruise Terminal project would combine with emissions from those projects listed on Table 5.1-3 in the project vicinity. Development projects such as the Exploratorium relocation, 8 Washington Street, 921 Front Street, and 717 Battery Street would result in generation of substantial new vehicle trips in the project vicinity.

Long-term operational emissions associated with the cruise terminal were analyzed for informational purposes about future air quality conditions at the project site. The following

analysis was performed to compare future air pollutant emissions with current conditions. As stated in Chapter 3, Project Description, up to 80 cruise ship calls per year occur between Pier 35 and Pier 27 under existing conditions. The proposed Cruise Terminal project would not result in an increase in cruise ship calls. Future year emissions were estimated based on an assumed level of up to 80 calls per year (see Chapter 3), which is within the upper range of historical call rates at the Port over the past decade. Although ship calls are not projected to increase, average ship size will increase, resulting in somewhat larger passenger volumes; this future condition would occur regardless of the proposed project. With completion of the Pier 27 cruise terminal and returned availability of the shore power hookup in time for the 2014 cruise season, Pier 27 would become the primary cruise ship destination with ships going to Pier 35 only when Pier 27 is unavailable, e.g., when two ships are visiting at the same time. As required under the CARB's shore power regulation, an increasing percentage of visiting ships will make use of the shore power facility, thus resulting in an overall reduction in emissions in future years.

Cruise terminal operation baseline (2011) emissions and annual emissions for 2014 of criteria and precursor pollutants (ROG, CO, NOx, PM_{10}, DPM, and $PM_{2.5}$) were estimated using procedures and assumptions described in Section 5.8.3.2, Approach to Analysis. Average daily and maximum annual emissions are compared with the 2011 baseline emissions in **Table 5.8-15**. Average daily emissions were calculated by dividing annual total emissions by the number of days with cruise ship visits. Maximum annual emissions are estimated to occur in 2014; emissions after 2014 would be lower as the percentage of ships using shore power increases and as turnover of vessels and engines occur and are replaced by new engines meeting more stringent emissions standards. Average daily incremental emissions and maximum annual incremental emissions would decrease for PM_{10} and $PM_{2.5}$ emissions, but would increase slightly for ROG and NOx due to a conservative assumption of increased percentage of diesel electric engines in 2014. Cruise ship emissions are expected to decline in future years as new, more efficient and lower emitting ships are placed into service. New U.S.-flagged vessels are subject to U.S. EPA new engine regulations, but a majority of cruise ships berthing in San Francisco are foreign-flagged and subject to international regulations. With establishment of the North America Emission Control Area under international regulations, NOx emissions will need to meet U.S. EPA Tier 3 standards starting 2016. Additionally, the percentage of the fleet that will be equipped to accommodate shore power will increase over time. This annual emission rate of ROG and NOx would be expected to be reduced in future years subsequent to 2014, eventually reaching a less-than-significant level. Therefore, feasible mitigation is implemented through regulatory controls.

Toxic Air Contaminants and Respirable Particulate Matter. Types of sources within a 1,000-foot boundary around the Cruise Terminal project site include onsite and offsite stationary sources and roadways, as well as contributions of the cruise terminal itself. The highest cancer risk for offsite sensitive receptor from cruise terminal operations is 4.1 in one million. According to stationary source screening health risk data provided by the BAAQMD, there are five stationary sources in the cumulative risk study area with non-zero risks of up to 671 in one million. These sources are scattered throughout the cumulative risk study area, such that no one receptor is within 1,000 feet of all stationary sources. At least three sources have screening risks exceeding

TABLE 5.8-15
CRUISE TERMINAL OPERATIONS AVERAGE DAILY AND MAXIMUM ANNUAL BASELINE AND FUTURE (2014) EMISSIONS

	Average Daily Emissions (pounds/day)			
	ROG	**NOx**	**PM10**	**PM2.5**
Cruise Terminal				
Total 2014	262	5,920	115	106
Total 2011 (Baseline Year)	254	5,656	166	153
Difference	8	264	-51	-47

	Maximum Annual Emissions (tons/year)			
	ROG	**NOx**	**PM10**	**PM2.5**
Cruise Terminal				
Total 2014	10	222	4	4
Total 2011 (Baseline Year)	10	212	6	6
Difference	0	10	-2	-2

SOURCE: ENVIRON, 2011

10 in one million, some of which are listed as diesel emergency generators. Although the BAAQMD provides a screening method for scaling risk contributions from diesel generators by distance, many offsite stationary sources are situated in clusters adjacent or close to residential receptors such that distance attenuation would likely not decrease their individual risks below 10 in one million. As a result, there are several locations where risk from stationary sources alone would exceed the 100 in one million cumulative risk threshold.

According to a cumulative risk evaluation conducted for a concurrent nearby development project at 8 Washington Street,[41] risk associated with existing roadway traffic in the vicinity of both the 8 Washington Street and Cruise Terminal projects is on the order of 71 in one million, including a 58 in one million risk from traffic along The Embarcadero alone. Additionally, risk from ferry operations were estimated to range from 2 to 30 in one million based on a comparative analysis of other ferry and port studies. The sum of the risks associated with roadway emissions (71 in one million), stationary sources (greater than 100 in one million), and project contribution of cruise terminal operations (4.1 in one million) would exceed the 100 in one million increased cancer risk significance criteria of the BAAQMD. However, given that the proposed project would not result in an operational increased cancer risk exceeding the project-level threshold of 10 in one million, the Cruise Terminal project would not result in a cumulatively considerable

41 Case Number 2007.0030E, *8 Washington Street Draft Environmental Impact Report*, available at http://www.sf-planning.org/

contribution to localized health risk and hazard impacts, resulting in a less-than-significant cumulative air quality impact.

Cumulative Air Quality Impact Summary

The proposed Cruise Terminal project would result in -significant construction-related cumulative air quality impacts with regard to regional emissions of criteria pollutants and their precursors in an air basin designated as nonattainment for ozone and particulate matter. Construction-related emissions of NOx would be above significance thresholds established by the BAAQMD to identify a cumulatively considerable contribution to air quality in the region. Mitigation measures for cumulative impacts would be the same as those identified for significant unavoidable Impact AQ-10, but even with implementation of **Mitigation Measure M-AQ-2a (**Construction Vehicle Emissions Minimization) and **M-AQ-2b (**Off-Road Construction Equipment**), t**hese cumulative criteria pollutant impacts would be *significant and unavoidable*.

The proposed Cruise Terminal project would result in less-than-significant construction-related and operational cumulative air quality impacts with regard to localized emissions that would increase cancer risks, health indices, and concentrations of $PM_{2.5}$. These emissions, when combined with other emissions in the project areas, would not contribute considerably to cumulative risks and would result in a less-than-significant cumulative impact with regard to local risks and hazards.

> **Mitigation Measure M-AQ-2a: Construction Vehicle Emissions Minimization** (see above)
>
> **Mitigation Measure M-AQ-2b**: **Off-Road Construction Equipment** (see above)

Pier 27 Shed Variant

Impact C-AQ-3: The proposed Pier 27 Shed Variant, in combination with other past, present, and reasonably foreseeable future projects, would result in significant adverse cumulative impacts on air quality. (Significant and Unavoidable with Mitigation)

Cumulative Construction Impacts

Criteria Air Pollutants and Precursors. As indicated in Table 5.1-3, several other construction projects are likely to occur in the vicinity of Pier 27. Construction emissions from the proposed project in combination with emission from those projects listed on Table 5.1-3 in the project vicinity with overlapping construction schedules would result in a cumulative, construction-related air quality impact. Projects that would have a potential likelihood of occurring simultaneously with the Pier 27 Shed Variant construction would include improvement projects at Piers 15 and 17, Piers 19 through 23, and Piers 31-33.

Construction-related criteria pollutant impacts of the Pier 27 Shed Variant were quantified in Impact AQ-17 and would exceed the thresholds established by the BAAQMD to identify a

cumulatively considerable contribution to air quality impacts. Therefore, given the air basin's nonattainment status relative to ozone and PM_{10} and $PM_{2.5}$, construction-related emissions of criteria pollutants from the Pier 27 Shed Variant would be considered a significant cumulative air quality impact.

Toxic Air Contaminants and Respirable Particulate Matter. Nearby construction projects that would have a potential likelihood of occurring simultaneously with Pier 27 Shed Variant would include improvement projects at Piers 15 and 17, Piers 19 through 23, and Piers 31-33.

Construction-related health risk and hazard impacts of the Pier 27 Shed Variant were quantified in Impact AQ-18. Under the Pier 27 Shed Variant, construction would exceed the BAAQMD's project-level acute health index threshold and would therefore result in a considerable contribution to cumulative health risks, and the cruise terminal's construction emissions under the variant would be cumulatively considerable.

Cumulative Operational Impacts

Cumulative operational impacts of the Pier 27 Shed Variant would be the same as those discussed for the cruise terminal and would be less than cumulatively considerable.

Cumulative Air Quality Impact Summary

The proposed Pier 27 Shed Variant would result in significant construction-related cumulative air quality impacts with regard to regional emissions of criteria pollutants and their precursors in an air basin designated as nonattainment for ozone and particulate matter. Emissions of ROG, NOx. $PM_{10,}$ and $PM_{2.5}$ would all exceed significance thresholds established by BAAQMD to identify a cumulatively considerable contribution to air quality in the region. Mitigation measures for cumulative impacts would be the same as those identified for significant unavoidable Impact AQ-19, but even with implementation of **Mitigation Measure M-AQ-2a** (Construction Vehicle Emissions Minimization) and **M-AQ-2b** (Off-Road Construction Equipment)**,** these cumulative criteria pollutant impacts would be *significant and unavoidable*.

The proposed Pier 27 Shed Variant would result in construction-related cumulative air quality impacts with regard to localized emissions that would increase acute health indices. These emissions when combined with other emissions in the project areas would exceed the 10 in a million cumulative operational acute health index threshold and result in a significant cumulative impact with regard to local risks and hazards.

Cumulative operational impacts of the Pier 27 Shed Variant would the same as those discussed for the cruise terminal and would be less than cumulatively considerable.

> **Mitigation Measure M-AQ-2a: Construction Vehicle Emissions Minimization** (see above)
>
> **Mitigation Measure M-AQ-2b**: **Off-Road Construction Equipment** (see above)

5.9 Greenhouse Gas Emissions

This section describes greenhouse gas (GHG) emissions and global climate change, the existing regulatory framework governing GHG emissions, and the potential impacts related to GHGs associated with implementation of the proposed 34th America's Cup (AC34), James R. Herman Cruise Terminal and Northeast Wharf Plaza (Cruise Terminal) projects, and long-term development rights. The proposed project is evaluated for compliance with San Francisco's *Strategies to Address Greenhouse Gas Emissions*, recognized by the Bay Area Air Quality Management District (BAAQMD) as meeting the criteria of a qualified GHG Reduction Strategy.

5.9.1 Setting

5.9.1.1 Greenhouse Gas Emissions and Global Climate Change

Gases that trap heat in the atmosphere are referred to as GHGs because they capture heat radiated from the earth, similar to a greenhouse. The accumulation of GHGs has been implicated as a driving force for global climate change. Definitions of climate change vary between and across regulatory authorities and the scientific community, but in general can be described as the changing of the earth's climate caused by natural fluctuations and anthropogenic activities (i.e., activities relating to, or resulting from the influence of, human beings) that alter the composition of the global atmosphere.

5.9.1.2 Sources of Greenhouse Gas Emissions

Individual projects contribute to the cumulative effects of climate change by emitting GHGs during demolition, construction, and operational phases. The primary GHGs associated with land use development projects are carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O). Although the presence of the primary GHGs in the atmosphere is naturally occurring, CO_2, CH_4, and N_2O are largely emitted from human activities, accelerating the rate at which these compounds accumulate in the earth's atmosphere.

CO_2 is the "reference gas" for GHG emissions, meaning that emissions of total GHGs are typically reported in "carbon dioxide equivalent" (CO_2e). Emissions of CO_2 are largely byproducts of fossil fuel combustion, whereas methane results from offgassing associated with agricultural practices and landfills. Other GHGs, with much greater heat-absorption potential than CO_2, include hydrofluorocarbons (HFCs), perfluorocarbons, and sulfur hexafluoride, and are generated in certain industrial processes.

There is international scientific consensus that human-caused increases in GHGs have contributed, and will continue to contribute, to global warming, although there is uncertainty concerning the magnitude and rate of the warming. Potential global warming impacts in California may include a decrease in snowpack, sea level rise, more extreme heat days per year, more high ozone days, increased frequency and intensity of wildfires, and more drought years.[1]

[1] California Natural Resources Agency, *2009 California Climate Adaptation Strategy Discussion Draft*, 2009, Sacramento, CA. Pages 48–55.

Secondary effects are likely to include a global rise in sea level, impacts on agriculture, water resources, changes in disease vectors, and changes in habitat and biodiversity.

The California Air Resources Board (ARB) estimated that in 2008 California produced about 478 million gross metric tons ($MMTCO_2E$; about 525 million U.S. tons) of CO_2e.[2] The ARB found that transportation is the source of 37 percent of the state's GHG emissions, followed by electricity generation (both in-state and out-of-state) at 24 percent and industrial sources at 19 percent. Commercial and residential fuel use (primarily for heating) accounted for 9 percent of GHG emissions.[3]

In the Bay Area, fossil fuel consumption in the transportation sector (on-road motor vehicles, off-highway mobile sources, and aircraft) and the industrial/ commercial sector were the two largest sources of GHG emissions, each accounting for about 36 percent of the Bay Area's 95.8 $MMTCO_2e$ (105.4 million U.S. tons) emissions in 2007. Industrial and commercial electricity and fossil fuel consumption (including office and retail) were the second largest contributors of GHG emissions with about 34 percent of total emissions. Electricity generation accounts for approximately 16 percent of the Bay Area's GHG emissions, followed by residential fuel usage (e.g., home water heaters, furnaces) at 7 percent, off-road equipment at 3 percent, and agriculture at 12 percent. Among industrial sources, oil refining currently accounts for more than 40 percent of GHG emissions, or approximately 15 percent of the total Bay Area GHG emissions.[4]

5.9.2 Regulatory Framework

5.9.2.1 Federal Regulations

Supreme Court Ruling on California Clean Air Act Waiver

The United States Environmental Protection Agency (U.S. EPA) is the federal agency responsible for implementing the Clean Air Act (CAA). The U.S. Supreme Court ruled on April 2, 2007 that CO_2 is an air pollutant as defined under the CAA, and that the U.S. EPA has the authority to regulate emissions of GHGs. However, there are no federal regulations or policies regarding GHG emissions applicable to the proposed project. (See discussion of Assembly Bill [AB] 1493 in Section 5.9.2.2, State Regulations, below, for more information on the California Clean Air Act [CCAA] waiver.)

[2] The abbreviation for "million metric tons" is MMT; thus, "million metric tons of CO2 equivalents is written as $MMTCO_2E$.

[3] California Air Resources Board, "California Greenhouse Gas Inventory for 2000-2008—by Category as Defined in the Scoping Plan," http://www.arb.ca.gov/cc/inventory/data/tables/ghg_inventory_scopingplan_00-08_2010-05-12.pdf, accessed online January 10, 2011.

[4] BAAQMD, *Source Inventory of Bay Area Greenhouse Gas Emissions: Base Year 2007*, December 2008, available at http://www.baaqmd.gov/~/media/Files/Planning%20and%20Research/Emission%20Inventory/regionalinventory2007_003_000_000_000.ashx.

Energy and Independence Security Act of 2007 and Corporate Average Fuel Economy Standards

The Energy and Independence Security Act of 2007 (EISA) amended the Energy Policy and Conservation Act (EPCA) to further reduce fuel consumption and expand production of renewable fuels. The EISA's most significant amendment includes a statutory mandate for the National Highway Traffic Safety Administration (NHTSA) to set passenger car corporate average fuel economy (CAFE) standards for each model year at the maximum feasible level. This statutory mandate also eliminates the old default CAFE standard of 27.5 miles per gallon (mpg). The EISA requires that CAFE standards for model years 2011 through 2020 be set sufficiently high to achieve the goal of an industrywide passenger car and light-duty truck average CAFE standard of 35 mpg. The rule-making for this goal, per President Barack Obama's request, has been divided into two separate parts. The first part, which was published in the *Federal Register* in March 2009, includes CAFE standards for model year 2011 to meet the statutory deadline (i.e., March 30, 2009). The second part of the rule-making applies to model year 2012 and subsequent years. These would be the maximum CAFE standards feasible under the limits of the EISA and the EPCA. The NHTSA and U.S. EPA are working in coordination to develop a national program targeting model year 2012–2016 passenger cars and light trucks.

United States Environmental Protection Agency Actions

In response to the issue of climate change, the U.S. EPA has taken actions to regulate, monitor, and potentially reduce GHG emissions.

Proposed Endangerment and Cause or Contribute Findings for Greenhouse Gases under the Clean Air Act

On April 23, 2009, EPA published its proposed Endangerment and Cause or Contribute Findings for Greenhouse Gases under the CAA (Endangerment Finding) in the Federal Register. The Endangerment Finding is based on Section 202(a) of the CAA, which states that the EPA Administrator should regulate and develop standards for "emission[s] of air pollution from any class or classes of new motor vehicles or new motor vehicle engines, which in [its] judgment cause, or contribute to, air pollution which may reasonably be anticipated to endanger public health or welfare." The proposed rule addresses Section 202(a) in two distinct findings. The first addresses whether the concentrations of the six key GHGs (i.e., CO_2, CH_4, N_2O, HFCs, perflurorocarbons, and sulfur hexafluoride) in the atmosphere threaten the public health and welfare of current and future generations. The second addresses whether the combined emissions of GHGs from new motor vehicles and motor vehicle engines contribute to atmospheric concentrations of GHGs and thus increase the threat of climate change.

The EPA Administrator proposed the finding that atmospheric concentrations of GHGs endanger the public health and welfare within the meaning of Section 202(a) of the CAA. The evidence supporting this finding consists of human activity resulting in "high atmospheric levels" of GHG emissions, which are likely responsible for increases in average temperatures and other climatic changes. Furthermore, the observed and projected results of climate change (e.g., higher

likelihood of heat waves, wildfires, droughts, sea level rise, and higher-intensity storms) are a threat to public health and welfare.

The EPA Administrator also proposed the finding that GHG emissions from new motor vehicles and motor vehicle engines are contributing to air pollution, which is endangering public health and welfare. The proposed finding states that in 2006, motor vehicles were the second largest contributor to domestic GHG emissions (24 percent of the total), behind electricity generation. Furthermore, in 2005, the U.S. was responsible for 18 percent of global GHG emissions. Thus, GHG emissions from motor vehicles and motor vehicle engines were found to contribute to air pollution that endangers public health and welfare.

On December 7, 2009, the U.S. EPA finalized its decision that GHG emissions from motor vehicles constitute an "endangerment" under the CAA. This U.S. EPA finding allows for the establishment of GHG emissions standards for new motor vehicles. In a related action, in June 2009, EPA granted California a waiver under the federal Clean Air Act, allowing the state to impose its own, stricter GHG regulations for vehicles beginning in 2009 (see below).

Notice of Intent for Development of New GHG and Fuel Economy Standards

In September 2010, the National Highway Traffic Safety Administration with the U.S. EPA published a Notice of Intent for the development of new GHG and fuel economy standards for model year 2017–2025 vehicles. The agencies published a Supplemental Notice of Intent in December 2010. Draft regulations are anticipated on September 30, 2011, with a final rule due to be adopted in July 31, 2012.[5]

5.9.2.2 State Regulations

The ARB is the state agency responsible for coordination and oversight of state and local air pollution control programs in California and for implementing the California Clean Air Act (CCAA), adopted in 1988. With the passage of Assembly Bill (AB) 32, the ARB was also given broad responsibility for promulgating regulations designed to achieve the general goals of AB 32. (For a discussion of AB 32, see "Assembly Bill 32 and the California Climate Change Scoping Plan" below.)

Various statewide and local initiatives have been introduced to reduce the state's contribution to GHG emissions. However, because every nation emits GHGs and thus makes an incremental cumulative contribution to global climate change, cooperation on a global scale will be required to reduce the rate of GHG emissions to a level that can effectively slow or stop the human-caused increase in average global temperatures and associated changes in climatic conditions.

[5] 75 Federal Register 76337, December 8, 2010, available at http://www.nhtsa.gov/staticfiles/rulemaking/pdf/cafe/Supplemental_Notice_FR_12082010.pdf; Fact Sheet, "NHTSA and EPA Issue a Supplemental Notice in the Process for Setting Future Greenhouse Gas and Fuel Economy Standards for Passenger Cars and Light Trucks, November 2010, available at http://www.nhtsa.gov/staticfiles/rulemaking/pdf/cafe/Supplemental_NOI_CAFE_2017_Fact_Sheet.pdf, accessed January 2, 2011.

Assembly Bill 1493

In 2002, then-Governor Gray Davis signed AB 1493, which required that the ARB 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 ARB to be vehicles whose primary use is noncommercial personal transportation in the state."

To meet the requirements of AB 1493, the ARB approved amendments to the California Code of Regulations (CCR) in 2004, adding GHG emissions standards to California's existing standards for motor vehicle emissions. Amendments to CCR Title 13, Sections 1900 and 1961 (13 CCR 1900, 1961), and adoption of Section 1961.1 (13 CCR 1961.1), require automobile manufacturers to meet fleet-average GHG emissions limits for all passenger cars, light-duty trucks within various weight criteria, and medium-duty passenger vehicle weight classes (i.e., any medium-duty vehicle with a gross vehicle weight [GVW] rating of less than 10,000 pounds and which is designed primarily for the transportation of persons), beginning with model year 2009. For passenger cars and light-duty trucks with a loaded vehicle weight (LVW) of 3,750 pounds or less, the GHG emission limits for model year 2016 are approximately 37 percent lower than the limits for the first year of the regulations, model year 2009. For light-duty trucks with an LVW of 3,751 pounds to a GVW of 8,500 pounds, as well as for medium-duty passenger vehicles, GHG emissions will be reduced approximately 24 percent between 2009 and 2016.

Because the Pavley standards (named for the bill's author, state Senator Fran Pavley) would impose stricter standards than those under the federal Clean Air Act, California applied to the U.S. EPA for a waiver under the Clean Air Act; this waiver was denied by the Bush administration in 2008. As noted above, in 2009 the U.S. EPA granted the waiver. California has now agreed to cooperate with the federal GHG and Corporate Average Fuel Economy standards under development so that there will be a single national standard.

Executive Order S-3-05

In 2005, in recognition of California's vulnerability to the effects of climate change, then-Governor Schwarzenegger established Executive Order S-3-05, which sets forth a series of target dates by which statewide GHGs 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.[6]

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 the ARB to design and implement emission limits, regulations, and other measures, such that feasible and cost-effective statewide GHG emissions are reduced to 1990 levels by 2020 (representing a 25-percent reduction in emissions).

[6] California Air Resources Board, *Climate Change Scoping Plan: A Framework for Change*, December 2008, available on the internet at: http://www.arb.ca.gov/cc/scopingplan/document/scopingplandocument.htm, accessed January 3, 2011.

Pursuant to AB 32, the ARB adopted a Scoping Plan in December 2008, outlining measures to meet the 2020 GHG reduction limits.[7] 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.[8] The Scoping Plan estimates a reduction of 174 million metric tons of CO_2e ($MMTCO_2e$) (about 191 million U.S. tons) from the transportation, energy, agriculture, forestry, and high global warming potential sectors (see **Table 5.9-1**). The ARB has identified an implementation timeline for the GHG reduction strategies in the Scoping Plan.[9] Some measures may require new legislation to implement, some will require subsidies, some have already been developed, and some will require additional effort to evaluate and quantify. Additionally, some emissions reductions strategies may require their own environmental review under CEQA or the National Environmental Policy Act (NEPA).

AB 32 also anticipates that local government actions will result in reduced GHG emissions. ARB 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.

The Scoping Plan relies on the requirements of Senate Bill 375 (discussed below) to implement the carbon emission reductions anticipated from land use decisions. SB 375 was enacted to align local land use and transportation planning to further achieve the state's GHG reduction goals. SB 375 requires regional transportation plans (RTPs), developed by Metropolitan Planning Organizations (MPOs), to incorporate a "sustainable communities strategy" that would achieve GHG emission reduction targets set by the ARB. SB 375 also includes provisions for streamlined CEQA review for some infill projects, such as transit-oriented development. SB 375 would be implemented over the next several years. The Metropolitan Transportation Commission (MTC) is responsible for developing RTPs for the Bay Area. MTC's 2013 RTP will be its first plan subject to SB 375.

Executive Order S-1-07

Executive Order S-1-07, signed by then-Governor Schwarzenegger in 2007, proclaimed that the transportation sector is the main source of GHG emissions in California, at over 40 percent of statewide emissions. The order established a goal of reducing the carbon intensity of transportation fuels sold in California by a minimum of 10 percent by 2020. It also directed the ARB to determine whether this Low Carbon Fuel Standard could be adopted as a discrete, early-action measure after meeting the mandates in AB 32. The ARB adopted the Low Carbon Fuel Standard on April 23, 2009.

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7 On January 24, 2011, a San Francisco Superior Court judge issued a proposed injunction against implementation of the Scoping Plan. No formal ruling has yet been issued. (Association of Irritated Residents et al v. California Air Resources Board, San Francisco Superior Court Case No. CPF-09-509562.)

8 California Air Resources Board, *California's Climate Plan: Fact Sheet*, available at http://www.arb.ca.gov/cc/facts/scoping_plan_fs.pdf, accessed March 4, 2010.

9 California Air Resources Board, *AB 32 Scoping Plan*., available at: http://www.arb.ca.gov/cc/scoping plan/sp_measures_implementation_timeline.pdf, accessed March 2, 2010.

TABLE 5.9-1
GREENHOUSE GAS REDUCTIONS FROM AB 32 SCOPING PLAN SECTORS

GHG Reduction Measures By Sector		GHG Reductions (MMT CO2E)
Transportation		62.3
Electricity and Natural Gas		49.7
Industry		1.4
Landfill Methane Control Measure (Discrete Early Action)		1.0
Forestry		5.0
High Global Warming Potential GHGs		20.2
Additional Reductions Needed to Achieve the GHG Cap		34.4
	Total	**174.0**
Other Recommended Measures		
Government Operations		1.0-2.0
Agriculture- Methane Capture at Large Dairies		1.0
Methane Capture at Large Dairies		1.0
Additional GHG Reduction Measures		
Water		4.8
Green Buildings		26.0
High Recycling/ Zero Waste • Commercial Recycling • Composting • Anaerobic Digestion • Extended Producer Responsibility • Environmentally Preferable Purchasing		9.0
	Total	**42.8-43.8**

NOTES:
MMT = million metric tons
CO_2e = carbon dioxide equivalent

SOURCE: California Air Resources Board, AB 32 Scoping Plan, available at http://www.arb.ca.gov/cc/scopingplan/sp_measures_implementation_timeline.pdf, accessed March 2, 2010.

Senate Bill 1078 and 107 and Executive Order 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 expands the state's Renewable Portfolio Standard to 33 percent renewable power by 2020. In September 2009, then-Governor Schwarzenegger continued California's commitment to the Renewable Portfolio Standard by signing Executive Order S-21-09, which directs the ARB 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.

Senate Bill 1368

SB 1368 is the companion bill of AB 32 and was signed by Governor Schwarzenegger in September 2006. SB 1368 requires the California Public Utilities Commission (PUC) to establish a greenhouse gas emission performance standard for baseload generation from investor owned utilities by February 1, 2007. The California Energy Commission (CEC) must establish a similar standard for local publicly owned utilities by June 30, 2007. These standards cannot exceed the greenhouse gas 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 CEC.

Senate Bill 97

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 were reviewed by the Office of Administrative Law and became effective March 18, 2010.

Senate Bill 375

In addition to policy directly guided by AB 32, the legislature in 2008 passed Senate Bill (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 the ARB. In the Bay Area, the Metropolitan Transportation Commission (MTC) is the MPO. SB 375 also includes provisions for streamlined CEQA review for some infill projects such as transit-oriented development. MTC's 2013 RTP will be its first plan subject to SB 375.

The ARB, in consultation with MPOs, will provide each affected region with reduction targets for GHGs emitted by passenger cars and light trucks in the region for the years 2020 and 2035. These reduction targets will be updated every 8 years, but can be updated every 4 years if advancements in emissions technologies affect the reduction strategies to achieve the targets. The ARB is also charged with reviewing each MPO's SCS or alternative planning strategy (APS) for consistency with its assigned targets. If MPOs do not meet the GHG emissions reduction targets, transportation projects would not be eligible for funding programmed after January 1, 2012.

This bill also extends the minimum time period for the Regional Housing Needs Allocation cycle from 5 years to 8 years for local governments located within an MPO that meets certain requirements. City and county land use policies (including general plans) are not required to be consistent with the RTP (and associated SCS or APS). However, new provisions of CEQA would create incentives for qualified projects that are consistent with an approved SCS or APS, categorized as "transit priority projects."

5.9.2.3 Local Regulations

Bay Area Air Quality Management District Climate Protection Program

The Bay Area Air Quality Management District (BAAQMD) is the primary agency responsible for air quality regulation in the 9-county San Francisco Bay Area Air Basin (SFBAAB). The BAAQMD established a climate protection program to reduce pollutants that contribute to global climate change and affect air quality in the SFBAAB. The climate protection program includes measures that promote energy efficiency, reduce vehicle miles traveled, and develop alternative sources of energy, all of which assist in reducing emissions of GHGs and in reducing air pollutants that affect the health of residents. The BAAQMD also seeks to support current climate protection programs in the region and to stimulate additional efforts through public education and outreach, technical assistance to local governments and other interested parties, and promotion of collaborative efforts among stakeholders. In June 2010, the BAAQMD adopted revised CEQA significance thresholds for GHG emissions. These recently adopted GHG significance thresholds are discussed in detail in Section 5.9.3.2, Approach to Analysis, below.

City and County of San Francisco Greenhouse Gas (GHG) Reduction Strategy

Consistent with state CEQA Guidelines Section 15183.5, BAAQMD has adopted a qualitative GHG threshold of significance that allows a lead agency to determine that a project's contribution of GHG emissions is less than significant if the lead agency finds that the project is consistent with a Qualified Greenhouse Gas Reduction Strategy, as defined in the *2010 CEQA Air Quality Guidelines*. The City and County of San Francisco (City) has a history of environmental protection policies and programs aimed at improving the quality of life for residents and reducing impacts on the environment. A comprehensive assessment of these policies, programs and ordinances has been compiled into the City's *Strategies to Address Greenhouse Gas Emissions in San Francisco*.[10] The BAAQMD reviewed this document and concluded that the strategy meets the criteria for a Qualified GHG Reduction Strategy as outlined in BAAQMD's *2010 CEQA Air Quality Guidelines*.

The following plans, policies, and legislation demonstrate San Francisco's continued commitment to environmental protection. They include measures applicable to this project that would decrease the amount of GHGs emitted into the atmosphere and thus decrease San Francisco's overall contribution to climate change. These programs are collectively referred to as San Francisco's GHG Reduction Strategy.

[10] San Francisco Planning Department. *Strategies to Address Greenhouse Gas Emissions in San Francisco,* 2010, available online at: http://www.sfplanning.org/index.aspx?page=1570.

Plans, Policies, and Programs

Transit First Policy. In 1973, the City instituted the Transit First Policy, which added Article 8A, Section 8A.115 to the City Charter with the goal of reducing San Francisco's reliance on freeways and meeting transportation needs by emphasizing mass transportation. The Transit First Policy gives priority to public transit investments, adopts street capacity and parking policies to discourage increased automobile traffic, and encourages the use of transit, bicycling, and walking instead of single-occupant vehicles.

San Francisco Sustainability Plan. In July 1997, the Board of Supervisors endorsed the *Sustainability Plan for the City and County of San Francisco*, which establishes sustainable development as a fundamental goal of municipal public policy.

Electricity Resource Plan (Revised December 2002). The City adopted the *Electricity Resource Plan* to help address growing environmental health concerns in San Francisco's southeast community, the site of two power plants. The plan presents a framework for assuring a reliable, affordable, and renewable source of energy for the future of San Francisco.

Climate Action Plan for San Francisco. In February 2002, the San Francisco Board of Supervisors passed the Greenhouse Gas Emissions Reduction Resolution (Number 158-02) that set a goal for the City to reduce GHG emissions to 20 percent below 1990 levels by the year 2012. In September 2004, the San Francisco Department of the Environment and San Francisco Public Utilities Commission published the *Climate Action Plan for San Francisco: Local Actions to Reduce Greenhouse Gas Emissions*.[11] This climate action plan provides the context of climate change in San Francisco and examines strategies to meet the 20-percent GHG emissions reduction target. Although the Board of Supervisors has not formally committed the City to perform the actions addressed in the plan, and many of the actions require further development and commitment of resources, the plan serves as a blueprint for GHG emissions reductions, and several actions have been implemented or are now in progress.

San Francisco Municipal Transportation Agency's Zero Emissions 2020 Plan. The Zero Emissions 2020 Plan focuses on the purchase of cleaner emission transit buses, including hybrid diesel-electric buses. Under this plan, hybrid buses will replace the oldest diesel buses, some dating back to 1988. The hybrid buses emit 95 percent less particulate matter (soot) than the buses they replace; they produce 40 percent less nitrogen oxides and reduce GHGs by 30 percent.

Zero Waste. In 2004, the City committed to a goal of diverting 75 percent of its waste from landfills by 2010, with the ultimate goal of zero waste by 2020. San Francisco currently recovers 77 percent of discarded material.[12]

GoSolarSF. On July 1, 2008, the San Francisco Public Utilities Commission launched its "GoSolarSF" program to San Francisco's businesses and residents, offering incentives in the form

[11] San Francisco Department of the Environment and San Francisco Public Utilities Commission, *Climate Action Plan for San Francisco: Local Actions to Reduce Greenhouse Emissions*, 2004, San Francisco, CA.

[12] San Francisco Department of the Environment, *Zero Waste*, 2011, available online at http://www.sfenvironment.org/our_programs/overview.html?ssi=3, accessed March 2011.

of a rebate program that could pay for approximately half the cost of installation of a solar power system and more to those qualifying as low-income residents.

The San Francisco Planning Department and the San Francisco Department of Building Inspection have also developed a streamlining process for solar photovoltaic permits and priority permitting mechanisms for projects pursuing Leadership in Energy and Environmental Design (LEED®) Gold certification.

Ordinances

San Francisco Planning Code. The San Francisco Planning Code reflects the latest smart growth policies and includes electric vehicle refueling stations in city parking garages, bicycle storage facilities for commercial and office buildings, and zoning that is supportive of high-density mixed-use infill development. The City's more recent area plans, such as the *Rincon Hill Area Plan* and the *Market and Octavia Area Plan*, provide transit-oriented development policies that allow for neighborhood-oriented retail services and limit offstreet parking to accessory parking spaces.[13] At the same time, there is a communitywide focus on ensuring that San Francisco's neighborhoods are "livable," reflected in the *San Francisco Better Streets Plan*, which provide streetscape policies throughout the city; the Transit Effectiveness Project, which aims to improve transit service; and the *San Francisco Bicycle Plan*. All of these plans and projects are intended to promote alternative transportation options for residents and visitors.

Greenhouse Gas Reduction Ordinance. In May 2008, the City adopted an ordinance amending the San Francisco Environment Code to establish GHG emissions targets and departmental action plans, to authorize the San Francisco Department of the Environment to coordinate efforts to meet these targets, and to make environmental findings. The ordinance establishes the following GHG emissions reduction limits for San Francisco and the target dates by which to achieve them:

- Determine 1990 City GHG emissions by 2008, the baseline level with reference to which target reductions are set
- Reduce GHG emissions by 25 percent below 1990 levels by 2017
- Reduce GHG emissions by 40 percent below 1990 levels by 2025
- Reduce GHG emissions by 80 percent below 1990 levels by 2050

The ordinance also specifies requirements for City departments to prepare a climate action plan (CAP) that assesses GHG emissions associated with their activities and activities regulated by them, report the results of those assessments to the San Francisco Department of the Environment, and prepare recommendations to reduce emissions. In particular, the Port of San Francisco is required to (1) develop a systematic boiler maintenance and replacement program for all Port property, (2) implement the City's zero waste programs and green purchasing requirements, and (3) implement the Port of San Francisco Building Code which will further the goal of reducing the greenhouse gas emissions in the Port of San Francisco to 20 percent below 1990 levels by the year 2012.[14]

[13] See San Francisco Planning Code, Sections 206.4 and 155.
[14] 2010 Port of San Francisco Building Code, Section 13C.101

Port Climate Action Plan. The 2008 Greenhouse Gas Reduction Ordinance requires that all City departments prepare an annual department-specific climate action plan (CAP). The evaluation of GHG checklist compliance for municipal projects, such as the proposed James R. Herman Cruise Terminal and Northeast Wharf Plaza improvements, includes a summary of the sponsoring department's climate action plan. The CAP summary for the Port of San Francisco (Port) is provided below.

The Port of San Francisco Climate Action Plan (Port CAP or Plan) for 2009-2010 documents the Port's carbon footprint and identifies opportunities to reduce the impacts from activities at the Port that might contribute to climate change.[15] The Port is a public enterprise that balances several activities, such as maritime, industrial, transportation, commercial, public access, and more. The Port's property is a complex mix of piers, structures (sheds, offices, etc.), and open land, with more than 25 million square feet and more than 500 tenants. Both Port and tenant operations contribute to greenhouse gas emissions (GHG), and the Port CAP provides an inventory of these emissions as well as strategies to reduce them. Building operations constitute a large portion of Port-related GHG emissions. Port operations are primarily located at Pier 1 and Pier 50. The Port's fleet includes more than 100 vehicles and 100 pieces of equipment. The fleet comprises about 100 vehicles, including several that are hybrid or compressed natural gas (CNG), and a diesel fleet that operates on biodiesel, all of which helps reduce GHG emissions.

The Port-wide carbon footprint for buildings is 968 metric tons of CO2e.[16] Eight-eight percent of these emissions are attributable to tenant operations; 12 percent are attributable to Port operations. More than 50 percent of Port-wide emissions from buildings are due to the consumption of natural gas.

As a reduction measure, the Port is developing a systematic boiler maintenance and replacement program. The Port partnered with the SFPUC to sponsor an investment-grade energy audit of Port facilities in the areas of lighting, heating/ventilating/air conditioning (HVAC), and refrigeration systems. The audit resulted in energy efficient upgrades at 18 facilities.

The Port is also engaged in several other sustainability measures that contribute to climate change goals, including zero waste programs, the employee commuter benefit program, green purchasing, information technology, and sustainability planning. All Port staff has access to composting and recycling, commuter incentives, and training on green purchasing requirements and resources. Landscaping staff maintains an inventory of almost 2,000 trees on Port property. Additionally, the Port has been participating in a regional effort to promote sustainable marine industrial development along the West Coast.

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15 Port of San Francisco, *Department Climate Action Plan, Fiscal Year 2009-2010,* April 4, 2011. A copy of this document is available for review at the San Francisco Planning Department, 1650 Mission Street, Suite 400, San Francisco as part of Case File. 2010.0493E.

16 Emissions are reported as actual metric tons of carbon dioxide equivalent (CO2e), which is an accepted method for standardizing the varying climate change potential among different greenhouse gases such as methane (CH_4), carbon dioxide (CO_2), and nitrous oxide N_2O.

City and County of San Francisco's Green Building Ordinance. On August 4, 2008, then-Mayor Gavin Newsom signed into law San Francisco's Green Building Ordinance for newly constructed residential and commercial buildings and renovations to existing buildings. The ordinance specifically requires newly constructed commercial buildings over 5,000 square feet, residential buildings over 75 feet in height, and renovations on buildings over 25,000 square feet to be subject to an unprecedented level of required Leadership in Energy and Environmental Design (LEED®) Green Building Rating System™ certifications, which makes San Francisco the city with the most stringent green building requirements in the nation. Cumulative benefits of this ordinance include reducing CO_2 emissions by 60,000 tons, saving 220,000 megawatt-hours of power, saving 100 million gallons of drinking water, reducing waste and stormwater by 90 million gallons, reducing construction and demolition waste by 700 million pounds, increasing the valuations of recycled materials by $200 million, reducing 540,000 automobile trips, and increasing the generation of green power by 37,000 megawatt-hours.[17]

The Green Building Ordinance also continues San Francisco's efforts to reduce locally-emitted GHG emissions to 20 percent below 1990 levels by the year 2012, a goal outlined in the City's 2004 Climate Action Plan. In addition, by reducing San Francisco's emissions, this ordinance furthers efforts to reduce GHG emissions statewide, as mandated by the California Global Warming Solutions Act of 2006.

Construction and Demolition Debris Recovery Ordinance. In 2006, the City adopted Ordinance No. 27-06, requiring all construction and demolition debris to be transported to a registered facility that can divert a minimum of 65 percent of the material from landfills. This ordinance applies to all construction, demolition, and remodeling projects within the city.

Waste Reduction Ordinances. The City has also passed ordinances to reduce waste from retail and commercial operations. Ordinance 295-06, the Food Waste Reduction Ordinance, prohibits the use of polystyrene foam disposable food serviceware and requires biodegradable/compostable or recyclable food serviceware by restaurants, retail food vendors, city departments, and city contractors. Ordinance 81-07, the Plastic Bag Reduction Ordinance, requires stores located within the city to use compostable plastic, recyclable paper, and/or reusable checkout bags.

Port of San Francisco Building Code. The Port of San Francisco Building Code is Chapter 13C of the Port of San Francisco Building Code. The Port of San Francisco adopted the California Green Standards Code with local amendments as Chapter 13C of the Port of San Francisco Building Code. The purpose of this chapter is to promote the health, safety and welfare of San Francisco residents, workers, and visitors by minimizing the use and waste of energy, water, and other resources in the construction and operation of buildings in the Port of San Francisco and by providing a healthy indoor environment. The green building practices required under Chapter 13C will also further the goal of reducing the greenhouse gas emissions in the Port of San Francisco to 20 percent below 1990 levels by the year 2012, as adopted in Port Commission Resolution No. 158-02 and the City's 2004 Climate Action Plan. The provisions of Chapter 13C apply to the planning, design, operation, construction, use and occupancy of every newly

[17] These findings are contained within the final Green Building Ordinance, signed by the mayor on August 4, 2008.

constructed building or structure, unless otherwise indicated in the code, as well as alterations to existing buildings throughout the Port of San Francisco.

City and County of San Francisco Commuter Benefits Ordinance. The City adopted an ordinance, effective January 19, 2009, that allows commuters to deduct a specified amount per month, pretax, for transit and vanpool expenses. These commuter benefits must be offered by any employer with 20 employees or more that operates within the city. To qualify for these benefits, employees must work at least 10 hours per week averaged over a calendar month. Although not required by the ordinance, employers can offer the commuter benefits to employees who work fewer than 10 hours per week averaged over a month.

City and County of San Francisco Mandatory Recycling and Composting Ordinance. The City adopted an ordinance, effective October 21, 2009, that requires all businesses and residences to compost food scraps and biodegradable products. Businesses and residents are provided with green, blue, and black bins to sort their food and other biodegradable waste, recycling, and trash, respectively. Businesses and residents that do not comply with the ordinance are subject to fines, depending on the level and duration of noncompliance.

San Francisco has been actively pursuing cleaner energy, alternative transportation, and solid waste policies, many of which have been codified into regulations, as discussed above. In an independent review of San Francisco's communitywide emissions, it was reported that San Francisco has achieved a 5-percent reduction in communitywide GHG emissions below the Kyoto Protocol 1990 baseline levels. The 1997 Kyoto Protocol sets a greenhouse gas reduction target of 7 percent below 1990 levels by 2012. The "communitywide inventory" includes greenhouse gas emissions generated by San Francisco—from residents, businesses, and commuters as well as from municipal operations. The inventory also includes emissions from both transportation and building energy sources.[18]

5.9.3 Impacts and Mitigation Measures

5.9.3.1 Significance Criteria

As discussed above, SB 97 required OPR to amend the state CEQA Guidelines to address the feasible mitigation of GHG emissions or the effects of GHGs. In response, OPR amended the CEQA Guidelines to provide guidance for analyzing GHG emissions. The City has not formally adopted significance standards for impacts related to geology and soils, but generally consider that implementation of the project could have a potentially significant impact related to greenhouse gas emissions if it were to:

- Generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment; or

- Conflict with an applicable plan, policy, or regulation of an agency adopted for the purpose of reducing the emissions of GHGs.

[18] IFC International, City and County of San Francisco: *Community GHG Inventory Review,* prepared for City and County of San Francisco, Department of the Environment, San Francisco, CA, August 1, 2008.

5.9.3.2 Approach to Analysis

Among other changes to the CEQA Guidelines, the amendments add a new section to the CEQA environmental checklist form (CEQA Guidelines Appendix G) to address questions regarding a project's potential to emit GHGs.

BAAQMD is the primary agency responsible for air quality regulation in the nine-county San Francisco Bay Area Air Basin (SFBAAB). As part of its role in air quality regulation, BAAQMD has prepared the CEQA air quality guidelines to assist lead agencies in evaluating air quality impacts of projects and plans proposed in the SFBAAB. On June 2, 2010, BAAQMD adopted new and revised CEQA air quality thresholds of significance and issued revised guidelines that supersede the 1999 air quality guidelines. The *2010 CEQA Air Quality Guidelines* provide, for the first time, CEQA thresholds of significance for greenhouse gas emissions. OPR's amendments to the CEQA Guidelines, as well as BAAQMD's *2010 CEQA Air Quality Guidelines* and thresholds of significance, have been incorporated into this analysis accordingly.

As discussed above, BAAQMD has adopted CEQA thresholds of significance with respect to GHGs. Consistent with state CEQA Guidelines Section 15183.5, BAAQMD has adopted a qualitative GHG threshold of significance that allows a lead agency to determine that a project's contribution of GHG emissions is less than significant if the lead agency finds that the project is consistent with a qualified Greenhouse Gas Reduction Strategy, as defined in the *2010 CEQA Air Quality Guidelines*.

San Francisco's *Strategies to Address Greenhouse Gas Emissions*[19] identifies a number of mandatory requirements and incentives that have measurably reduced greenhouse gas emissions including, but not limited to, increases in the energy efficiency of new and existing buildings, installation of solar panels on building roofs, implementation of a green building strategy, adoption of a zero waste strategy, a construction and demolition debris recovery ordinance, a solar energy generation subsidy, incorporation of alternative fuel vehicles in the City's transportation fleet (including buses and taxis), and a mandatory composting ordinance. The strategy also identifies 42 specific regulations for new development that would reduce a project's GHG emissions.

San Francisco's *Strategies to Address Greenhouse Gas Emissions* identifies the City's actions to pursue cleaner energy, energy conservation, alternative transportation, and solid waste policies, and concludes that San Francisco's policies have resulted in a reduction in greenhouse gas emissions below 1990 levels, meeting statewide AB 32 GHG reduction goals. As reported, San Francisco's 1990 GHG emissions were approximately 8.26 million metric tons (MMT) CO_2e and 2005 GHG emissions are estimated at 7.82 $MMTCO_2e$, representing an approximately 5.3 percent reduction in GHG emissions below 1990 levels.

The BAAQMD reviewed San Francisco's *Strategies to Address Greenhouse Gas Emissions* and concluded that the strategy meets the criteria for a Qualified GHG Reduction Strategy as outlined in BAAQMD's *2010 CEQA Air Quality Guidelines* and stated that San Francisco's "aggressive

[19] San Francisco Planning Department, *Strategies to Address Greenhouse Gas Emissions in San Francisco,* 2010, available online at: http://www.sfplanning.org/index.aspx?page=1570.

GHG reduction targets and comprehensive strategies help the Bay Area move toward reaching the State's AB 32 goals, and also serve as a model from which other communities can learn."[20]

The analysis of the proposed project's climate change impact is an analysis of the project's contribution to a cumulatively significant global impact through its emission of GHGs. Given the analysis is in a cumulative context, this section does not include an individual, project-specific impact statement for the AC34 or Cruise Terminal projects, but instead includes analysis of them in the cumulative impact analysis.

5.9.3.3 AC34 Events, Cruise Terminal, and Cumulative Impacts

Impact C-GG: The proposed project would not generate greenhouse gas emissions at levels that would result in a significant impact on the environment or conflict with any policy, plan, or regulation adopted for the purpose of reducing greenhouse gas emissions. (Less than Significant)

The most common GHGs resulting from human activity are CO_2, CH_4, and N_2O.[21] State law defines GHGs to also include hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride. These latter GHG compounds are usually emitted in industrial processes; however, the boat fabrication and maintenance may result in these other sources of GHG emissions. The America's Cup team bases would use hazardous materials--such as fuels, oils, alkaline and acidic solutions, rust inhibitors, and anti-fouling paints--for boat fabrication. Individual projects contribute to the cumulative effects of climate change by directly or indirectly emitting GHGs during construction and operational phases. Direct operational emissions include GHG emissions from new vehicle and boat trips and area sources (natural gas combustion). Indirect emissions include emissions from electricity providers; energy required to pump, treat, and convey water; and landfill operations.

The proposed project would increase the activity in various locations. The 34th America's Cup would increase activity over the two-year course of the event by generating up to 334,000 visitors per day during an average peak race day; by constructing temporary facilities at Marina Green, Aquatic Park, Crissy Field, Fort Mason, Alcatraz, Cavallo Point, Seawall Lot 330, Pier 26, Pier 28, Piers 19 ½ and 19, Pier 23, Pier 80, and various open water areas; and by constructing permanent facilities at Piers 30-32 and Phase 1 of the Cruise Terminal at Piers 27-29. The 34th America's Cup would contribute to annual short-term increases in GHGs as a result of increased vehicle and boat trips (mobile sources), as well as event operations resulting in increased energy use, water use and wastewater treatment, and solid waste disposal. Construction of temporary and permanent facilities for AC34 would also result in an increase in GHG emissions.

The James R. Herman Cruise Terminal and Northeast Wharf Plaza (Cruise Terminal project) project would increase activity by relocating the existing primary cruise terminal from Pier 35 to

[20] Letter from Jean Roggenkamp, BAAQMD, to Bill Wycko, San Francisco Planning Department, October 28, 2010, available online at http://www.baaqmd.gov/~/media/Files/Planning%20and %20Research/CEQA%20Letters/San%20Francisco%20GHG%20Reduction%20Strategy_10_28_2010%20-%20AY.ash*x*, accessed March 8, 2011.

[21] Governor's Office of Planning and Research, *Technical Advisory- CEQA and Climate Change: Addressing Climate Change through California Environmental Quality Act (CEQA) Review,* June 19, 2008, available at: http://www.opr.ca.gov/ceqa/pdfs/june08-ceqa.pdf, accessed March 3, 2010.

Pier 27, and by constructing Phase 2 of the cruise terminal building and the Northeast Wharf Plaza Park. The Cruise Terminal project would not result in an increase of cruise ships calls (40 to 80 calls a year); the project would accommodate the cruise ship sizes and the passenger carrying capacity from 2,600 to 4,000 passengers per cruise ship. The Cruise Terminal project would contribute to annual short-term increases in GHG emissions as a result of construction activities. Construction activities include construction equipment, worker vehicle trips, and vendor trips, which result in GHG emissions. Long-term emissions include an increase of cruise ship size and passenger capacity, which would be generated regardless of the proposed project.

Based on the BAAQMD's *2010 CEQA Air Quality Guidelines*, projects that are consistent with San Francisco's *Strategies to Address Greenhouse Gas Emissions* would result in a less-than-significant impact with respect to GHG emissions. Furthermore, because San Francisco's strategy is consistent with AB 32 goals, projects that are consistent with San Francisco's strategy would also not conflict with the state's plan for reducing GHG emissions.

America's Cup

As discussed above, the 34th America's Cup would contribute to GHGs over the two-year course of the event activities and also during preparation and take down of event facilities. Operations of AC34 would result in GHG emissions from the following activities: mobile sources (boats, buses, and vehicles) to and from event activities; waste produced by the event that is sent to landfills; energy use, water and wastewater treatment from event operations; and boat maintenance and fabrication.

Construction of temporary facilities would also result in an increase in GHG emissions at primary temporary event venues and spectator areas; and by constructing permanent facilities at Piers 30-32 and Phase 1 of the Cruise Terminal at Piers 27-29. Construction of these facilities will require on-road and off-road vehicles and equipment that would generate GHG emissions.

The 34th America's Host Agreement includes the requirement for the development and implementation of a Sustainability Plan (titled LEED Plan in the Host Agreement), a Waste Management Plan, and a People Plan. These plans would support the General Plan policies for reducing greenhouse gases by implementing a People Plan that favors bicycling and transit over the private automobile; constructing green building and grounds that comply with sustainability standards of Chapter 7 of the Environment Code and Chapter 13 of the Port Building Code, reducing energy and water use; and implementing a Waste Management Plan that emphasizes composting and recycling. The Sustainability Plan and Waste Management are also intended to ensure compliance with City regulations, as listed in **Table 5.9-2**. These plans are further described below.

Sustainability Plan

The proposed project would include the development and implementation of an event Sustainability Plan, led by the Event Authority in consultation with the San Francisco Department of the Environment (DOE) and other involved organizations. The Sustainability Plan would describe event-related sustainability activities taking place in San Francisco and throughout the

TABLE 5.9-2
GREENHOUSE GAS REGULATIONS APPLICABLE TO THE 34TH AMERICA'S CUP

Regulation	Requirements	Project Compliance	Discussion
Transportation Sector			
Transportation Management Programs (Planning Code, Section 163) or People Plan (34th America's Cup Host and Venue Agreement, Section 8.1 of the Agreement calls for the City to coordinate the development of a "People Plan," which is to be approved by the Event Authority	Requires new buildings or additions over a specified size (buildings greater than 25,000 square feet or 100,000 square feet depending on the use and zoning district) within certain zoning districts (including downtown and mixed-use districts in the City's eastern neighborhoods and south of Market) to implement a Transportation Management Program and provide onsite transportation management brokerage services for the life of the building.	☒ Project Complies ☐ Not Applicable ☐ Project Does Not Comply	The 3th America's Cup would have up to 334, 000 viewers during an average peak race weekend race day. AC34 facilities would all be located within the jurisdiction of the Port of San Francisco, San Francisco Recreation and Park Department (SFRPD), and Golden Gate National Recreation Area. Therefore, the AC34 facilities would not be required to implement a transportation management program according to the San Francisco Planning Code. However, the project sponsor has prepared a Draft People Plan to address transportation management for AC34. The Draft People Plan has been structured according to four guiding principles: resource efficiency, environmental sustainability, strategic adaptability, and positive legacy. These principles favor bicycling and transit over the private automobile while emphasizing the need for effective communication and information tools that allow large numbers of users to make individual decisions that support the success of the system as a whole. The sustainable principles of the People Plan prioritize lower-impact forms of transport such as walking, bicycling, and transit. Automobile use in the immediate vicinity of the key spectator areas would be controlled, not only to encourage the use of alternate modes of transportation but also to limit the negative environmental effects of automobile congestion in close proximity to sensitive areas along the Bay waterfront. The Draft People Plan has an overall strategy for management of bicycles, pedestrians, transit, and private automobiles. The draft People Plan has been designed to reduce use of private automobile use and vehicle miles traveled (vmt), which would reduce vehicle generated GHG emissions.
Bicycle Parking in New and Renovated Commercial Buildings (Planning Code, Section 155.4)	Professional Services: (A) Where the gross square footage of the floor area is between 10,000 and 20,000, 3 bicycle spaces are required. (B) Where the gross square footage of the floor area is between 20,000 and 50,000, 6 bicycle spaces are required. (3) Where the gross square footage of the floor area exceeds 50,000 square feet, 12 bicycle spaces are required. Retail Services: (A) Where the gross square footage of the floor area is between 25,000 and 50,000, 3 bicycle spaces are required. (2) Where the gross square footage of the floor area is between 50,000 and 100,000, 6 bicycle spaces are required. (3) Where the gross square footage of the floor area exceeds 100,000 square feet, 12 bicycle spaces are required.	☐ Project Complies ☒ Not Applicable ☐ Project Does Not Comply	The 34th America's Cup would require the construction of several temporary facilities for spectator viewing and associated event activities. All would be located within the jurisdiction of the Port of San Francisco, the San Francisco Recreation and Park Department (SFRPD), and Golden Gate National Recreation Area (GGNRA). The AC34 People Plan includes several requirements for bicycle parking for temporary facilities and has a bicycle strategy for the event. The bicycle strategy includes requirements for secured bicycle parking, establishing bicycle rental and bicycle sharing facilities at strategic locations, and potentially implementing bike improvements to facilitate travel along the waterfront corridor to link AC34 event facilities. The draft People Plan includes requirements for bicycle parking, which would increase use of bicycle use for AC34, thereby reducing automobile use and vehicle generated GHG emissions.

TABLE 5.9-2 (Continued)
GREENHOUSE GAS REGULATIONS APPLICABLE TO THE 34TH AMERICA'S CUP

Regulation	Requirements	Project Compliance	Discussion
Energy Efficiency Sector			
San Francisco Green Building Requirements for Energy Efficiency (Port Building Code, Chapter 13C and Environment Code Chapter 7)	Commercial buildings greater than 5,000 square feet will be required to be at a minimum 14 percent more energy efficient than Title 24 energy efficiency requirements. By 2008 large commercial buildings will be required to have their energy systems commissioned, and by 2010, these large buildings will be required to provide enhanced commissioning in compliance with LEED® Energy and Atmosphere Credit 3. Mid-sized commercial buildings will be required to have their systems commissioned by 2009, with enhanced commissioning by 2011.	☒ Project Complies ☐ Not Applicable ☐ Project Does Not Comply	The 34th America's Cup would require the construction of several temporary and permanent facilities within the jurisdiction of the Port of San Francisco, San Francisco Recreation and Park Department (SFRPD), and Golden Gate National Recreation Area (GGNRA). All new construction projects and major alterations (including Piers 27-29 America's Cup Village) of City-owned facilities and City leaseholds used for America's Cup activities must comply with Environment Code Chapter 7 and the 2010 Port Building Code Chapter 13C (if on Port property), and be LEED® Silver or higher certified by the Green Building Certification Institute. The requirements for AC34 facilities to be LEED Silver or higher would reduce the use of energy, water, and wastewater, thereby reducing GHG emissions.
Resource Efficiency and Green Building Ordinance (Environment Code, Chapter 7)	The ordinance specifies requirements for all city buildings as well as requirements for construction and demolition debris recycling, and requirement for new construction. All new construction must achieve at a minimum the LEED® Silver standard. These buildings are required to perform commissions to ensure achievement of design standards. All other buildings are required to meet the following minimum specifications related to energy efficiency: 1. Toilets must use no more than 1.6 gallons per flush 2. Showerheads must use no more than 1.5 gallons per minute 3. All lighting and electrical fixtures must meet specified requirements 4. All fluorescent lamps must be replaced	☒ Project Complies ☐ Not Applicable ☐ Project Does Not Comply	The 34th America's Cup would require the construction of several temporary and permanent facilities within the jurisdiction of the Port of San Francisco, San Francisco Recreation and Park Department (SFRPD), and Golden Gate National Recreation Area (GGNRA). All new construction projects and major alterations (including Piers 27-29 America's Cup Village) of City-owned facilities and City leaseholds used for America's Cup activities must comply with Environment Code Chapter 7 and the 2010 Port Building Code Chapter 13C (if on Port property) which requires LEED® Silver or higher certified by the Green Building Certification Institute. The requirements for AC34 facilities to be LEED Silver or higher would reduce the use of water, and wastewater, thereby reducing GHG emissions.
Environment Code, Chapter 20: Existing Commercial Building Energy Performance Environment Code, Chapter 20: Existing Commercial Building Energy Performance	The owner of any nonresidential building with a gross area of 10,000 square feet or greater shall conduct a comprehensive energy efficiency audit for each such building. Energy efficiency audits shall comprehensively examine whole buildings, and must be completed on the schedule set forth in Section 2004 of this Chapter, or as described in Section 2006, as applicable. (b) Energy Efficiency Audit Standards. Energy efficiency audits required by this Chapter shall meet or exceed the American Society of Heating, Refrigerating, and Air-conditioning Engineers (ASHRAE) Procedures for Commercial Building	☒ Project Complies ☐ Not Applicable ☐ Project Does Not Comply	All piers within the jurisdiction of the Port of San Francisco occupied for AC34 would be required to be annually audited for energy efficiency consistent with Environment Code Chapter 20. Energy efficiency would reduce the use of energy, water, and wastewater, thereby reducing GHG emissions.

TABLE 5.9-2 (Continued)
GREENHOUSE GAS REGULATIONS APPLICABLE TO THE 34TH AMERICA'S CUP

Regulation	Requirements	Project Compliance	Discussion
Energy Efficiency Sector (cont.)			
Environment Code, Chapter 20: Existing Commercial Building Energy Performance Environment Code, Chapter 20: Existing Commercial Building Energy Performance (cont.)	Energy Audits (2004), or shall comply with Section 2006, as applicable. Energy efficiency audits must be performed by, or under the supervision of, an energy professional as defined in subsections (c) and (d), below. The level of detail required in an energy efficiency audit shall be proportionate to the scale of the nonresidential building, such that: (1) Buildings greater than 50,000 square feet in gross area shall receive a comprehensive audit of the whole building which meets or exceeds the Level II Audit standard or equivalent as determined by the Director. (2) Buildings greater than 10,000 square feet and less than or equal to 49,999 square feet in gross area receive a walkthrough audit of the whole building which meets or exceeds the Level I audit standard, or equivalent as determined by the Director.		
San Francisco Green Building Requirements for Stormwater Management (San Francisco Building Code, Chapter 13) Or San Francisco Stormwater Management Ordinance (Public Works Code Article 4.2)	All new development or redevelopment disturbing more than 5,000 square feet of ground surface must manage stormwater onsite using low-impact design. Projects subject to the Green Building Ordinance requirements must comply with either LEED® Sustainable Sites Credits 6.1 and 6.2, or with the City's stormwater ordinance and stormwater design guidelines.	☒ Project Complies ☐ Not Applicable ☐ Project Does Not Comply	AC34 permanent construction work at Piers 30-32 and the Pier 27 America's Cup Village would be required to install stormwater management features, consistent with the San Francisco Stormwater Management Guidelines. This requirement would be specified in the construction bid requirements for both Piers 30-32 and Pier 27 America's Cup Village construction. The requirements for stormwater management features would reduce the use of water and wastewater, which would reduce GHG emissions from landscaping.
San Francisco Green Building Requirements for water-efficient landscaping (San Francisco Building Code, Chapter 13C and Port Building Code, Chapter 13)	All new commercial buildings greater than 5,000 square feet are required to reduce the amount of potable water used for landscaping by 5 percent.	☒ Project Complies ☐ Not Applicable ☐ Project Does Not Comply	All new landscaping installed for AC34 facilities would be required to comply with the water-efficient landscaping ordinance. The requirements for water efficient landscaping would reduce the use of water, which would reduce GHG emissions from landscaping.

TABLE 5.9-2 (Continued)
GREENHOUSE GAS REGULATIONS APPLICABLE TO THE 34TH AMERICA'S CUP

Regulation	Requirements	Project Compliance	Discussion
Energy Efficiency Sector (cont.)			
San Francisco Green Building Requirements for water use reduction (San Francisco Building Code, Chapter 13C, Port Building Code, Chapter 13, and Environment Code Chapter 7)	All new commercial buildings greater than 5,000 square feet are required to reduce the amount of potable water used by 20 percent.	☒ Project Complies ☐ Not Applicable ☐ Project Does Not Comply	All new construction projects and major alterations (including Piers 27-29 America's Cup Village) of City-owned facilities and City leaseholds used for America's Cup activities must comply with the Environment Code and the Port Building Code, Chapter 13, for all major construction and alterations projects including Piers 30-32 and the Piers 27-29 America's Cup Village. These projects would be required to reduce potable water use, where applicable. The requirements for water conservations would reduce GHG emissions generated from water usage.
Commercial Water Conservation Ordinance (San Francisco Building Code, Chapter 13A and Port Building Code, Chapter 13)	All existing commercial properties undergoing tenant improvements are required to achieve the following minimum standards: 1. All showerheads have a maximum flow of 2.5 gallons per minute (gpm) 2. All showers have no more than 1 showerhead per valve 3. All faucets and faucet aerators have a maximum flow rate of 2.2 gpm 4. All water closets (toilets) have a maximum rated water consumption of 1.6 gallons per flush (gpf) 5. All urinals have a maximum flow rate of 1.0 gpf 6. All water leaks have been repaired	☒ Project Complies ☐ Not Applicable ☐ Project Does Not Comply	The tenant improvements for AC34 and all permanent construction projects at Piers 30-32 and Piers 27-29 would be required to comply with the Port Building Code Chapter 13 for commercial water conservation. The requirements for water conservations would reduce GHG emissions generated from water usage.
San Francisco Administrative Code, Chapter 63: Water Efficient Landscaping	(a) This chapter applies to the following: (1) Tier 1: All public agency, residential, and commercial new construction landscape projects and rehabilitated landscape projects with a modified landscape area equal to or greater than 1,000 square feet and less than 2,500 square feet (2) Tier 2: All public agency, residential and commercial new construction and rehabilitated landscape projects with a modified landscape area equal to or greater than 2,500 square feet (3) The irrigation and maintenance of any landscape irrigation system in the City and County of San Francisco (b) This ordinance does not apply to: (1) Registered local, state, or federal historical sites where the landscape is maintained as part of the historical integrity of the site	☒ Project Complies ☐ Not Applicable ☐ Project Does Not Comply	All new landscaping installed for AC34 facilities would be required to comply with the water-efficient landscaping ordinance. This requirement would be specified in bid requirements for AC34 contractors. The requirements for water efficient landscaping would reduce the use of water, which would reduce GHG emissions from landscaping.

TABLE 5.9-2 (Continued)
GREENHOUSE GAS REGULATIONS APPLICABLE TO THE 34TH AMERICA'S CUP

Regulation	Requirements	Project Compliance	Discussion
Energy Efficiency Sector (cont.)			
San Francisco Administrative Code, Chapter 63: Water Efficient Landscaping (cont.)	(2) Ecological restoration projects that do not require a permanent irrigation system (3) Plant collections or animal habitat areas, as part of botanical gardens, zoological gardens, and arboretums open to the public (c) The General Manager may waive some or all of the requirements of this chapter if, based on a site inspection, the General Manager determines that compliance is not feasible. (d) A process for document submissions and approvals pursuant to Section 63.6.1 will be developed by the General Manager in conjunction with the Department of Building Inspection, with the purpose of administrative efficiency and effective customer service. Regulation of Landscape Irrigation Efficiency: (a) Landscape projects shall be installed, constructed, operated, and maintained in accordance with this chapter and the rules and regulations adopted by the Public Utilities Commission that establish limits on water consumption for the purpose of irrigating landscape areas that are part of new construction, landscape rehabilitation projects, and existing landscapes. (b) Landscape projects shall be planted and irrigated efficiently by complying with water efficient design and operation requirements developed by the General Manager, including but not limited to the use of low water use plants or climate appropriate plants, restrictions on turf areas over 25 percent of the total landscaped area or on steep slopes, irrigation system audits, regular irrigation scheduling and maintenance practices. (c) All landscape projects shall not exceed a Maximum Applied Water Allowance using the formulas developed by the General Manager for local climate conditions within the City and County of San Francisco. (d) Landscape areas irrigated with graywater or harvested rain water may have a Maximum Applied Water Allowance that exceeds those for landscapes irrigated with potable water. (e) The architectural guidelines of a common interest development, which include community apartment projects, condominiums, planned developments, and stock cooperatives as defined in Section 1351 of the California Civil Code, shall not prohibit or include conditions that have the effect of prohibiting the use of low water use plants as a group.		

TABLE 5.9-2 (Continued)
GREENHOUSE GAS REGULATIONS APPLICABLE TO THE 34TH AMERICA'S CUP

Regulation	Requirements	Project Compliance	Discussion
Renewable Energy Sector			
San Francisco Green Building Requirements for renewable energy (San Francisco Building Code, Chapter 13C and Port Building Code, Chapter 13)	By 2012, all new commercial buildings will be required to provide onsite renewable energy or purchase renewable energy credits pursuant to LEED® Energy and Atmosphere Credits 2 or 6. Credit 2 requires providing at least 2.5 percent of the buildings energy use from onsite renewable sources. Credit 6 requires providing at least 35 percent of the building's electricity from renewable energy contracts. The Port Building Code requirements are the following: (1) At least 1% of the building's energy costs are offset by on-site renewable energy generation, meeting LEED® credit EA 2, including any combination of: photovoltaic, solar thermal, wind, biofuel-based electrical systems, geothermal heating, geothermal electric, wave, tidal, or low-impact hydroelectric systems. OR (2) Engage in at least a 2-year renewable energy contract from renewable energy sources located in the State of California to provide at least 100% of the building's electricity as estimated in energy efficiency compliance documentation or US Department of Energy Commercial Building Energy Consumption Survey median annual electrical intensity for similar types of facilities (in kilowatt hours per square foot per year,) meeting LEED® credit EA 6, OR (3) In addition to meeting 13C.5.103.2.8 Energy Performance requirement, achieve an additional 10% compliance margin over Title 24 Part 6 2008 California Energy Standards, for a total compliance margin of at least 25%,	☒ Project Complies ☐ Not Applicable ☐ Project Does Not Comply	The 34th America's Cup would require the construction of several temporary and permanent facilities within the jurisdiction of the Port of San Francisco, San Francisco Recreation and Park Department (SFRPD), and Golden Gate National Recreation Area (GGNRA). All new construction projects and major alterations (including Piers 27-29 America's Cup Village) of City-owned facilities and City leaseholds used for America's Cup activities must comply with Environment Code Chapter 7 and the 2010 Port Building Code Chapter 13C (if on Port property) requirements for use of renewable energy. Therefore, all new construction projects and major alterations would be required to provide for renewable energy onsite or purchase energy credits. The requirements for AC34 facilities to be LEED Silver or higher would reduce the use of energy these facilities, thereby reducing GHG emissions.
Waste Reduction Sector			
San Francisco Green Building Requirements for solid waste (San Francisco Building Code, Chapter 13C and Port Building Code, Chapter 13)	Pursuant to Section 1304C.0.4 of the Green Building Ordinance, all new construction, renovation, and alterations subject to the ordinance are required to provide recycling, composting and trash storage, collection, and loading that is convenient for all users of the building.	☒ Project Complies ☐ Not Applicable ☐ Project Does Not Comply	The Waste Management Plan for 34th America's Cup outlines how AC34 would comply with the requirements of Section 1304C.0.4 of the Building Code. The Waste Management Plan states that, for the construction of facilities that would be used by event staff, racing teams, media, and sponsors, it would be required that space for recycling is incorporated into the design. This means providing spaces for containers that would hold materials to be recycled (compostables and cans/bottles/paper), and locating those spaces for convenient use. It also means providing mounting surfaces at those container locations, where instructional signs can be posted. The requirements for recycling, composting and trash storage, collection, and loading that is convenient for all AC34 events and facilities would reduce trash sent to landfills, thereby reducing GHG emissions.

TABLE 5.9-2 (Continued)
GREENHOUSE GAS REGULATIONS APPLICABLE TO THE 34TH AMERICA'S CUP

Regulation	Requirements	Project Compliance	Discussion
Waste Reduction Sector (cont.)			
Mandatory Recycling and Composting Ordinance (Environment Code, Chapter 19)	All persons in San Francisco must separate their refuse into recyclables, compostables and trash, and place each type of refuse in a separate container designated for disposal of that type of refuse.	☒ Project Complies ☐ Not Applicable ☐ Project Does Not Comply	The Waste Management Plan for the 34th America's Cup outlines how AC34 would comply with the requirements of the Mandatory Recycling and Composting Ordinance. The Waste Management Plan states that for all AC34 facilities, all containers for landfill-bound waste must be paired with compost and recycling collection containers. Similarly, receptacles for collecting recyclable and compostable material must be clustered so that access to disposal of all three material streams is provided. These clusters will be referred to as "disposal stations" or "stations." Each disposal station must provide color-coded containers, or indicators, as well as signage. According to the Special Event Ordinance, the disposal stations must be easy to locate with indicators of their location visible above the height of the crowd. The requirements for recycling, composting and access to composting and recycling facilities for all AC34 events and facilities would reduce trash sent to landfills, thereby reducing GHG emissions.
Food Service Waste Reduction Ordinance (Environment Code, Chapter 16)	Any establishment that serves food prepared in San Francisco is prohibited from using polystyrene foam (Styromfoam) to-go containers. Any containers used must be either recyclable or compostable in the City's programs. Compostable food service ware is defined according to American Society for Testing and Materials (ASTM) standards, and must be clearly marked.	☒ Project Complies ☐ Not Applicable ☐ Project Does Not Comply	AC34 events and facilities would be required to comply with the Mandatory Food Service Ware Ordinance, which promotes the uses of compostable food service ware. One or more of the Draft Implementation Plans would describe how AC34 would comply with this required ordinance. The requirements for recyclable or compostable food service ware would reduce trash sent to landfills, thereby reducing GHG emissions.
San Francisco Special Events Ordinance No. 73-89	Any applicant seeking permission for the temporary use or occupancy of a public street, a street fair, or an athletic event within the city and county that includes the dispensing of beverages or that generates large amounts of other materials must submit a recycling plan. Recycling plans shall include arrangements for collection and disposition of source separated recyclables and/or compostable by a service provider or the event organizer. Although the requirements of the Mandatory Recycling Ordinance (see above) are generally more stringent than those of the Special Events Ordinance, the Special Events Ordinance also requires a monetary deposit that may be forfeited if recycling cannot be documented after the event.	☒ Project Complies ☐ Not Applicable ☐ Project Does Not Comply	The Waste Management Plan for the 34th America's Cup has a strategy for implementation of the San Francisco Special Events Ordinance, including requirements and guidelines for the reduction, diversion, and management of discards from spectator activities. Discards from spectator areas are expected to be a subset of typical municipal solid waste, containing glass and plastic bottles, plastic packaging, mixed paper, food scraps, and non-recyclable (but compostable) paper products, and compostable plastics. The event staff and vendors would be required to direct these discards into three separate waste streams, mimicking the City's well-established programs for recyclable, compostable, and landfill bound materials. The Waste Management Plan states that a Zero Waste Coordinator or other similar management position (Coordinator) would ensure compliance with local legislation, coordinate purchasing and disposal requirements, and provide technical assistance for vendors and the event as a whole. Additionally, event support staff would be needed to assist the Coordinator and to manage the discards from the event by monitoring public disposal stations, collecting litter, and sorting wastes where necessary. The Coordinator would be tasked with reporting on the event and collecting data to evaluate performance in 2012, with an eye to improving efforts in 2013. The requirements for recycling, composting and access to composting and recycling facilities for all AC34 events and facilities would reduce trash sent to landfills, thereby reducing GHG emissions.

TABLE 5.9-2 (Continued)
GREENHOUSE GAS REGULATIONS APPLICABLE TO THE 34TH AMERICA'S CUP

Regulation	Requirements	Project Compliance	Discussion
Waste Reduction Sector (cont.)			
San Francisco Construction and Demolition Debris Recovery Ordinance (San Francisco Environment Code, Chapter 14)	A person conducting full demolition of an existing structure must submit a waste diversion plan to the Director of the Environment that provides for a minimum of 65-percent diversion from landfill of construction and demolition debris, including materials source separated for reuse or recycling. The same requirements apply to all construction projects such as new construction, remodels and partial demolitions. The building permit holder or the property owner must make sure that all construction and demolition materials removed from the project are properly recycled. Construction and demolition materials may not be placed in trash or sent to a landfill. Construction and demolition materials source-separated at the construction site for reuse or recycling must be taken to a facility that reuses or recycles those materials. All mixed C&D debris must be transported offsite by a registered transporter and taken to a registered facility that can process mixed construction and demolition debris and divert a minimum of 65 percent of the material from landfill.	☒ Project Complies ☐ Not Applicable ☐ Project Does Not Comply	The Waste Management Plan for the 34th America's Cup outlines how AC34 would comply with the requirements of Construction and Demolition Debris Recovery Ordinance. Implementation measures include maximizing deconstruction, reusing construction materials, keeping materials separate throughout the demolition process to increase salvaged materials, and providing clean concrete to processors that would crush it to salvage reinforcing steel and produce rock products. The requirements for recycling construction and demolition materials for AC34 facilities would reduce trash sent to landfills, thereby reducing GHG emissions.
Plastic Bag Reduction Ordinance (Environment Code, Chapter 17)	All stores shall provide only the following as checkout bags to customers: recyclable paper bags, and/or compostable plastic bags, and/or reusable bags.	☒ Project Complies ☐ Not Applicable ☐ Project Does Not Comply	The Waste Management Plan for AC34 includes a recommendation that the event operations adhere to the Plastic Bag Reduction Ordinance, that all vendors use alternatives to plastic bags, such as paper or poly-coated bags for food service; and paper, durable or reusable cloth, or woven bags for merchandise. The requirements for AC34 vendors to use alternatives to plastic bags it would reduce waste sent to landfills, thereby reducing GHG emissions.
Environment/Conservation Sector			
Wood Burning Fireplace Ordinance (San Francisco Building Code, Chapter 31, Section 3102.8)	The installation of wood-burning fireplaces is banned except for the following: • Pellet-fueled wood heater • EPA-approved wood heater • Wood heater approved by the Northern Sonoma Air Pollution Control District	☒ Project Complies ☐ Not Applicable ☐ Project Does Not Comply	The AC34 facilities would not include the installation of wood-burning fireplaces. By using natural gas and other methods of heating and banning wood-burning fireplaces, GHG emissions would be diverted from entering into the environment.

TABLE 5.9-2 (Continued)
GREENHOUSE GAS REGULATIONS APPLICABLE TO THE 34TH AMERICA'S CUP

Regulation	Requirements	Project Compliance	Discussion
Environment/Conservation Sector (cont.)			
Executive Directive, 09-03: Healthy and Sustainable Food for San Francisco	In June of 2009, Mayor Gavin Newsom announced an Executive Directive 09-03 to promote Healthy and Sustainable Food in San Francisco. This comprehensive food policy for San Francisco approaches the food system holistically; from food production and distribution of consumption and recycling with the acknowledgement that a thriving local food system has far reaching benefits for the health, environment and economy of San Francisco and its residents. The Executive Directive called into action the San Francisco Food Policy Council. The Council is tasked first and foremost with ensuring that the principles of the Executive Directive are made into law and that these laws are put to use to create healthy and sustainable food system in San Francisco. The work of the Food Policy Council has been organized around six major themes: Nutritional Standards, Urban Agriculture, Regional Food, Hunger and Food Security, Food Business, and Fisheries.	☒ Project Complies ☐ Not Applicable ☐ Project Does Not Comply	According to requirements of Executive Directive, 09-03: Healthy and Sustainable Food for San Francisco, AC34 vendors would be required to emphasizes use of organic, sustainably harvested, local food by vendors consistent with Healthy and Sustainable Food for San Francisco. Prospective food vendors would be scored for compliance with Healthy and Sustainable Food for San Francisco as part of their bid evaluation. The use of local food by AC34 vendors would reduce the distance food has to travel, thereby reducing transportation GHG emissions.
Environment Code Chapter 5, Sec. 509 Non-PVC Plastics	Wherever possible, all departments shall obtain non-PVC plastics where appropriate alternative products composed of non-chlorinated materials are available. City departments are not required to procure non-chlorinated products in any of the following circumstances: (i) the product is not available in a reasonable period of time; (ii) the product would fail to meet reasonable performance standards; or (iii) the product is only available at an unreasonable price.	☒ Project Complies ☐ Not Applicable ☐ Project Does Not Comply	City Departments comply with Environment Code Chapter 5, Sec. 509 Non-PVC Plastics, which limits use of PVC plastics. This requirement would be specified in relevant bid requirements for AC34 vendors and contractors. The reduction in use of PVC plastics would reduce GHG emissions.
Environment Code Chapter 13: Arsenic Treated Wood	Except as provided in this section, after June 30, 2003, each City department entering into a new contract or extending the term of an existing contract for the purchase of preservative-treated wood products, and each contractor purchasing preservative-treated wood products on behalf of the City, shall only purchase such products from the list of alternatives adopted by the department pursuant to Section 1302 of this chapter. A City department or contractor that purchases preservative-treated wood containing arsenic for saltwater immersion shall be exempt from this section.	☒ Project Complies ☐ Not Applicable ☐ Project Does Not Comply	All new construction projects for AC34 facilities would be required to comply with the requirements for the purchase of arsenic-treated wood. Exemptions from this requirement would only be allowed in accordance with Section 1302 of the Environment Code. This requirement would be specified in bid requirements for AC34 vendors and contractors. The reduction in use of arsenic treated wood would reduce GHG emissions.

TABLE 5.9-2 (Continued)
GREENHOUSE GAS REGULATIONS APPLICABLE TO THE 34TH AMERICA'S CUP

Regulation	Requirements	Project Compliance	Discussion
Environment/Conservation Sector (cont.)			
Environment Code Chapter 8, Tropical Hardwood and Virgin Redwood Ban	The City and County shall not enter into or renew any contract with any person or entity for the provision of services, the performance of which calls for the use of any tropical hardwood, tropical hardwood wood product, virgin redwood, or virgin redwood wood product. (2) In the case of any bid proposal or solicitation, request for bid or proposal or contract for the construction of any public work, building maintenance or improvement for or on behalf of the City and County, the City shall not require or permit the use of any tropical hardwood, tropical hardwood wood product, virgin redwood or virgin redwood wood product. (3) Every bid proposal, solicitation, request for bid or proposal and contract for the construction of any public work, building maintenance or improvement shall contain a statement that any bid, proposal or other response to a solicitation for bid or proposal which proposes or calls for the use of any tropical hardwood, tropical hardwood wood product, virgin redwood or virgin redwood wood product in performance of the contract shall be deemed nonresponsive. All contracts involving wood or wood products entered into by any department of the City and County shall include as a material condition to that contract the following paragraph in the contract: "Except as expressly permitted by the application of Sections 802(b) and 803(b) of the San Francisco Environment Code, Contractor shall not provide any items to the City in performance of this contract which are tropical hardwoods, tropical hardwood wood products, virgin redwood or virgin redwood wood products." (b) Every contract shall also contain a statement urging companies not to import, purchase, obtain, or use for any purpose, any tropical hardwood, tropical hardwood wood product, virgin redwood or virgin redwood wood product. This Subsection (b) shall not apply to contracts with public entities for the provision of water or power and related services.	☒ Project Complies ☐ Not Applicable ☐ Project Does Not Comply	All new construction projects for AC34 facilities would be required to comply with the requirements for the ban on purchase of tropical hardwoods and virgin redwood. Exemptions from this requirement would only be allowed in accordance with Section 802(b) and 803(b) of the Environment Code. This requirement would be specified in bid requirements for AC34 vendors and contractors. The ban on purchase of tropical hardwood and virgin redwood would help to limit deforestations, which can contribute to global climate change.

event life cycle. It would be an overarching document covering event sustainability activities implemented by various organizations. The Sustainability Plan would include sustainability-related regulations required by the City and County of San Francisco, and it would cover both onshore and offshore event sustainability activities, such as carbon emissions, waste, water, food, habitat protection and transport. It would make reference to other Plans being developed for the event, such as the People Plan. The Sustainability Plan aims to reduce AC34 generated GHG emissions.

Waste Management Plan

Consistent with the provisions of the Host Agreement, a Waste Management Plan would be developed to provide options for recycling, composting and waste reduction to meet or exceed the City's goals for landfill diversion and comply with City regulations. Elements of the Waste Management Plan would include requirements for accessible and visible recycling and composting facilities, food and beverage vendors to use compostable and/or recyclable to-go food utensils and packaging; requirements for vendors to maintain adequate composting and recycling receptacles and service levels to meet demand for expected crowds; coordination with local recycling and composting collection firms to ensure adequate collection service; and prohibitions on the use of non-recyclable or non-compostable food service materials in event areas. As described in Table 5.9.2, the Waste Management Plan would help to ensure implementation of City regulations for reducing waste sent to landfills and increasing recycling and composting, which would reduce GHG emissions.

People Plan

The City would develop a "People Plan" that would set forth provisions for planning and managing support services, including a transportation management plan, to allow race sponsors and spectators to attend the 2012 and 2013 races. The People Plan would include several transportation implementation strategies to manage spectators, such as effective public transportation service to the public areas, including the on-shore venue and the on-the-water spectator areas during the event; a program for managing parking spaces in and around the venue for the Event Authority, the Event Authority affiliates, competitors, the media, the event sponsors and hospitality guests; a program for managing satellite public parking lots and facilities close to Muni and regional transit lines that access spectator areas; provisions for additional operation of public and private shuttle service also are included to supplement public transit service as determined to be needed; an communication strategy to provide the public and AC34 visitors advance information on special transportation arrangements and recommendations to access race events; and an information and sign-posting system in and around the city and, in particular, on main accesses from highways, main entrance roads, airports and public transit stations.

The People Plan would examine alternatives for transportation to event venues oriented to minimize private automobile use and plans for expanded transportation access by multiple modes that connect visitors to AC34 events, as well as serve residents and workers in the affected areas who may not attend AC34 events. The People Plan proposal includes temporary transit enhancements along the F-Line Embarcadero corridor and temporary transit service to locations including Fort Mason and Crissy Field. The People Plan would also examine the need for possible

partial street closures to encourage pedestrian and bicycle access, and satellite parking locations with connections to public transit. Major event areas would include secure bicycle parking facilities. The People Plan would also examine water-oriented transportation service, including ferry and excursion access to secondary viewing locations such as Treasure Island and Angel Island. As described in Table 5.9.2, implementation of the People Plan would reduce GHG emissions by minimizing private automobile use and increasing use of public transit, bicycles, and walking.

As discussed in San Francisco's *Strategies to Address Greenhouse Gas Emissions*, projects within the City and County of San Francisco are required to comply with a variety of regulations that collectively reduce a project's contribution to greenhouse gas emissions. Specific requirements for the America's Cup event are detailed in Table 5.9-2 and would reduce GHG-related emissions that result from transportation, energy, waste, and water and wastewater treatment. The proposed project was reviewed for compliance with the City's *Strategies to Address Greenhouse Gas Emissions*, which as described above, has been determined to meet BAAQMD requirements for a qualified Greenhouse Gas Reduction Strategy. Additionally, temporary facilities constructed at GGNRA, which are outside of the City and County of San Francisco, are considered to result in a less-than-significant impacts of GHG emissions because of the minimal amount to construction they would require and because these facilities and locations would be required to implement the Draft People Plan, forthcoming Sustainability Plan, Draft Waste Management Plan, and forthcoming Parks Event Operations Plan, which would include specific requirements for water conservation, energy conservation, recycling and composting, and increased transit use, all of which would reduce GHG emissions. As determined in the GHG compliance checklist for the 34th America's Cup, the proposed project would be consistent with the City's *Strategies to Address Greenhouse Gas Emissions*.[22]

In addition, as detailed in Section 5.6, Transportation and Circulation, the project would be required to implement mitigation measures that would require increased transit service to accommodate spectators of AC34, which would minimize private automobile use, thereby reducing GHG transportation generated emissions. Additionally, as detailed in Section 5.8, Air Quality, the project would be required to implement mitigation measures that would reduce diesel particulate emissions.

Other sources of GHG emissions that would not be reduced through compliance with the City's *Strategies to Address Greenhouse Gas Emissions* include mobile boat sources from private spectator vessels. These emissions sources for vehicles and marine vessels are regulated at the state and federal level by United States Environmental Protection Agency (U.S. EPA) and California Air Resources Board (CARB). As discussed in Air Quality, the project sponsor has no authority or regulation over private spectator vessels and therefore cannot implement measures that would reduce their GHG emissions.

As described above, AC34 would implement a variety of Plans designed to reduce project-related GHG emissions, including a Sustainability Plan, Waste Management Plan, and the People Plan. Given that the proposed project was determined to be consistent with the City's *Strategies to*

[22] Ibid.

Address Greenhouse Gas Emissions, AC34 would not generate GHG emissions that would have a significant impact on the environment, nor would the project conflict with an applicable plan, policy or regulation for reducing GHG emissions, and the project's contribution of GHGs would be considered *less than significant*.

James R. Herman Cruise Terminal and Northeast Wharf Plaza (Cruise Terminal Project)

The James R. Herman Cruise Terminal and Northeast Wharf Plaza would result in direct and indirect GHG emissions from relocating the existing primary cruise terminal from Pier 35 to Pier 27, and by constructing a Phase 2 of the cruise terminal building and the Northeast Wharf Plaza Park. As discussed above, San Francisco's *Strategies to Address Greenhouse Gas Emissions* requires that new development and renovations/alterations for private projects and municipal projects comply with San Francisco's ordinances that reduce greenhouse gas emissions. A GHG compliance checklist for the Cruise Terminal project was submitted to the San Francisco Planning Department and reviewed for consistency with the GHG Reduction Strategy. The Cruise terminal project would be consistent with the City's *Strategies to Address Greenhouse Gas Emissions* and the policies from the San Francisco General Plan, as shown in **Table 5.9-3**. The James R. Herman Cruise Terminal and Northeast Wharf Plaza would support the General Plan policies and the Port Climate Action Plan for reducing greenhouse gases by constructing the cruise terminal to LEED Silver or higher. The cruise terminal project, upon completion, would allow for continued provision of shoreside power to cruise ships and use of San Francisco's electrical grid while ships are in port, thereby allowing for continued limitation of cruise ship diesel air pollutant emissions and reduction GHG emissions pursuant to existing regulations. The Cruise Terminal project was found to be in compliance the City's GHG reduction strategy, and, therefore, the potential GHG impacts would be *less than significant*.[23]

Mitigation: Not required

5.9.3.4 Future Long-Term Development Impacts

Impact LT-GG: Long-term development on Port properties under the Host Agreement would not result in greenhouse gas emissions at levels that would result in a significant impact on the environment or conflict with any policy, plan, or regulation adopted for the purpose of reducing greenhouse gas emissions. (Less than Significant)

The potential long-term development rights that may be exercised at Pier 26, Pier 28, Piers 30-32, Seawall Lot 330, Pier 19, Pier 19 ½, Pier 23, Pier 29, and the Brannan Street Wharf and Rincon Point Open Water Basins could allow development of a mix of retail, entertainment, residential, maritime, and office uses. There is no specific development proposal for any of these sites under consideration at this time. These long-term development rights are analyzed at a conceptual level

[23] San Francisco Planning Department, Compliance Checklist Greenhouse Gas Analysis for James R. Herman Cruise Terminal and Northeast Wharf Plaza, April 2011. A copy of this document is available for review at the San Francisco Planning Department, 1650 Mission Street, Suite 400, San Francisco as part of Case File. 2010.0493E.

TABLE 5.9-3
REGULATIONS APPLICABLE TO THE JAMES R. HERMAN CRUISE TERMINAL AND NORTHEAST WHARF PLAZA

Regulation	Requirement	Project Compliance	Discussion
Transportation sector			
Commuter Benefits Ordinance (Environment Code, Section 421)	All employers of 20 or more employees must provide at least one of the following benefit programs: (1) A pre-tax election consistent with 26 U.S.C. § 132(f), allowing employees to elect to exclude from taxable wages and compensation, employee commuting costs incurred for transit passes or vanpool charges, or (2) Employer paid benefit whereby the employer supplies a transit pass for the public transit system requested by each covered employee or reimbursement for equivalent vanpool charges at least equal in value to the purchase price of the appropriate benefit, or (3) Employer provided transit furnished by the employer at no cost to the employee in a vanpool or bus, or similar multi-passenger vehicle operated by or for the employer.	☒ Project Complies ☐ Not Applicable ☐ Project Does Not Comply	The operator for the cruise terminal would employ more than 20 people and therefore must comply with the commuter benefits ordinance. Additionally, retail components of the Northeast Wharf Plaza that would have over 20 employees would be required to comply with the commuter benefits ordinance. The Commuter Benefits Ordinance would reduce use of private automobile by commuters, which would reduce vehicle generated GHG emissions.
Clean Construction Ordinance (Administrative Code, Section 6.25)	Effective March 2009, all contracts for large (20+ day) City projects are required to: • Fuel diesel vehicles with B20 biodiesel, and • Use construction equipment that meet U.S. EPA Tier 2 standards or best available control technologies for equipment over 25 horsepower.	☒ Project Complies ☐ Not Applicable ☐ Project Does Not Comply	The Clean Construction Ordinance requirements would be included in construction bid requirements for the Cruise Terminal project. The requirements for the Clean Construction Ordinance would reduce criteria air pollutants as well as GHG emissions.
Bicycle Parking in City-Owned and Leased Buildings (Planning Code, Section 155.1)	***Class 1 and 2 Bicycle Parking Spaces*** Class 1 Requirements: (A) Provide 2 spaces in buildings with 1 to 20 employees. (B) Provide 4 spaces in buildings with 21 to 50 employees. (C) In buildings with 51 to 300 employees, provide bicycle parking equal to at least 5 percent of the number of employees at that building, but no fewer than 5 bicycle spaces. (D) In buildings with more than 300 employees, provide bicycle parking equal to at least 3 percent of the number of employees at that building, but no fewer than 16 bicycle spaces. In addition to the Class 1 bicycle parking spaces provide Class 2 bicycle parking. Class 2 Requirements: (A) In buildings with one to 40 employees, at least 2 bicycle parking spaces shall be provided.	☒ Project Complies ☐ Not Applicable ☐ Project Does Not Comply	The Cruise Terminal project would comply with Planning Code Section 155.1 and would provide bicycle parking. The bicycle parking requirements would increase use of bicycles and reduce vehicle usage, thereby reducing vehicle generated GHG emissions.

TABLE 5.9-3 (Continued)
REGULATIONS APPLICABLE TO THE JAMES R. HERMAN CRUISE TERMINAL AND NORTHEAST WHARF PLAZA

Regulation	Requirement	Project Compliance	Discussion
Transportation sector (cont.)			
Bicycle Parking in City-Owned and Leased Buildings (Planning Code, Section 155.1) (cont.)	(B) In buildings with 41 to 50 employees, at least 4 bicycle parking spaces shall be provided. (C) In buildings with 51 to 100 employees, at least 6 bicycle parking spaces shall be provided. (D) In buildings with more than 100 employees, at least 8 bicycle parking spaces shall be provided. Wherever a responsible City official is required to provide 8 or more Class 2 bicycle parking spaces, at least 50 percent of those parking spaces shall be covered.		
Energy Efficiency Sector			
Resource Efficiency and Green Building Ordinance (Environment Code, Chapter 7 and Port Building Code, Chapter 13)	The ordinance specifies requirements for all city buildings as well as requirements for construction and demolition debris recycling, and requirement for new construction. All new construction must achieve at a minimum the LEED® Silver standard. These buildings must perform commissions to ensure achievement of design standards. All other buildings must meet the following minimum specifications related to energy efficiency: 1. Toilets must use no more than 1.6 gallons per flush 2. Showerheads must use no more than 1.5 gallons per minute. 3. All lighting and electrical fixtures must meet specified requirements 4. All fluorescent lamps must be replaced	☒ Project Complies ☐ Not Applicable ☐ Project Does Not Comply	The Cruise Terminal project must comply with Environment Code Chapter 7 and the 2010 Port Building Code Chapter 13C (if on Port property), and be LEED® Silver or higher, certified by the Green Building Certification Institute. These requirements would be included in construction bid requirements for the Cruise Terminal project. Additionally, cruise ships would be powered by shoreside power while berthed at the cruise terminal. The shoreside power system enables cruise ships to plug into the City's electrical grid while in port, instead of relying on the vessel's diesel generators for power, thereby substantially reducing diesel emissions and GHG emissions. The requirements for the Cruise Terminal to be LEED Silver or higher would reduce the use of energy, water, wastewater, for this facilities, thereby reducing GHG emissions.
San Francisco Green Building Requirements for Stormwater Management (San Francisco Building Code, Chapter 13) Or San Francisco Stormwater Management Ordinance (Public Works Code, Article 4.2)	All new development or redevelopment disturbing more than 5,000 square feet of ground surface must manage stormwater onsite using low-impact design. Projects subject to the Green Building Ordinance Requirements must comply with either LEED® Sustainable Sites Credits 6.1 and 6.2, or with the City's stormwater ordinance and stormwater design guidelines.	☒ Project Complies ☐ Not Applicable ☐ Project Does Not Comply	The Cruise Terminal project would be required to install stormwater management features, consistent with the San Francisco Stormwater Management Guidelines. These requirements would be included in construction bid requirements for the cruise terminal and wharf plaza. The requirements for stormwater management features would reduce the use of water and wastewater, which would reduce GHG emissions from landscaping.

TABLE 5.9-3 (Continued)
REGULATIONS APPLICABLE TO THE JAMES R. HERMAN CRUISE TERMINAL AND NORTHEAST WHARF PLAZA

Regulation	Requirement	Project Compliance	Discussion
Energy Efficiency Sector (cont.)			
San Francisco Green Building Requirements for water efficient landscaping (San Building Code, Chapter 13C and Port Building Code, Chapter 13)	All new commercial buildings greater than 5,000 square feet must reduce the amount of potable water used for landscaping by 50 percent.	☒ Project Complies ☐ Not Applicable ☐ Project Does Not Comply	The proposed Cruise Terminal project would be required to comply with the Green Landscaping Ordinance. The reduction in potable water would reduce GHG emissions from water usage.
San Francisco Green Building Requirements for water use reduction (San Francisco Building Code, Chapter 13C; Port Building Code, Chapter 13; and Environment Code, Chapter 7)	All new commercial buildings greater than 5,000 square feet must reduce the amount of potable water used by 20 percent.	☒ Project Complies ☐ Not Applicable ☐ Project Does Not Comply	The proposed Cruise Terminal project would be required to comply with the requirements of the Port's Green Building Ordinance and the Environment Code. The reduction in potable water would reduce GHG emissions from water usage.
San Francisco Administrative Code, Chapter 63: Water Efficient Landscaping	This chapter applies to the following: (1) Tier 1: All public agency, residential, and commercial new construction landscape projects and rehabilitated landscape projects with a modified landscape area equal to or greater than 1,000 square feet and less than 2,500 square feet; (2) Tier 2: All public agency, residential and commercial new construction and rehabilitated landscape projects with a modified landscape area equal to or greater than 2,500 square feet; (3) The irrigation and maintenance of any landscape irrigation system in the City and County of San Francisco. (b) This ordinance does not apply to: (1) Registered local, state, or federal historical sites where the landscape is maintained as part of the historical integrity of the site; (2) Ecological restoration projects that do not require a permanent irrigation system; (3) Plant collections or animal habitat areas, as part of botanical gardens, zoological gardens, and arboretums open to the public. (c) The General Manager may waive some or all of the requirements of this chapter if, based on a site inspection, the General Manager determines that compliance is not feasible.	☒ Project Complies ☐ Not Applicable ☐ Project Does Not Comply	All new landscaping installed for the cruise terminal and wharf plaza would be required to comply with the water- efficient landscaping ordinance. These requirements would be included in construction bid requirements for the Cruise Terminal project. The requirements for water conservations would reduce GHG emissions generated from water usage.

TABLE 5.9-3 (Continued)
REGULATIONS APPLICABLE TO THE JAMES R. HERMAN CRUISE TERMINAL AND NORTHEAST WHARF PLAZA

Regulation	Requirement	Project Compliance	Discussion
Energy Efficiency Sector (cont.)			
San Francisco Administrative Code, Chapter 63: Water Efficient Landscaping (cont.)	(d) A process for document submissions and approvals pursuant to Section 63.6.1 will be developed by the General Manager in conjunction with the Department of Building Inspection, with the purpose of administrative efficiency and effective customer service. Landscape projects shall be installed, constructed, operated, and maintained in accordance with this chapter and the rules and regulations adopted by the Public Utilities Commission that establish limits on water consumption for the purpose of irrigating landscape areas that are part of new construction, landscape rehabilitation projects, and existing landscapes. (b) Landscape projects shall be planted and irrigated efficiently by complying with water efficient design and operation requirements developed by the General Manager, including but not limited to the use of low water use plants or climate appropriate plants, restrictions on turf areas over 25 percent of the total landscaped area or on steep slopes, irrigation system audits, regular irrigation scheduling and maintenance practices. (c) All landscape projects shall not exceed a Maximum Applied Water Allowance using the formulas developed by the General Manager for local climate conditions within the City and County of San Francisco. (d) Landscape areas irrigated with graywater or harvested rain water may have a Maximum Applied Water Allowance that exceeds those for landscapes irrigated with potable water. (e) The architectural guidelines of a common interest development, which include community apartment projects, condominiums, planned developments, and stock cooperatives as defined in Section 1351 of the California Civil Code, shall not prohibit or include conditions that have the effect of prohibiting the use of low water use plants as a group.		
Waste Reduction Sector			
Resource Efficiency and Green Building Ordinance (Environment Code, Chapter 7 and Port Building Code, Chapter 13)	All demolition (and new construction) projects must prepare a Construction and Demolition Debris Management Plan designed to recycle construction and demolition materials to the maximum extent feasible, with a goal of 75-percent diversion. All city buildings must provide adequate recycling space.	☒ Project Complies ☐ Not Applicable ☐ Project Does Not Comply	The contractor for the construction of the Cruise Terminal project would be required to prepare a Construction and Demolition Debris Management Plan. These requirements would be included in construction bid requirements for the Cruise Terminal project. The requirements for recycling construction and demolition materials for construction of the Cruise Terminal Phase 2 and the Northeast Wharf Plaza would reduce trash sent to landfills, thereby reducing GHG emissions.

TABLE 5.9-3 (Continued)
REGULATIONS APPLICABLE TO THE JAMES R. HERMAN CRUISE TERMINAL AND NORTHEAST WHARF PLAZA

Regulation	Requirement	Project Compliance	Discussion
Waste Reduction Sector (cont.)			
Resource Conservation Ordinance (Environment Code, Chapter 5)	This ordinance establishes a goal for each City department to (i) maximize purchases of recycled products, and (ii) divert from disposal as much solid waste as possible so that the City can meet the state-mandated 50-percent division requirement. Each City department shall prepare a Waste Assessment. The ordinance also requires the Department of the Environment to prepare a Resource Conservation Plan that facilitates waste reduction and recycling. The ordinance requires janitorial contracts to consolidate recyclable materials for pick up. Lastly, the ordinance specifies purchasing requirements for paper products.	☒ Project Complies ☐ Not Applicable ☐ Project Does Not Comply	The proposed Cruise Terminal project would be required to comply with the Resource Conservation Ordinance. These requirements would be included in construction and operation contracts for the operation of the Cruise Terminal project. The requirement for purchase of recycled materials would reduce materials sent to landfills, which would reduce GHG emissions.
Mandatory Recycling and Composting Ordinance (Environment Code, Chapter 19)	All persons in San Francisco must separate their refuse into recyclables, compostables, and trash, and place each type of refuse in a separate container designated for disposal of that type of refuse.	☒ Project Complies ☐ Not Applicable ☐ Project Does Not Comply	The proposed Cruise Terminal project would be required to comply with the Mandatory Recycling and Composting Ordinance. These requirements would be included in operation contracts for the Cruise Terminal project. The requirements for recycling, composting and separate containers for the Cruise Terminal project would reduce trash sent to landfills, thereby reducing GHG emissions.
Construction Recycled Content Ordinance (Administrative Code, Section 6.4)	This ordinance requires the use of recycled content material in public works projects to the maximum extent feasible and gives preference to local manufacturers and industry.	☒ Project Complies ☐ Not Applicable ☐ Project Does Not Comply	The proposed cruise terminal and wharf plaza would be required to comply with the Construction Recycled Content Ordinance. These requirements would be included in construction and bid requirements for the cruise terminal and wharf plaza. The requirements for recycling construction and demolition materials for construction of the Cruise Terminal Phase 2 and the Northeast Wharf Plaza would reduce trash sent to landfills, thereby reducing GHG emissions.
Environment/Conservation Sector			
Tropical Hardwood and Virgin Redwood Ban (Environment Code, Chapter 8)	City departments are prohibited from procuring or engaging in contracts that would use the ordinance-listed tropical hardwoods and virgin redwood.	☒ Project Complies ☐ Not Applicable ☐ Project Does Not Comply	The cruise terminal and wharf plaza would be required to comply with the ban on the purchase of tropical hardwoods and virgin redwood. Exemptions from this requirement would only be allowed in accordance with Section 802(b) and 803(b) of the Environment Code. This requirement would be specified in bid requirements for the cruise terminal and wharf plaza. The ban on purchase of tropical hardwood and virgin redwood would help to limit deforestations, which can contribute to global climate change.
Regulation of Diesel Backup Generators (San Francisco Health Code, Article 30)	All diesel generators must be registered with the Department of Public Health All new diesel generators must be equipped with the best available air emissions control technology.	☒ Project Complies ☐ Not Applicable ☐ Project Does Not Comply	The proposed cruise terminal project would be required to comply with Article 30 of the San Francisco Health Code. The requirements for diesel generators to be equipped with the best available air emissions control technology would reduce GHG emissions.

because design details are unknown at this time. As such, a GHG compliance checklist has not yet been completed for these long-term projects. However, as stated above, new development and renovations/ alterations for private projects and municipal projects are required to comply with San Francisco's ordinances that reduce greenhouse gas emissions, as applicable. Therefore, because these developments would be required to comply with the City's GHG Reduction Strategy, the potential GHG impacts would be less than significant. Once specific proposals for the long-term development rights have been designed, a GHG compliance checklist would be submitted to the San Francisco Planning Department for review.

Mitigation: Not required

5.9.3.5 Summary

Depending on a proposed project's size, use, and location, a variety of controls are in place to ensure that a proposed project would not impair the state's ability to meet statewide GHG reduction targets outlined in AB 32, nor affect the City's ability to meet San Francisco's local GHG reduction targets. Projects that are consistent with San Francisco's regulations would not contribute significantly to global climate change, given that (1) San Francisco has implemented regulations to reduce greenhouse gas emissions specific to new construction and renovations of private developments and municipal projects, (2) San Francisco's sustainable policies have resulted in the measured success of reduced greenhouse gas emissions levels, (3) San Francisco has met and exceeded AB 32 greenhouse gas reduction goals for the year 2020, (4) current and probable future state and local greenhouse gas reduction measures will continue to reduce a project's contribution to climate change, and (5) San Francisco's *Strategies to Address Greenhouse Gas Emissions* meet the BAAQMD's requirements for a Qualified GHG Reduction Strategy.

The proposed project would be required to comply with these requirements and was determined to be consistent with San Francisco's *Strategies to Address Greenhouse Gas Emissions* as documented in the GHG compliance checklists for the 34th America's Cup and the James R. Herman Cruise Terminal and Northeast Wharf Plaza.[24] Additionally, once specific proposals for the long-term development rights have been designed, a GHG compliance checklist would be submitted to the San Francisco Planning Department for review. As such, the proposed project would result in a less-than-significant impact with respect to GHG emissions.

[24] San Francisco Planning Department, Compliance Checklist Greenhouse Gas Analysis for 34th America's Cup, April 2011; and San Francisco Planning Department, Compliance Checklist Greenhouse Gas Analysis for James R. Herman Cruise Terminal and Northeast Wharf Plaza, April 2011. Copies of these documents are available for review at the San Francisco Planning Department, 1650 Mission Street, Suite 400, San Francisco as part of Case File. 2010.0493E.

5.10 Wind and Shadow

This section of the EIR discusses (1) existing wind conditions on and around the project sites, factors that determine wind exposure, and changes that would result in adverse effects on pedestrian-level wind; and (2) existing shadow conditions and potential shadow impacts on public open spaces in the vicinity of the project sites, including properties under the jurisdiction of the San Francisco Recreation and Park Department and other publicly accessible open space. This section only discusses the impacts of the permanent structures proposed as part of the AC34 and Cruise Terminal projects at Piers 27-29, and long-term development rights.

5.10.1 Wind

5.10.1.1 Background

Environmental Science Associates (ESA) performed a wind analysis and evaluation without conducting a wind-tunnel test for the proposed AC34 and Cruise Terminal project (2011 Memorandum).[1] This analysis relied in part on wind test data obtained from prior wind tunnel tests performed for a prior mixed-use recreation project on Piers 27-31 proposed in 2004 (referred to in this section as the 2004 mixed-use project). That testing was performed in order to define the existing pedestrian wind environment and the future wind environment that would exist at the site and vicinity with the 2004 mixed-use project in place. As part of that study, pedestrian-level wind speeds were measured at selected points for the Piers 27, 29 and 31 site as it existed in 2004, as well as with the 2004 mixed-use project to quantify resulting pedestrian-level winds in public spaces at and around the site. The Technical Memorandum completed for the 2004 mixed-use project (2004 Memorandum)[2] and submitted to the San Francisco Planning Department as a part of the environmental review process examined wind effects on two types of users: (1) site users, comprised of visitors who elect to use the site; and (2) the general public. Therefore, that study focused on the suitability of the site for its intended uses as well as effects on the general public along The Embarcadero.

The analysis and evaluation for this EIR directly uses the 2004 Memorandum wind-test data to show existing conditions on Piers 27-31, since they accurately represent existing winds today. However, the 2004 mixed-use project that was previously studied differed in several important ways from the currently proposed project at Piers 27-29, especially with regard to the proposed cruise terminal and changes to the Pier 29 shed. That 2004 test provides information useful in forecasting the effects of the proposed project.

1 ESA, *Potential Wind Conditions, Proposed 34th America's Cup and James R. Herman Cruise Terminal and Northeast Wharf Plaza Project,* Technical Memorandum 210317.02, May 9, 2011.

2 ESA, *Potential Wind Conditions, Proposed Piers 27-31 Mixed-Use Recreation Project, San Francisco*. Technical Memorandum 201332, July 22, 2004

5.10.1.2 Wind Setting

Bay Area Topography and Wind

San Francisco Bay Area terrain is complex; the northwest-southeast trending Coast Range is divided into western and eastern ranges, with the Bay between them. The Bay Area contains a sea-level pass through the Coast Range; the Golden Gate is the sea-level gap in the western range and the Carquinez Strait is the sea-level gap in the eastern. These two sea-level gaps allow air to flow relatively freely between the coast and the Central Valley, generally following a sinuous path over the intervening Bay and low lands that lie between the two gaps. Ridges at elevations of 1,500 feet and more in the eastern and western ranges of the Coast Range are high enough to distort surface wind flows through the Bay Area. The distortion is greatest when low-level inversions are present and the surface air flows independently of the air above the inversion. This is very common in summer, when the surface air mass of the marine layer turns into the sea breeze. Along the west side of the Bay are the Marin peninsula north of the Golden Gate and the San Francisco peninsula on the south. The mass of the Marin peninsula near the Golden Gate contains no significant gap. To the south, San Francisco is mostly below 200 feet, while the Santa Cruz Mountains extend up the center of the peninsula, with elevations of about 500 feet in South San Francisco and increasing to more than 2,000 feet at the south end of the peninsula. The marine layer can easily pass over much of low-lying San Francisco, as well as through the Golden Gate, resulting in high winds on the Bay and in San Francisco.

San Francisco Winds

Average wind speeds in San Francisco are the highest in the summer and lowest in winter. However, the strongest peak winds occur in winter. The highest average wind speeds occur in mid-afternoon and the lowest occur in the early morning. Westerly to northwesterly winds are the most frequent and strongest winds during all seasons.

Data describing the speed, direction, and frequency of occurrence of winds were gathered at the old San Francisco Federal Building at 50 United Nations Plaza (at a height of 132 feet) during the 6-year period, 1945 to 1950. Measurements taken hourly and averaged over 1-minute periods have been tabulated for each month (over the 6 years) in 3-hour periods using seven classes of wind speed and 16 compass directions. Analysis of these data shows that during the hours from 6:00 a.m. to 8:00 p.m., about 70 percent of all winds blow from five of the 16 directions as follows: northwest (NW), 10 percent; west-northwest (WNW), 14 percent; west (W), 35 percent; west-southwest (WSW), 2 percent; southwest (SW), 9 percent; and all other winds, 28 percent. Calm conditions occur 2 percent of the time. More than 90 percent of measured winds over 13 miles per hour (mph) blow from NW, WNW, W, WSW, or SW.

Existing Wind at Piers 27-29

Located on the northern waterfront of San Francisco and approximately 4 miles east of the Golden Gate, Piers 27 and 29 are fully exposed to winds that approach over the Bay from the southeast through east, north, and northwest. Winds from the south, southwest and west

southwest must approach over the City's hills and substantial core of tall buildings in the downtown area. Winds approach Piers 27 and 29 from the west through northwest by passing through the Golden Gate and over the Bay as well as by passing over the relatively low buildings and flat topography of northern-most San Francisco. Telegraph Hill, due west of the Piers 27-29, marks a boundary between the taller buildings and hills to the south, and the lower buildings and flat topography north of Chestnut Street.

The mix of wind directions and wind speeds at Piers 27 and 29 differs from those measured at the old San Francisco Federal Building – namely the NW, WNW and West winds would pass over less urban land to reach the Piers, *vs.* the old Federal Building, and SW and WSW winds would pass over more hills and buildings before they reached the piers, *vs.* the old Federal Building. For these reasons, the SW and WSW winds would have reduced speeds and the W and NW winds would have increased speeds at the Piers compared to those same winds measured at the old Civic Center Weather Bureau site.

Wind Speed and Pedestrian Comfort[3]

The comfort of pedestrians varies under different conditions of sun exposure, temperature, clothing, and wind speed. Winds up to 4 mph have no noticeable effect on pedestrian comfort. With speeds from 4 to 8 mph, wind is felt on the face. Winds from 8 to 13 mph will disturb hair, cause clothing to flap, and extend a light flag mounted on a pole. Winds from 13 to 19 mph will raise loose paper, dust and dry soil, and will disarrange hair. For winds from 19 to 26 mph, the force of the wind will be felt on the body. With 26 to 34 mph winds, umbrellas are used with difficulty, hair is blown straight, there is difficulty in walking steadily, and wind noise is unpleasant. Winds over 34 mph increase difficulty with balance and gusts can blow people over.

Existing Comfort Criterion Conditions at Piers 27-29

ESA performed wind analyses at 34 test points[4] located within and adjacent to the Piers 27-29 site. The general vicinity of the project site is windy; for all test points, the average of the wind speeds exceeded 10 percent of the time is approximately 14 mph.[5] Wind speeds range from 5 to 11 mph at 7 of the 34 locations tested, 12 mph to 14 mph at 9 of the 34 points, and 15 mph or greater occur at 15 of the points tested.

Seven of the points tested (Points 9 10, 14-16, 26 and 27) meet the San Francisco Planning Code's pedestrian comfort criterion of 11 mph. The remaining 24 points tested exceed the pedestrian

[3] Lawson, T.V. and A.D. Penwarden, "The Effects of Wind on People in the Vicinity of Buildings," Proceedings of the Fourth International Conference on Wind Effects on Buildings and Structures, London, 1975, Cambridge University Press, Cambridge, U.K., 605-622 1976.

[4] There are 31 test points that apply to existing setting conditions and 33 test points that apply to the project. Test Points 8, 17, and 18 were covered by the existing Pier 27 Transit Shed in the Setting, and as such, do not allow for direct comparisons of wind speed changes when comparing existing conditions to project conditions. With the project, Point 8 also would be covered by the Cruise Terminal, while Points 17 and 18 would be exposed.

[5] "Wind speed," as used in the following discussions, refers to "wind speed exceeded 10 percent of the time," not an instantaneous or average speed.

comfort criterion. The highest wind speed in the vicinity (25 mph) occurs at Pier 27's northwestern apron (Point 20).

Wind Conditions for General Public

Under existing conditions, The Embarcadero sidewalks are windy, with wind speeds exceeded 10 percent of the time ranging from 15 to 19 mph. Wind conditions in the open valley between the existing Piers 27 and 29 sheds (Points 7, 11, 12, 14 and 16) range from mild to windy (7 to 17 mph), with an average wind speed of just over 12 mph.

Onsite Wind Conditions

Existing winds along Pier 27's eastern apron (Points 9 and 10) are mild, with average speeds of 6 mph. These points currently meet both the pedestrian and seating comfort criteria. Existing conditions adjacent to Pier 27's eastern apron near The Embarcadero (Points 1 and 2) are windy with speeds of 16 and 15mph, respectively.

Wind speeds on Pier 29's eastern apron (Points 19 and 20) are high, with speeds of 19 and 25 mph, respectively. Along Pier 29's northern apron (Points 21-24), wind speeds range from 13 to 16 mph, exceeding the pedestrian comfort criterion. Adjacent to the open water area along Pier 29½ (Points 25 and 26), existing wind speeds are 13 mph at Point 25 and 5 mph at Point 26. Pier 31's eastern apron (Points 28 and 29) is windy, and wind speeds range from 12 to 19 mph. Wind speeds along Pier 31's northern apron (Point 30) were measured at 14 mph. At Point 31, located on Pier 31½, north of Pier 31, wind speeds are 20 mph.

Existing Wind Hazard Conditions

The Planning Code's wind hazard criterion is currently exceeded at one of the test locations tested: Point 20, at the northeastern corner of the Pier 29's apron. Winds at this point exceed the wind hazard criterion 50 hours per year.

5.10.1.3 Regulatory Framework

San Francisco Planning Code Requirements

The San Francisco Planning Code specifically outlines wind criteria for the Downtown Commercial District and the Rincon Hill, Van Ness Avenue, and South of Market Areas in Planning Code Sections 148, 249.1(a)(3), 243(c)(9), and 263.11(c), respectively. The project site lies outside of all of these areas, such that these specific criteria do not apply.

5.10.1.4 Impacts and Mitigation Measures

The permanent structures proposed as part of the AC34 and Cruise Terminal projects at Piers 27-29 would involve demolition of some existing buildings, construction of a new cruise terminal building on a smaller footprint than the Pier 27 shed, construction of the Northeast Wharf Plaza and creation of a large outdoor open space on Piers 27 and 29. Because the project site is located

on the waterfront and because the project would remove structures that now shelter open areas from the wind, the project could result in new significant wind effects over a wider area, and potentially expose visitors to unsafe existing wind hazards. This impact analysis is therefore provided for informational purposes to provide a description of potential wind hazards at the project site.

Significance Criteria

The City has not formally adopted significance standards for impacts related to wind, but generally considers that implementation of the project could have a potentially significant impact related to wind if the project were to alter wind in a manner that substantially affects public areas.

An indication of such an alteration would be if the wind speed were to be increased so that the hazard criterion established by Planning Code Section 148 would be exceeded, or if the size of the area that would be affected by the wind hazard were to be substantially increased. An alteration of the wind that would cause new exceedances of Planning Code Section 148 comfort criteria, but not the wind hazard criterion, in public areas would not be considered to have a significant impact.

Approach to Analysis

Use of Data and Results from the 2004 Wind Test

In the 2011 Memorandum, the prior wind-tunnel test results were interpreted and extrapolated to describe the potential wind effects on Piers 27-29 from the proposed project. This discussion also covers potential wind effects on adjacent Pier 31, even though Pier 31 is not involved in the proposed project, because the 2004 wind-tunnel test indicated that winds at some locations on Pier 31 would be affected by that project's changes at Piers 27-29. The 2011 Memorandum presents details of existing wind conditions and other relevant background information as well as wind test results for the existing Piers 27-31 and discussion of the expected effects of the proposed project.

The measured values for the existing case from the 2004 Memorandum, along with a modified map of the proposed project with the 2004 wind test point locations superimposed, are presented here.

Wind Speed Profile Adjustments

The Section 148 wind test methodology usually assumes that the relationship between height above the ground, and wind speed (referred to hereafter as the wind speed profile) is the same in the test area as at the Civic Center weather station, which is surrounded by a mile or more of hills, trees, and urban development that slows winds that approach from every direction.

Given that the piers are on the Bay shoreline, with nothing but the Bay upwind of the project site for NW winds and only relatively low upwind obstructions for WNW winds, it is necessary to adjust the wind speed profiles for those two directions to recognize that the speed of those winds is less diminished by upwind surface roughness.

Piers 27-31 Test Locations[6]

The 2004 wind-tunnel tests measured 34 locations for both the existing conditions and the 2004 mixed-use project test scenarios for the four prevailing wind directions: northwest, west-northwest, west and southwest. The test locations were located throughout the Piers 27-31 site, including 6 points along the sidewalk along The Embarcadero, 4 points at the site of the proposed Northeast Wharf Plaza, 5 points in the open valley area between Piers 27 and 29, and 15 points along the Piers 27-31 aprons. One test point (Point 8) was discarded because it was located beneath both the existing Pier 27 terminal shed and the proposed cruise terminal building. With respect to the locations of the proposed project elements on the site:

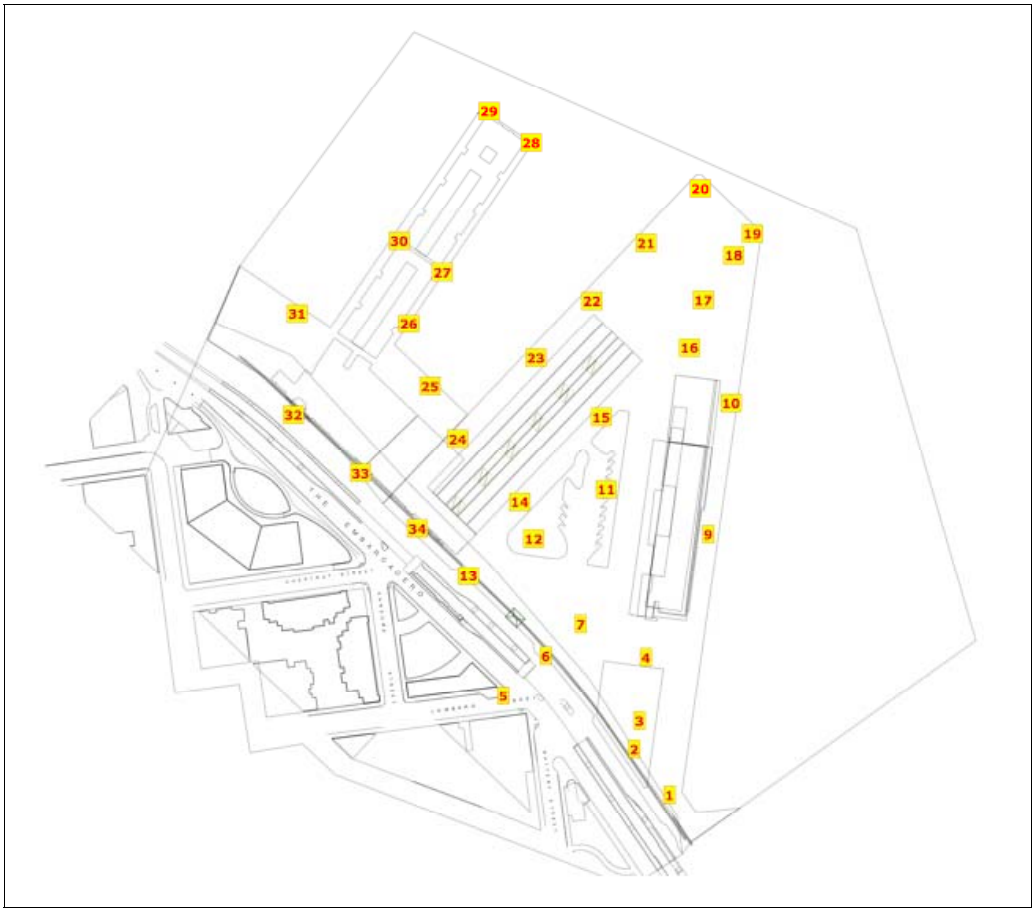
- Five test points (Points 1-4, and 7) are on the proposed Northeast Wharf Plaza.
- Two points (Points 9 and 10) are on Pier 27's apron, east of and adjacent to the proposed cruise terminal building.
- Four test points (Points 11, 12, 14 and 15) are within the proposed open access and ground transportation area (GTA).
- Two test points (Points 16 and 17) are within the footprint of the Pier 27 shed, but north of the proposed cruise terminal building.
- Three test points (Points 18-20) are at the Bay end of Pier 29.
- Three points (Points 21-23) are along Pier 29's northern apron.
- Two points (Points 24-25) are located on Pier 29½.
- Five points (Points 26-30) are on the aprons around Pier 31.
- One point (Point 31) is on Pier 31½.
- Six points are located along the eastern frontage of The Embarcadero sidewalk, with three (Points 32-34) immediately adjacent to the Piers 29-31 Bulkhead Connector Building, one (Point 13) adjacent the proposed vehicular entry to the GTA, one (Point 6) on the east sidewalk of The Embarcadero at the intersection with Lombard Street, and one (Point 5) across The Embarcadero at the northwest corner of Lombard Street.

Figure 5.10-1, Wind Test Point Location Map, illustrates the 2004 test points superimposed on a simplified site plan for proposed Cruise Terminal and Northeast Wharf Plaza.

Wind Evaluation and Criteria

Planning Code Section 148 performance requirements were used to evaluate the results of the 2004 wind tests. The mean wind speeds that would be exceeded 10 percent of the time between the hours of 7:00 a.m. and 6:00 p.m., were compared to the code's comfort criteria of 11 mph for areas of substantial pedestrian use and 7 mph for public seating areas. Separate calculations evaluated compliance with the Planning Code's hazard criterion.

[6] The location point numbers were arbitrarily assigned, and have no significance in the analysis of wind results.



SOURCE: ESA AC34 / Cruise Terminal and NE Wharf Plaza / 210317.02

Figure 5.10-1
Wind Test Point Locations

For the purposes of identifying the applicable wind criteria of the Planning Code, under existing conditions, only areas along The Embarcadero and within the existing Pier 27 open valley area (Points 1-7, 11-15, and 32-34) are assumed to be accessible to the public, and therefore subject to the code's criteria now.

With the proposed cruise terminal project, the same points in the open valley area would remain accessible to the public at all times, and other points such as along the aprons of Pier 27 and the proposed enlarged open area at the Bay end of Piers 27-29 would also be accessible when ships are not berthed at the pier. Further, during the proposed AC34 events at the AC Village in 2013, the event spectators would also largely have access to the aprons and proposed open area at the Bay end of Piers 27-29.

Data from the 2004 Test and This Analysis

Summary information about the wind-tunnel test results and evaluations of compliance with the comfort and hazard criteria for existing conditions and for the 2004 mixed-use project scenarios were presented in the 2004 Memorandum.

For this analysis, **Table 5.10-1**, below presents the comfort analyses results, namely the 10 percent exceeded speed and the percentage of time that the comfort criterion is exceeded for each test location, as measured in the 2004 test. The following analysis of the proposed project's expected wind conditions was derived entirely from review of the 2004 project test and interpretation by ESA of the effects of the differences between the 2004 mixed-use project and the proposed project on those values. The results of the project's wind comfort and wind hazard analyses are discussed here, but are not presented in Table 5.10-1.

Throughout the following discussion, the wind speeds reported refer to the equivalent wind speeds that would be exceeded 10 percent of the time when referring to the comfort criterion, and winds exceeded one hour per year when referring to the hazard criterion.

AC34 Events and Cruise Terminal Impacts and Mitigation Measures

The first phase of the proposed project, AC34, would demolish the Pier 27 shed in its entirety, along with the easternmost 220 feet of the Pier 29 shed to create a temporary public viewing platform at the east end of Piers 27-29 for the AC34 events (Piers 27-29 would serve as the site of the proposed America's Cup Village in 2013). A new east and corner wall for the Pier 29 shed would be constructed to complete the modified pier shed. The Pier 27 Annex office building would also be demolished. Other existing facilities to be removed include the Teatro Zinzanni tent and associated facilities, and the soccer field. Existing buildings to remain would include the balance of the Pier 29 shed not demolished, and the historic Belt Line office building. The AC34 project would also include construction of the proposed cruise terminal core and shell building. Other permanent improvements to Piers 27-29 during AC34 would include strengthening and seismically upgrading the Pier 29 superstructure, if needed; repairing the Pier 29 apron and fendering; and repairing the Pier 29 marginal wharf and Piers 27-29 substructure, if needed. After the conclusion of the AC34 race events, the Port would implement Phase 2, which would include completion of the cruise terminal and development of the Northeast Wharf Plaza.

Of the project components discussed above, those changes expected to alter wind conditions on Piers 27-29 would be (1) removal the eastern portion of the Pier 29 shed; (2) removal of the entire existing Pier 27 terminal and Pier 27 Annex office building; (3) construction of the proposed cruise terminal building (discussed below); and (4) construction of the 2½-acre Northeast Wharf Plaza (discussed below).

The proposed cruise terminal building would be smaller than the existing Pier 27 shed, leaving the site of the proposed Northeast Wharf Plaza and the area north of the proposed cruise terminal building and truncated Pier 29 shed as new open space. Following the AC34 events, the open valley area west of the cruise terminal building would be developed into the proposed Ground Transportation Area (GTA) for use for access and transportation when cruise ships are in port, and available to the public (e.g., for shared use events) when cruise ships are not in port. Fencing and gates would enable certain areas around the cruise terminal site be fully secured when ships are berthed and access to and from the ships to be controlled.

TABLE 5.10-1
WIND COMFORT ANALYSIS: MEASURED EXISTING WIND SPEEDS

References		Existing	
Test Location Number	Wind Comfort Criterion Speed, miles/hour	Equivalent Wind Speed Exceeded 10% of Time, miles/hour	Percent of Time Wind Speed Exceeds Criterion
1	11	16	*26*
2	11	15	*25*
3	11	14	*23*
4	11	12	*14*
5	11	16	*29*
6	11	19	*42*
7	11	17	*33*
8	11		
9	11	6	*0*
10	11	6	*0*
11	11	14	*22*
12	11	15	*27*
13	11	19	*41*
14	11	7	*0*
15	11	7	*1*
16	11	9	*3*
17	11		
18	11		
19	11	16	*23*
20	11	25	*57*
21	11	16	*29*
22	11	14	*23*
23	11	14	*20*
24	11	13	*15*
25	11	13	*19*
26	11	5	
27	11	7	*0*
28	11	12	*14*
29	11	19	*43*
30	11	14	*21*
31	11	20	*42*
32	11	17	*35*
33	11	15	*28*
34	11	15	*27*
Ave. of 10%		**13.8 mph**	
	Percent:		***23%***
Total Exceedances:		**Total**	**24**
Subtotals by type:		*Existing*	**24**

SOURCE: ESA

NOTE: Wind speeds and durations are rounded, so column totals and row differences may not add.

During the AC34 events, a number of tents and other temporary structures would be installed at Piers 27-29 to accommodate the proposed America's Cup Village in 2013.[7] Although several of these temporary event structures would be large enough to affect winds on the site, their effects are not considered here because they are more likely to be adversely affected by the winds than to cause adverse wind effects, and because these structures would be temporary.

Project Comfort Criterion Conditions

With the proposed project, much of the open area of Piers 27-29 that is currently sheltered from the wind by the Pier 27 and Piers 29 sheds would be exposed to the Bay. The major structures that currently shelter the open valley area would be removed (Pier 27 shed) or truncated (Pier 29 shed). Consequently, wind speeds in the open valley area would be higher than under existing conditions; the average of the wind speeds exceeded 10 percent of the time for all test points are expected to increase to 15 mph or more.

Under existing conditions, 7 of the 31 points tested meet the Planning Code's pedestrian comfort criterion of 11 mph (Points 9, 10, 14-16, 26, and 27), and the remaining 24 points exceed the pedestrian comfort criterion[8]. The project would increase wind speeds at many locations, and create new exceedances at most locations where they do not now occur under existing conditions. Similar to existing conditions, the highest wind speed in the vicinity would continue to occur at Pier 27's northeastern apron (Point 20).

Wind Conditions in Public Areas. The proposed project is similar to the 2004 mixed-use project with respect to its configuration fronting The Embarcadero and Northeast Wharf Plaza, except the prior project extended its building frontage farther along the Embarcadero by about 140 feet. However, this difference is not expected to further increase the wind speeds along The Embarcadero sidewalks by more than a few miles per hour because the speeds are already high. Under the proposed project, The Embarcadero sidewalks would continue to be windy, with wind speeds likely ranging from 15 to 19 mph. However, the proposed project would not cause new exceedences of the pedestrian comfort criterion along The Embarcadero, because the winds at those points already exceed that criterion.

The proposed project would be open to The Embarcadero at the site of the proposed Northeast Wharf Plaza, which in turn would be open to the Bay. As the test of the 2004 mixed-use project showed, when the points in the proposed Northeast Wharf Plaza (Points 1-4) were open to the Bay, the wind speeds there would increase to be similar to the wind speeds along The Embarcadero sidewalks. For that reason, wind speeds exceeded 10 percent of the time in the proposed Northeast Wharf Plaza (Points 1-4) are expected to increase to approximately 17 to 19 mph; while along the southern edge of the plaza, wind speeds exceeded 10 percent of the time should be lower, at 15 mph. The project would not result in any new pedestrian comfort exceedances in the proposed Northeast Wharf Plaza, because winds at those points already exceed the pedestrian comfort criterion.

[7] Refer to Section 3.4, Project Characteristics for a description and plans for the AC Village in 2013.
[8] As previously noted, 31 test points apply to existing setting conditions and 33 test points apply to the project.

Onsite Wind Conditions. Wind speeds in the area of the proposed GTA between the cruise terminal building and Pier 29 would increase substantially under the project. The removal of the Pier 27 shed and truncation of the Pier 29 shed, which together currently shelter this open area, would allow wind speeds similar to those that would occur along The Embarcadero and in the proposed Northeast Wharf Plaza.

Wind speeds exceeded 10 percent of the time at all four points in the middle of the proposed cruise terminal project's GTA (Points 11, 12, 14 and 15) would be expected to be 15 mph or more. Winds along the apron of Pier 27, on the Bay side of the proposed cruise terminal building (Points 9 and 10) also would be expected to exceed 18 to 19 mph. All of these would exceed the pedestrian comfort criterion.

Wind speeds on Pier 29's eastern apron (Points 19 and 20) are expected to change substantially under the proposed project. Removing the Pier 27 shed and truncating the Pier 29 shed would remove all wind shelter from this approximately 3-acre area. The result is expected to be that wind speeds over this entire 3-acre area (Points 16 through 22) would increase to speeds similar to that measured at the Bay end of Pier 29 (Point 20), namely 19 to 25 mph. In addition, winds may be accelerated further in the narrow part of the valley between the proposed cruise terminal building and the end of the truncated Pier 29 shed, bringing the speeds to the higher end of that range.

With respect to wind conditions at points (Points 23-31) on the rest of Pier 29 and on Pier 29½, Pier 31, and Pier 31½, it is expected that there would be little difference between the 2004 mixed-use project and the proposed project. Wind speeds would be expected to generally increase above the existing wind speeds, with only 2 or 3 points having wind speeds less than 15 mph.

Project Wind Hazard Conditions

With the proposed project, it is expected that the existing wind hazard at Pier 31½, Point 31, would be eliminated. In addition, the project would reduce the duration of potentially hazardous winds at Pier 27's northeastern apron, Point 20, from the current total of 50 hours per year under existing conditions to fewer hours per year under project conditions.

However, due to proposed opening up of the end of Piers 27-29, a 3-acre area at the end of these piers would be exposed to the same winds that now cause a hazard at Pier 27's northeastern apron, Point 20. Therefore, it is expected that a number of new wind hazard locations would be created within the 3-acre area north of the proposed cruise terminal building, such as in the vicinity of Points 16-22. This 3-acre area would initially be used during the AC34 events by spectators. Following the AC34 events, this area would have limited public access due to its dual use as a secured area when cruise ships are in port. If hazardous winds coincide with public access to this area, safety hazards could result.

In addition, it is possible that wind hazards would be created at the north end of the proposed cruise terminal GTA (between the north end of the proposed cruise terminal building and the

north end of the truncated Pier 29 shed). This area would be open to the public, so high winds that occur there could result in safety hazards to the public.

Site Suitability for Proposed Uses

The siting (or removal) of a large structure is expected to change wind flows, speeding up the wind at some locations and slowing it elsewhere in the vicinity. As can be seen in the case of this site located in a particularly windy area, even a moderate-size structure placed on this site can be expected to result in changes in the durations of criterion exceedances and changes in the locations at which those criterion exceedances occur. Experience in San Francisco indicates that in very windy areas it is common for new large buildings to eliminate some existing exceedances and create others. In practice, it is not always possible to eliminate such remaining exceedances (as required by the language of the Planning Code). In this case, 24 pedestrian-comfort criterion exceedances occur under the existing conditions at the project site. The project is expected to increase the number of pedestrian-comfort criterion exceedances.

The existing wind hazard exceedance identified at Point 20 would be expected to continue under project conditions; furthermore, the open area with a strong potential for more wind hazards would not be new, but would be expanded to approximately 3 acres.

Wind Conditions in Public Areas. The proposed project would not create any new exceedences of the pedestrian comfort criterion at points tested along The Embarcadero.

Onsite Wind Conditions. Afternoon outdoor activities would be essential components of the proposed AC Village at Piers 27-29 during the AC34 events in 2013, as well as future planned public uses of the Piers 27-29 open spaces following the AC34 events. The wind data indicate that west and west-northwest winds would be strongest during the afternoons and evening hours. Winds are typically lighter in the morning and into the early afternoon. Because AC34 site users would anticipate strong winds[9] when attending the AC34 events[10] at the AC Village at Piers 27-29, San Francisco's pedestrian comfort criterion is not appropriate for determining the suitability of AC34 onsite uses with the site's wind environment. For the AC34 event's proposed outdoor use areas, the wind speeds exceeded 10 percent of the time would be expected to exceed 15 mph at most locations, well in excess of the pedestrian comfort criterion. While wind speeds may exceed the Section 148 comfort criteria, those winds would not adversely conflict with the proposed AC34 uses.

[9] Note the important distinction between the reported 10-percent exceeded wind speed (or the hazard speed) and the actual speed of the wind at any particular day and time, such as during an AC34 event. The 10-percent exceeded wind speed (or the hazard speed) is a statistic that indicates the particular wind speed would occur a certain fraction of the time, but does not predict the actual wind speed that will occur at any specific time or during any particular AC34 event.

[10] This would also be true at other AC34 venues, such as Crissy Field, Marina Green, etc. where strong winds would also be anticipated during the AC34 event.

America's Cup

Impact WI-1: Construction and operation of the AC34 facilities and events could alter wind in a manner that substantially affects public areas. (Less than Significant with Mitigation)

Wind is a normal part of the Bay environment, and would be essential for the proposed AC34 races; in general, the stronger the wind, the better the racing conditions would be for the AC34 boats, even if not necessarily better for the comfort of spectators. However, given the nature of the event, wind comfort may not be the spectators' highest priority. Furthermore, as stated under significance criteria, wind comfort exceedances would not be significant impacts; only wind hazards would be significant impacts. The wind hazard to individuals only would occur if the wind hazard speeds occurred when people are present.

Note that wind speeds that reach or exceed the wind hazard criterion of the Planning Code would occur infrequently at the site; the expected occurrence would be less than 50 hours per year. At all other times of the year, the expected range of wind speeds under project conditions would not be adverse for the types of recreation activities proposed at the AC Village at Piers 27-29. Nevertheless, potential impacts could occur if the winds are much stronger than anticipated and cause wind hazards or cause damage to the proposed AC Village tents and other temporary structures.

The design and placement of these tents and other temporary structures at Piers 27-29 could provide onsite shelter for limited areas where a specific activity in the AC Village requires wind control. Placing proposed elevated spectator seating at heights up to 30 to 40 feet above the deck of the pier (at or near the height of the adjacent Pier 29 shed/cruise terminal building roofs) could expose those spectators to winds with noticeably higher speeds than the wind speeds at pedestrian height. Standard steps taken with the design, placement and erection, as well as the maintenance, of these structures would prevent such potential adverse effects.

During the proposed AC34 events at the AC Village in 2013, the event spectators would largely have access to the aprons and proposed open area at the Bay end of Piers 27-29, where at present, there is no public access. As discussed under Project Wind Hazard Conditions, above, it is expected that the AC34 project would reduce the duration of potentially hazardous winds at Pier 27's northeastern apron, Point 20, from the current total of 50 hours a year under existing conditions to fewer hours per year under project conditions.

However, due to the proposed expansion of the public open space at the end of Piers 27-29, the public would be afforded access to a new 3-acre area where existing and new hazardous wind conditions could occur. It is expected that a number of new wind hazard locations would be created north of the proposed cruise terminal building, such as near Points 16-19 and 21-22. If a hazardous wind event coincides with public access to this area, safety hazards could.

Because the higher-speed winds that can cause hazardous conditions at this site occur infrequently and for limited periods of time, the resulting safety hazards would exist infrequently and only for those limited periods of time. Limiting public access during those particular times

would eliminate these risks, while warning the public of those risks would allow each person to avoid or otherwise cope successfully with them.

In addition, the tents, bleachers and viewing stands, mobile equipment, fencing and street furniture that would be a part of the AC Village at Piers 27-29 would provide some added wind shelter and, as a result, would reduce pedestrian level wind speeds for event spectators.

The effect of the project would be to expand public access to the Bay shoreline where windy conditions exist, and the project would alter wind in a manner that would substantially affect existing and new public areas. Because it is unknown if hazardous wind conditions would occur during the AC34 2012 or 2013 events, this would be a *potentially significant* impact. However, this wind impact would be mitigated to a less-than-significant level by the implementation of **Mitigation Measure M-WI-1**.

> **Mitigation Measure M-WI-1: Warning Signs and/or Limiting Access on the Eastern Aprons of Piers 27-29 During Hazardous Wind Events.**
>
> The project sponsor shall be required to post warning signs and, if necessary, restrict public access to the eastern aprons of Piers 27-29 during the occurrence of high-speed winds that could result in hazardous wind conditions for spectators, and implement design features that provide wind protection for public access areas.
>
> If average wind speed at pedestrian height exceeds 26 mph, or when the National Weather Service issues high wind warnings for the Bay, the project sponsor shall implement this measure. As experience with the local wind conditions is gained, this trigger should be adjusted to suit the wind conditions that are experienced on the pier.

James R. Herman Cruise Terminal and Northeast Wharf Plaza

Impact WI-2: Construction and operation of the Cruise Terminal and Northeast Wharf Plaza could alter wind in a manner that would substantially affect public areas. (Less than Significant with Mitigation)

The Cruise Terminal project would provide new public access to the enlarged open area at the Bay end of Piers 27-29 when ships are not berthed at Pier 27. The Cruise Terminal project would reduce the duration of potentially hazardous winds at Pier 27's northeastern apron, Point 20, from the current total of 50 hours per year under existing conditions to fewer hours per year under project conditions. However, due to the proposed expansion of the public open space at the end of Piers 27-29, a new 3-acre area would be exposed to the same winds that would result in a hazard at the end of Piers 27-29. Therefore, the project would provide the public with increased access to the Bay shoreline where new hazardous wind conditions may occur.

In addition, hazardous wind conditions may occur at the north end of the proposed cruise terminal GTA (between the north end of the proposed cruise terminal building and the north end

of the truncated Pier 29 shed). This area would be open to the public, so high winds could result in safety hazards.

The present design of the facility provides fencing for security, but it is unlikely that the security fencing would eliminate the wind hazard conditions. No other element of the proposed project would provide wind shelter for site users, so the project would increase public access to areas where wind-related safety hazards may occur. Because the higher-speed winds that can cause hazardous conditions at this site occur infrequently and for limited periods of time, the resulting safety hazards would exist infrequently and for those limited periods of time. However, the effect of the project would be to expand public access to an area where windy conditions exist, and if hazardous winds coincide with public access to this area, safety hazards could result. No other element of the proposed project would provide wind shelter for site users, so limiting public access and/or warning the public would be necessary to prevent public exposure to wind-related safety hazards.

Thus, the project would alter wind in a manner that would substantially affect public areas. Therefore, construction and operation of the Cruise Terminal and Northeast Wharf Plaza would have a *significant* impact on wind. However, the significant wind impact would be mitigated to a less-than-significant level by the implementation of **Mitigation Measure M-WI-2**.

> **Mitigation Measure M-WI-2: Warning Signs, Limiting Access and/or Design Features on the Eastern Aprons of Piers 27-29 During Hazardous Wind Events.**
>
> The project sponsor shall be required to post warning signs and, if necessary, restrict public access to the eastern aprons of Piers 27-29 during the occurrence of high-speed winds that could result in hazardous wind conditions for visitors, and implement design features that provide wind protection for public access areas, consistent with BCDC and Port design guidelines, as well as *Secretary of the Interior's Standards for the Treatment of Historic Properties*. Examples of design features would include combinations of permanent or movable fences and partitions, kiosks, street furniture, substantial planter boxes with shrubs, hedges and trees (such as professionally designed landscape/hardscape commonly used to define and protect outdoor dining and seating areas).
>
> If average wind speed at pedestrian height exceeds 26 mph, or when the National Weather Service issues high wind warnings for the Bay, the project sponsor shall implement this measure. As experience with the local wind conditions is gained, this trigger should be adjusted to suit the wind conditions that are experienced on the pier.

Future Long-Term Development Impacts

Impact LT-WI: Long-term development under the Host Agreement could alter wind in a manner that substantially affects public areas. (Less than Significant)

As described in Chapter 3, the 34th America's Cup Host and Venue Agreement (Host Agreement) provides the Event Authority with certain long-term development rights under specified

conditions. Although no site-specific development projects or programs have been developed, this EIR analyzes at a conceptual level an assumed type and level of development based on current land use policies and guidelines. Future development at the Rincon Point and Brannan Street Wharf Open Water Basins, Piers 26, 28, 30-32, 19, 19½, 23, and 29 and Seawall Lot 330 could include a combination of residential, retail/commercial, office (maritime or general), entertainment and assembly/ commercial, and maritime uses. The only structure with the potential to be higher than 40 feet would be on Seawall Lot 330. At this time, in the absence of specific development proposals, it is assumed that future long term development would be designed and constructed in conformance with applicable design guidelines and policies, which include Section 148 of the San Francisco Planning Code, *BCDC Special Area Plan – Northeastern Waterfront, Port Waterfront Land Use Plan – South Beach/China Basin Waterfront, Bryant Street Mixed Use Opportunity Area*, and the Recreation and Open Space Element of the *San Francisco General Plan.*

Assuming conformance with the above guidelines and policies, the future long-term development wind impact would be less than significant. Further site-specific and project-specific review of wind impacts will be required when actual development proposals are submitted.

Mitigation: None required

Cumulative Impacts

Impact C-WI: The projects, in combination with other past, present, and reasonably foreseeable future projects, would not result in significant adverse cumulative wind impacts. (Less than Significant)

Cumulative impacts occur when impacts from a proposed project combine with impacts from other past, present, or reasonably foreseeable projects in a similar geographic area. Within the immediate vicinity of the proposed AC34 venues and/or the cruise terminal project sites, this EIR does not identify any specific cumulative projects that could have adverse wind impacts.

Since no such projects are identified, it would be speculative to assess future wind impacts until specific projects are proposed and project-level environmental review for these projects has been undertaken. In any case, future projects along the waterfront or in the project site vicinity would be subject to planning and design controls. These controls would regulate building height and configuration (e.g., through height and bulk districts) and protect open spaces from adverse wind effects. Other design-specific requirements such as design policies contained within the Port's Waterfront Design and Access Element would ensure safe access to public open spaces.

The project's wind effects are local, and would be limited to spaces on the site and in its immediate vicinity. The project, with mitigation, would not cause new wind hazards on existing publicly accessible areas or open spaces. As such, the proposed project would not result in adverse wind impacts that could combine with the potential wind impacts of other foreseeable

projects. It can thus be concluded that the proposed project would not result in cumulatively considerable wind impacts.

Mitigation: Not required

5.10.2 Shadow

5.10.2.1 Shadow Setting

Public open space within one mile of the project site includes Pioneer Park on Telegraph Hill and Washington Square Park, in the North Beach neighborhood on the other side of Telegraph Hill. Herb Caen Way, a 3.2-mile-long linear pedestrian promenade, extends along The Embarcadero from Fisherman's Wharf southward to China Basin, and provides open space along the waterfront. Other open spaces in the surrounding area are typically in the form of privately-owned open space, such as inner courtyards located within nearby residential projects, and small plazas and parks associated with private development, such as Levi's Plaza Park.

As is the case in all urban areas, buildings and infrastructure, as well as natural features such as trees and hillsides cast shadow on streets, pedestrian pathways, and other public open spaces. At Piers 27-29, existing shadow from on-site buildings falls mainly on the project site's interior open spaces, San Francisco Bay, and portions of The Embarcadero.

The Piers 27-29 buildings cast shadow on the piers themselves as well as over San Francisco Bay and the water area between Piers 29 and 31 generally during the morning and afternoon hours in the winter. In the spring, on-site buildings cast shadow on the northern apron of Pier 29 and on the open valley between Piers 27-29 in the morning and midday, and some shading occurs on the eastern aprons of Pier 29 during the afternoon. In the summer and fall, buildings on Piers 27-29 cast shadow on portions of the eastern side of The Embarcadero during the morning hours. During morning and midday in the fall, shadows from the on-site shed buildings are cast on the northern apron of Piers 29 as well as on the open valley between Piers 27-29.

5.10.2.2 Regulatory Framework

San Francisco Planning Code

Following voter approval of Proposition K in November 1994, Section 295 of the San Francisco Planning Code, the Sunlight Ordinance, was adopted to protect certain public open spaces from new shadow created by new structures. Section 295 prohibits the City from issuing building permits for structures or additions to structures greater than 40 feet in height that would shade property designated to be acquired by or under the jurisdiction of the Recreation and Park Commission, during the period from one hour after sunrise to one hour before sunset. An exception can be made if the Planning Commission, in consultation with the Recreation and Park Commission, determines that such shade would have an insignificant impact on the use of such property. There are no public parks in the project vicinity that are protected by Section 295.

5.10.2.3 Impacts and Mitigation Measures

Significance Criteria

The City has not formally adopted significance standards for impacts related to shadows, but generally considers that implementation of the project would have a significant environmental impact if it were to create new shadow in a manner that substantially affects outdoor recreation facilities or other public areas.

The Planning Commission and Recreation and Park Commission have adopted criteria for determining the significance of shadow impacts under Section 295 for 14 parks in the general downtown area, setting absolute cumulative limits for those properties.[11] Absolute cumulative limits for the parks in the vicinity of the project have not been established. However as noted above, Section 295 is not the only consideration used by the Planning Department to determine if shadow from a proposed project would be a significant impact.

As determined by a shadow analysis conducted by ESA, the project would not cast shadow on any public open space under the jurisdiction of the Recreation and Park Department. The area of Piers 27-29 that would be shadowed would be substantially decreased by the proposed cruise terminal building because it would be shorter and have a much smaller footprint than the Pier 27 shed it would replace. The shadow of the proposed cruise terminal building would not reach The Embarcadero. The proposed Northeast Wharf Plaza would not be shadowed by the proposed cruise terminal building.

Based on these findings, effects related to shadows would be less than significant. The following discussion focuses on the potential localized shadow effects attributable to the project on and around the site. A discussion of cumulative shading effects is also included at the end of the impact analysis.

Approach to Analysis

ESA prepared time-specific shadow patterns analyses that depict shadow impacts at specific times of the day, for existing conditions and for the demolition of the Pier 27 shed and the eastern end of Pier 29 and new construction of the cruise terminal building within a smaller footprint of Pier 27 shed. The new Piers 27-29 buildings would cast less shadow over San Francisco Bay and the water area between Piers 29 and 31 generally during the morning and afternoon hours in the winter. In the spring, on-site buildings would cast less shadow on the northern apron of Pier 29 in the morning and midday, and significantly less shading would occur on the eastern apron of Pier 29 during the afternoon hours. In the summer and fall, the shortened Pier 29 building and the proposed cruise terminal building would not cast new shadow on portions of the eastern side of The Embarcadero during the late morning hours. During morning and midday in the fall, shadow from the truncated Pier 29 building and proposed cruise terminal building would be reduced on the northern apron of Pier 29 as well as on the open valley between Piers 27-29.

[11] City and County of San Francisco, Planning Commission Resolution 11595, adopted February 7, 1989.

AC34 Events and Cruise Terminal Impacts

America's Cup

Impact SH-1: Construction and operation of the AC34 facilities would not create new shadow in a manner that would substantially affect outdoor recreation facilities or other public areas. (Less than Significant)

The proposed project would alter the current configuration of buildings on Piers 27-29 by demolishing the non-historic Pier 27 shed and replacing it with the proposed cruise terminal building (on a smaller footprint) and the Northeast Wharf Plaza. Because the heights of the proposed buildings at the project site would be approximately the same as the existing structures on the site but smaller in footprint and massing, shadow effects under project conditions would be substantially reduced compared to those that exist today.

No net new shadow effects from the proposed project would occur. The shading in areas in the open valley and the aprons would be substantially reduced certain times of the year (such as throughout the morning in the autumn and winter). The truncated Pier 29 shed would result in considerably less shading on the aprons, which are areas that would be used primarily for pedestrian circulation and waterfront access. Because of the heights and orientation of structures along the site's southern boundary, shadow effects attributable to the proposed piazza structures on the proposed Northeast Wharf Plaza would be minimal, and only a small portion of the plaza would be shaded, mainly during the late afternoon in the fall, and during the midday and late afternoon hours in winter. Temporary AC34 tents/structures at Piers 27-29 and other AC34 venues (Marina Green, Crissy Field, etc.) would not create any long-term shadow impacts. The impact would be *less than significant.*

Mitigation: Not required

James R. Herman Cruise Terminal and Northeast Wharf Plaza

Impact SH-2: Construction and operation of the James R. Herman Cruise Terminal and Northeast Wharf Plaza would not create new shadow in a manner that would substantially affect outdoor recreation facilities or other public areas. (Less than Significant)

See discussion for AC34 under Impact SH-1 above.

Mitigation: Not required

Future Long-Term Development Impacts

Impact LT-SH: Long-term development under the Host Agreement would not result in new structures with the potential to cast shadows on existing or proposed parks and open space in a manner that would have an adverse effect on the use of the open space. (Less than Significant)

As described in Chapter 3, the 34th America's Cup Host and Venue Agreement (Host Agreement) provides the Event Authority with certain long-term development rights under specified conditions. Although no site-specific development projects or programs have been developed, this EIR analyzes at a conceptual level an assumed type and level of development based on current land use policies and guidelines. Future development at the Brannan Street Wharf and Rincon Point Open Water Basins, Piers 26, 28, 30-32, 19, 19½, 23, and 29 and Seawall Lot 330 could include a combination of residential, retail/commercial, office (maritime or general), entertainment and assembly/ commercial, and maritime uses. The only structure with the potential to be higher than 40 feet would be on Seawall Lot 330. At this time, in the absence of specific development proposals, it is assumed that future long term development would be designed and constructed in conformance with applicable design guidelines and policies, which include Section 295 of the San Francisco Planning Code, *BCDC Special Area Plan – Northeastern Waterfront, Port Waterfront Land Use Plan – South Beach/China Basin Waterfront, Bryant Street Mixed Use Opportunity Area*, and the Recreation and Open Space Element of the *San Francisco General Plan*.

Assuming conformance with the above guidelines and policies, the shadow impact would be *less than significant*. Further site-specific and project-specific review of shadow impacts will be required when actual development proposals are submitted.

Mitigation: Not required

Cumulative Impacts

Impact C-SH: The project, in combination with other past, present, and reasonably foreseeable future projects, would not result in significant adverse cumulative shadow impacts. (Less than Significant)

Cumulative impacts occur when impacts from a proposed project combine with impacts from other past, present, or reasonably foreseeable projects in a similar geographic area. Within the immediate vicinity of the proposed AC34 venues and/or the cruise terminal project sites, this EIR does not identify any specific cumulative projects that would have adverse shadow impacts.

Since no such projects are identified, it would be speculative to assess future shadow impacts until specific projects are proposed and project-level environmental review for these projects has been undertaken. In any case, future projects along the waterfront or in the project site vicinity would be subject to planning and design controls. These controls would regulate building height and configuration (e.g., through height and bulk districts) and protect open spaces from adverse

shading effects (e.g., for buildings over 40 feet in height through compliance with Proposition K). Other design-specific requirements such as design policies contained within the Port's Waterfront Design and Access Element would ensure access to light and air.

The project's shadows would be largely confined to spaces on the site and in its immediate vicinity. The project would not shade open spaces protected by Proposition K. As such, the proposed project would not result in adverse shadow impacts that could combine with the potential shadow impacts of other foreseeable projects. It can thus be concluded that the proposed project would not result in cumulatively considerable shadow impacts.

Mitigation: Not required

5.11 Recreation

This section describes existing public parks and recreational facilities in the vicinity of the America's Cup event facilities, spectator venues, secondary viewing locations, and the James R. Herman Cruise Terminal and Northeast Wharf Plaza. It evaluates the potential for implementation of the proposed projects to adversely affect these existing facilities. The impact analysis evaluates the potential recreation impacts of the projects and identifies mitigation measures to avoid or reduce adverse impacts. Impacts related to the direct effects of the proposed projects on aesthetics, historical resources, biological resources, and water quality that may be associated with the recreational experience of park users are discussed in Sections 5.3, 5.5, 5.14, and 5.16, respectively.

5.11.1 Setting

5.11.1.1 Overview of Regional Recreational Resources

Existing recreational resources in the project area and vicinity are shown in **Figures 5.11-1**, **5.11-2**, and **5.11-3**. Regional recreational resources are described in the following order: (1) local recreational resources and open spaces, including those managed by the San Francisco Recreation and Parks Department (SFRPD) and the Port of San Francisco, and small privately owned parks; (2) parks managed by the California Department of Parks and Recreation; and (3) federally owned and managed facilities, including recreational and open space uses owned and managed by the Golden Gate National Recreation Area (GGNRA), which is designated by the U.S. Department of the Interior and administered by the National Park Service (NPS), as well as recreational and open space uses within GGNRA managed by the Presidio Trust. In addition, other regional recreational resources outside of San Francisco, including those in the town of Tiburon and the City of Sausalito, are generally described below.

Local

San Francisco Recreation and Parks Department

The SFRPD maintains more than 230 parks, playgrounds, and open spaces throughout the city. SFRPD facilities located in the project vicinity are described below.

San Francisco Marina Yacht Harbor. The San Francisco Marina Yacht Harbor, also known as the San Francisco Marina, is located on the northern waterfront of San Francisco, as shown in Figure 5.11-2. The approximately 35-acre San Francisco Marina consists of two main harbors: East Harbor (next to the western boundary of Fort Mason) and West Harbor (generally north and northeast of the Baker Street and Marina Boulevard intersection). The East Harbor consists of 343 boat slips, the City Yachts boat sales, restrooms, and two parking lots. The West Harbor includes the St. Francis and Golden Gate Yacht Clubs, and the Harbormaster's Building.

RECREATIONAL FACILITIES

1 Battery Ledyard
2 Battery Drew
3 Fire Road
4 Nike Missile Site
5 Shoreline Park
6 Corinthian Yacht Club
7 Sausalito Town Square
8 Gabrielson Park
9 Sausalito Boardwalk/Yee Tock Chee Park
10 Tiffany Park
11 Point Diablo
12 China Beach
13 Eagle's Point Overlook
14 The Great Lawn
15 Fogwatch Picnic Area
16 Treasure Isle Marina
17 Kirby Cove Campground
18 Bunker Overlooks
19 Battery Spencer

Race Area
GGNRA Lands

0 1 Mile

SOURCE: Google Maps; ESA

Case No. 2010.0493E: AC34 / Cruise Terminal and Northeast Wharf Plaza (210317)

Figure 5.11-1
Recreational Facilities in Project Area

SOURCE: Google Maps; ESA

Case No. 2010.0493E: AC34 / Cruise Terminal and Northeast Wharf Plaza (210317)

Figure 5.11-2
Recreational Facilities in San Francisco Waterfront Area

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SOURCE: Google Maps; ESA

Case No. 2010.0493E: AC34 / Cruise Terminal and Northeast Wharf Plaza (210317)

Figure 5.11-3
Recreational Facilities in the Cavallo Point Area

Marina Green. This approximately 7-acre park is located between West Harbor and East Harbor. Marina Green includes several "par course" workout stations along the park's perimeter, restrooms, a concession stand, and parking lots. This park is home to many large athletic and community events such as Escape from Alcatraz (2 times per year, drawing approximately 7,000 people in 2010 for each event), marathon races, Men's Health Urbanization (drawing approximately 5,000 people), Family Kite Day (drawing approximately 5,000 per day), Susan Koman 3-Day Walk, and the Rolex Big Boat Series sailing event (which attracted approximately 1,500 people in 2010). Marina Green also serves as the headquarters to Fleet Week every October.[1] Fleet Week drew approximately 20,000 people to Marina Green in 2010.[2]

On weekday afternoons and Saturdays, Marina Green is commonly used by various youth soccer leagues serving players up to age 10. Over 3,000 children use the field in the course of a week during the peak seasons. With teams organized by SFRPD, the Marina Green is commonly booked throughout the spring, summer, and fall seasons for soccer games. Youth soccer practices typically occur between 3:00 and 5:30 p.m. during weekdays. In addition, adult volleyball, kickball, and flag rugby games typically occur Tuesday through Thursdays during evening hours on the western part of Marina Green (referred to as Little Marina Green). Marina Green is also used informally as an athletic training area on Saturdays and is frequently used for kite flying, picnicking, walking, and running. Little Marina Green is used for larger picnics and small fundraisers throughout the year.[3]

Palace of Fine Arts and Exploratorium. Located at Lyon and Marina Streets, the Palace of Fine Arts is a 19-acre park that consists of a rotunda and colonnades set against a lagoon, grassy areas, and a paved path. This park is well used by visitors and residents for picnicking, strolling, and jogging. The park is also a popular wedding and photography location. The exhibition hall behind the rotunda houses the Exploratorium, an interactive science museum, and the Palace of Fine Arts Theatre, which hosts concerts, dance performances, films, and other events.[4]

Justin Herman Plaza. This public plaza is located at the terminus of Market Street, across from the Ferry Building. This plaza hosts numerous promotional events and expositions for races such as the San Francisco Marathon. The plaza is also used by artisan vendors during daytime hours.[5]

Harry Bridges Plaza. This plaza is the median divider between The Embarcadero and extends from Clay Street on the north to the southern end of the Ferry Building. This space is commonly used by skateboarders and bicyclists.[6]

1 San Francisco Recreation and Parks Department (SFRPD), San Francisco Marina Yacht Harbor website, available online at http://sfrecpark.org/SF-Marina.aspx, accessed March 31, 2011.
2 Kushner, Lev, San Francisco Recreation and Park Department (SFRPD), email communication, May 2, 2011.
3 Ibid.
4 San Francisco Recreation and Parks Department (SFRPD), SF Rec & Part Palace of Fine Arts Page, available online at http://sfrecpart.org/PalaceOfFineArts.aspx, accessed March 31, 2011.
5 San Francisco Recreation and Parks Department (SFRPD), Rec & Park Main Map, available online at http://sfrecpark.org/parksMapPage.aspx, accessed April 2011.
6 Ibid.

Sue Bierman Park. This 4.4-acre park is bordered by Washington Street to the north, Drumm Street to the west, Justin Herman Plaza to the south, and The Embarcadero to the east. This park consists of a grassy lawn and bench seating.[7]

Coit Tower and Pioneer Park. Located at 1 Telegraph Hill Boulevard, Coit Tower is a popular tourist attraction that consists of an observation deck accessible by elevator, offering views of the city and Bay. Coit Tower contains several murals that were painted by a group of artists employed by the Public Works of Art Project. The tower is surrounded by Pioneer Park and trails winding around the tower and down to the base of Telegraph Hill.[8]

George R. Moscone Recreation Center. The George R. Moscone Recreation Center is located at 1800 Chestnut Street and includes an indoor gym, community rooms, two play areas, a basketball court, tennis courts, four baseball diamonds, a putting green, and a fully renovated playground.[9]

Russian Hill Park. Russian Hill Park is a 1-acre open space area with bench seating and is located at Hyde and Bay Streets. To the south of this park is Russian Hill Open Space, which is managed by the San Francisco Public Utilities Commission. This former man-made reservoir is currently covered with concrete and provides scenic views of the Bay.[10]

Lafayette Park. Lafayette Park is an elevated park located at Gough and Washington Streets. This 11.5-acre park contains open space with shady trees, picnic benches, and restroom facilities.[11]

Union Square. Union Square is a plaza of 2.6 acres bordered by Geary Street on the south, Powell Street on the west, Post Street on the north, and Stockton Street on the east. It is located within the central shopping, hotel, and theater district of the city. Union Square consists of an elevated central plaza, stage, terraced performance seating, café, and outdoor seating. Union Square frequently hosts concerts and large events. During the winter season, a temporary ice skating rink is installed.[12]

San Francisco Civic Center. San Francisco Civic Center is bounded by Market Street on the south, Franklin Street on the west, Turk Street on the north, and Leavenworth and Seventh Streets on the east. The Civic Center contains two large plazas: Civic Center Plaza and United Nations Plaza. Many of the city's largest government and cultural institutions, including City Hall, are located adjacent to the civic center. San Francisco Civic Center was designated a National Historic Landmark in 1987 and is also a City-designated historic district under Article 10 of the Planning Code.

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7 Ibid.
8 San Francisco Recreation and Parks Department (SFRPD), SF Rec & Park Coit Tower Page, available online at http://sfrecpark.org/CoitTower.aspx, accessed April 2011.
9 San Francisco Recreation and Parks Department (SFRPD), Rec & Park Main Map, available online at http://sfrecpark.org/parksMapPage.aspx, accessed April 2011.
10 Ibid.
11 Ibid.
12 San Francisco Recreation and Parks Department (SFRPD), SF Rec & Park Coit Tower Page, available online at http://sfrecpark.org/CoitTower.aspx, accessed April 2011.

Port of San Francisco

The Port of San Francisco (Port) manages waterfront property along San Francisco Bay. Below is a description of recreational facilities under the Port's jurisdiction.

Fisherman's Wharf. Fisherman's Wharf roughly encompasses the northern waterfront from Van Ness Avenue east, to Pier 35 or Kearny Street. It is the center of the Port's fishing industry, as well as a major tourist and visitor area. Popular attractions at Fisherman's Wharf include Pier 39 complex of shops, restaurants and public access pier, the Pier 39 marina, the adjacent Bay Institute and Aquarium of the Bay, and restaurants and stands that serve fresh seafood along Jefferson and Taylor Streets. Other attractions on Port lands include the Hyde Street Pier historic ships, a part of the San Francisco Maritime National Historical Park (described further below under National Park Service, Golden Gate National Recreation Area), and the Hyde Street Fishing Harbor. Fisherman's Wharf offers numerous water activities, including ferry and excursion boat tours, sport fishing trips, and kayak rentals[13] This mix of activities on Port land occurs in the broader context of visitor-oriented hotels, shops and attractions in Fisherman's Wharf on non-Port land south of Jefferson Street, including Ghirardelli Square, the Argonaut Hotel and Cannery Shopping Center.

Fisherman's Wharf is located at the terminus of Herb Caen Way/Embarcadero Promenade at Pier 39, connecting the area to the broad pedestrian public access that stretches along the Northeast Waterfront, south to China Basin Channel. In Summer 2011, the Port will start construction of the Pier 43 Promenade public open space project, which entails removing a dilapidated pier and remnants of a parking lot, and extending the Embarcadero Promenade into Fisherman's Wharf to Pier 45. The Promenade provides continuous scenic views of the Bay and waterfront activities including fishing boat activities, Alcatraz Island, and the Golden Gate Bridge to the west, ferries, sea lions at Pier 39 and views of the East Bay.[14]

Telegraph Field. Telegraph Field is located on a parking lot between Piers 27-29 east of Teatro ZinZanni, off The Embarcadero at the intersection with Lombard Street. This field is an artificial turf soccer field leased to a nonprofit organization, San Francisco Soccer, and is commonly used by youth and adult soccer leagues on a reservation-only basis.[15]

Pier 7 Public Access Pier. Pier 7 is a 900-foot-long public access pier at The Embarcadero's intersection with Broadway. The pier provides seating, passive recreation, public fishing, and expansive scenic views of the Bay Bridge and Treasure Island.

Ferry Building and Piers 1-5. The Ferry Building and Piers 1-5 provide integrated public access extending from Pier 7 south through the Ferry Building waterfront area--as part of historic rehabilitation of Piers 1 to 5 and Ferry Building--and Downtown. The Ferry Building hosts farmers markets on a weekly basis and, together with ferry operations, has become a popular destination for downtown workers, residents, and tourists.

[13] Fisherman's Wharf San Francisco official site, http://visitfishermanswharf.com/thingstodo/default.aspx, accessed April 2011.
[14] Pier 39 San Francisco, Attractions website, http://www.pier39.com/Attractions/index.htm, accessed April 2011.
[15] San Francisco Soccer website, http://www.sanfranciscosoccer.org/, accessed March 31, 2011.

Pier 14 Public Access Pier. The Pier 14 Public Access Pier is located on top of the breakwater for the Downtown Ferry Terminal, south of the historic Agriculture Building, providing public viewing and passive recreation amenities in the Ferry Building area.

Rincon Park. Rincon Park is a 2-acre grassy park located on The Embarcadero at the foot of Folsom Street. The park includes a large sculpture called "Cupid's Span," which resembles Cupid's bow and arrow with the arrow implanted in the ground.

Herb Caen Way. Herb Caen Way is an approximately 3.2-mile-long promenade along The Embarcadero that runs between South Beach and Pier 39. This paved path constitutes a segment of the San Francisco Bay Trail (Bay Trail) and is commonly used by pedestrians, bicyclists, joggers, and rollerbladers. The new Exploratorium building is currently under construction at Piers 15 and 17 and adjacent to Herb Caen Way. Refer to the subsection "San Francisco Bay Trail," below, for further description of the Bay Trail.

South Beach Park. South Beach Park is a small park within the South Beach Harbor (leased to the San Francisco Redevelopment Agency) located just north of AT&T Ballpark. This park consists of an enclosed playground for toddlers and an open grassy area commonly used for off-leash dogs.

South Beach Harbor. South Beach Harbor is located between Pier 40 and AT&T Park and was built by the San Francisco Redevelopment Agency on land leased by the Port of San Francisco. This harbor consists of 700 slips with concrete docks, a 640-foot recreational and commercial guest dock, and the Pier 40 Maritime Center. The South Beach Yacht Club is located at Pier 40 and primarily includes a clubhouse, store, and restaurant. Commercial services offered at South Beach Harbor include kayak rentals, sailing lessons, and boat rentals.[16]

China Basin Park. China Basin Park, constructed by the San Francisco Giants, is located just north of Pier 48 and abuts the southern entrance of China Basin. The park consists of a mini baseball field and a strip of grass elevated off the sidewalk.

Pier 52 Public Boat Ramp. A public boat ramp is located at Pier 52, approximately ¼ mile south of China Basin. This small ramp provides access for boats and kayaks. Public parking is available nearby.

Mission Creek Park. Mission Creek Park is located southwest of AT&T Ballpark, on both the north and south sides of Mission Creek between Third Street and Seventh Street, On the south side, it includes a grassy area and paved paths used by joggers and walkers. The north side of Mission Creek includes public access walkways lead west to a kayak storage and public launch, and a space at the end of the creek is used for active recreation, including basketball and sand volleyball. These park areas were developed as part of the Mission Bay North and South Redevelopment Plans.

[16] South Beach Harbor website, http://www.southbeachharbor.com/index.html, accessed April 13, 2011.

Tulare Park and Islais Landing. These two parks are small pocket parks located along Islais Creek Channel, which abuts the southern side of Pier 80.

Warm Water Cove Park. Warm Water Cove is a small concrete park located at 24th and Michigan Streets.

San Francisco Bay Trail. The San Francisco Bay Trail is a recreational corridor that, upon completion, will encircle San Francisco and San Pablo Bays with a continuous 500-mile network of bicycling and hiking trails. Portions of the Bay Trail within the project area are shown in **Figure 5.11-4**. The Bay Trail will connect the shoreline of all nine Bay Area counties in the region. As described above, Herb Caen Way and the Giants Promenade constitute segments of the Bay Trail. Other segments of the Bay Trail in the project vicinity are described below and include GGNRA's Golden Gate Promenade, which passes through both Aquatic Park and Crissy Field; multiuse paths along Marina Green and Fort Mason; a pedestrian and bicycle path along both sides of the Golden Gate Bridge; and multiuse paths through Fort Baker.

Currently, approximately 290 miles of the Bay Trail have been completed. The Bay Trail provides opportunities for walking, jogging, and bicycling.[17] The Bay Trail offers access to commercial, industrial, and residential neighborhoods; points of historic, natural and cultural interest; and recreational areas such as beaches, marinas, fishing piers, boat launches, and more than 130 parks and wildlife preserves.

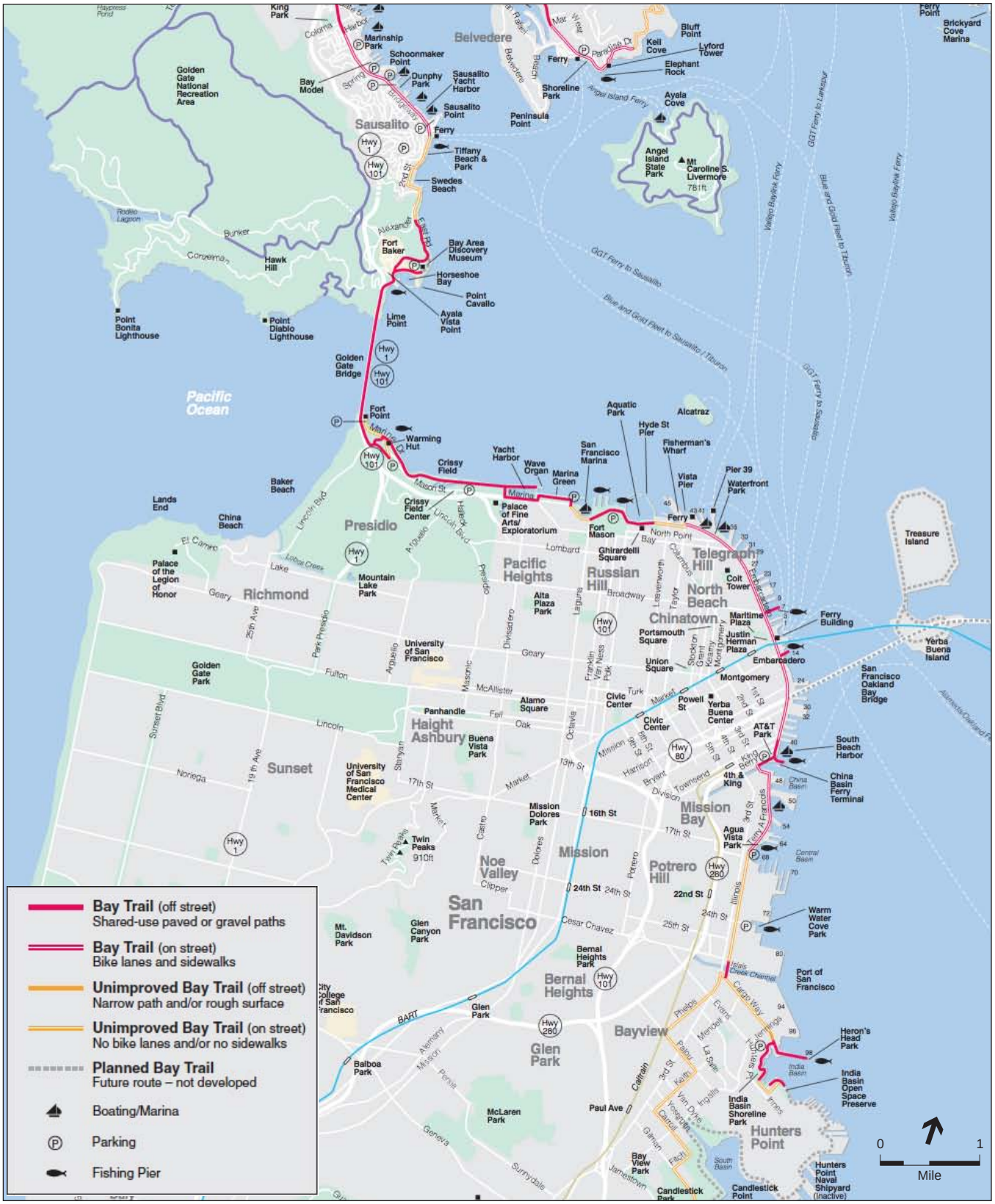
Golden Gate Bridge, Highway and Transportation District

The 1.7-mile-long Golden Gate Bridge, managed by the Golden Gate Bridge, Highway and Transportation District, is a popular destination for tourists and recreationists. The bridge contains sidewalks along both sides that are accessible to pedestrians and bicyclists during daylight hours. Pedestrians and bicyclists share the east sidewalk on weekdays; on weekends, the western side is limited to bicyclists and the eastern side is open to pedestrians only. The bridge sidewalks also comprise a portion of the Bay Trail. The southeast side of the Golden Gate Bridge includes a visitor center, parking lot, renovated garden, and the Fort Point Overlook.[18]

Private Parks

There are two private parks in the vicinity of the America's Cup project area that are open to the public: Sydney G. Walton Square (located at Jackson and Davis Streets) and Levi's Plaza Park (located at Battery and Filbert Streets). Sydney G. Walton Square is a 2-acre open space area owned and maintained by the Golden Gateway Center and Carr America. Levi's Plaza Park is owned and maintained by Levi Strauss & Co. and includes grassy areas, shady areas, ponds, and bridges. Both parks are popular lunch spots for employees working in the Telegraph Hill area and the Financial District.

[17] Association of Bay Area Governments, Bay Trail website, http://www.baytrail.org/overview.html, accessed April 2011.
[18] Golden Gate Bridge, Highway and Transportation District website, http://goldengatebridge.org/visitors/whattodo.php, accessed April 2011.



SOURCE: San Francisco Bay Trail Project

Case No. 2010.0493E: AC34 / Cruise Terminal and Northeast Wharf Plaza (210317)

Figure 5.11-4
San Francisco Bay Trail

State

Angel Island State Park, managed by the California Department of Parks and Recreation, is an approximately 740-acre island in San Francisco Bay that offers expansive views of the Central Bay and San Francisco. The island was formerly used for military forts and immigration centers. The immigration station, situated on the northeast corner of the island, has been designated a National Historic Landmark. Angel Island offers miles of hiking trails, including ones to the island's highest peak, Mt. Livermore. The paved Perimeter Road encircles the outer edge of the island, offering bicyclists and hikers scenic views of the entire Bay.[19] Aside from the numerous trails, Angel Island offers other recreational facilities including campgrounds, a snack bar, a visitor center at the north side of the island, segway and tram tours, and bicycle rentals. Two ferry companies provide access to Angel Island: the Blue & Gold Fleet, which departs from Pier 41, and the Angel Island Tiburon Ferry, which departs from downtown Tiburon.[20]

Federal

National Park Service, Golden Gate National Recreation Area

Within the region, the National Park Service (NPS) operates the Golden Gate National Recreation Area (GGNRA) in Marin, San Francisco, and San Mateo Counties. The GGNRA includes popular attractions such as the Marin Headlands, Fort Point National Historic Site, Alcatraz Island, and the San Francisco Maritime National Historical Park, all of which would serve either as primary venues for the America's Cup or as secondary viewing areas. Annual visitation to the GGNRA is shown to have reached 13 to 15 million visitors since 1980.[21]

San Francisco Maritime National Historical Park. The San Francisco Maritime National Historical Park includes a fleet of historic vessels, a visitor center, man-made lagoon, gardens, a maritime museum, and a library/research facility, among other recreational opportunities. This park also incorporates the Aquatic Park Historic District, which is bounded by Van Ness Avenue, Beach Street, and Hyde Street. Aquatic Park generally includes the bathhouse and stadia, Municipal Pier, speaker towers, beach, promenade, and retaining walls. The San Francisco Maritime Museum is a Streamline Moderne (late Art Deco) building that is a key structure of the Aquatic Park Historic District and currently houses exhibit space. This four-story concrete structure is oval in plan and has nautical lines and stepped levels, evoking images of a ship. The building was built as a bathhouse for 5,000 people in the mid- to late-1930s and is decorated with colorful murals. North of the Maritime Museum is a man-made lagoon that is used for swimming and boating. West of the lagoon is the horseshoe-shaped Municipal Pier, which is commonly used for fishing and provides scenic viewing opportunities of the Bay. South of the lagoon is a sandy beach and concrete seawall; farther south is a grassy area known as Victorian Park, which contains the Hyde Street cable turnaround. The park also includes five bocce ball courts located west of the museum and grassy area. At the eastern boundary of the lagoon, NPS leases the

[19] Angel Island Association, map, available online at http://angelisland.org/visitor-information/getting-there/map/, accessed April 2011.
[20] Angel Island Company, http://www.angelisland.com/things_to_do/index.php, accessed April 2011.
[21] Golden Gate National Recreation Area (GGNRA), *Dog Management Draft Plan / Draft Environmental Impact Statement*, published January 14, 2011.

Hyde Street Pier from the Port of San Francisco for exhibition of historic ships and maritime historical artifacts and educational programs. Some of the historic ships are available for self-guided or docent-led tours. Ships that are on display include the *Balclutha, C.A. Thayer*, *Eureka, Alma, Hercules,* and *Eppleton Hall.*[22]

Fort Mason. Fort Mason is a former military post and port of embarkation that was in use until the 1960s. Fort Mason consists of Upper and Lower Fort Mason.

Upper Fort Mason sits at a higher elevation and includes the Great Meadow and the GGNRA headquarters offices, library, and collections. Upper Fort Mason also hosts a youth hostel, hiking and biking trails, open space parks and gardens, picnic areas, a cultural center, and historic buildings. The Great Meadow is a large open space area that is a used to sit on the grass, walk, or fly kites, among other recreational opportunities. The Great Meadow has hosted a number of large events, such as music concerts and large sporting events. A paved path that follows the harbor edge and rises along the headland offers scenic views to the north facing Alcatraz and to the west toward the Golden Gate Bridge. This path connects Aquatic Park to Marina Boulevard to the west.

Lower Fort Mason primarily consists of Fort Mason Center, which is used for events, programs, and organizations that support and reflect the culture of San Francisco. Fort Mason Center leases space out to various nonprofit organizations, such as the San Francisco Modern Art Artists Gallery and the San Francisco Children's Art Center. Greens Restaurant is also located at Fort Mason Center.[23]

Crissy Field. Located west of the San Francisco Marina and east of the Golden Gate Bridge, Crissy Field features 100 acres of nature-related and history educational opportunities, along with recreation opportunities that include a 22-acre restored tidal marsh and dunes, the scenic Golden Gate Promenade, restored historic airfield, bleachers, and the Crissy Field Center. The Golden Gate Promenade is a segment of the Bay Trail and generally follows the northern edge of Crissy Field. East Beach, located east of the tidal marsh area, consists of several picnic areas, parking, and restroom facilities. The Crissy Field Center hosts numerous environmental programs for children and families. Other facilities within Crissy Field include the Marine Sanctuary Visitor Center, the Warming Hut Café, and the West Bluff picnic area.[24] [25]

Fort Point and Golden Gate Promenade. Fort Point National Historic Site is located at the south side of the Golden Gate Bridge and at the end of Marine Drive on the Presidio. The fort offers special programs including a cannon loading demonstration, video programs about the history of Fort Point, and several exhibits.[26] From the Warming Hut located to the north of Fort Point, the

[22] National Park Service (NPS), San Francisco Maritime National Historical Park brochure, available online at http://www.nps.gov/safr/planyourvisit/brochures.htm, accessed April 2011.
[23] Fort Mason Center, http://www.fortmason.org/residents/directory, accessed April 27, 2011.
[24] Golden Gate National Recreation Area (GGNRA) maps, available online at http://www.nps.gov/goga/planyourvisit/maps.htm, accessed April 2011.
[25] Golden Gate National Parks Conservancy, Crissy Field Center website, http://www.parksconservancy.org/our-work/crissy/, accessed April 2011.
[26] Golden Gate National Recreation Area (GGNRA), "Fort Point Things to Do," available online at http://www.nps.gov/fopo/planyourvisit/things2do.htm, accessed April 2011.

Golden Gate Promenade continues westward along Marine Drive. This portion of the Golden Gate Promenade is an unimproved segment of the Bay Trail.

Fort Baker. Fort Baker is a former Army site situated in the southeastern portion of the Marin Headlands and northeast of the Golden Gate Bridge (see Figure 5.11-3). The fort includes several scenic viewing areas, such as Battery Spencer to the west, a vista point located northeast of Highway 1, and Cavallo Point (eastern point of Horseshoe Cove).

Other recreational facilities in Fort Baker include the Bay Area Discovery Museum; the Travis Sailing Center, which offers sailing lessons and boat lessons; picnic areas at Cavallo Point; the Presidio Yacht Club; and a public fishing pier. The Presidio Yacht Club clubhouse is available for use for wedding receptions and other private events on a reservation-only basis. The club also offers sailboat rentals to military, United States Department of Defense, NPS, and United States Coast Guard staff upon completion of the sail training program.

Fort Baker also includes a large grassy area called the Parade Grounds. Adjoining the Parade Grounds is a lodge called Cavallo Point–the Lodge at the Golden Gate. The Bay Trail follows the shoreline of Horseshoe Cove and extends north toward Sausalito along East Road.[27]

Marin Headlands. The Marin Headlands features numerous recreation opportunities including an extensive trail network, access to scenic viewing areas, beaches such as Rodeo Beach and Muir Beach, and many other facilities. Areas that may provide scenic views of the America's Cup race events include Conzelman Road and Kirby Cove. The park's most popular viewing areas are along Conzelman Road, which provides access to overlook points such as Battery Spencer that offer expansive views of the Bay, Golden Gate Bridge, and San Francisco. The entire length of this road is a scenic viewing corridor that is well used by pedestrians, bicyclists, and vehicles. Kirby Cove is accessible to hikers only and includes a campground by the beach. The Point Bonita Lighthouse offers distant views of the Bay.[28]

Baker Beach. Located along the western coast of the Presidio of San Francisco and accessible via Gibson Road, Baker Beach is a popular beach offering scenic views of the Golden Gate Bridge, Marin Headlands, and the Pacific Ocean. The beach contains a picnic area, barbecue pits, restroom facilities, and a designated nature viewing area.

China Beach. This is a small beach located south of Baker Beach and accessible via Sea Cliff Avenue. The beach includes a picnic area, restroom facilities, parking, and scenic views of the Golden Gate Bridge, Marin Headlands, and Pacific Ocean.

Lands End. Lands End is located at the northwestern end of the San Francisco peninsula. Popular attractions include the Coastal Trail, which traverses the western edge of the city; Eagles Point Overlook, which is located at the northern entrance of the Coastal Trail; a scenic overlook from

[27] Golden Gate National Recreation Area (GGNRA) Fort Baker brochure, available online at http://www.nps.gov/goga/planyourvisit/upload/2008-0910-sb-foba-web.pdf, accessed April 2011c.
[28] Golden Gate National Recreation Area (GGNRA), Marin Headlands Trail Map, available online at http://www.nps.gov/goga/planyourvisit/upload/2008-0910-sb-foba-web.pdf, accessed April 2011.

the Palace of the Legion of Honor; the El Camino Del Mar Trail, the West Fort Miley batteries, which offer a grassy picnic area; and a drive-in vista point at Point Lobos and 48th Avenues above the Cliff House that provides expansive views of the Pacific coast. The Coastal Trail also leads to the Sutro Bath ruins and the Cliff House to the south.

Alcatraz Island. Alcatraz Island, which became part of the GGNRA in 1972, is an increasingly popular destination for visitors of the park. The island includes a variety of trails, programs, and exhibits that interpret Alcatraz Island's history and natural resources. In general, the southern half of the island is open to the public. The Agave Trail provides scenic pedestrian access from the dock along the southern side of the island. The primary attraction on Alcatraz is the Cellhouse, which is open year-round. The northern portion of the island is accessible by docent-led tours only and is restricted to the non-breeding season for colonial water birds that nest on the island. Several areas of the island are closed to the public for biologic resource protection and other areas and portions of buildings are closed due to public health and safety concerns.[29] Access to Alcatraz Island is through a private ferry company, Alcatraz Cruises LLC, which is under contract with the National Park Service and operates from Pier 33 in San Francisco.

Presidio Trust/Presidio of San Francisco

The Presidio of San Francisco (Presidio) is a former United States Army post and one of the oldest continuously operating military posts in the nation. It is also a National Historic Landmark consisting of over 780 contributing historic features and is renowned for its depth of history, architecture, archaeology, natural features, vistas, and recreational opportunities.

The Presidio Trust, established by Congress in 1996, manages the majority of lands within the Presidio, including most buildings and infrastructure. The Presidio Trust manages the inland portion (approximately 80 percent) of the Presidio's approximately 1,491 acres; the coastal areas (approximately 20 percent), including Crissy Field, are managed by the NPS.

Attractions at the Presidio include the Main Post, the San Francisco National Cemetery, the Presidio Golf Course, the Presidio Bowling Center, the Walt Disney Family Museum, and numerous picnic areas, scenic overlooks, trails, bicycle routes, and camping areas.[30]

The parade ground at the Main Post is used for many large events. In the past, the two largest events held at the parade grounds were the San Francisco Aloha Festival, which used to occur the first weekend in August; and the Free Shakespeare in the Park event, which typically occurs every weekend in September. The San Francisco Aloha Festival attracted approximately 18,000 people in one weekend, and the Free Shakespeare in the Park event typically draws 1,500 to 1,800 people over the course of the weekend. The Aloha Festival has been discontinued at the Presidio location due to construction activities, and it is not known whether the festival will return to the Presidio. Other large special events that use Presidio roadways and the Main Post include races such as the

[29] National Park Service (NPS), *Alcatraz Island Historic Preservation and Safety Construction Program EIS*, October 2001, available online at http://parkplanning.nps.gov/document.cfm?parkID=303&projectId=20262&documentID=20865, accessed April 2011.

[30] The Presidio Trust website, http://www.presidio.gov/trust/, accessed April 2011a.

Escape from Alcatraz Triathlon (at the beginning of June), the San Francisco Marathon (at the end of July), and the KNBR Bridge to Bridge race (at the beginning of October). In addition, Fleet Week generates heavy demand for parking in all areas of the Presidio.[31,32]

U.S. Navy

The U.S. Navy manages both Treasure Island and Yerba Buena Island, which are connected. Yerba Buena island is bisected by the Bay Bridge.

Treasure Island, located north of the Bay Bridge, is an approximately 404-acre island in the middle of San Francisco Bay. Open space and recreational facilities include water-related recreation and boating facilities, four parks, multiuse paths, a jogging trail on the perimeter of the island, and picnic areas. The 3.7-acre Great Lawn on the western shore of Treasure Island is used for many special events, including the two-day Treasure Island Music Festival. The Treasure Isle Marina, located on Clipper Cove Way (between Treasure Island and Yerba Buena Island), accommodates about 100 slips.[33,34] The Treasure Island Sailing Center, located on California Avenue (southeastern side of the island), provides instruction and facilities for sailors of all skill levels and includes year-round racing and adaptive sailing programs for youth and adults.[35]

Yerba Buena Island consists of approximately 150 acres. The Bay Bridge extends through the southeastern side of the island. Parks and open space occupy approximately 80 acres, or about 50 percent of the island's total area. There are beach areas and picnic grounds at the foot of Clipper Cove, and a multipurpose field located near the peak of Yerba Buena Island that is used by local residents.[36]

5.11.1.2 Existing Recreational Resources by Proposed Project Location

Existing recreational facilities in the vicinity of the project area are described by land management agency in Section 5.11.1.1, Overview of Regional Recreational Resources. This section briefly describes the existing recreational resources, starting with those that are in the vicinity of primary spectator sites, followed by summary of existing recreational resources in the vicinity of presumed secondary viewing sites, including Sausalito, Angel Island, and Treasure/Yerba Buena Island, as summarized in **Table 5.11-1**.

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31 Overman, Steve, Special Events Manager, Presidio Trust, personal communication with Allison Chan (ESA), April 28, 2011.

32 The Presidio Trust, Presidio Special Events Schedule with Expected Impacts Spring through Fall 2011, updated March 22, 2011, available online at http://www.presidio.gov/NR/rdonlyres/3A4073E2-A7D2-4FC5-8839-6DCAA9575401/0/SpecialEvents2011.pdf, accessed April 2011.

33 San Francisco Planning Department, *Treasure Island/Yerba Buena Island Redevelopment Project Draft Environmental Impact Report*, Section J, Recreation, published July 12, 2010, available online at http://www.sfplanning.org/index.aspx?page=1828, accessed April 2011.

34 City and County of San Francisco (CCSF), Treasure Island Special Event Venues, available online at http://www.sftreasureisland.org/index.aspx?page=17, accessed April 2011.

35 Treasure Isle Marina website, http://treasure-isle.com, accessed April 2011.

36 San Francisco Planning Department, *Treasure Island/Yerba Buena Island Redevelopment Project Draft Environmental Impact Report*, Section J, Recreation, published July 12, 2010, available online at http://www.sfplanning.org/index.aspx?page=1828, accessed April 2011.

TABLE 5.11-1
RECREATIONAL RESOURCES IN THE PROJECT VICINITY

Resource	Location	Activities/Facilities	Land Owner or Land Manager
RECREATIONAL USES IN THE VICINITY OF PORT OF SAN FRANCISCO PIERS, WATER AREAS, AND SEAWALL LOTS			
Fisherman's Wharf	Extends north from Jefferson and Taylor Streets	Popular tourist attraction with restaurants, shops, and street performers. Provides access to tours and cruises. Offers tours of the USS Pampanito (World War II-era submarine) and access to the Musee Mecanique exhibit. Hosts many San Francisco events including firework displays for Fourth of July and Fleet Week.	Port of San Francisco
Telegraph Field	On the parking lot between Piers 27-29 off the Embarcadero at the intersection with Lombard Street	Soccer field available on a reservation-only basis; parking lot.	Port of San Francisco
Pier 7 Public Access Pier	The Embarcadero and the foot of Broadway.	900-foot long public access pier that provides seating and passive recreation, public fishing, and expansive scenic views of the Bay.	Port of San Francisco
Herb Caen Way	Approximately 3.2-mile-long promenade along The Embarcadero that runs between South Beach Pier and Pier 39	Paved pathway used by pedestrians, bicyclists, joggers, and rollerbladers.	Port of San Francisco
Levi's Plaza Park	Generally bordered by Sansome Street to the west, Filbert Street to the south, and The Embarcadero to the east	Grassy area, ponds, paved paths. Popular lunch spot for employees at Levi's Plaza.	Levi Strauss Property Management
Sydney G. Walton Square	Jackson and Davis Streets	2-acre open space area that was designed by well-known landscape architect Peter Walker. Popular lunch spot for Financial District employees.	Golden Gateway Center and Carr America
Rincon Park	Adjacent to The Embarcadero between Howard and Folsom Streets	Grassy open space area along The Embarcadero; includes the Cupid's Span sculpture.	Port of San Francisco
Ferry Building and Piers 1-5	On The Embarcadero at the terminus of Market Street	Ferry terminal and shopping center. A promenade follows the northeastern side of the Ferry Building.	Port of San Francisco
Pier 14 Public Access Pier	The Embarcadero and the foot of Mission Street.	Provides public viewing and passive recreation amenities.	Port of San Francisco
Harry Bridges Plaza	Median divider between The Embarcadero; extends from Clay Street on the north to the southern end of the Ferry Building	This space is commonly used by skateboarders and bicyclists.	Port of San Francisco
South Beach Park	Just north of AT&T Ballpark	Playground for toddlers and open grassy area.	Port of San Francisco
South Beach Harbor	Between Pier 40 and AT&T Ballpark	Consists of 700 slips with concrete docks, a 640-foot recreational and commercial guest dock, and the Pier 40 Maritime Center. Commercial services offered include kayak rentals, sailing lessons, and boat rentals. South Beach Yacht Club is located at Pier 40 and includes a clubhouse, store, and restaurant.	Port of San Francisco

TABLE 5.11-1 (Continued)
RECREATIONAL RESOURCES IN THE PROJECT VICINITY

Resource	Location	Activities/Facilities	Land Owner or Land Manager
RECREATIONAL USES IN THE VICINITY OF PORT OF SAN FRANCISCO PIERS, WATER AREAS, AND SEAWALL LOTS (cont.)			
AT&T Ballpark	Bordered by Third Street to the southwest, King Street to the west, Second Street to the northeast, and San Francisco Bay to the east.	Baseball stadium and home to the San Francisco Giants, major league baseball franchise.	Port of San Francisco
Giants PortWalk Promenade	Waterfront promenade along the southeastern side of AT&T Ballpark; connects to Third Street.	Multiuse path used by bicyclists, hikers, and joggers.	Port of San Francisco
China Basin Park	Bordered by Third Street to the west, Terry A. Francois Street to the south, and San Francisco Bay to the north and east. Just northwest of Pier 48.	Grass area, passive recreation elevated off the sidewalk. Contains a mini baseball field.	Port of San Francisco
Mission Creek Park	Borders the northwestern shore of Mission Creek between Fourth Street to the northeast and Berry Street to the northwest.	Benches and multiuse path used by bicyclists, walkers, and joggers; public launch for hand-held water vessels (e.g. kayaks) and sports court/active recreation area at end of Mission Creek.	San Francisco Redevelopment Agency / Port of San Francisco
Pier 52 Public Boat Ramp	Pier 52	Two lane public boat ramp for trailered boat access, and kayaks.	Port of San Francisco
Warm Water Cove Park	24th and Michigan Streets	Passive recreation with a small grassy area.	Port of San Francisco
Islais Landing	At the corner of Quint Street and Cargo Way (just west of Third Street)	Small pocket park; water recreation area for kayaks, outrigger cannoes.	Port of San Francisco
Tulare Park	Between Third and Illinois Streets along Islais Creek Channel	Small pocket park.	Port of San Francisco
RECREATION FACILITIES IN THE VICINITY OF PROPOSED SPECTATOR VENUES			
Fort Baker, Marin County			
Cavallo Point	Eastern point of Horseshoe Cove	Accessible via pedestrian and bicycle path; parking available.	Golden Gate National Recreation Area
Bay Area Discovery Museum	557 McReynolds Road, Sausalito	Educational museum for young children.	Golden Gate National Recreation Area
Travis Sailing Center	East side of Horseshoe Cove	Provides sailing lessons and boat rentals.	Golden Gate National Recreation Area
Battery Spencer	West of the Golden Gate Bridge and accessible via Conzelman Road in Sausalito	Popular viewing location of the Golden Gate Bridge and San Francisco.	Golden Gate National Recreation Area
Alcatraz Island			
Alcatraz Island	Central San Francisco Bay, offshore of Fisherman's Wharf	Major museum exhibit attraction, lighthouse, guided tours, trails.	Golden Gate National Recreation Area
Crissy Field			
Fort Point Overlook	Southeastern end of Golden Gate Bridge	Offers up-close scenic views of the Golden Gate Bridge. Access to bridge sidewalks (east side is available to pedestrians and west side is open to bicyclists). Adjacent to a gift center and café.	Golden Gate Bridge, Highway and Transportation District

TABLE 5.11-1 (Continued)
RECREATIONAL RESOURCES IN THE PROJECT VICINITY

Resource	Location	Activities/Facilities	Land Owner or Land Manager
RECREATION FACILITIES IN THE VICINITY OF PROPOSED SPECTATOR VENUES (cont.)			
Crissy Field (cont.)			
Crissy Field	Generally bordered by Long Avenue to the west, Mason Street to the south, East Beach to the north, and Yacht Road to the east.	A 22-acre tidal marsh and historic air field. Contains ample parking spaces, Torpedo Wharf, Battery East, the Warming Hut Café and bookstore, Beach Hut Café (adjacent to interim Crissy Field Center), and Café Crissy (at Mason and Halleck Streets).	Golden Gate National Recreation Area
Crissy Field Center	1199 East Beach (interim location)	Interim center provides a variety of environmental education and youth leadership programs	Golden Gate National Recreation Area
Crissy Field Overlook	Off Lincoln Boulevard and near Crissy Field Avenue	Vista point above Crissy Field that offers views of City skyline, Palace of Fine Arts, Alcatraz, and Angel Island.	Golden Gate National Recreation Area
Golden Gate Promenade (Bay Trail)	Paved promenade that runs from Fort Point through Fisherman's Wharf, Jefferson Street, Aquatic Park, Fort Mason, Marina Green, and Crissy Field, and ends at the Golden Gate Bridge.	A 4.3-mile-long multiuse trail that runs the length of Crissy Field and is accessible to bicyclists and hikers.	Golden Gate National Recreation Area
Mason Street multi-use path and bike lane (Bay Trail)	Paved path and bike lane that runs along Mason Street from the Marina Gate to West Bluff Picnic Area (west end of Crissy Field)	Multiuse path used by bicyclists, hikers, and joggers.	Golden Gate National Recreation Area
Marina Green and Vicinity			
West Harbor	Between St. Francis Yacht Club (near Baker Street/Marina Boulevard intersection) and Marina Green	Consists of 325 slips, St. Francis and Golden Gate Yacht Clubs, the Harbor Office Building, restrooms, concession stand, and four parking lots.	San Francisco Recreation and Parks Department
East Harbor	Between Marina Green and Fort Mason	Consists of 343 boat slips, City Yachts sales and fuel concession, restrooms, and two parking lots	San Francisco Recreation and Parks Department
Marina Green	Situated between East and West Harbors	An approximately 7-acre open grass field encircled by wide, paved sidewalks on all sides and four parking areas to the north, south, and west. Includes a concession stand and restroom facilities, several "par course" workout stations.	San Francisco Recreation and Parks Department
Palace of Fine Arts	Lyon and Marina Streets	A 19-acre park that consists of a rotunda and colonnades set against a lagoon, grassy areas, and a paved path. Popular place for picnicking, strolling, and jogging. The exhibition hall behind the rotunda houses the Exploratorium (described below), and the Palace of Fine Arts Theatre, which hosts concerts, dance performances, films, and other events.	San Francisco Recreation and Parks Department

TABLE 5.11-1 (Continued)
RECREATIONAL RESOURCES IN THE PROJECT VICINITY

Resource	Location	Activities/Facilities	Land Owner or Land Manager
RECREATION FACILITIES IN THE VICINITY OF PROPOSED SPECTATOR VENUES (cont.)			
Marina Green and Vicinity (cont.)			
Exploratorium	3601 Lyon Street	An interactive museum of science, art, and human perception.	City and County of San Francisco
George R. Moscone Recreation Center	1800 Chestnut Street	Includes an indoor gym, community rooms, two play areas, a basketball court, tennis courts, four baseball diamonds, a putting green, and a fully renovated playground.	San Francisco Recreation and Parks Department
Fort Mason	Bordered by Laguna Street to the west, Bay Street to the south, and Van Ness Avenue to the east	Includes the Golden Gate National Recreation Area headquarters, historic buildings, public open spaces, and Fort Mason Center which hosts various environmental, cultural, and arts organizations. Includes the Great Meadow Lawn with a paved trail connecting Aquatic Park to Marina Green.	Golden Gate National Recreation Area
San Francisco Maritime National Historic Park	Van Ness Avenue and Beach Street	Includes a beach, concrete stadia, grassy lawns, bocce ball courts, Municipal Pier, visitor center, exhibit, Aquatic Park Bathhouse (Maritime Museum), Hyde Street Pier, and Golden Gate Promenade.	Golden Gate National Recreation Area
Recreational Facilities Near Proposed AC34 Live Sites			
Union Square	Post and Stockton Streets	Elevated landscaped plaza within the central shopping, hotel, and theater district of San Francisco. Contains restroom facilities and parking.	San Francisco Recreation and Parks Department
Justin Herman Plaza	Bordered by Sue Bierman Park to the north, commercial businesses to the west, The Embarcadero the east, and Market Street to the southwest	Open space plaza with water feature structure.	San Francisco Recreation and Parks Department
Sue Bierman Park	Washington and Drumm Streets	4.4-acre grassy open space area that borders Justin Herman Plaza to the north.	San Francisco Recreation and Parks Department
San Francisco Civic Center	Bounded by Market Street on the south, Franklin Street on the west, Turk Street on the north, and Leavenworth and Seventh Streets to the east	Two play areas at the center of Civic Center. Near City Hall, the San Francisco Main Library, and the Asian Art Museum.	San Francisco Recreation and Parks Department
SECONDARY VIEWING AREAS			
Marin Headlands			
Conzelman Road	In the southern part of Sausalito; extends west from the northern end of the Golden Gate Bridge	This road provides scenic views of the San Francisco Bay and includes several roadside pullouts. The road is commonly used by cyclists and connects the Golden Gate Bridge with the Marin Headlands.	City of Sausalito
Kirby Cove Campground	Approximately 3,000 feet west of the Golden Gate Bridge	Campground with four sites; open April through October.	Golden Gate National Recreation Area

TABLE 5.11-1 (Continued)
RECREATIONAL RESOURCES IN THE PROJECT VICINITY

Resource	Location	Activities/Facilities	Land Owner or Land Manager
SECONDARY VIEWING AREAS (cont.)			
Marin Headlands (cont.)			
Bicentennial Campground	Approximately 2,000 feet west of Kirby Cove Campground	Campground with three sites; open year-round	Golden Gate National Recreation Area
Point Bonita Lighthouse	Point Bonita (accessible via Bunker Road and Field Road)	Lighthouse accessible via 0.5-mile trail.	Golden Gate National Recreation Area
Bird Island Overlook	Western terminus of Fort Barry Road	Scenic overlook of Bird Island and the Pacific Ocean; parking lot.	Golden Gate National Recreation Area
Rodeo Beach	Near western end of Conzelman and Field Roads	Beach, picnic tables, restroom facilities, and parking facilities. Private events and functions (weddings, receptions, organized events, etc.) require special use permits.	Golden Gate National Recreation Area
Angel Island State Park			
Angel Island	Within Central San Francisco Bay, east of the town of Tiburon and north of Alcatraz Island	Consists of numerous group picnic areas, campsites, restroom facilities, snack bar, visitor center, and café. Trails that encircle the island include the Sunset Trail and Ida Trail. Roads that are accessible to bicyclists and hikers include the Perimeter Road, Point Stuart Loop, and the Fire Road. Other destinations on the island include Battery Ledyard, Battery Drew, and the Nike Missile Site.	California Department of Parks and Recreation
City of Sausalito			
Tiffany Park	Easterly side of Bridgeway at east end of North Street	Small sand beach.	City of Sausalito
Yee Tock Chee Park	Bay side of Bridgeway at Princess Street	Passive park with landscaping, lights, benches, and access to water. Scenic views of San Francisco available.	City of Sausalito
Gabrielson Park	Outboard of Parking Lot #1 which fronts on Anchor Street	Lawn area, benches, sculpture and view across Richardson Bay.	City of Sausalito
Sausalito Town Square	Intersection of Bridgeway, Anchor, and El Portal Streets	Also known as Vina del Mar Plaza, this plaza serves as the town square of Sausalito. Consists of a greenbelt area with fountain and landscaping.	City of Sausalito
Richardson Bay Marina	100 Gate Six Road	Consists of 220 slips.	City of Sausalito
Clipper Yacht Harbor	310 Harbor Drive	Private harbor that consists of 700 slips and a fuel dock and is home to a large portion of Sausalito's sportfishing fleet. Tenants accepted on an application basis.[37]	City of Sausalito

[37] Boating San Francisco website: http://www.boatingsf.com/catpage.php?category=marina&region=&showmap=1, accessed April 2011.

TABLE 5.11-1 (Continued)
RECREATIONAL RESOURCES IN THE PROJECT VICINITY

Resource	Location	Activities/Facilities	Land Owner or Land Manager
SECONDARY VIEWING AREAS (cont.)			
City of Sausalito (cont.)			
Marina Plaza Harbor	2320 Marinship Way between downtown Sausalito and Harbor Road	Private harbor that consists of 103 slips. Tenants accepted on an application basis.[38]	City of Sausalito
Schoonmaker Point Marina	85 Liberty Ship Way, #205	Full-service private marina with 160 slips. Also includes a café and an adjacent sandy beach that can be used to land or launch kayaks and dinghies. Temporary and permanent berthing available as space permits.[39]	City of Sausalito
Cass' Marina	1702 Bridgeway at Napa Street	Private marina that offers sailboat rentals, sailing classes, and adventure charters.[40]	City of Sausalito
Galilee Harbor	300 Napa Street	Maintained by the Galilee Harbor Community Association, a member-run cooperative community composed of artists and marine workers, this harbor is home to many boat builders and their respective families.[41]	City of Sausalito
Pelican Yacht Harbor	Just north of and adjacent to Sausalito Yacht Harbor	Private marina that consists of 90 slips with many classic wooden boats. Does not include guest slips.	City of Sausalito
Arques Shipyard and Marina	2350 Marinship Way Sausalito (south of Clipper Yacht Harbor)	Small private marina that is part of the Arques Shipyard.	City of Sausalito
Sausalito Yacht Club	Humboldt Avenue and Anchor Street, adjacent to Gabrielson Park	Private clubhouse, bar, and restaurant.	City of Sausalito
Town of Tiburon and City of Belvedere			
Shoreline Park	Along the Tiburon shoreline, extending from the corner of Tiburon Boulevard and Paradise Drive to the corner of Paradise Drive and Mar West Street	Passive park consisting of a strip of grass and paved walkway along the Tiburon shoreline.	Town of Tiburon
Waterfront Area along Beach Road	Beach Road along the southeastern side of Belvedere.	Paved walkway along the Belvedere Cove waterfront.	City of Belvedere
Treasure Island and Yerba Buena Island			
Fogwatch Picnic Area	Western side of Treasure Island	Picnic area located on the western shore of Treasure Island offering unobstructed views of the San Francisco skyline. Available on a reservation-only basis.	U.S. Navy

[38] Ibid.
[39] Ibid.
[40] Ibid.
[41] Galilee Harbor Community Association website: http://www.galileeharbor.org/index.html, accessed April 2011.

TABLE 5.11-1 (Continued)
RECREATIONAL RESOURCES IN THE PROJECT VICINITY

Resource	Location	Activities/Facilities	Land Owner or Land Manager
SECONDARY VIEWING AREAS (cont.)			
Treasure Island and Yerba Buena Island (cont.)			
Treasure Island Great Lawn	Western side of Treasure Island	An approximately 126,500-square-foot expansive grass area located on the western shore of the island. Contains 400 parking spaces. Available on a reservation-only basis.	U.S. Navy
Treasure Isle Marina	Clipper Cove Way (between Treasure Island and Yerba Buena Island)	Accommodates about 100 slips.	U.S. Navy
Yerba Buena Island	Throughout Yerba Buena Island	Unnamed beach areas and picnic grounds at the foot of Clipper Cove, and a multipurpose field located near the peak of Yerba Buena Island.	U.S. Navy
Golden Gate Bridge			
Golden Gate Bridge	Highway 1/101 bridge that connects San Francisco to Marin County	A 1.7-mile-long bridge containing sidewalks along both sides that are accessible to pedestrians and bicyclists during daylight hours. The southeast side of the Golden Gate Bridge includes a visitor center, parking lot, renovated garden, and the Fort Point Overlook.	Golden Gate Bridge, Highway and Transportation District
Presidio of San Francisco and Vicinity			
Fort Point National Historic Site	End of Marine Drive at the Presidio (east of the Warming Hut)	Special programs and exhibits related to the fort's history.	Golden Gate National Recreation Area
Main Post	Lincoln Boulevard and Montgomery Street	Includes a main parade ground that is widely used for special events such as the San Francisco Marathon, Escape from Alcatraz, and the KNBR Bridge to Bridge race. Other attractions in the vicinity of the Main Post include the Presidio Bowling Center and the Walt Disney Family Museum.	Presidio Trust
San Francisco National Cemetery	Northern center of the Presidio (just south of Lincoln Boulevard and east of Veterans Boulevard)	30-acre cemetery for the nation's military veterans and their families. This cemetery overlooks the San Francisco Bay and includes a vista point at the southern end of the cemetery accessible by the Bay Area Ridge Trail.	Presidio Trust
Baker Beach	Western coast of the Presidio. Generally west of Lincoln Boulevard, just north of the water treatment plant (accessible via Gibson Road)	Beach with picnic area, barbecue pits, restroom facilities, parking lots, and nature viewing area. Adjacent to Batter Chamberlin and Battery Crosby.	Golden Gate National Recreation Area
China Beach	West of El Camino Del Mar and between Baker Beach and Land's End	Beach with picnic area, barbecue pits, and parking lot.	Golden Gate National Recreation Area

TABLE 5.11-1 (Continued)
RECREATIONAL RESOURCES IN THE PROJECT VICINITY

Resource	Location	Activities/Facilities	Land Owner or Land Manager
SECONDARY VIEWING AREAS (cont.)			
Presidio of San Francisco and Vicinity (cont.)			
Lands End	Generally bounded by El Camino Del Mar, Lincoln Park to the east, Point Lobos Avenue to the south, and the Pacific Ocean to the west	Includes the Eagles Point Overlook, Cliff House, Sutro Bath ruins, USS San Francisco Memorial, picnic areas, and several coastline hiking trails offering views of the Golden Gate Bridge, Marin Headlands, Point Reyes, and Pacific Ocean.	Golden Gate National Recreation Area
Northern San Francisco Hillside Locations			
Coit Tower and Pioneer Park	1 Telegraph Hill Boulevard	Coit Tower consists of an observation deck accessible by elevator that offers views of the city and Bay. The tower is surrounded by Pioneer Park and trails winding around the tower and down the hill. Has a parking lot.	San Francisco Recreation and Parks Department
Russian Hill Park and Open Space	Hyde and Bay Streets	An approximately 1-acre open space park that is handicap accessible.	San Francisco Recreation and Parks Department
Lafayette Park	Gough and Washington Streets	An approximately 11.5-acre open space park with restroom facilities.	San Francisco Recreation and Parks Department

SOURCE: ESA 2011.

Recreational Resources in Vicinity of Port of San Francisco Piers, Water Areas, and Seawall Lots

Piers 27-29 and Piers 30-32 are the two primary sites proposed for AC34 events and improvements in the Port's northern half of the waterfront, between Fisherman's Wharf and China Basin. The Embarcadero Promenade/Herb Caen Way provides approximately 3.2 miles of public access that links these sites and other Port piers with numerous plazas, public viewing areas, sightseeing opportunities and recreational activities on either side of The Embarcadero, which is part of the San Francisco Bay Trail. This includes Pier 43 public access in Fisherman's Wharf, Telegraph Field (soccer) at Piers 27-29, and Levi's Plaza Park just west of Pier 23. At Broadway, Herb Caen Way incorporates the Pier 7 plaza and public access pier, continues along the Bayside History Walk created as part of the Pier 1-5 rehabilitation. Adjacent to Pier 1, the Ferry Building and Justin Herman Plaza frame both sides of The Embarcadero, continuing south to the Pier 14 public access pier/breakwater, and the Rincon Point Open Water Basin in front of Rincon Park, located between Piers 14 and 22½. Herb Caen Way extends past Piers 30-32 and Brannan Street Wharf (Piers 32-36) Open Water Basin, South Beach Harbor marina, then reaching to AT&T Park Port Walk on the north side of China Basin Channel.

Both sides of China Basin have been improved with public open space and recreational uses (e.g., kayak, sports courts) as part of the development of Mission Bay. Additional parks and recreational facilities located in the Mission Bay and Southern Waterfront include Pier 52 Public Boat Launch, Tulare Park and Islais Landing. Refer to Section 5.11.1.1 for a description of these recreational facilities.

Recreational Resources in the Vicinity of Central San Francisco Bay

Recreational opportunities within the central portion of San Francisco Bay are considered in this analysis since the proposed America's Cup race course would be within the Central Bay. The Bay is a widely popular place for in-water recreation activities such as wind surfing, kayaking, boating, and fishing. The Central Bay is generally bounded by the Richmond-San Rafael Bridge to the north; the cities of Richmond, Berkeley, and Emeryville to the east; the Bay Bridge to the south; and the Golden Gate Bridge to the west. Refer to Figure HY-1 in Appendix HY, Hydrology and Water Quality Supporting Information, for an overview of the numerous marinas and harbors in the northern and southern portions of the San Francisco Bay. A summary of marinas located within the Central Bay is provided below.

San Francisco Marinas

As described in Section 5.11.1.1, above, and as shown in Section 5.16, Figure 5.16-5, there are several marinas along San Francisco's northern and eastern waterfronts. The northern waterfront of San Francisco includes the San Francisco Marina Yacht Harbor, which is managed by the SFRPD; and the Hyde Street Harbor, Fisherman's Wharf, and Pier 39, which are under the Port of San Francisco's jurisdiction. Other marinas along San Francisco's eastern waterfront include the South Beach Harbor, and the Pier 52 Public Boat Ramp.

Cavallo Point Marinas

As described in Section 5.11.1.1 under the subheading "Fort Baker," the Travis Sailing Center and Presidio Yacht Club are located within Horseshoe Cove.

Treasure Island Marinas

The Treasure Isle Marina, described in Section 5.11.1.1, is located at 1 Clipper Cove. This marina is a small boat harbor consisting of 107 slips and offers scenic views of the San Francisco Bay, as well as the Bay Bridge and East Bay hills.[42]

Sausalito Marinas

There are eight major marinas in Sausalito: Richardson Bay Marina, Clipper Yacht Harbor, Marina Plaza Harbor, Arques Shipyard and Marina, Schoonmaker Point Marina, Cass' Marina, Galilee Harbor, and Pelican Yacht Harbor. See Section 5.16, Hydrology and Water Quality, for the locations of these marinas. For an overview of these marinas, refer to the discussion under the subheading "City of Sausalito," below.

[42] Treasure Isle Marina website, http://treasure-isle.com, accessed April 2011.

Recreational Resources in Vicinity of Proposed Spectator Venues

Recreational facilities located at or within the vicinity of proposed spectator venues (including Cavallo Point, Alcatraz Island, Crissy Field, Marina Green, Fort Mason, and Aquatic Park) are described in Section 5.11.1.1 and Table 5.11-1, above.

Refer to Section 5.11.1.1 and Table 5.11-1 for a description of recreational facilities and opportunities at potential America's Cup Live Sites such as Union Square, Embarcadero, Justin Herman Plaza, and Civic Center.

Recreational Resources in Vicinity of America's Cup Secondary Viewing Areas

Golden Gate National Recreation Area, Southern Marin County

Several areas within southern Marin County, and specifically within the Marin Headlands and Fort Baker, could serve as secondary viewing areas for the AC34 races. As discussed in Section 5.1, the two Golden Gate Bridge overlooks, Fort Baker, roadside pull-offs along Conzelman Road, Kirby Cove, and Point Diablo could be used by AC34 spectators, despite the absence of programmed amenities and the possibilities for intervening obstructions and unknown public access.

Southern Marin County

City of Sausalito. In Sausalito, shoreline parks that could provide opportunities for viewing the AC34 race area include Sausalito Town Square (also known as Vina del Mar Plaza), Gabrielson Park, Yee Tok Chee Park, and Tiffany Park, assuming the absence of intervening obstructions on land or in the water. There are also eight marinas and harbors in the City of Sausalito: Richardson Bay Marina, Clipper Yacht Harbor, Marina Plaza Harbor, Arques Shipyard Marina, Schoonmaker Point Marina, Cass' Marina, Galilee Harbor, and Pelican Yacht Harbor. The Sausalito Yacht Club, located just east of Gabrielson Park, could also provide opportunities for viewing the AC34 races. For an overview of facilities available at these parks and harbors, refer to Table 5.11-1.

Town of Tiburon and City of Belvedere. In Tiburon, Shoreline Park and the Corinthian Yacht Club, located along the southern waterfront of Tiburon, could serve as distant viewing areas during the AC34 races if there were no intervening vessels or other obstructions on the Bay. Shoreline Park, located east of the Tiburon Ferry Terminal, is a passive park consisting of a strip of grass and a paved walkway along the Tiburon shoreline. The Corinthian Yacht Club, located at 43 Main Street, consists of a clubhouse, restaurant, and bar. In Belvedere, waterfront areas accessible from Beach Road could also serve as AC34 secondary viewing areas.

Angel Island (California State Park)

Views of the AC34 races could be available from several areas on Angel Island, if there were no intervening vessels or other obstructions on the Bay. As shown in Figure 5.11-1, broad views of the race area would be available from Battery Ledyard, Battery Drew, and the Nike Missile Site. Elevated and more distant views would be available from the fire road that circumnavigates the island.

Treasure Island and Yerba Buena Island

Viewing areas on Treasure Island include areas along the western shoreline. Spectators could potentially use the Great Lawn, Fogwatch Picnic Area, and the Treasure Isle Marina to watch the AC34 races. On Yerba Buena Island, a small beach area and picnic ground at the foot of Clipper Cove may serve as a potential AC34 race viewing location for a limited group of people.

Golden Gate National Recreation Area, Northern San Francisco

The northwestern shoreline of San Francisco and GGNRA lands could act as secondary viewing areas as well. In particular, spectators might use coastal overlooks from the Presidio batteries, Baker Beach, China Beach, Eagles Point Overlook, and the Lands End trail to watch the AC34 races.

San Francisco Northern Waterfront

Secondary viewing areas along the northern San Francisco waterfront would likely include Fort Point, the southern Golden Gate Bridge overlook, Presidio overlooks located west of Crissy Field, street views along Marina Green, San Francisco Marina West Harbor, San Francisco Marina East Harbor, Pier 39 and its promenade, Pier 41, and Pier 45. Views of the race area would also be available along the northeastern waterfront from Pier 7, from the promenade along the back side of the Ferry Building, and along The Embarcadero and Herb Caen Way.

Northern San Francisco Hillside Locations

Secondary viewing areas along the northern San Francisco hillsides include Coit Tower, Russian Hill Park, Russian Hill Open Space, and Lafayette Park, which is located at Washington and Gough Streets. Refer to Section 5.11.1.1, above, for an overview of facilities at these parks.

Recreational Resources in Vicinity of Proposed James R. Herman Cruise Terminal and Northeast Wharf Plaza

The nearest recreational uses to the proposed Cruise Terminal project site include a turf soccer field located at Piers 27-29, Herb Caen Way, Fisherman's Wharf and Pier 39 to the northwest, and the Central Bay to the east. As described in Section 5.11.1.1, the turf soccer field is located on the parking lot in the "valley" between the Piers 27 and 29 sheds and is commonly used by youth and adult soccer leagues. Herb Caen Way follows The Embarcadero and is commonly used by joggers, bicyclists, and walkers. Fisherman's Wharf and Pier 39 are popular tourist attractions and contain numerous shops, restaurants, and food carts. The Bay is a widely popular place for in-water recreation activities such as wind surfing, kayaking, boating, and fishing. Levi's Plaza Park, bordered by Sansome Street to the west, Filbert Street to the south, and the Embarcadero to the east, is directly across the street from Piers 27-29. This park includes a grassy lawn, ponds, and paved paths, and serves as a popular lunch spot for employees at Levi's Plaza. Refer to Section 5.11.1.1 for additional information on recreational uses.

5.11.2 Regulatory Framework

5.11.2.1 Federal Regulations

2006 National Park Service Management Policies

The 2006 National Park Service Management Policies contains several policies related to the protection of natural resources, cultural resources, wildlife, use of parks, and park facilities. The following policies pertaining to visitor use and recreation are relevant to the proposed project:

- "***Visitor Use.*** Enjoyment of park resources and values by the people of the United States is part of the fundamental purpose of all parks. The Service is committed to providing appropriate, high-quality opportunities for visitors to enjoy the parks, and the Service will maintain within the parks an atmosphere that is open, inviting, and accessible to every segment of American society. However, many forms of recreation enjoyed by the public do not require a national park setting and are more appropriate to other venues. The Service will therefore:

  - Provide opportunities for forms of enjoyment that are uniquely suited and appropriate to the superlative natural and cultural resources found in the parks;
  - Defer to local, state, tribal, and other federal agencies; private industry; and nongovernmental organizations to meet the broader spectrum of recreational needs and demands….

- ***Recreational Activities.*** The broad range of recreational activities that take place in parks include, but are not limited to boating, camping, bicycling, fishing, hiking, horseback riding and packing, outdoors sports, picnicking, swimming, etc… Many of these activities support the federal policy of promoting the health and personal fitness of the general public, as set forth in Executive Order 13266. However, not all of these activities will be appropriate or allowable in all parks; that determination must be made on the basis of park-specific planning."[43]

Golden Gate National Recreation Area General Management Plan

The 1980 *Golden Gate National Recreation Area General Management Plan* is a guide for the responsible management of the GGNRA's natural and cultural resources. The GGNRA is currently updating the general management plan and the associated EIS for the plan. Management objectives contained in the 1980 plan pertaining to recreation and visitor experience include:

- "***Making the Recreation Area Readily Available to the Broadest Variety of Park Users.*** To offer recreational opportunities to a diversity of park users and to impart knowledge necessary for full enjoyment of park resources through a particular emphasis on interpretation, education, and information programs.

[43] National Park Service (NPS), Management Policies 2006, available online at http://www.nps.gov/policy/mp2006.pdf, accessed April 2011

- ***Provision of a Broad Variety of Park Experiences.*** To retain opportunities for recreational activities pursued in the park today."[44]

Presidio Trust Management Plan

The 2002 *Presidio Trust Management Plan* contains planning principles that guide the Presidio Trust to fulfill its goals of preserving and enhancing the park's resources within the Presidio of San Francisco Main Post, which is managed by the Presidio Trust. This plan also describes land use preferences for future rehabilitation and leasing of the Presidio's amenities. The following guidelines related to preservation of open space, vegetation, and views are relevant to the proposed project:

- "***Spatial Organization and Land Patterns Guideline***: Maintain the Main Post as the 'heart of the Presidio' through rehabilitation, reuse, and interpretation of historic buildings, open spaces, and archeological resources. Consider selective placement of compatibly-scaled infill construction and/or landscape treatments to strengthen the articulation of the historic open spaces and provide a rich visitor experience.

- ***Guidelines for Open Space/Vegetation/Views***: Improve pedestrian and visual connections between the Main Post and Crissy Field. Reinforce the historic connection along Halleck Street. Incorporate an open space connection to Crissy Field as part of the planning for reconstruction of Doyle Drive.

- ***Guidelines for Open Space/Vegetation/Views*:** Preserve Mason Street as an open streetscape with expansive views. Retain the 'open' setting and feel of Crissy Field; limit the introduction of vast, new landscape plantings."[45]

5.11.2.2 State Regulations

San Francisco Bay Plan

The San Francisco Bay Conservation and Development Commission (BCDC) is a state agency with permit authority over the Bay and its shoreline. Created by the McAteer-Petris Act in 1965, BCDC regulates filling, dredging, and changes in use in San Francisco Bay, and development within 100 feet of the Bay. As described in Chapter 4, Plans and Policies, the *San Francisco Bay Plan* (Bay Plan), specifies goals, objectives, and policies for San Francisco Bay and its shoreline and is administered by BCDC. The Bay Plan identifies policies for recreational use of the Bay, including marinas. Policies relevant to recreation and applicable to the proposed project include the following:

> g. *Beaches*. Sandy beaches should be preserved, enhanced, or restored for recreational use, such as swimming, consistent with wildlife protection…

[44] National Park Service (NPS), Golden Gate National Recreation Area General Management Plan, 1980, available online at http://parkplanning.nps.gov/documentsAndLinks.cfm?projectID=15075, accessed May 2011.

[45] Presidio Trust, 2002, Presidio Trust Management Plan, available online at http://www.presidio.gov/trust/documents/environmentalplans/ptmp.htm, accessed May 2011.

The following policies pertaining to maintenance of scenic views of the shoreline and Bay are applicable to the proposed project:

2. 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….

14. 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…[46]

San Francisco Waterfront Special Area Plan

BCDC's *San Francisco Waterfront Special Area Plan* (Special Area Plan) applies the requirements of the McAteer-Petris Act and the provisions of the *San Francisco Bay Plan* (described above) in greater detail. The Special Area Plan, in conjunction with the McAteer-Petris Act and the Bay Plan, facilitates non-maritime, maritime, commercial, and recreational shoreline development along the San Francisco waterfront. The Special Area Plan covers the land and water area located along the existing shoreline of the City and County of San Francisco from the Hyde Street Pier south to the India Basin, including all areas within the jurisdiction of the Port of San Francisco.

Policies pertaining to both public access and visual access to the Bay include the following:

1. Open Water Basins should be focal points of public use and enjoyment of the Northeastern Waterfront. Open Water Basins should provide opportunities for physical access between the Bay and piers and should provide new and substantial Bay views from the boundary piers framing the Open Water Basins.

2. Public access should emphasize passive recreation and focus on its proximity to the Bay and on views and unique experiences that nearness to the Bay affords.

For projects that are proposed on "Finger Piers" (i.e., Piers 27-29, 23, 19, and 26), the Special Area Plan calls for the following:

ii) Projects on Finger Piers where the pier shed is significantly modified or a new building is constructed should provide public access on the entire apron, the Bayside History Walk, and an additional significant public access feature that is consistent with the project and size of the pier

b) Large Piers (30-32, and Piers 27-29 if redeveloped as a Large Pier):

[46] San Francisco Bay Conservation and Development Commission (BCDC), *San Francisco Bay Plan*, adopted in 1968 and amended in January 2008, available online at http://www.bcdc.ca.gov/pdf/planning/plans/bayplan/bayplan.pdf, accessed April 2011.

ii) public access provided should consist of: perimeter access, significant park(s)/plaza(s) on the pier perimeter, additional areas (e.g., small parks or plazas integrated into the perimeter access, significant view corridors to the Bay from points on the pier, etc.[47]

Bay Trail Plan

As mandated by State Senate Bill 100, the Association of Bay Area Governments (ABAG) prepared the *Bay Trail Plan*, which proposes the development of a 500-mile regional hiking and bicycling trail around the perimeter of San Francisco and San Pablo Bays. The Bay Trail consists of paved multiuse paths, unpaved trails, bicycle lanes, sidewalks, or city streets signed as bicycle routes. Within the project area and adjacent project vicinity (see Figure 5.11-4), several multiuse paths and trails contribute to the Bay Trail; these include the Giants PortWalk Promenade (off-street), Herb Caen Way/Embarcadero Promenade (on-street), the Golden Gate Promenade (which passes through Aquatic Park, Marina Green, and Crissy Field), and the Golden Gate Bridge. Unimproved portions of the Bay Trail are located between Herb Caen Way and Aquatic Park as well as between Fort Mason and Marina Green. In Marin County, the Bay Trail extends north from the Golden Gate Bridge through Fort Baker, along Horseshoe Cove, along East Road, and farther north through Sausalito and Tiburon.[48]

Enhanced San Francisco Bay Water Trail Plan

The *Enhanced San Francisco Bay Water Trail Plan* (Water Trail Plan), prepared by BCDC in cooperation with the California Coastal Conservancy (Conservancy) and other public agencies and organizations, aims to create a network of launch and landing sites, or "trail heads" around the Bay to allow people in human-powered boats and beachable sail craft (i.e., kayaks, canoes, dragon boats, windsurf boards) to enjoy single-day trips or multiple-day trips on the Bay. This regional trail would include educational, stewardship, and outreach components. Some general goals for achieving the water trail vision include (1) promoting and linking access points – with each other and with the Bay and Ridge Trails – through signage and other education and outreach materials and programs; and (2) facilitating access improvements and provision of diverse, water-accessible overnight accommodations for trail users of all abilities and economic means.[49] As shown in **Figure 5.11-5**, the water trail plan consists of two planned launch sites in San Francisco: one at the Brannan Street Wharf and one near Piers 27-29. Existing launch sites are located at Cavallo Point, Crissy Field, Fort Mason, Aquatic Park, Mission Bay and Islais Creek. The Conservancy is leading implementation of the Water Trail Plan; the Final EIR for the plan was certified and adopted by the Conservancy Board in March 2011.[50]

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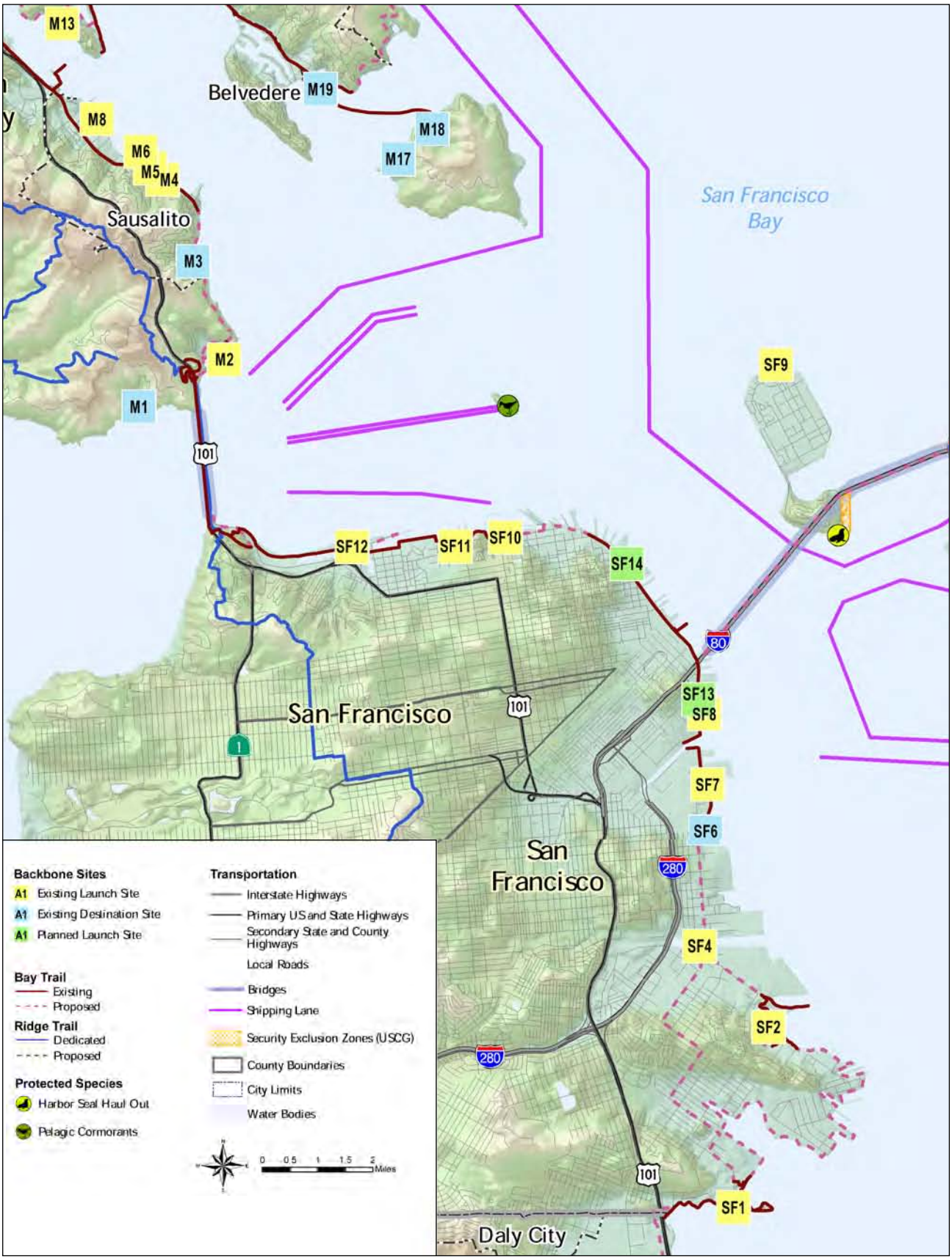
47 San Francisco Bay Conservation and Development Commission (BCDC), *San Francisco Waterfront Special Area Plan*, adopted 1975 and amended through February 2010, available online at http://www.bcdc.ca.gov/pdf/planning/plans/sfwsap/SFWSAP_Final.pdf, accessed April 2011.

48 Association of Bay Area Governments, Bay Trail website, http://www.baytrail.org/overview.html, accessed April 2011.

49 San Francisco Bay Conservation and Development Commission (BCDC), *Enhanced San Francisco Bay Water Trail Plan*, March 17, 2011.

50 California Coastal Conservancy, San Francisco Bay Area Water Trail website, http://scc.ca.gov/2010/07/30/san-francisco-bay-area-water-trail/, accessed May 2011.



Case No. 2010.0493E: AC34 / Cruise Terminal and Northeast Wharf Plaza (210317)

SOURCE: BCDC

Figure 5.11-5
San Francisco Water Plan:
Access Points for Human-Powered Boats
and Beachable Sail Craft on San Francisco Bay

5.11.2.3 Local Regulations

San Francisco General Plan (1996) – Recreation and Open Space Element

The Recreation and Open Space Element of the *San Francisco General Plan* concerns the conservation and preservation of open spaces, parks and recreational areas within San Francisco. The following policies are applicable to the AC34 project:

> *Policy 2.2*: Preserve existing public open space.
>
> *Policy 2.5*: Preserve the open space and natural historic, scenic and recreational features of the Presidio.
>
> *Policy 2.13*: Preserve and protect significant natural resource areas.
>
> *Policy 3.2*: Maintain and improve the quality of existing shoreline open space.
>
> *Policy 3.5*: Provide new public open spaces along the shoreline.[51]

Northwestern Shoreline Plan (1992)

The *Northwestern Shoreline Plan* concerns the preservation and enhancement of San Francisco's northwestern shoreline from Lincoln Park to Fort Mason. The following objectives apply to the proposed project:

> *Fort Mason (GGNRA).* Protect natural vegetation and marine wildlife habitat at the northeast portion of the site. Maintain the existing cultural center in renovated pier and warehouse structures, and use for educational and cultural facilities and activities. Encourage continued programming of special events and activities. Introduce landscaping in parking area. Develop the Burton Memorial amphitheater. Preserve historic gardens and adapt historic buildings to community uses as current use is discontinued and structures are made available by the U.S. Army.
>
> *The Presidio Shoreline (GGNRA).* Develop the Crissy Field area to permit more intensive recreational uses without significantly altering the character of its open landscape. Enhance existing beach and lawn areas to accommodate varied active and passive recreational uses, and enhance views of the Golden Gate. Integrate the landscaping, design, development and use of the portion of Crissy Field under jurisdiction of the US Army with the portion managed by the National Park Service. Reduce the profile of any development near the National Recreation Area so that it may be screened from view from the shoreline.
>
> *Marina-Presidio to Gashouse Cove.* Maintain the quality and character of the Marina Green. Enhance public access to boat marinas consistent with reasonable marina privacy.

[51] City and County of San Francisco (CCSF), 1996 General Plan – Recreation and Open Space Element, amendments by Resolution 18098 on 6/3/2010, available online at http://www.sf-planning.org/ftp/General_Plan/I3_Rec_and_Open_Space.htm, accessed April 2011.

Northeastern Waterfront Plan (1998)

The *Northeastern Waterfront Plan*, which is part of the *San Francisco General Plan*, contains objectives and policies designed to contribute to the waterfront's environmental quality, enhance the economic vitality of the Port and the City, preserve the unique maritime character, and provide for the maximum feasible visual and physical access to and along the Bay. Within the project area, everything east of the boundary of San Francisco Maritime National Historical Park (Hyde Street) falls within the jurisdiction of the *Northern Waterfront Plan*. The following policies are applicable to the project area:

> *Policy 7.4*: Encourage and provide open space and public recreation facilities as part of any development, to provide facilities for people residing and working in the Northeastern Waterfront and adjoining neighborhoods.
>
> *Policy 7.10*: Provide as much public open space and peripheral access as is feasible in areas of maritime activity without interfering with the operation of this activity.[52]

5.11.3 Impacts and Mitigation Measures

5.11.3.1 Significance Criteria

The City has not formally adopted significance standards for impacts related to recreation, but generally considers that implementation of the project could have a potentially significant impact related to recreation if it were to:

- Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facilities would occur or be accelerated;
- Include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment; or
- Physically degrade existing recreational resources.

Due to the nature of the proposed AC34 project, the following criterion is not analyzed in this section for the reasons described below:

- ***Include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment.*** As a yachting competition, the AC34 event is considered a recreational activity, and thus, construction of AC34-related facilities is considered construction of recreational facilities. Similarly, as a public open space area, the Northeast Wharf Plaza is considered a recreational facility. Long-term development could also include the construction of recreational facilities. Therefore, analysis of the construction or expansion of recreational facilities as it relates to the proposed AC34 or Northeast Wharf Plaza projects is the subject of this EIR, since the primary purpose of this EIR is to evaluate the potential impacts of implementing these

[52] City and County of San Francisco (CCSF), *1998 Northeastern Waterfront Plan*, Amendment by Planning Commission Resolution 16626 adopted on 7/31/2003, available online at http://www.sf-planning.org/ftp/General_Plan/NE_Waterfront.htm, accessed April 2011.

projects. Their construction would cause numerous significant effects as described and analyzed throughout this EIR, Chapters 1 through 7.

5.11.3.2 Approach to Analysis

Existing local planning documents and maps were reviewed to identify, where available, the location, use types, use levels, capacity, and sensitivity of resources of recreational facilities in the project area that, because of their proximity, could be directly or indirectly affected by the project.

To determine the potential for project activities to cause direct physical effects on recreational resources (i.e., physical deterioration of facilities, acceleration of physical deterioration of facilities, or physically degrade existing resources), the proposed construction and operations at project sites were compared with existing usage of identified recreational resources at or near those sites. Potential indirect effects on recreational resources were identified through the same means, as well as by reviewing the impact findings presented in other pertinent sections of this EIR. Indirect effects on recreational resources that can result from impacts on other environmental resources include vegetation removal (see Section 5.14, Biological Resources); effects on viewsheds and sightseeing opportunities (see Section 5.3, Aesthetics); traffic hazards along recreational routes or impeded access to recreational resources (see Section 5.6, Transportation and Circulation); project-related noise (see Section 5.7, Noise); and project-related dust and exhaust emissions (see Section 5.8, Air Quality). The results of the impact analyses on these other environmental resources were used to inform the recreational impact analysis.

The potential for recreation-related project activities to cause direct and indirect effects on other resources, such as but not limited to biological resources, cultural resources, utilities, public services, and transportation/circulation, is referenced in this section but analyzed in the appropriate section of Chapter 5, Environmental Setting, Impacts, and Mitigation Measures.

Under CEQA, the lead agency may evaluate impacts on existing recreational resources in the context of the availability of similar recreational resources to the public. Physical degradation of or short-term disruption of access to a recreational facility does not automatically result in a finding of a significant recreational impact under CEQA if the public has access to alternative, similar resources during that period. For example, minor physical degradation of or temporary disruption of access to a single bicycle route might not be significant in a region containing numerous alternative bicycle routes with sufficient capacity; that is, the recreational activity—bicycling on public roads—would not be significantly diminished by the loss of one route. Accordingly, the following analysis evaluates specific recreational impacts in the context of public availability of similar, alternative recreational resources.

In determining the potential effects of the AC34 events on recreational resources, this EIR considers the multiple implementation plans presented in Chapter 3, including the People Plan, Water and Air Traffic Plan, Public Safety Plan, and Parks Event Operations Plan, as summarized below. These implementation plans, along with the ongoing agency coordination efforts for the regional planning, as described in Chapter 3, and design of the AC34 event facilities, are intended in part to minimize disruption to or use of existing recreational resource. Temporary disruption

of the existing visitor experience at recreational facilities is acknowledged as a potential consequence of the AC34 events. These disruptions are being addressed through the AC34 events planning and design process, including the implementation plans and the National Environmental Policy Act (NEPA) analysis to be completed by NPS.

As described in Chapter 2, this EIR is a CEQA document and subject to a different set of standards and requirements than a NEPA document. Therefore, the impact analysis below does not address disruption to or use of existing recreational facilities. Rather, consistent with the CEQA significance criteria, the impact analysis addresses the potential for substantial physical adverse effects on recreational resources/facilities. The estimated number of visitors that would attend the sites, described in Chapter 3 and summarized below, would also travel among spectator venues, as well as between spectator venues and other areas of the city. The estimates are provided, for purposes of determining environment impacts pursuant to CEQA.

The following summarizes implementation plans which are described in detail in Chapter 3:

People Plan. The People Plan describes a safe, reliable and efficient traffic and transportation scheme to facilitate the movement of thousands of visitors on any day to and from the America's Cup events. The People Plan would examine alternatives for transportation to event venues oriented to minimize private automobile use and plans for expanded transportation access by multiple modes that connect visitors to AC34 events, as well as serve residents and workers in the affected areas who may not attend AC34 events. The People Plan would also examine the need for possible partial street closures to encourage pedestrian and bicycle access, and satellite parking locations with connections to public transit. Major event areas would include secure bicycle parking facilities.

Water and Air Traffic Plan. The Water and Air Traffic Plan would provide guidelines for adequate and safe access to the race course area and provisions for use of the race course area by AC34-related water transportation; it would also establish effective enforcement mechanisms for traffic controls in the airspace and water space for AC34.

Public Safety Plan. The Public Safety Plan would include specific measures to ensure a high level of security within and around all elements of the event venues and within and around sensitive locations such as airports, rail, BART, metro and bus stations.

Waste Management Plan. The Waste Management Plan would provide options for recycling, composting and waste reduction to meet or exceed the City's goals for landfill diversion and would include requirements for vendors to maintain adequate composting and recycling receptacles and service levels to meet demand for expected crowds; coordination with local recycling and composting collection firms to ensure adequate collection service; and prohibitions on the use of non-recyclable or non-compostable food service materials in event areas.

Parks Event Operations Plan. The Parks Event Operations Plan would be developed in consultation with the Event Authority and responsible jurisdictional authorities, including the NPS, California Department of Parks and Recreation, Presidio Trust, and SFRPD. The Plan would be implemented as part of the AC34 project. The Plan would identify potential issues and develop cost-effective solutions to help create a positive spectator experience during the AC34 events as well as aim to respect the needs of other incidental visitors that

may be in affected areas, consistent with the mission and objectives of all parties. The implementation of the Plan for the AC34 events in 2012 would provide an opportunity for refinement of the Plan for use during the AC34 events in 2013 based on actual experience at the different spectator venues.

The Plan would link to and reinforce existing management and operational strategies in applicable park venues, such as the GGNRA's established management zones. The NPS has provided preliminary planning information for GGNRA lands to assist the City and Event Authority in the development of the Parks Event Operations Plan; this information is included in **Appendix PD-3**. The Plan would be coordinated and be consistent with other pertinent implementation plans supporting the AC34 events, including the Public Safety Plan, Waste Management Plan, People Plan, Sustainability Plan, Workforce Development Plan, and Youth Involvement Plan.

Key considerations to be addressed into the Plan are crowd management, safety, visitor comfort, visitor experience and post-event restoration. The roles and responsibilities of implementing entities would be clearly described.

5.11.3.3 AC34 and Cruise Terminal Project Impacts and Mitigation Measures

America's Cup

Impact RE-1: The America's Cup facilities and events could increase the use of parks and recreational facilities such that substantial physical deterioration of the facilities could occur or otherwise result in physical degradation of existing recreational resources. (Less than Significant with Mitigation)

As described in Chapter 3, Project Description, America's Cup races would occur in summer through fall in 2012 and 2013. Total visitor attendance in 2012 is estimated to be over 1.4 million people, assuming up to 17 yacht racing days, with an estimated average daily visitorship of up to 45,000 visitors on a peak race weekday and 197,300 on a peak race weekend day (see Chapter 3, Tables 3-3 and 3-4). Total visitor attendance in 2013 is estimated to be approximately 5.5 million people; 2013 races would occur on up to 50 days, with an estimated average daily visitorship of up to 50,000 on an average peak race weekday and up to 334,000 on an average peak race weekend day (see Chapter 3, Tables 3-5 and 3-6). As many as between 400,000 and 500,000 visitors could be anticipated on a "super peak" day, such as a Match Cup final race day.

The anticipated AC34 visitors would represent an increase in recreational uses at project sites and secondary viewing areas during the event, especially on race days, and could also result in increased use of other regional recreational facilities due to increased visitation/tourism experienced as a result of the AC34 events. In addition, existing users of recreational facilities at the project sites would be displaced to other regional recreational facilities due to perceived crowding during AC34 events, although it is likely that some of the existing users would participate as spectators to the AC34 events. Under CEQA, should the increased use of recreational facilities at project sites and other regional recreation areas result in substantial physical deterioration of recreational resources (e.g., trails, meadows/lawns, picnic areas, campgrounds, playgrounds, restrooms, and other recreation support facilities) or accelerate such

deterioration, a significant impact would occur. Physical effects on other resources that could occur as a result of increased recreation use, such as impacts on biological resources (trampling of sensitive vegetation, disturbance of protected wildlife), historic resources (damage to historic structures/architecture), soils and geology (loss of topsoil), and hydrology and water quality (overuse of trails resulting in soil erosion and increased sediment in runoff) are discussed within each applicable resource section included in Chapter 5, Environmental Setting, Impacts, and Mitigation Measures.

Port of San Francisco Piers, Water Areas, and Seawall Lot Areas

As described in Section 5.11.1, Setting, the piers, water areas, and seawall lots within the Port's jurisdiction proposed for AC34 venues currently do not provide recreational facilities, with the exception of Telegraph Field located at Piers 27-29, which would be relocated to the Pier 17 shed at Piers 15-17 under the proposed project. However, The Embarcadero Promenade adjacent to these project sites is used for sightseeing, walking, running, and other recreational activities. In addition, the proposed project facilities in these areas would be in the vicinity of many other urban- and waterfront-related recreational opportunities (shown on Figure 5.11-2).

As described in Chapter 3, Project Description, 2012 peak weekend race days could attract up to 5,000 visitors to the Live Sites and up to 25,000 visitors to the Fisherman's Wharf and the northeast Embarcadero area (Pier 42 to Fisherman's Wharf) (see Table 3-4). In 2013, peak weekend race days could attract up to 50,000 visitors to the America's Cup Village at Piers 27-29, up to 8,000 visitors to the Justin Herman Plaza Live Site, and up to 73,000 visitors to secondary viewing areas at Fisherman's Wharf and along the northeast Embarcadero (see Table 3-7).

Average visitation during non-peak weekend race days is expected to be much lower, and weekday race days even lower. Between race events, visitors and tourists traveling to the area for AC34 would likely increase use of parks and open space areas in the vicinity of the Port of San Francisco piers, water areas, and seawall lots. However, the recreational facilities located in this vicinity are urban parks and open space areas constructed to withstand substantial use, are generally paved with plantings in raised beds, and are capable of serving large numbers of visitors and tourists, as experienced during other special events such as Fourth of July and Fleet Week. In addition, the People Plan --included in support of the AC34 events--would include a set-up and operations plan to organize and manage spectator crowds. Therefore, increased use of recreation facilities in the Port of San Francisco piers, water areas, and seawall lots vicinity would not result in substantial physical deterioration of recreational resources, or otherwise result in physical degradation of existing recreational resources, and the impact would be *less than significant*.

AC34 Spectator Areas

Use of Aquatic Park and Vicinity. As described in Section 5.11.1, Setting, Aquatic Park is located within the San Francisco Maritime National Historical Park, which includes a fleet of historic vessels, a visitor center, a man-made lagoon used for swimming and boating, gardens, a maritime museum, and a library/research facility, among other recreational opportunities. West of the

lagoon is the horseshoe-shaped Municipal Pier, which is commonly used for fishing and provides scenic viewing opportunities of the Bay, but is in deteriorating structural condition. South of the lagoon is a sandy beach and concrete seawall; farther south is a grassy area known as Victorian Park. The Hyde Street Pier is a historic ferry pier and forms the eastern boundary of the lagoon. Fort Mason includes the Great Meadow; the GGNRA headquarters offices, library, and collections; Fort Mason Center; a youth hostel; hiking and biking trails; open space parks and gardens; picnic areas; a cultural center; and historic buildings. The Great Meadow is the largest open space within the area and is well used to sit on the grass, walk, or fly kites, among other recreational opportunities. The Great Meadow has served as a host for several large events, such as music concerts and large sporting events.

During the AC34 events, the Municipal Pier would be closed during races because of its deteriorating condition, to avoid dangerous crowding and possible public safety hazards. While spectator viewing of the races from Aquatic Park would be obscured by Municipal Pier, there would be boat exhibitions and a large video screen set on a floating platform for viewing the AC34 races in the lagoon) for viewing from the beach and park seating area. General merchandise sales and concessions are proposed in areas around the south perimeter of the park, It is anticipated that the area from Fort Mason to Aquatic Park area would draw up to approximately 3,000 AC34 related visitors on a 2012 peak race day and up to 7,000 visitors on a 2013 peak weekend race day. (See Tables 3-4, 3-5, 3-7 and 3-8 for estimated geographic distribution of America's Cup visitors.)

Use of Alcatraz Island. Alcatraz Island includes a variety of trails, programs, and exhibits that interpret Alcatraz Island's history and natural resources. During the AC34 events, Alcatraz would be used as a hospitality area for corporate and private functions, and for placement of broadcasting equipment and weather monitoring equipment. AC34 related visitation is expected to be approximately up to 500 on peak race days in both 2012 and 2013.

Use of San Francisco Marina. The San Francisco Marina Yacht Harbor, also known as the San Francisco Marina, includes East Harbor and West Harbor, and Marina Green, which includes several "par course" workout stations along the park's perimeter, restrooms, a concession stand, and parking lots. Marina Green would serve as the America's Cup Village in 2012 and would include a media center and floating docks. As shown in Chapter 3, the main grassy field areas of Marina Green would include large seating areas, a stage, video screens, restrooms and concessions, and other visitor support facilities. In 2013, Marina Green would include outdoor event seating and hospitality. It is anticipated that the Marina Green area, serving as the America's Cup Village, would draw up to approximately 57,000 AC34 related visitors on a 2012 peak race day, and in 2013, as a spectator venue, would attract up to approximately 55,000 visitors on a peak weekend race day. Estimated visitation on peak race days is anticipated to be more than twice that experienced during large events such as Fleet Week. As described in Section 5.11.1, Setting, Fleet Week drew approximately 20,000 people to Marina Green in 2010.[53] On non-peak race days, as well as on weekdays, visitorship is anticipated to be far lower.

[53] Kushner, Lev, San Francisco Recreation and Park Department (SFRPD), email communication, May 2, 2011.

Use of Crissy Field. As described in Section 5.11.1, Setting, Crissy Field includes 100 acres of nature-related and history educational opportunities, along with recreation opportunities including a 22-acre restored tidal marsh and dunes, the scenic Golden Gate Promenade, restored historic airfield, bleachers, and the Crissy Field Center. The Golden Gate Promenade is a segment of the Bay Trail and generally follows the northern edge of Crissy Field. East Beach, located east of the tidal marsh area, consists of several picnic areas, parking, and restroom facilities. During the AC34 events, Crissy Field and Crissy Field east would include outdoor event seating, a large stage, exhibitions, and hospitality. It is anticipated that the AC34 programmed venues in the Crissy Field area would draw approximately up to 75,000 AC34 related visitors on a 2012 peak race day and up to approximately 77,000 visitors on a 2013 peak weekend race day, with an additional 2,000 to 5,000 visitors in the adjacent Crissy Field picnic area, Presidio, and areas at the south end of the Golden Gate Bridge.

Use of Cavallo Point at Fort Baker. Fort Baker includes several scenic viewing areas such as Battery Spencer to the west, a vista point located northeast of Highway 1, and Cavallo Point. Other recreational facilities at Fort Baker include the Bay Area Discovery Museum; the Travis Sailing Center, which offers sailing lessons and boat lessons; picnic areas at Cavallo Point; the Presidio Yacht Club; and a public fishing pier. The Bay Trail follows the shoreline of Horseshoe Cove and extends north toward Sausalito along East Road. Fort Baker Pier at Cavallo Point would serve as a hospitality area for corporate and private functions. Combined private and public AC34 related visitation at Cavallo Point is expected to be up to approximately 800 on peak race days in both 2012 and 2013.

Use on Non-Race Days. Visitors and tourists traveling to the Bay Area to attend the AC34 events may also visit the above-described recreation and public open space areas on non-race days, adding to recreational use of these facilities anticipated to occur on race days.

Impacts of Increased Use. Increased use of Alcatraz and Cavallo Point on race days would be minimal, as described above. Use of Alcatraz on non-race days by visitors and tourists staying in the Bay Area for race events could occur. However, visitation is by reservation and is limited by the availability of the Alcatraz Cruises ferry schedule/capacity; similarly, AC34 events at Cavallo Point would be limited to private functions. Therefore, increased recreational use of Alcatraz and the Fort Baker Pier at Cavallo Point under the proposed project would be minimal.

Placement of America's Cup facilities on the grass areas at Marina Green and Crissy Field for several weeks, coupled with visitation by large crowds, would likely result in damage to the grassy areas, which are frequently used as play fields and for casual use by joggers, etc. In addition, increased use of the Aquatic Park, Fort Mason, Marina Green, and Crissy Field recreational facilities during the AC34 events, especially during peak race days when the largest crowds are anticipated, could increase the potential for damage to trails/pathways, restrooms, and other recreation-support facilities. However, as described in Section 3.4.2, AC34 Summary, under the heading "AC34 Venue Plan," following the removal of temporary installations at AC34 venues in 2012 and 2013, those venues would be restored as needed (e.g., spectator venues resodded and revegetated) to pre-AC34 event condition.

Increased visitation could also result in the creation of casual trails between public streets and parking areas and the spectator venues that result in damage to grassy areas, meadows, and other open space areas. For instance, if access to Crissy Field from Mason Street was congested, visitors could attempt to access Crissy Field from Lincoln Boulevard or other roadways to the south of the field area.

As described in Chapter 3, Project Description, the proposed project incorporates a number of implementation plans that support the proposed AC34 events and activities at spectator venue areas. These implementation plans include a People Plan, Waste Management Plan, and Public Safety Plan. These plans would ensure that during the AC34 events, additional restrooms and concessions would be installed commensurate with the anticipated level of visitors and spectators to ensure that adequate services are available to visitors. The plans would include provisions for a set-up and operations plan to organize and manage spectator crowds, which would minimize the potential for creation of casual trails between public streets and parking areas and spectator venues. In addition, as described in Chapter 3, Project Description, the AC34 project would include measures to ensure public open spaces are returned to their original use and pre-event condition, including restoration of the grassy field areas at the Marina Green and Crissy Field venues. With the removal of all temporary AC34 event facilities and restoration of spectator sites to their existing conditions, the increased use of recreational facilities at the spectator venues and vicinity would not result in substantial physical deterioration of recreational resources, or otherwise result in physical degradation of existing recreational resources. Therefore, this impact would be *less than significant*.

It is likely that on peak use days, some recreationists who currently use Marina Green, Crissy Fields, and Aquatic Park for activities such as dog walking, running, and kite flying and for access to shoreline areas for swimming, fishing, kayaking, and surfing would not want to use these areas due to the size of crowds, spectator support facilities, and nearshore spectator boats present for America's Cup events. Some recreationists may instead use other similar regional recreational facilities and shoreline areas, including those described in Section 5.11.1, Setting (e.g., the Presidio, other Crissy Field or Fort Mason areas), as well as other nearby resources such as Golden Gate Park, Baker Beach, and Ocean Beach, resulting in occasional increases in use of other recreational facilities in San Francisco during the AC34 events. However, given the availability of recreational facilities in the region, increased use of regional recreational facilities would not result in substantial physical deterioration of recreational resources, or otherwise result in physical degradation of existing recreational resources, and the impact would be *less than significant*.

America's Cup Secondary Viewing Areas and Vicinity

As described in Section 5.11.1, Setting, in addition to the proposed AC34 venues, San Francisco and Marin County provide extensive recreation opportunities along San Francisco Bay, many of which include hillside areas, shorelines, and beaches from which the America's Cup races could be viewed. These secondary viewing areas would not include AC34-sponsored spectator venues or support facilities. Some visitors might travel to secondary viewing areas on race days to seek out more isolated race viewing opportunities than would be found at the designated spectator venues and other popular urban visitor areas such as The Embarcadero promenade and

Fisherman's Wharf. It is estimated that during 2012 peak race days, up 2,000 people may view races from Presidio areas such as the Crissy Field picnic area and areas adjacent to the Golden Gate Bridge, such as Fort Point. That number could increase up to 5,000 on 2013 peak weekend race days. Up to approximately 1,000 additional visitors beyond the normal visitors might travel to Angel Island on 2012 and 2013 peak race days to view the races. In addition, it is estimated that during 2012 peak race days, up to 2,000 people might view races from the trails and other destinations within Fort Baker and the Marin Headlands. During 2013 peak weekend race days that number could be up to up to 3,500. Other popular viewing areas would likely include shoreline areas in Sausalito and Belvedere. (See Tables 3-4, 3-5, 3-7 and 3-8 for estimated geographic distribution of America's Cup visitors.)

Increased use of secondary viewing areas, especially on peak weekend race days, could result in overuse of and damage to trailheads and trails, grass fields, and other areas selected for independent spectator use. In addition, increased use of these areas could increase the potential for overuse/damage to restrooms and other recreation-support facilities. Increased visitation could also result in the creation of casual trails between public streets and parking areas and areas selected for independent spectator use that result in damage to grassy areas, meadows, and other open space areas. For example, visitors could park along Conzelman Road north of the Golden Gate Bridge and create casual trails while attempting to access a location to view races. Therefore, increased use of recreational facilities at secondary viewing areas could result in substantial physical deterioration of recreational resources, or otherwise result in physical degradation of existing recreational resources, and the impact would be *significant*.

It is possible that on peak use days, some recreationists who currently use the secondary viewing areas for activities such as hiking would not want to use these areas due to crowding or availability of parking. Some recreationists may instead use other similar regional recreational facilities, resulting in occasional increases in use of other recreational facilities. However, given the availability of recreation facilities in the region, such as the hundreds of miles of hiking trails within GGNRA, Mount Tamalpais State Park, and other Marin regional recreational areas, increased use of regional recreational facilities would not result in substantial physical deterioration of recreational resources, or otherwise result in physical degradation of existing recreational resources, and the impact would be *less than significant*.

Impact Summary

The AC34 events would result in increased use of existing recreational facilities at designated spectator venues and at secondary viewing areas, as well as at other recreational facilities in the vicinity that may be used by those traveling to the Bay Area for America's Cup events. Given the availability of recreational resources in the region, and the inclusion of the project implementation plans, substantial physical deterioration of recreational resources or other physical degradation of existing recreational resources would not occur at spectator venue areas. However, increased use of recreational facilities at secondary viewing areas could result in substantial physical deterioration of recreational resources, or otherwise result in physical degradation of existing recreational resources, and the impact would be potentially *significant*. This impact can be mitigated through agency coordination to identify areas of concern and protection and

restoration requirements, as identified in **Mitigation Measure M-RE-1**. In addition, it is noted that **Mitigation Measures M-BI-1a**, **M-BI-1b**, **M-BI-3**, **M-BI-4**, and **M-CP-1b** include fencing, area closures, signage, and educational requirements that would protect sensitive biological and cultural resources located in the vicinity of venue and secondary viewing areas. Implementation of these measures would also reduce the potential for physical degradation of recreational resources in the immediate vicinity of sensitive biological and cultural resources. The impact would be *less than significant with mitigation*.

Mitigation Measure M-RE-1: Protection of Recreational Resources

As described in the Project Description, the *Parks Event Operations Plan* (applicable to NPS, Presidio Trust, California Department of Parks and Recreation, and SFRPD) will be prepared and implemented in support of the proposed project. Also as described in the Project Description, the City and Event Authority are coordinating with local agencies and jurisdictions (including BCDC, Marin County, Sausalito, Tiburon, and Belvedere). As the plan and agency coordination are still under development, this mitigation measure requires that the plan and ongoing agency coordination to incorporate specific elements to protect recreational resources through protection and restoration requirements. The *Parks Event Operations Plan* and the agency coordination shall each include, for their respective jurisdictions, the following measures to protect and restore recreational resources:

- ***Identification of Recreational Resource Areas of Special Concern.*** Agency coordination shall include identification of recreational resource areas of special concern to land management agencies (e.g., Crissy Field picnic area near the Warming Hut) that could provide attractive spectator viewing opportunities, determination of the existing condition of resources, and identify requirements for additional service levels at recreational facility restrooms and trash/recycling needs.

- ***Crowd Control*:** The project sponsor shall ensure that crowd control volunteers are posted at or near the recreation resources identified to be of special concern in order to manage crowd levels at those locations. The exact number, location, and timing of the crowd control volunteers shall be determined in consultation with the appropriate land authority where the indirect impacts are anticipated.

- ***Post-Event Repair*:** Following each of the 2012 and 2013 AC34 events, the project sponsor shall ensure that recreational resource areas of special concern are returned to their previously identified pre-project condition to the extent damaged by event activities, which could include trash collection, facility repairs, restroom maintenance, pavement washing, trail repair, revegetation, and resodding.

James R. Herman Cruise Terminal and Northeast Wharf Plaza

Impact RE-2: The James R. Herman Cruise Terminal and Northeast Wharf Plaza at Piers 27-29 would not increase the use of parks and recreational facilities such that substantial physical deterioration of the facilities would occur and would not otherwise result in physical degradation of existing recreational resources. (Less than Significant)

The proposed Cruise Terminal project would include construction of an approximately 2 ½-acre open space at the southwest end of Pier 27, fronting along The Embarcadero promenade. The plaza would be designed to serve as a major waterfront park resource to support passive recreational enjoyment and expansive public views of San Francisco Bay. The plaza design would include a "piazza" feature in the southwest portion of the plaza, and integrate the historic Pier 29 Belt Line office building and ancillary structures for commercial and recreational services (e.g., snacks, bike rentals) into the park/piazza design. Hardscaping at the plaza would include pavers, concrete seating/steps, and planters. The multiuse recreational space is proposed to consist of a natural turf underlaid by a soil bed and base drain mat, and the plaza would be maintained as part of the project. In addition to the Northeast Wharf Plaza, the project would include public access on Pier 27. Given the abundance of existing public open space in the project area, the Northeast Wharf Plaza would be expected to increase public use in the immediate vicinity of the site, redistributing existing levels of public uses currently occurring elsewhere along the waterfront, but it would not substantially increase the overall number of visitors to the San Francisco waterfront. Therefore, use of the facility as a recreational resource would not result in substantial physical deterioration of recreational resources, or otherwise result in physical degradation of existing recreational resources. The impact would be *less than significant*.

Implementation of the cruise terminal project would relocate the current cruise ship operations from Pier 35 to Piers 27-29. Regardless of the proposed project, it is expected that in the future, larger cruise ships would frequent the Port of San Francisco compared to current conditions. The cruise terminal project would be better equipped to accommodate the increase in visitors to San Francisco and the Bay Area associated with the larger cruise ships than the existing terminal, but the project in itself would not result in an increase in regional visitors. Therefore, any incremental increase in the use of existing recreational facilities due to cruise ships, particularly waterfront areas in the vicinity of the cruise terminal, would not be attributable to the proposed project but to the changing cruise ship industry. However, the up to 100 days of shared uses of the cruise terminal and other areas of Piers 27 – 29 could incrementally increase use of recreational facilities. Nevertheless, given the availability of recreational facilities in the region, including the proposed new Northeast Wharf Plaza, increased use of regional recreation facilities would not result in substantial physical deterioration of recreational resources, or otherwise result in physical degradation of existing recreational resources, and the impact would be *less than significant*.

Mitigation: Not required

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5.11.3.4 Future Long-Term Development Impacts

Impact LT-RE: Future long-term development under the Host Agreement could result in potential recreation impacts. (Less than Significant)

As described in Chapter 3, Section 3.4.8, the 34th America's Cup Host and Venue Agreement (Host Agreement) provides the Event Authority with certain long-term development rights on Port properties under specified conditions. Although no site-specific development projects or programs have been developed, this EIR analyzes at a conceptual level an assumed type and level of development based on current land use policies and guidelines presented in Chapter 3. The long-term development options include both landside and waterside developments. At a conceptual level, both types of development would have the potential to affect recreational resources.

Landside development could include more than 1.3 million square feet of residential, retail/commercial, office, entertainment/assembly, and maritime uses at several of the Port's piers along the waterfront as well as at Seawall Lot 330. Waterside development could result in construction of recreational marinas in the Rincon Point Open Water Basin and/or the Brannan Street Wharf Open Water Basin. This increase in development would be expected to result in an increase in residents and workers—as well as visitors, shoppers, and tourists—to the waterfront area, who would collectively be expected to increase the use of recreational facilities in the project area. However, the recreational facilities located in this vicinity, described in Section 5.11.1, Setting, above, are urban parks and open space areas designed and constructed to withstand substantial use and are capable of serving large numbers of people. At a conceptual level, increased use of recreation facilities in the vicinity of Port of San Francisco piers, water areas, and seawall lots would not result in substantial physical deterioration of recreational resources, or otherwise result in physical degradation of existing recreational resources, and the impact would be *less than significant*.

Mitigation: Not required

5.11.3.5 Cumulative Impacts

Impact C-RE: The project, in combination with other past, present, and reasonably foreseeable future projects, would not result in significant adverse cumulative recreation impacts. (Less than Significant)

The geographic scope of potential cumulative impacts on recreational resources encompasses the greater central Bay Area region. The EIR evaluates the impacts of the AC34 and Cruise Terminal projects on recreational resources and determines that impacts would be less than significant. The purpose of this section is to assess whether the project's impacts, in combination with impacts from other past, present, and reasonably foreseeable future projects, would result in a significant adverse cumulative impact.

Foreseeable projects that could result in cumulative impacts on recreational resources in combination with the proposed project include the Brannan Street Wharf Public Open Space, proposed redevelopment of Treasure Island, the completion of the new eastern span of the Bay Bridge and associated highway projects on Yerba Buena Island, the construction and operation of a 400-berth marina in Clipper Cove, a variety of Port of San Francisco waterfront and Port infrastructure improvement projects including the Southern Waterfront area, the Downtown Ferry terminal, the Piers 15 and 17 Exploratorium relocation, the Piers 31-33 Alcatraz Landing improvements, Port of San Francisco and Port of Oakland maintenance dredging, the Transbay Tube and ferry terminal seismic improvements (Tube Vibro), and the San Francisco marina renovation.

This increase in development would be expected to result in an increase in residents and workers—as well as visitors, shoppers, and tourists—to the central Bay Area region, who would collectively be expected to increase the use of recreational facilities in the region. However, the recreational facilities located in this region, described in Section 5.11.1, Setting, above, are primarily urban parks and open space areas designed and constructed to withstand substantial use and are capable of serving large numbers of people. Further, the central Bay Area region includes extensive non-urban outdoor recreation opportunities within GGNRA, Mount Tamalpais State Park, and other Marin, San Francisco, and East Bay regional recreational areas. It is expected that sufficient recreation opportunities are available to serve the cumulative projects and increased use of regional recreational facilities would not result in substantial physical deterioration of recreational resources, or otherwise result in physical degradation of existing recreational resources. These projects, when combined with project, would not have a cumulatively considerable contribution to impacts on recreational resources. The impact would be *less than significant.*

Mitigation: Not required

5.12 Utilities and Service Systems

This section addresses potential effects of the project on existing utilities and service systems, including water supply, wastewater, stormwater, and solid waste systems. Existing regional service providers, infrastructure, and their capacities are described based on published relevant information for the project area, and impacts are determined based on these capacities, estimates of project-generated demand, and project components that would reduce or divert demand. With respect to stormwater and wastewater, this section analyzes impacts on the existing physical infrastructure systems, including transmission and treatment system capacity. The project's impacts on water quality, including impacts on water quality from combined sewer overflows, are addressed in Section 5.16, Hydrology and Water Quality. The project's impacts on police, fire, and emergency response services are analyzed in Section 5.13, Public Services.

5.12.1 Setting

5.12.1.1 Physical Setting

The physical setting of the project falls within several utility provider systems. The description below divides these systems into those in mainland San Francisco, Southern Marin County, and Alcatraz Island, as well as the secondary viewing areas outside those three geographic areas.

America's Cup Primary Venues and James R. Herman Cruise Terminal and Northeast Wharf Plaza) - Mainland San Francisco

Water

San Francisco Water Supply. The San Francisco Public Utilities Commission (SFPUC) provides water services to approximately 2.5 million people in San Francisco, Santa Clara, Alameda, and San Mateo Counties. Eighty-five percent of the water delivered to SFPUC customers comes from Sierra Nevada snowmelt stored in the Hetch Hetchy Reservoir on the Tuolumne River in Yosemite National Park. The remaining 15 percent comes from runoff in the Alameda and Peninsula watersheds captured in reservoirs located in San Mateo and Alameda Counties. In 2010, the entire regional system delivered approximately 227 million gallons of water per day (mgd) to its customers.[1]

Within the city, the SFPUC provides distribution and storage for water and fire protection for the local water system. This system includes 10 reservoirs, 8 water tanks, 17 pump stations, and approximately 1,250 miles of transmission lines and water mains within the city. The SFPUC manages distribution of potable water through two systems: a low-pressure water main system that provides water for domestic and commercial uses at about 1,000 gallons per minutes (gpm), and a high-pressure system that provides a dedicated water source for fire suppression at about 10,000 gpm. In 2010, available supply was 83.2 mgd. The SFPUC plans to augment local supplies

[1] San Francisco Public Utilities Commission (SFPUC), *2010 Urban Water Management Plan for the City and County of San Francisco: Public Review Draft*, prepared by the SFPUC, April 27, 2011.

by extracting up to 4 mgd of groundwater from new wells in the City's Westside Basin, as well as 1.5 mgd of recycled water from new recycled water projects. Total retail supply is expected to increase to 90.0 mgd by 2035.[2]

This water supply system serves the following America's Cup and James R. Herman Cruise Terminal and Northeast Wharf Plaza project sites: Port of San Francisco piers, seawall lots, Marina Green, Aquatic Park, Fort Mason, and the AC34 Live Sites.

Presidio (Including Crissy Field) Water Supply. Historically, the Presidio water needs have been met by Lobos Creek water. The main source of water for Lobos Creek is the Lobos groundwater drainage basin, a 3.2-square-mile underground aquifer extending from under the southwest quarter of the Presidio south to Golden Gate Park and west to the Palace of the Legion of Honor. Creek flows are treated at the Presidio Water Treatment Plant (PWTP) and are supplemented by water purchased from the SFPUC. Between 0.7 and 1.6 mgd of Lobos Creek water is available in any given year for diversion, treatment, and use at the Presidio. Historically the SFPUC system, described above, has supplied up to one-third of the Presidio's water demand. The amount of water purchased varies by year.[3]

Water Demand. In 2010, SFPUC retail water use was 77.7 mgd, comprising 71 mgd of in-city retail use, 4.1 mgd of suburban retail use, and 2.2 mgd of groundwater irrigation use. This use was lower than expected, due to a wet spring and cool summer, reduced customer consumption due to dry years in 2008 and 2009, and the economic decline that pushed down commercial and industrial demand. Total retail demand is expected to increase to 80.7 mgd in 2015 and 80.9 mgd in 2035, due primarily to expected growth in business and industry.

In addition to retail demand, the SFPUC provides water to 26 wholesale customers in San Mateo, Alameda, and Santa Clara Counties. These customers receive more than two-thirds of the SFPUC's regional water system supply, and 14 of these customers receive 100 percent of their water from the SFPUC. Wholesale customers used 149.5 mgd in 2010. Under the 2009 Water Supply Agreement among the SFPUC and wholesale customers, wholesale customers are assured 184 mgd of supply and retail customers are assured 81 mgd of supply through 2018. If the 265-mgd supply limitation is extended beyond 2018, projected wholesale demand would remain at 184 mgd through 2035. However, if the supply limitation is not extended beyond 2018, wholesale customer demand is expected to increase to 198.0 mgd by 2035.

The SFPUC has forecast future water demand using the Association of Bay Area Governments (ABAG) reports *Projections 2002, Projections 2009,* and *Draft Projections 2011.* These projection reports incorporate existing land use designations and reasonably foreseeable future projects within the City of San Francisco and other areas served by the SFPUC. According to the Urban Water Management Plan, the SFPUC can still meet the current and future demand in years of average or above-average precipitation. However, during a multiple-dry-year event, it is possible that the

[2] Ibid.
[3] Presidio Trust, *Presidio Trust Management Plan Environmental Impact Statement*, available online: http://www.presidio.gov/trust/documents/environmentalplans/final_eis.htm, May 2002.

SFPUC would not be able to meet 100 percent of demand and would therefore have to impose reductions on its supply. Under the Water Shortage Allocation Plan (WSAP), customers would experience no reduction in regional water system deliveries within a 10-percent shortage. During a prolonged drought with 20-percent systemwide shortage, customers would experience a 1.9 percent reduction in deliveries. Retail allocations would be reduced to 79.5 mgd (98.1 percent of normal year supply), and wholesale allocations would be reduced to 132.5 mgd (72 percent of normal year supply).

The ability to meet the demand of the customers is in large part due to the anticipated development of local supplies in the city through implementation of the Water Supply Improvement Program (WSIP). These additional sources of groundwater, recycled water, and conservation supplies are essential to provide the city with adequate supply in dry year periods, as well as improving supply reliability during years with normal precipitation. With the WSIP in place, and the addition of local supplies, the SFPUC concluded that it has sufficient water available to serve existing customers and planned future uses.

Wastewater and Stormwater

The SFPUC maintains and operates a combined sewer system that serves most of San Francisco (see Section 5.16, Hydrology and Water Quality, for further description). This system collects stormwater runoff and wastewater flows in the same network of pipes. It conveys flows to facilities where they are treated prior to discharge through outfalls into the Bay or Pacific Ocean. Discharges are regulated under National Pollutant Discharge Elimination System (NPDES) permits from the California Regional Water Quality Control Board, San Francisco Bay Region.

The collection system consists of about 976 miles of underground pipes throughout the city, which is divided into an eastern and western basin (see Section 5.16, Figure 5.16-3). In the eastern basin, which encompasses the entirety of the project sites that are proposed for primary venues during the America's Cup events as well as the proposed Pier 27 cruise terminal, average dry weather flows of 63 mgd are directed to the Southeast Water Pollution Control Plant (SEWPCP) located on Phelps Street, south of Islais Creek on the eastern waterfront. Dry weather flows receive secondary treatment and are discharged into the Bay through the Pier 80 outfall, which has a capacity of 110 mgd.[4]

During wet weather, up to 150 mgd of wet weather flows receive secondary treatment at the SEWPCP. The SEWPCP can also treat up to an additional 100 mgd to a primary treatment standard plus disinfection. Treated wet weather discharges of up to 250 mgd flow through the Pier 80 outfall or through the Quint Street outfall to Islais Creek. Only wastewater treated to a secondary level is discharged at the Quint Street outfall.[5]

[4] SFPUC, *Sewer System Improvement Program Report: Draft Report for SFPUC Commission Review*, prepared by Wastewater Enterprise Staff, August 10, 2010.
[5] Ibid.

Up to an additional 100 mgd of wet weather flows receive primary treatment plus disinfection at the North Point Wet Weather Facility, located on the north side of the City at 111 Bay Street, which operates only during wet weather. Treated effluent from this facility is discharged through four deep water outfalls, approximately 800 feet from the Bay shore. Two of the deep water outfalls terminate at the end of Pier 33 and two terminate at the end of Pier 35 on the northeastern Bay shore.[6]

The combined sewer system includes storage and transport boxes that, during wet weather, retain the combined stormwater and sewage flows that exceed the capacities of the SEWPCP and the North Point Wet Weather Facility for later treatment. One transport box is located beneath Marina Boulevard along the northern waterfront, adjacent to Marina Green. It is connected by a transport tunnel to the North Point Wet Weather Facility. A box sewer is located beneath The Embarcadero along the northeast waterfront. Another transport box is located beneath The Embarcadero and roadways adjacent to China Basin. In total, these boxes connect to 15 combined sewer outfalls to the San Francisco Bay (see Section 5.16, Figure 5.16-4). When rainfall intensity results in combined flows that exceed the total capacity of the SEWPCP, North Point Wet Weather Facility, and the storage and transport structures, the excess flows are discharged through the combined sewer overflow (CSO) structures in compliance with NPDES permits. Citywide, discharges from the CSO structures, consisting of about 6 percent sewage and 94 percent stormwater, receive "flow-through treatment," which is similar to primary treatment, to remove settleable solids and floatable materials. Wet weather flows are intermittent throughout the rainy season, and combined sewer overflow events vary in nature and duration depending largely on the intensity of individual rainstorms.[7]

This combined sewer system serves as the wastewater collection and disposal system for all AC34 and cruise terminal project sites within the City of San Francisco, including all Port of San Francisco piers, Aquatic Park, Fort Mason, and Crissy Field. It also serves as the stormwater collection system for the majority of mainland San Francisco, including Aquatic Park, Fort Mason, and the AC34 Live Sites (see Section 5.16 for further description).

San Francisco Municipal Separate Storm Sewer Systems (MS4s). Municipal separate storm sewer systems (MS4s) within San Francisco are separate stormwater systems from the SFPUC combined system. The location and extent of these systems is shown in Section 5.16, Figure 5.16-2. Most of the Port properties—including all of the America's Cup and cruise terminal project sites—are served by one MS4. Marina Green is also served by an MS4, as is the entirety of the Presidio—including Crissy Field. MS4s are regulated by the State Water Resources Control Board.[8] Stormwater from these areas does not drain into the SFPUC system, but is instead discharged into the Bay. However, as stated above, wastewater from these areas is directed into the SFPUC's combined sewer system for treatment and disposal at the SEWPCP.

6 Ibid.
7 Ibid.
8 State Water Resources Control Board (SWRCB), Water Quality Order No. 2003-0005-DWQ, National Pollutant Discharge Elimination System (NPDES), General Permit No. CAS000004, Waste Discharge Requirements (WDRS) for Storm Water Discharges from Small Municipal Separate Storm Sewer Systems (General Permit), April 30, 2003.

Pumpout Systems. Marina and boatyard facilities[9] typically include some degree of boat maintenance (general mechanical repairs and hull treatments) and fueling activities, as well as sewage and bilge water pumpout facilities. These facilities pump boat wastewater into the SFPUC's combined sewer system, as well as wastewater sewer systems in other jurisdictions. Figure 5.16-5, in Section 5.16, shows the location of San Francisco vicinity marina and boatyard facilities and provides additional discussion of their water quality impacts. Appendix HY shows the location of marinas throughout the San Francisco Bay and indicates whether the marina has pumpout facilities.

Solid Waste

San Francisco diverted more than 1.6 million tons of waste material in 2008 through recycling, composting, and reuse, and sent 560,000 tons of waste to landfills.[10] In 2009, San Francisco sent 484,812 tons to landfills, down from 675,278 tons in 2005. The San Francisco Department of the Environment estimates that the city generated 2.15 million tons of waste in 2010, 60 percent of which was recycled and 20 percent of which was composted.

According to the California Integrated Waste Management Act of 1989 (AB 939), San Francisco is required to adopt an integrated waste management plan, implement a program to reduce the amount of waste disposed, and have its waste diversion performance periodically reviewed by the California Department of Resources Recycling and Recovery (CalRecycle). The City achieved a 77-percent landfill diversion rate for 2008, up from 70 percent in 2006, and the highest of any city in the country. Beginning with the 2007 jurisdiction annual reports, diversion rates were no longer used to measure compliance with AB 939. With the passage of SB 1016 in 2006 (the Per Capita Disposal Measurement System), per capita disposal rates are instead measured to determine if a jurisdiction's efforts are meeting the intent of AB 939. The City's per resident disposal target rate is 6.6 pounds per person per day (PPD), and its per employee disposal target rate is 10.6 PPD. In 2009, which is the most recent date for which data are available, the measured disposal rate was 3.1 PPD for residents and 4.8 PPD for employees, thereby meeting the City's target rates.[11]

More than 80 percent of solid waste generated in San Francisco is transported to the Altamont Landfill in Alameda County. The Altamont Landfill has a permitted peak maximum daily disposal of 11,150 tons per day and accepted 1.06 million tons in 2009, down from 1.31 million tons in 2005. The landfill has an estimated remaining capacity of approximately 46 million cubic yards or 74 percent of its permitted capacity. The estimated closure date of the landfill is 2029.[12] However, the City's remaining contracted capacity at the landfill is anticipated to be reached as soon as 2015. The City intends to ship its solid waste to the Recology Ostrom Road Landfill in

[9] The term "boatyard," as used here, describes maintenance facilities common to marinas within San Francisco Bay used by small private craft for minor repairs, standard maintenance, and hull treatments. This term does not include reference to large commercial ship building or vessel manufacturing/assembly operations.

[10] City and County of San Francisco, Press Release, "Mayor Newsom Announces San Francisco's Waste Diversion Rate At 77 Percent, Shattering City Goal And National Recycling Records," Office of the Mayor, August 27, 2010.

[11] California Department of Resources Recycling and Recovery (CalRecycle), http://www.calrecycle.ca.gov/, accessed April 15, 2011.

[12] Ibid.

Yuba County when the current agreement with the Altamont Landfill expires.[13] The Ostrom Road Landfill has a permitted capacity of 3,000 tons of solid waste per day. The landfill has an expected closure date of 2066 with a total design capacity of over 41 million cubic yards.[14]

America's Cup Primary Venues - Southern Marin County

Water

The Marin Municipal Water District (MMWD) serves populated areas of southern Marin County, including the communities of Tiburon, Belvedere, and Sausalito. The service area covers approximately 147 square miles, 190,000 residents, and 61,000 connections.[15] The system comprises 25,927 million gallons of reservoir capacity, 925 miles of pipelines, 83 million gallons of storage tanks, and three water treatment plants with a capacity to treat up to 59 mgd. A contractual agreement with the Sonoma County Water Agency (SCWA) allows for delivery to MMWD of an additional 23 mgd in the winter months and 12.8 mgd during summer months, primarily from the Russian River. MMWD also has a recycled water system that contains 25 miles of pipeline and 1.7 mgd of storage. Current district-wide demand is approximately 28.6 mgd.[16] Even with conservation measures, MMWD believes that additional water efficiency/demand management measures and additional water supply will be necessary to meet projected water demand, which would be expected to increase to 29.5 mgd by 2025.

At Fort Baker, which includes Cavallo Point, the potable water distribution system is gravity-fed from a 400,000-gallon storage tank. The system is supplied with water from MMWD through an 8-inch-diameter water main with a supply capacity of 720,000 gpd. Average daily use at Fort Baker is about 50,000 gpd.[17]

Wastewater

City of Sausalito and Marin Headlands. The City of Sausalito owns and operates sewers conveying wastewater to the Sausalito-Marin City Sanitary District (SMCSD) for treatment and discharge to Bay waters. The city sewers are operating under a United States Environmental Protection Agency (U.S. EPA) Administrative Order due to recent spills. The management of the sewers is regulated by State Water Discharge Requirements mandating pipeline cleaning and repair. A significant expansion in the historical level of sewer maintenance and repair is planned to comply with new state regulations and U.S. EPA orders. About 70 miles of sewer lines collect wastewater from a population of about 18,000.

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13 RecologySF.com, Newsletter, July—September 2010, http://recologysf.com/pdf/RecologySFSummer2010.pdf, accessed May 2, 2011.
14 Recology, Ostrom Road Landfill, www.recologyostromroad.com, accessed September 14, 2010.
15 Marin Municipal Water District, *Urban Water Management Plan 2005*, adopted January 18, 2006, amended November 2007.
16 Ibid.
17 National Park Service (NPS), *Fort Baker Plan Environmental Impact Report*, October 1999.

Flows are directed to the wastewater treatment plant, located at 1 Fort Baker Road in Sausalito. The plant has a design capacity of 1.8 mgd average dry weather flow to secondary standards, and it treats about 1.3 mgd during dry months. During wet weather, the design flow is 6.0 mgd to secondary standards. When wet weather exceeds the 6.0-mgd design flow, excess flow is diverted from the treatment units to secondary clarifiers. Wastewater from Sausalito, Marin City, the Tamalpais Community Service District, and the Marin Headlands within GGNRA is treated at the plant. The treated effluent is discharged 300 feet offshore at a 30-foot depth into Central San Francisco Bay through a submerged diffuser.[18]

Flows from Fort Baker and Cavallo Point are also directed to the SMCSD. The fort's gravity sewer system drains to a wastewater pumping station, which conveys the collected wastewater via a force main to the treatment plant. A 1997 study of the fort's wastewater collection system found that excessively high wet weather flows into the system could cause localized overflows, and that the pumping station has insufficient wet weather capacity. The study recommended replacement of existing pipelines and replacement of existing pumps.[19]

Town of Tiburon and City of Belvedere. Sanitary District No. 5 of Marin County provides wastewater services to the municipalities of Tiburon and Belvedere, as well as surrounding unincorporated areas. A system of 33 miles of gravity sewers, 5 miles of force mains, and 22 pump stations collects wastewater from a service area that comprises more than 3,500 households and 8,400 people.[20]

Flows are directed to the wastewater treatment plant, located at 2001 Paradise Drive in Tiburon. The plant has a design capacity of 0.98 mgd average dry weather flow to secondary standards. During wet weather, the design flow is 2.3 mgd to secondary standards. When wet weather exceeds the 2.3-mgd design flow, excess flow is diverted to a separate 6.7-mgd tank that assures primary treatment, although the tank is more often used simply as a short-term holding tank to retain the flows until they can be routed back to the headworks for full treatment. In cases in which primary-treated effluent cannot be routed back to the headworks, during significant rain events, the primary-treated effluent is blended with the secondary-treatment effluent.

Treated, disinfected, and dechlorinated secondary effluent from the treatment plant is combined with treated, disinfected, and dechlorinated effluent from the Sewerage Agency of Southern Marin's wastewater treatment plant. The combined effluent is discharged through a pipe in Central San Francisco Bay to Raccoon Strait, which is the channel between the Tiburon Peninsula and Angel Island, about 840 feet offshore at a depth of 84 feet.[21]

Pumpout Facilities. As further described above and in Section 5.16, pumpout facilities are available at marinas and boatyards for the disposal of wastewater. These facilities pump boat wastewater into the local wastewater systems. Figure 5.16-6 in Section 5.16 shows the location of marinas in

[18] RWQCB, San Francisco Bay Region, Order No. R2-2007-0054, NPDES No. CA0038067, August 8, 2007.
[19] National Park Service (NPS), *Fort Baker Plan Environmental Impact Report*, October 1999.
[20] Marin Sanitary District No. 5 website, http://www.sani5.org/, accessed April 23, 2011.
[21] RWQCB, San Francisco Bay Region, Order No. R2-2008-0057, NPDES No. CA0037753, July 9, 2008.

Sausalito and vicinity, and Figure HY-1 in Appendix HY shows the location of marina and boatyard facilities and in Marin County and throughout San Francisco Bay.

Stormwater

Sausalito, Belvedere, Tiburon, and Marin County have municipal separate storm sewer systems (MS4s). As stated above in the discussion of San Francisco's system, MS4s are regulated by the State Water Resources Control Board (SWRCB). Stormwater from these systems in the area of Sausalito, Belvedere, and Tiburon is discharged into the Bay. The Marin County Stormwater Pollution Prevention Program (MCSTOPPP), formed in 1993, is a joint effort on the part of separate Marin jurisdictions to comply with SWRCB and federal regulations and prevent stormwater pollution. Hydrology and water quality are analyzed in Section 5.16 of this document.

As further described in Section 5.16, stormwater in Fort Baker at Cavallo Point, adjacent to Horseshoe Bay, consists of a trunk line drainage system. This trunk line system includes catch basins, pipes, and concrete-lined swales that drain to four major storm drain outfalls along the seawall at Horseshoe Bay. The system does not involve any pumps and is drained entirely by gravity flow.

Solid Waste

According to the California Integrated Waste Management Act of 1989 (AB 939), Marin County is required to adopt an integrated waste management plan, implement a program to reduce the amount of waste disposed, and have its waste diversion performance periodically reviewed by the California Department of Resources Recycling and Recovery (CalRecycle). The Marin County Hazardous and Solid Waste Management Authority (Authority)—a joint powers authority that comprises Sausalito, Belvedere, Tiburon, and other Marin communities—achieved a 72-percent landfill diversion rate for 2006, up from 32 percent in 1995. The Authority has established a goal of achieving 80-percent waste reduction in the next 5 years and zero disposal by 2025. Beginning with the 2007 jurisdiction annual reports, diversion rates were no longer used to measure compliance with AB 939. With the passage of SB 1016 (the Per Capita Disposal Measurement System) in 2006, per capita disposal rates are instead measured to determine if a jurisdiction's efforts are meeting the intent of AB 939. The Authority's per resident disposal target rate is 7.6 pounds per person per day (PPD), and its per employee disposal target rate is 17.3 PPD. In 2009, which is the most recent date for which data are available, the measured disposal rate was 3.8 PPD for residents and 9.5 PPD for employees, thereby meeting the Authority's target rates.[22]

The Authority sent 179,919 tons of solid waste to landfills in 2009, of which 130,350 tons went to the Redwood Sanitary Landfill at 8950 Redwood Road in Novato. About 50 percent of the material brought to the center is reused. The facility is permitted to accept 1,290 tons per day of solid waste.[23] As of 2000, the total estimated permitted capacity was 19,100,000 cubic yards, of which 67.5 percent (12,900,000 cubic yards) was remaining. The County recently approved an expansion

[22] California Department of Resources Recycling and Recovery (CalRecycle), http://www.calrecycle.ca.gov/, accessed April 15, 2011.
[23] Redwood Landfill, Waste Management website, http://www.redwoodlandfill.com/, accessed April 23, 2011.

of the landfill, along with new requirements to expand recycling, composting, and energy recovery. This would allow the landfill to continue to accept waste through about 2024.[24]

Bay Cities Refuse Service collects residential and commercial garbage, recycling, and yard waste from the City of Sausalito. Mill Valley Refuse Service collects residential and commercial garbage, recycling, and yard waste from Tiburon and Belvedere, as well as Mill Valley, Almonte, Alto, Corte Madera, Homestead, Strawberry, and surrounding unincorporated areas. Collected refuse is sent to the Redwood Sanitary Landfill and Recycling Center.

America's Cup Primary Venue - Alcatraz Island

Alcatraz Island is the only primary project site not directly connected to water, stormwater, and/or wastewater systems of either the City and County of San Francisco or Marin County. Water is delivered by vessels and pumped into holding tanks on the island. This water is used for potable purposes, and the landscape vegetation is watered by a rainwater catchment system. As further described in Section 5.16, stormwater runoff from Alcatraz Island flows directly into the Bay.

Regarding wastewater, the island's system comprises a network of pipes and grinder pumps installed at sanitary stations on the island. The grinder pumps collect and pulverize wastewater, which flows through 1.25-inch pipes to a dockside collection tank for transport off the island. Alcatraz Cruises, the company that brings tourists to the island, has a service agreement to bring fresh water, fuel, and supplies to the island and dispose of trash and wastewater. Using a specially equipped Mechanized Landing Craft, Alcatraz Cruises pumps sewage and wastewater from the on-island storage tank to a built-in container onboard the vessel. Upon arrival in San Francisco, the waste is pumped from the onboard tank directly into the City's sewer line. The procedure transfers 6,000 gallons per day, and 2.19 million gallons of wastewater annually.[25] Solid waste is also transferred into the City's waste stream at that point. Alcatraz Cruises recycles and composts all solid waste, and has a 70-percent diversion rate.[26]

America's Cup Secondary Viewing Areas and Vicinity

Utility services for secondary viewing areas and vicinity—including the Marin Headlands, Marin County, and northern San Francisco waterfront—are described above. Only Angel Island and Treasure Island/Yerba Buena Island have utility service systems separate from those already described.

Angel Island

Irrigation and potable water are supplied to Angel Island by state-owned and -maintained wells on the island. Solid waste is collected in a garbage packer on the island and transported via boat to the Redwood Landfill in Marin, described above. Wastewater treatment is provided by existing septic systems for some buildings, and a wastewater treatment plant for other buildings.

[24] Marin County Community Development, *Redwood Landfill Final Environmental Impact Report*, March 2008.
[25] Nestor, Bill, "Escape to Alcatraz: A Low-Pressure Wastewater Disposal System Solves the Problem," *Pumps & Systems*, September 2010.
[26] Alcatraz Cruises website, http://www.alcatrazcruises.com/website/conservation.aspx, accessed May 1, 2011.

Wastewater flowing to the plant, which is operated by park staff, is collected on the island, treated, and dispersed on island hillsides.[27]

Treasure Island and Yerba Buena Island

As in mainland San Francisco, water and solid waste services at Yerba Buena and Treasure Islands are provided by the SFPUC and Recology, as described above.

For wastewater, the SFPUC operates the existing wastewater collection and treatment system on Treasure Island and Yerba Buena Island. The existing wastewater collection system consists of 4- to 12-inch-diameter gravity sewer pipes, approximately 27 sewage pump/lift stations, and force mains ranging from 6 to 16 inches in diameter.[28] The existing Treasure Island Wastewater Treatment Plant, at the northeast corner of Treasure Island, serves both Treasure Island and Yerba Buena Island. The plant has permitted secondary treatment capacity to 2.0 mgd dry weather flow and 4.4 mgd wet weather flow.[29] As part of the Treasure Island Redevelopment Project, a new wastewater treatment plant would be constructed to accommodate the residential growth planned for on the island.

For stormwater, the SFPUC maintains and operates the stormwater collection system, which is an MS4, as described above, and therefore separate from the wastewater collection and treatment system. The existing stormwater collection system consists of 6- to 42-inch gravity pipes and lift stations with outfalls along the perimeters of the islands. The outfalls discharge directly into San Francisco Bay. Currently, stormwater is not treated before it is discharged to the Bay.[30]

5.12.2 Regulatory Framework

Please refer to Section 5.16.2, Hydrology and Water Quality, Regulatory Framework, for description of federal, state, and local regulations regarding water, wastewater, and stormwater as well as regulations pertinent to boating and cruise ship discharges.

5.12.2.1 Federal Regulations

Golden Gate National Recreation Area General Management Plan

As described in Chapter 4, Plans and Policies, the America's Cup project would be required to comply with the GGNRA General Management Plan, which calls for adequate sewage collection and disposal, solid waste collection and disposal, and protection of quality of waters within, or flowing through, the GGNRA lands. Wherever possible, water systems are to be connected to public utilities nearby. The General Management Plan further states that when existing water systems or wells are not available alternative means of supplying sufficient water will be

[27] California Department of Parks and Recreation, *Hospital Building Rehabilitation: Final IS/MND, Angel Island State Park*, Acquisition and Development Division, Northern Services Center, January 2006.
[28] City and County of San Francisco Planning Department, *Treasure Island/Yerba Buena Island Redevelopment Project: Draft Environmental Impact Report*, August 26, 2010.
[29] RWQCB, San Francisco Bay Region, Order No. R2-2010-0001, NPDES No. CA00110116, January 13, 2010.
[30] Ibid.

studied.[31] Wherever possible, sewage systems are to be connected to nearby public utilities.[32] The plan also calls for adequate solid waste collection and disposal.[33]

Executive Order 13148

Executive Order 13148, decreed by President Clinton in 2000 with a deadline for implementation of December 31, 2005, stipulated that the National Park Service (NPS) create environmental management systems (EMS) to address "environmental goals, objectives, and targets." In 2008, the initiative was renamed the Climate-Friendly Parks Program, intended to address energy and water use issues as well as resource consumption and disposal.

5.12.2.2 State Regulations

Urban Water Management Plan

In 1983, the California Legislature enacted the Urban Water Management Planning Act (California Water Code Sections 10610 through 10656). The act states that every urban water supplier that provides water to 3,000 or more customers, or that provides over 3,000 acre-feet of water annually, should make every effort to ensure the appropriate level of reliability in its water service sufficient to meet the needs of its various categories of customers during normal, dry, and multiple dry years. The act describes the contents of the Urban Water Management Plan as well as how urban water suppliers should adopt and implement the plans. The plan must be updated at least every five years on or before December 31 in years ending in five and zero. The provisions of the Urban Water Management Plans for the SFPUC and MMWD are described above in Section 5.12.1, Setting.

RWQCB Permits

The Porter-Cologne Water Quality Control Act authorizes the State Water Resources Control Board, which, in turn, delegated certain authority to the several Regional Water Quality Control Boards (RWQCBs) to issue and enforce NPDES permits. In addition, the State Water Resources Control Board develops water quality standards and performs other functions to protect California's waters. The RWQCBs carry out the State Water Resources Control Board regulations and standards as well as issue and enforce permits. The provisions of RWQCB permits applicable to San Francisco and Marin County areas in the project vicinity are described above in Section 5.12.1, Setting.

Assembly Bill 939 and Senate Bill 1016

The California Integrated Waste Management Act of 1989, or Assembly Bill 939, established the Integrated Waste Management Board, required the implementation of integrated waste management plans, and mandated that local jurisdictions divert at least 50 percent of all solid

[31] NPS, *GGNRA General Management Plan and Environmental Analysis*, 1980.
[32] Ibid.
[33] Ibid.

waste generated (from 1990 levels), beginning January 1, 2000, and divert at least 75 percent by 2010. Projects that would have an adverse effect on waste diversion goals are required to include waste diversion mitigation measures to assist in reducing these impacts to less-than-significant levels. With the passage of Senate Bill 1016 (the Per Capita Disposal Measurement System) in 2006, only per capita disposal rates are measured to determine if a jurisdiction's efforts are meeting the intent of Assembly Bill 939.

5.12.2.3 Local Regulations

San Francisco General Plan

The *San Francisco General Plan* Environmental Protection Element includes the following policies relevant to water supply systems:

> *Policy 5.1*: Maintain an adequate water distribution system within San Francisco.
>
> *Policy 5.2*: Exercise controls of development to correspond to the capabilities of the water supply and distribution system.
>
> *Policy 6.1*: Maintain a leak detection program to prevent the waste of fresh water.
>
> *Policy 6.2*: Encourage and promote research on the necessity and feasibility of water reclamation.

The plan includes the following objectives and policies relevant to wastewater and stormwater:

> *Environmental Protection Element, Policy 3.1*: Cooperate with and otherwise support regulatory programs of existing regional, State, and Federal agencies dealing with the Bay, Ocean, and Shorelines.
>
> *Environmental Protection Element, Policy 3.3*: Implement plans to improve sewage treatment and halt pollution of the Bay and Ocean.
>
> *Community Facilities Element, Objective 10*: Locate wastewater facilities in a manner that will enhance the effective and efficient treatment of storm and wastewater.
>
> *Community Facilities Element, Policy 10.1*: Provide facilities for treatment of storm and wastewater prior to discharge into the Bay or ocean. Locate such facilities according to the Wastewater and Solid Waste Facilities Plan.

The plan contains the following policies relating to solid waste:

> *Objective 11*: Locate solid waste facilities in a manner that will enhance the effective and efficient treatment of solid waste.
>
> *Policy 11.1*: Provide facilities for treatment of solid waste and locate such facilities as shown on the Wastewater and Solid Waste Facilities Plan.

San Francisco Stormwater Design Guidelines

The SFPUC and the Port of San Francisco have developed the San Francisco *Stormwater Design Guidelines*, for areas with separated sanitary and storm sewers, as described in Section 5.16.2, Hydrology and Water Quality, Regulatory Framework.[34] The guidelines set forth a planning process for stormwater management with Low-Impact Design criteria.

San Francisco Zero Waste Policy

In September 2002, the San Francisco Board of Supervisors adopted Ordinance 679-02, which states in part:

> RESOLVED, That the Board of Supervisors adopts a goal for San Francisco of 75% landfill diversion by the year 2010, and authorizes the San Francisco Commission on the Environment to adopt a long term goal of zero waste, with the date set once when the 50% diversion goal is met, and will establish including a timeline to achieve a goal of zero waste once the 50% diversion goal is met.

In 2003, it was determined that the goal of 50-percent landfill diversion had been met in 2001. Accordingly, the San Francisco Commission on the Environment passed Resolution 002-03-COE, which states in part:

> RESOLVED, That the Commission on the Environment adopts a date for achieving zero waste to landfill by 2020 and directs the Department of the Environment to develop policies and programs to achieve zero waste, including increasing producer and consumer responsibility, in order that all discarded materials be diverted from landfill through recycling, composting or other means.

Moreover, the goal of 75-percent landfill diversion by 2010 was met in 2008 through the implementation of numerous programs and efforts.

San Francisco Construction and Demolition Waste Ordinance

In 2006, the City adopted Ordinance No. 27-06[35] mandating the recycling of construction and demolition debris. This ordinance affects all construction projects such as new construction, remodels, and partial demolitions, and requires the building permit holder or the property owner to ensure that all construction and demolition materials removed from the project are properly recycled. This ordinance prohibits any construction and demolition materials from being placed in trash or sent to a landfill.

Construction and demolition materials source-separated at the construction site for reuse or recycling must be taken to a facility that reuses or recycles those materials. The ordinance requires that all mixed construction and demolition debris be transported offsite by a registered

[34] SFPUC, *Stormwater Design Guidelines*, available online at http://sfwater.org/mto_main.cfm/MC_ID/14/MSC_ID/361/MTO_ID/543, accessed May 22, 2010.

[35] City and County of San Francisco, Ordinance No. 27-06, available online at http://www.sfenvironment.org/downloads/library/ondemolitionordinancefinal.pdf, accessed May 2, 2011.

transporter and taken to a registered facility that can process mixed construction and demolition debris and divert a minimum of 65 percent of the material from landfills.

Full demolition of an existing structure requires that a Demolition Debris Recovery Plan be submitted to and approved by the Department of the Environment before a Full Demolition Permit (Form 6) will be issued by the Department of Building Inspection. The plan must demonstrate how a minimum of 65 percent of the material from the demolition will be diverted from landfills.

San Francisco Green Building Ordinance: Space Requirements

The lack of space for separate collection of recyclables has long been recognized as a problem that inhibits waste reduction. This is especially true in cities such as San Francisco that have numerous older structures. Accordingly, in 2008 the City enacted Green Building Requirements[36] that include the following requirement:

> *1304C.0.4 Solid waste*: Areas provided for recycling, composting and trash storage, collection and loading, including any chute systems, must be designed for equal convenience for all users to separate those three material streams, and must provide space to accommodate a sufficient quantity and type of containers to be compatible with current methods of collection.

San Francisco Mandatory Recycling and Composting Ordinance

To help San Francisco move closer to its goal of zero waste by 2020, the Mandatory Recycling and Composting Ordinance requires everyone in San Francisco to separate their refuse into recyclables, compostables, and trash.[37] No one may mix recyclables, compostables, or trash, or deposit refuse of one type in a collection container designated for another type. All property owners are required to maintain and pay for adequate refuse service.

Owners or managers of apartments, condominiums, tenancies in common (TICs), food establishments, and events are required to maintain appropriate, color-coded (blue for recyclables, green for compostables, and black for trash), labeled containers in convenient locations, and to educate tenants, employees, and contractors, including janitors, on what materials go in each container. Vendors that provide disposable food service ware or to-go containers must have appropriate containers for use by customers and visitors, placed inside near a main exit.

San Francisco Food Service Waste Reduction Ordinance

The Food Service Waste Reduction Ordinance, effective June 1, 2007, prohibits any establishment that serves food prepared in San Francisco from using polystyrene foam (Styrofoam) to-go containers. The ordinance further requires that any containers used in the City's programs be

[36] City and County of San Francisco, San Francisco Building Inspection Commission (BIC) Codes: Chapter 13C, Green Building Requirements, available online at http://www.sfenvironment.org/downloads/library/sf_green_building_ordinance_2008.pdf, accessed May 2, 2011.

[37] City and County of San Francisco, Mandatory Recycling and Composting Ordinance, available online at http://www.sfenvironment.org/downloads/library/sf_mandatory_recycling_composting_ordinance.pdf, accessed May 2, 2011.

either recyclable or compostable. The ordinance also clearly defines compostable food serviceware according to American Society for Testing and Materials (ASTM) standards, and requires that it be clearly marked.[38] Compostable food serviceware should also be Building Performance Institute (BPI)-certified.[39]

San Francisco Special Events Ordinance

San Francisco Special Events Ordinance No. 73-89 requires any applicant seeking permission for the temporary use or occupancy of a public street, a street fair or an athletic event within the city and county that includes the dispensing of beverages or that generates large amounts of other materials to submit a recycling plan. Recycling plans must include arrangements for collection and disposition of source separated recyclables and/or compostables by a service provider or the event organizer.

Although the requirements of the Mandatory Recycling and Composting Ordinance (see above) are generally more stringent than those of the Special Events Ordinance, the Special Events Ordinance also requires a monetary deposit that may be forfeited if recycling cannot be documented after the event.

Marin Countywide Plan

The *Marin Countywide Plan* Community Facilities Element includes the following policies relevant to water, wastewater, stormwater, and solid waste utility systems:[40]

> ***Public Facilities and Services***
>
> Policy PFS-2.1 Conserve Water and Utilize Sustainable Sources
> Policy PFS-2.3 Manage Water Resources Sustainably
> Policy PFS-4.1 Reduce the Solid Waste Stream

Marin County Zero Waste Resolution

On February 14, 2006, the Marin County Board of Supervisors signed the United Nations World Environment Day Urban Environmental Accords, pledging that the County of Marin would implement 21 action steps toward sustainability in the areas of energy, waste reduction, urban design, transportation, environmental health, and water including: Establish a policy to achieve zero waste. Pursuant to that goal, the Marin County Hazardous and Solid Waste Management Joint Powers Authority passed a Zero Waste resolution on November 9, 2006. On April 17, 2007, the County of Marin approved the Marin County Zero Waste Resolution, which adopted the goal of 80 percent landfill diversion by 2012 and a Zero Waste Goal by 2025.[41]

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38 City and County of San Francisco, Food Service Waste Reduction Ordinance, available online at http://www.sfbos.org/ftp/uploadedfiles/bdsupvrs/ordinances06/o0295-06.pdf, accessed May 2, 2011.

39 Biodegradable Products Institute, Certified Compostable Foodservice Items, available online at http://www.bpiworld.org/Certified-Bioedgradable-Foodservice-Items-Plates-Cups-Utinsels [sic], accessed May 2, 2011.

40 County of Marin, *Marin Countywide Plan*, November 6, 2007.

41 GreenYes Archives, http://greenyes.grrn.org/2007/04/msg00061.html, April 18, 2007; accessed June 7, 2011.

Sausalito General Plan

The *Sausalito General Plan* includes the following policies relevant to utility systems:[42]

> *Policy LU-7.2: Adequacy of Facilities*: Allow construction to proceed for only those projects that demonstrate the availability of adequate potable water, sewer, septic leach fields and storm drainage.
>
> *Policy LU-4: Solid Waste Disposal*: Strive to reduce the amount of solid waste generated in Sausalito in accordance with State Law.
>
> *Policy EQ-3.14: Solid Waste Conservation and Recycling*: Support recycling efforts and actions that reduce solid waste generation and provide for its safe disposal.

City of Sausalito Special Event Ordinance

City of Sausalito Ordinance No. 1162 established Chapter 17.32 of the City Charter: Special Events on City Property. Pursuant to the ordinance, special event applicants are required to specify location, date, time, number of participants, number of vehicles, whether water and sanitary stations, and other event characteristics. The City Manager is required to approve, conditionally approve, or deny the application within 30 days of receipt. Conditions imposed can include requirements for garbage and recycling containers, use of recyclable or compostable materials, and requirement for provision of sanitary facilities.[43]

Tiburon General Plan

The *Town of Tiburon General Plan* includes the following policies relevant to utility systems:[44]

> *Policy LU-8*: Sewer, water, and other essential infrastructure improvements must be available t the developer to serve new development by the time of completion of construction. Developers shall participate in the funding of essential expanded infrastructure to the maximum extent allowed by law.
>
> *Policy LU-9*: The Town shall coordinate with urban service providers such as Marin Municipal Water District and the sanitary districts to ensure that they have the capacity to serve new development.
>
> *Policy EQ-3.14*: Solid Waste Conservation and Recycling: Support recycling efforts and actions that reduce solid waste generation and provide for its safe disposal.

Town of Tiburon Special Event Permit Policy

The Town of Tiburon requires any special event planners to submit an application form, with attached logistical plan, anticipated number of visitors and workers, a traffic control plan,

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42 City of Sausalito, *The Sausalito General Plan*, as amended, through October 26, 1999.

43 City of Sausalito, Ordinance No. 1162, http://webcache.googleusercontent.com/search?q=cache:wZ603n2r7ukJ:www.ci.sausalito.ca.us/index.aspx%3Fpage%3D511+city+of+sausalito+special+event+ordinance&cd=2&hl=en&ct=clnk&gl=us&source=www.google.com, November 19, 2002, accessed June 7, 2011.

44 Town of Tiburon, *The Town of Tiburon General Plan*, September 2005.

parking plan, water facilities and sanitary measures, security, street closure, and required recycling plan. The permit application is reviewed by the Deputy Director of Public Works, the Director of Community Development, the Town Manager, and the Chief of Police. Public hearings may be required for applications for events with more than 200 people.[45]

Belvedere General Plan

The *City of Belvedere General Plan* includes the following goals relevant to utility systems:[46]

> *Goal SUST-5*: Reduce solid waste disposal and increase recycling in line with Marin County's goal of 80 percent waste diversion by 2012 and zero waste generation by 2025.
>
> *Goat SUST-6*: Encourage and facilitate water conservation in public and private use.

City of Belvedere Special Event Policy

Individuals planning an event that will be held on, or pass through, public lands or streets are required to apply for a Special Event Permit with the City of Belvedere. The permit requires the applicant to list equipment, parking, street closures, clean-up, recycling, and vendor information. The City's Department of Public Works Superintendent reviews the permit prior to approval.[47]

5.12.3 Impacts and Mitigation Measures

5.12.3.1 Significance Criteria

The City has not formally adopted significance standards for impacts related to utilities and service systems, but generally consider that implementation of the project could have a potentially significant impact related to utilities and service systems if it were to:

- Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board;
- 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;
- 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;
- Have insufficient water supply available to serve the project from existing entitlements and resources, or require new or expanded water supply resources or entitlements;

[45] Town of Tiburon, "Special Events Permit Policy," http://www.ci.tiburon.ca.us/services/forms/administrative/SPECIAL%20EVENT%20PERMIT.pdf, April 17, 2002, accessed June 7, 2011.
[46] City of Belvedere, *City of Belvedere General Plan*, *The Town of Tiburon General Plan*, June 9, 2010.
[47] City of Belvedere, "Special Event Permit Application Process," http://www.cityofbelvedere.org/DocumentView.aspx?DID=66, accessed June 7, 2011.

- Result in a determination by the wastewater treatment provider that would serve the project that it has inadequate capacity to serve the project's projected demand in addition to the provider's existing commitments;
- Be served by a landfill with insufficient permitted capacity to accommodate the project's solid waste disposal needs; or
- Fail to comply with federal, state, and local statutes and regulations related to solid waste.

5.12.3.2 Approach to Analysis

This analysis evaluates the proposed project's potential effects on utilities during project construction and operation. For the AC34 events, the analysis focuses on the increased number of employees and spectators that would place additional demand on water and wastewater service systems. Other activities, such as food vending, boat washdowns and team bases, and AC34 facility maintenance would also increase demand for these services. Such demand would be dispersed among multiple utility providers and locations within each system.

The tenant relocations that would be required to facilitate the implementation of AC34 on Port properties would not result in increased demand for water, wastewater, stormwater, or solid waste services. Instead, the demand for these services would be relocated to other locations within the same provider systems, where utility connections are existing or available. Therefore, the tenant relocation component of the project is considered to have no impact related to the capacities of existing utility systems, and tenant relocation is not analyzed below.

In the analysis of the proposed James R. Herman Cruise Terminal and Northeast Wharf Plaza, the cruise terminal component is considered a relocation of an existing use. Therefore, the cruise terminal would not increase demand for water, wastewater, or solid waste services, as described below. For stormwater, the cruise terminal would include the construction of new rainwater harvesting, recycled water, and stormwater systems. The other components of this project—the commercial uses and shared uses on Piers 27 and 29—could incrementally increase demand for utility services, as analyzed below.

5.12.3.3 AC34 Event and Cruise Terminal Impacts

America's Cup

Impact UT-1: Construction and operation of the America's Cup facilities and events would not increase wastewater generation to the extent that would exceed the treatment requirements of the Regional Water Quality Control Board. (Less than Significant)

An increase in wastewater generation from the AC34 events and venues could affect the available storage, pumping, and treatment capacity of the sewer systems. During construction new wastewater lines would be constructed at Pier 27, Piers 30-32, and Pier 80 to connect to the existing system, but this construction would not result in substantial new flows.

According to preliminary estimates, the additional 292,000 spectators, 2,000 employees, and boat washdown facilities that would be in San Francisco on the five average peak race days would generate about 886,940 gpd of wastewater in 2013.[48] During AC34 operations, boat wash-down facilities would produce wastewater at Piers 30-32 and Pier 80. The estimated 24,000 spectators expected to view the events from outside of mainland San Francisco on peak race days would also temporarily increase wastewater flows, which would be dispersed among the Bay Area's wastewater collection and treatment systems, as described below.

The AC34 events would be conducted during the dry season, and any increase in wastewater from the increased out-of-town visitors and spectators to the America's Cup would take place during dry weather only, when there is sufficient treatment capacity at the wastewater treatment plants for the anticipated levels of increased flows. Also, because little or no rain is likely to fall during the summer-fall months when the races are scheduled, there would be no additional stormwater runoff, or inflow and infiltration, into the combined sewer systems due to the AC34 events.

In addition, during operations of the AC34 events, existing public restroom facilities on Port, GGNRA, and San Francisco Recreation and Park Department (SFRPD) properties would be augmented. The Waste Management Plan (described under Impact UT-6, below) would include procedures and specifications for portable restrooms and washing stations in public park and spectator areas. Pursuant to **Mitigation Measure RE-1** (Protection of Recreational Resources), additional portable toilet facilities are planned to be provided at Crissy Field, Marina Green, and AC34 Live Sites, as well as at other venues through coordination with these agencies. At Alcatraz, the project sponsor proposes to host private events on the island. Private events are currently held at Alcatraz though a formal permitting and coordination process with the NPS. This permitting process and continued controlled access to the island, via ferry, would ensure that adequate utilities are provided for these private functions.

Also pursuant to **Mitigation Measure RE-1** (Protection of Recreational Resources), the project sponsor would coordinate with the affected jurisdictions—including Sausalito, Tiburon, Belvedere, and Angel Island--to ensure that other secondary viewing areas, east and north of the race course, have adequate utility and convenience services. This coordination would include consideration for adequate provision of portable toilet and wash station facilities, as well as the pumpout and maintenance of these facilities, during peak AC34 days, as necessary, to complement existing public restrooms. Pumpout services for spectator boats may also be provided via roaming on-water sanitation boats.

These secondary viewing areas have shown their ability to accommodate large crowds with proper event planning. The annual Treasure Island Music Festival, held each autumn, has an attendance of about 25,000 visitors over 2 days.[49] The City of Sausalito hosts the annual Sausalito Art Festival,

[48] Hydroconsult Engineers, *Draft Technical Memorandum: 34th America's Cup/Cruise Terminal: Estimated Water/Wastewater Flow Rates*, May 16, 2011.

[49] Noise Pop Industries, "Treasure Island Music Festival," available online at http://www.noisepopindustries.com/deck/timf_sponsor.pdf, accessed May 4, 2011.

which had an attendance of 34,000 people over a 3-day period in 2010.[50] Also, the Tiburon Wine Festival and Tiburon Art Festival annually attract crowds of visitors to the downtown and waterfront areas.[51,52] The America's Cup five average peak race days would generate comparable, or fewer, visitors to these areas, as described in Chapter 3, Project Description.

Although the specific portable toilet provider(s) for each spectator venue, secondary viewing area, or the event as a whole have not yet been determined, the generated wastewater that would be accommodated by these toilet providers could bypass the sewer systems of San Francisco, Sausalito, Tiburon, and Treasure Island. Instead, wastewater from portable toilets would be delivered via truck directly to Bay Area wastewater treatment plants. Given that the portable toilet provider(s) have not yet been identified, the specific plants where wastewater would be disposed are not known at this time. Disposal of portable toilet wastewater at these plants would be undertaken in accordance with provisions of contracts between those plant operators and wastewater haulers, in compliance with applicable federal, state and local regulations. Therefore, such disposal would not exceed the wastewater treatment plants' capacities or RWQCB requirements.

Finally, the event-related and spectator boats in the Bay would be required to use pumpout facilities for disposal of wastewater. For marinas located in San Francisco, these facilities pump boat wastewater into the City's combined sewer system, and if any visiting spectator boats are docked at marinas outside of San Francisco, pumpout facilities would discharge to wastewater sewer systems in other jurisdictions. **Appendix HY** shows the location of marinas throughout San Francisco Bay and indicates whether the marina offers pumpout facilities. Given the dispersed locations of these facilities, the increased load on any one wastewater collection system would not be substantial enough to exceed wastewater treatment capacities.

Because the wastewater treatment requirements of the AC34 would not exceed the treatment requirements of the RWQCB, impacts related to wastewater treatment would be *less than significant*, and no mitigation is required.

Mitigation: Not required

Impact UT-2: The America's Cup facilities and events would not require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities. (Less than Significant)

The America's Cup project would not require the construction of new water or wastewater treatment facilities.

[50] Sausalito Art Festival, "Welcome to the Sausalito Art Festival" website, http://www.sausalitoartfestival.org/festival_info.aspx?pid=16, accessed May 4, 2011.
[51] Tiburon Wine Festival website, http://www.tiburonwinefestival.org/, accessed May 5, 2011.
[52] Tiburon Art Festival website, http://tiburon-artfestival.com/, accessed May 5, 2011.

Regarding wastewater treatment, as stated under Impact UT-1, the AC34 events would be held during the dry season, when there would be adequate capacity at the wastewater treatment plants to handle increased wastewater flows generated by AC34 workers and spectators. Also, wastewater would be accommodated through provision and pumpout of portable toilets. Therefore, new treatment facilities, or expansion of existing treatment facilities, would not be required.

Regarding water treatment facilities, please see the discussion under Impact UT-4, below. As stated there, no new water treatment facilities, expansion of existing water treatment facilities, or new water entitlements would be required due to the AC34 events. The impact would be *less than significant*.

Mitigation: Not required

Impact UT-3: The America's Cup facilities and events would require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which would not cause significant environmental effects. (Less than Significant)

As stated under Impact UT-1, the AC34 events would occur during the dry season. Therefore, the events would not result in increased stormwater flows due to increased area of impervious surfaces.

A separate stormwater drainage system, including a rainwater harvesting system, would be constructed as part of the core and shell construction of the cruise terminal, which would be available for the AC34 event. The construction of these facilities would not, in and of themselves, result in significant environmental effects, but would be considered as part of the construction activities for the overall project. Impacts on air quality, traffic, noise, water quality, and other environmental topics due to the demolition of the existing Pier 27 shed and construction of the cold shell of the cruise terminal are discussed in those respective sections of this EIR, and mitigation measures are identified to reduce impacts to less-than-significant levels. No other stormwater drainage facilities would be constructed as part of the AC34 events. The impact of construction of new storm water drainage facilities would be *less than significant*. For the same reasons described above, the Pier 27 Shed Variant would also result in less-than-significant impacts due to construction of new storm water drainage facilities, although the construction of the proposed stormwater drainage facilities would be delayed until after completion of the AC34 events.

Mitigation: Not required

Impact UT-4: The City and County of San Francisco would have sufficient water supply available to serve the America's Cup facilities and events from existing entitlements and resources and would not require new or expanded water supply resources or entitlements. (Less than Significant)

Operation of the AC34 events and venues, as well as the water consumption of employees and spectators, would temporarily increase water demand. During AC34 operations, boat wash-down facilities would consume water at Piers 30-32 and Pier 80. According to preliminary estimates, the additional 292,000 spectators and 2,000 employees, as well as boat washdown facilities, that would be in San Francisco on average peak race days would generate about 975,630 gpd of water demand.[53] The 24,000 spectators outside of mainland San Francisco on peak race days would also increase water demand.

According to the Draft 2011 Urban Water Management Plan, the SFPUC's retail water use was 77.7 mgd in 2010. About 70 percent of this use was for residential purposes. The remainder of retail water use includes all other sections—such as the services, government, and commercial sectors—which would include activities like the AC34 events. The roughly 1 mgd on five average peak race days would not affect overall water demand within the SFPUC system to the extent that additional water supplies or entitlements would be required.

During AC34 operations, portable toilet and wash stations (described above under Impact UT-1) would be provided at various locations to augment existing restroom and water fountains. Given that the provider(s) of portable wash stations have not yet been determined, the water supply system for these wash stations has not yet been determined. Facilities are planned to be provided at Crissy Field, Marina Green, and AC34 Live Sites, as well as at other venues through coordination with these agencies pursuant to **Mitigation Measure RE-1** (Protection of Recreational Resources). Also pursuant to that measure, the project sponsor would coordinate with jurisdictions outside of San Francisco—including Tiburon, Sausalito, and Angel Island--to ensure provisions for utilities, such as additional wash stations or water, are available at these locations if necessary. As stated under Impact UT-1, provision of temporarily supplemental utility services in these secondary viewing areas has proven adequate to accommodate similar or smaller crowds than those that would be attracted by AC34.

The temporary increases in water demand caused by the AC34 events would not exceed existing entitlements and resources to the extent that new or expanded water supply resources or entitlements would be required. The impact on water supply would therefore be *less than significant*, and no mitigation is required.

Mitigation: Not required

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[53] Hydroconsult Engineers, op. cit., 2011.

Impact UT-5: The America's Cup facilities and events would not result in a determination by the wastewater treatment providers that would serve the project that they have inadequate capacity to serve the project's projected demand in addition to the providers' existing commitments. (Less than Significant)

As stated under Impact UT-1, the AC34 events would temporarily increase wastewater generation, but the existing wastewater collection systems and treatment plants in the affected areas would have adequate capacity to accommodate the increase. Moreover, the use of portable toilets at AC34 venues could divert some wastewater flows from the local collection systems, since this wastewater would be transported via truck and pumped directly to treatment plants in accordance with portable toilet provider contract provisions and applicable regulations. The impact on the wastewater treatment plant capacities would be *less than significant*.

Mitigation: Not required

Impact UT-6: The America's Cup facilities and events would be served by landfills with sufficient permitted capacity to accommodate the project's solid waste disposal needs. (Less than Significant)

Regarding solid waste, the America's Cup Host Agreement requires that the City of San Francisco prepare a Waste Management Plan specific to the AC34 event, and the draft plan was published in March 2011. This plan calls for specific measures to assure litter control, require recycling and composting, and design AC34 facilities to limit construction waste and demolition.

According to the draft Waste Management Plan, waste from the event could be broadly divided into three categories.[54] First, construction and demolition debris would be deposited in large-volume containers. Recology or third-party trucks would transport the waste to sorting facilities. Construction and demolition solid waste would comply with the City's Construction and Demolition Waste Ordinance (described above), which requires diversion of a minimum of 65 percent of the material from landfills.

Second, waste could be generated by support facilities, which could include the storage, display, maintenance, and repair of boats; crew support such as dining and similar facilities; and the installation, overwintering, and removal of temporary pier and wave attenuator structures. Moored spectator boats at various Open Water Basins are also considered to contribute to waste generated by support facilities. Crews, janitors, and similar workers would bring compostables, recyclables, and trash to bins located where they may be readily serviced by collection trucks.

Third, spectator sites would contain clusters of small containers that would allow spectators to separate compostables, recyclables, and trash. These receptacles would be tended by workers who would keep the clusters from overflowing. At most sites, it is expected that collected

[54] City and County of San Francisco, Department of the Environment, *34th America's Cup Event Waste Management Plan*, March 2011.

materials would be placed into bins or boxes at each site for collection by Recology. According to the draft Waste Management Plan, it is estimated that 75 percent of the spectator waste would be compostable, and an additional 20 percent of the spectator waste would be recyclable.[55]

As stated above, at Alcatraz, the project sponsor proposes to host private events on the island. The NPS permitting process for these events, as well as continued controlled access to the island, via ferry, would ensure that adequate solid waste collection receptacles are provided for these private functions. Solid waste from the events would be transported via ferry and then transferred into the City's waste stream at that point. As stated above, currently 70 percent of waste from the island is diverted from local landfills.

The San Francisco Department of the Environment has directed its technical assistance consulting team to develop quantity estimates for the recycling and refuse services needed at and near the venue locations. These estimates are currently being reviewed by the City's primary service provider, Recology San Francisco.

Solid waste from the events would be collected by Recology, and recycled as feasible, with non-recyclables being disposed of at the Altamont Landfill in Alameda County and—after 2015–Recology Ostrom Road Landfill in Yuba County. Although final event waste generation estimates are still being reviewed, these landfills have adequate capacity to serve the City over the course of several years. Therefore, they have adequate capacity to accommodate the solid waste that would be generated by the AC34 events.

Regarding Marin County, visitorship to Fort Baker would be controlled through the NPS permitting process for private use of the Cavallo Point pier. Such controlled access and permitting requirements would ensure that adequate solid waste collection services and receptacles are provided. Regarding Angel Island, access to the island is limited by the number and capacity of ferries that travel to the island each day, which would limit overall waste generation on the island. Increased visitors to Tiburon, Sausalito, and Belvedere would also increase solid waste generation, especially on peak race days. Pursuant to **Mitigation Measure RE-1** (Protection of Recreational Resources), the project sponsor would coordinate with these jurisdictions to ensure that adequate provision of waste receptacles and servicing, as necessary.

As stated in the Setting, above, the Marin County Hazardous and Solid Waste Management Authority currently diverts more than 70 percent of generated solid waste from the Redwood Sanitary Landfill, and the landfill's expansion was recently approved to allow for continued disposal through 2024. The increased visitors to these Marin County locations would incrementally increase solid waste generation, but not to the extent that would exceed the capacity of the Redwood Sanitary Landfill.

Therefore, the impact on landfill capacities would be *less than significant.*

[55] Ibid.

Mitigation: Not required

Impact UT-7: The America's Cup facilities and events would comply with federal, state, and local statutes and regulations related to solid waste. (Less than Significant)

As stated above, AB 939 required municipalities to adopt an integrated waste management plan to divert 75 percent of waste by 2010. The City of San Francisco achieved a 77-percent landfill diversion rate for 2008, exceeding the plan's goal by two years. Under Senate Bill 1016, the City's per resident disposal target rate is 6.6 pounds per person per day (PPD), and its per employee disposal target rate is 10.6 PPD. In 2009, which is the most recent date for which data are available, the measured disposal rate was 3.1 PPD for residents and 4.8 PPD for employees, thereby meeting the City's target rates.

San Francisco Ordinance No. 27-06 requires a minimum of 65 percent of all construction and demolition debris to be recycled and diverted from landfills. Furthermore, the project would be required to comply with City's Ordinance 100-09, the Mandatory Recycling and Composting Ordinance, which requires everyone in San Francisco to separate their refuse into recyclables, compostables, and trash. Altamont and Recology Ostrom Road Landfills are required to meet federal, state and local solid waste regulations.

The America's Cup project would also be required to meet the Food Service Waste Reduction Ordinance, and the Special Events Ordinance, which require food and beverage dispensers to adhere to procedures to reduce or limit solid waste generation at primary venue sites in San Francisco. The America's Cup project Draft Waste Management Plan explains how the project sponsors would adhere to each of these regulations.

Therefore, AC34 events at mainland San Francisco, Treasure Island, and Alcatraz Island (which transfers its solid waste into the City's waste stream) would comply with federal, state and local statutes related to solid waste.

Regarding Marin County, the Marin County Hazardous and Solid Waste Management Authority (Authority achieved a 72-percent landfill diversion rate for 2006 and has established a goal of achieving zero waste disposal by 2025. The Authority's per resident disposal target rate is 7.6 pounds per person per day (PPD), and its per employee disposal target rate is 17.3 PPD. In 2009, which is the most recent date for which data are available, the measured disposal rate was 3.8 PPD for residents and 9.5 PPD for employees, thereby meeting the Authority's target rates.

Any temporary facilities to accommodate anticipated spectators to the America's Cup project in Marin jurisdictions would be required to meet the Special Event policies for Tiburon, Sausalito, and Belvedere, as described above. Adherence to these permit processes would ensure that solid waste disposal is undertaken in accordance with local, state, and federal standards. Visitorship to Fort Baker would be controlled through the NPS permitting process for private use of the Cavallo Point pier. Such controlled access and permitting requirements would ensure that solid waste

disposal adheres to regulations. Regarding Angel Island, the island would continue to operate with a limited number of ferries per day. Any additional refuse generated by visitors would be collected within the existing solid waste collection and disposal system, thereby adhering to applicable laws and regulations.

The proposed project would not impede the City of San Francisco or Marin County jurisdictions from meeting solid waste regulations, and the impact would be *less than significant*. No mitigation is required.

Mitigation: Not required

James R. Herman Cruise Terminal and Northeast Wharf Plaza

Impact UT-8: Operation of the James R. Herman Cruise Terminal and Northeast Wharf Plaza would not exceed wastewater treatment requirements of the San Francisco Regional Water Quality Control Board. (Less than Significant)

Under the proposed project, cruise ship calls would be expected to continue to fluctuate between 40 to 80 calls per year, similar to existing conditions. As under existing conditions, the average size of the cruise ships berthing at Pier 27—which is the current backup cruise ship terminal—would be expected to gradually increase over time. Therefore, the only change in cruise ship operations attributable to the proposed project would be that Pier 27 would be the primary terminal, and Pier 35 would be the secondary terminal, which would be the opposite of existing conditions.

The project, in and of itself, would not cause any increase in passengers associated with the larger-sized cruise ships. Therefore, the project would not result in a change in wastewater flows from the new terminal as compared to the existing flows from the Pier 35 and Pier 27 backup terminal. In addition, there would be no pumpout facilities included at the proposed cruise terminal; berthed ships would be required to use pumpout facilities at other locations, if needed. Therefore, the cruise ships at the new terminal would not increase wastewater flows beyond existing conditions.

In addition to cruise ship uses, the Piers 27-29 facility would continue to be used for other maritime events, such as Fleet Week, foreign naval diplomatic calls, "Tall Ships" festivals, and visits by oceanic research vessels. Up to 100 of such "shared use" events pear year could be held at the facility, although specific details are not known at this time. These temporary increases in intensity of use of Piers 27-29 may incrementally increase wastewater flows within the SFPUC system, depending on whether the same event would be held within the same service area at another location if Piers 27-29 were not available. Ancillary commercial uses around Northeast Wharf Plaza could also slightly increase generation. These incremental increases in wastewater generation would not exceed the wastewater treatment requirements of the Regional Water Quality Control Board.

Stormwater flows on Piers 27-29 are not directed into the combined sewer system, and they would not be directed into the combined system in the future. Therefore, stormwater flows would not affect the wastewater plant treatment requirements. Thus, the project's impact on wastewater treatment requirements of the Regional Water Quality Control Board would be *less than significant*.

Mitigation: Not required

Impact UT-9: The James R. Herman Cruise Terminal and Northeast Wharf Plaza would not require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities. (Less than Significant)

Regarding wastewater, as stated under Impact UT-8, the cruise terminal would not increase wastewater flows compared to existing conditions, and shared uses of Piers 27-29 for special events would only incrementally increase wastewater flows. Ancillary commercial uses adjacent to Northeast Wharf Plaza could also slightly increase flows. These increases would not be to the extent that new wastewater treatment facilities would be required within the SFPUC system.

Regarding water, as stated under Impact UT-11, the shared and commercial uses could also incrementally increase water demand. However, given that the project is essentially a relocation of an existing use, and that the project would incorporate rainwater harvesting and recycled water systems, increased water demand would not be of an extent as to require new water treatment facilities. The impact on wastewater and water treatment facilities would be *less than significant.*

Mitigation: Not required

Impact UT-10: The James R. Herman Cruise Terminal and Northeast Wharf Plaza would require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which would not cause significant environmental effects. (Less than Significant)

Piers 27-29 are within the Port's MS4, under which stormwater drainage does not enter the combined sewer system, but instead drains directly into the Bay. A new, updated stormwater drainage system—including a rainwater harvesting system—would be constructed at Pier 27 during cruise terminal project. The construction of these facilities would not, in and of themselves, result in significant environmental effects. Impacts on air quality, traffic, noise, water quality, and other environmental topics due to the demolition of the existing terminal and construction of the cold shell of the cruise terminal are evaluated in the respective sections of this EIR, and mitigation measures are identified to reduce impacts to less-than-significant levels. The impact of construction of new storm water drainage facilities would be *less than significant*.

Mitigation: Not required

Impact UT-11: The City and County of San Francisco would have sufficient water supply available to serve the James R. Herman Cruise Terminal and Northeast Wharf Plaza from existing entitlements and resources, and would not require new or expanded water supply resources or entitlements. (Less than Significant)

As stated in Chapter 3, the Port has received cruise ships at Pier 35 for several years. Calls have fluctuated between 40 and 80 per year, and this level is expected to continue for the foreseeable future. Therefore, the cruise terminal project itself would not be expected to increase water demand. Also, the rainwater harvesting that would be included in the cruise terminal design would provide water for non-potable uses, thereby lowering overall water demand. The building would also be equipped with reclaimed water lines that, if and when a reclaimed water line is built within the Embarcadero, would provide reclaimed water for non-potable uses within the terminal.

Shared uses of Piers 27-29, as well as commercial uses around the Northeast Wharf Plaza, could incrementally increase water demand at the piers. Given the limited number and size of these uses, however, they would not require new or expanded water supply resources or entitlements.

In an effort to streamline the water supply planning process, the SFPUC adopted resolutions in 2002 and 2006 to allow for all development projects requiring a Water Supply Assessment under Water Code Section 10910 et seq. to rely on the adopted Urban Water Management Plan as long as the anticipated growth was contained in the Urban Water Management Plan. As stated in Section 5.12.1, Setting, above, existing land use designations and reasonably foreseeable future projects were included in the Draft Urban Water Management Plan. Therefore, the water demand of the James R. Herman Cruise Terminal, Northeast Wharf Plaza, and ancillary uses was included in the Urban Water Management Plan demand projections. The impact on existing water entitlements and resources would be *less than significant*.

Mitigation: Not required

Impact UT-12: Operation of the James R. Herman Cruise Terminal and Northeast Wharf Plaza would not result in a determination by the wastewater treatment provider that would serve the project that it has inadequate capacity to serve the project's projected demand in addition to the provider's existing commitments. (Less than Significant)

As stated under Impact UT-7, the new cruise terminal would not result in larger passenger ships, which are expected to berth at Pier 27 under existing conditions. There would be no pumpout facilities included at the proposed cruise terminal, and berthed ships would be required to use pumpout facilities at other locations, if needed. Therefore, the new terminal would not increase wastewater flows beyond existing conditions. Shared uses on Piers 27-29, as well as ancillary

commercial uses adjacent to the Northeast Wharf Plaza, could incrementally increase wastewater flows, but such an increase would not substantially affect overall capacity. The impact on the wastewater treatment provider's capacity would be *less than significant*.

Mitigation: Not required

Impact UT-13: The James R. Herman Cruise Terminal and Northeast Wharf Plaza would be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs. (Less than Significant)

Solid waste from the Cruise Terminal project would be collected by Recology, and recycled as feasible, with non-recyclables being disposed of at the Altamont Landfill in Alameda County and—after 2015–Recology Ostrom Road Landfill in Yuba County. Operation of the cruise terminal would not substantially increase waste generation over existing conditions, as the number of calls per year is anticipated to remain the same as existing conditions. Increased use of the Pier 27 area associated with commercial uses around the Northeast Wharf Plaza could incrementally increase solid waste generation.

This increase would be relatively minor compared to the solid waste generation of San Francisco a whole, and it would not significantly increase total waste generation from the city. Also, the increasing rate of diversion through recycling and other methods would result in a decreasing share of total waste disposed at the Altamont and Ostrom Road Landfills. Given this increasing diversion rate, and given the long-term capacity available at these landfills, the solid waste generated by project construction and operation would not exceed the permitted landfill capacity.

The James R. Herman Cruise Terminal and Northeast Wharf Plaza would result in a *less-than-significant* solid waste generation impact.

Mitigation: Not required

Impact UT-14: The James R. Herman Cruise Terminal and Northeast Wharf Plaza would comply with federal, state, and local statutes and regulations related to solid waste. (Less than Significant)

As stated above, AB 939 required municipalities to adopt an integrated waste management plan to divert 75 percent of waste by 2010. The City of San Francisco achieved a 77-percent landfill diversion rate for 2008, exceeding the plan's goal by two years. Under Senate Bill 1016, the City's per resident disposal target rate is 6.6 pounds per person per day (PPD), and its per employee disposal target rate is 10.6 PPD. In 2009, which is the most recent date for which data are available, the measured disposal rate was 3.1 PPD for residents and 4.8 PPD for employees, thereby meeting the City's target rates.

San Francisco Ordinance No. 27-06 requires a minimum of 65 percent of all construction and demolition debris to be recycled and diverted from landfills. Furthermore, the project would be required to comply with City's Ordinance 100-09, the Mandatory Recycling and Composting Ordinance, which requires everyone in San Francisco to separate their refuse into recyclables, compostables, and trash. Altamont and Recology Ostrom Road Landfills are required to meet federal, state and local solid waste regulations.

The cruise terminal project would adhere to these regulations. Therefore, implementation of the proposed project would not impede the City from meeting solid waste regulations, and the impact would be *less than significant*. No mitigation is required.

Mitigation: Not required

5.12.3.4 Future Long-Term Development Impacts

Impact LT-UT: Future long-term development under the Host Agreement would not result in substantial increased demand for utility services. (Less than Significant)

As described in Chapter 3, the 34th America's Cup Host and Venue Agreement (Host Agreement) provides the Event Authority with certain long-term development rights under specified conditions. Although no site-specific development projects or programs have been developed, this EIR analyzes at a conceptual level an assumed type and level of development based on current land use policies and guidelines.

The increased residential population and increased intensity of use of the long-term development sites would increase demand for water. Preliminary calculations estimate that development of the piers and seawall lot subject to the Host Agreement would increase water demand by about 154,200 gpd.[56] Redevelopment of other long-term development sites could also increase water demand. However, given that these long-term development sites comprise existing uses, future continued use or development of these sites would not substantially increase water demand above existing conditions. As stated above, the Urban Water Management Plan anticipates future growth in San Francisco as projected in 2011 by ABAG, which takes into accounting existing land use and zoning controls that would allow for long-term development. Therefore, the impact on water demand would be *less than significant*.

Regarding wastewater, the increased residential population and increased intensity of use of the long-term development sites would increase wastewater generation. Preliminary calculations find that the development of the piers and seawall lot subject to the Host Agreement would result in additional wastewater generation of about 132,600 gpd total. However, redevelopment of these sites would reduce total impervious surfaces, which would reduce stormwater flows. Redevelopment of other long-term development sites may also increase wastewater generation.

[56] Hydroconsult Engineers, op. cit., 2011.

Most of the sites are within the Port jurisdiction MS4, which allows stormwater to drain directly into the Bay and bypass the combined sewer system. Therefore, redevelopment of these sites would not increase stormwater flows into the combined system during wet weather. Moreover, the SFPUC is in the process of implementing a Sewer System Improvement Program that anticipates long-term development within San Francisco pursuant to existing land use controls, including some of the potential development under the long-term leases. Therefore, assuming that long-term development of the subject piers and seawall lots would be in compliance with these land use controls, the impacts on wastewater and stormwater systems would be *less than significant*.

Regarding solid waste, as stated above, the City and County of San Francisco has committed to achieving zero waste to landfill by 2020. Although development of currently underused sites (Piers 30-32, Pier 19½, and Seawall Lot 330) could increase the generation of construction and demolition debris, as well as solid waste generation, this increase would be partially offset by existing San Francisco ordinances and policies regarding waste reduction. Solid waste would be disposed of at Recology Ostrom Road Landfill in Yuba County after 2015, which has adequate capacity to serve the City over the course of several years. Therefore, the increased generation of solid waste from these developments would not exceed permitted landfill capacity, and the impact would be *less than significant.*

Mitigation: Not required

5.12.3.5 Cumulative Impacts

Impact C-UT: The proposed project, combined with past, present, and reasonably foreseeable future projects, would not result in significant adverse cumulative impacts on utilities or service systems. (Less than Significant)

The geographic scopes of potential cumulative impacts on utilities are the service areas of each utility provider.

America's Cup Facilities and Operations

Future projects required to expand utility services capacity to meet the demands of future development in the project area could have significant impacts on the environment. However, because AC34 would be a temporary and short-term event, the utility services demands associated with the AC34 would not contribute to such future demand for utility services. As discussed above, the demand for utility services generated by the AC34 would be met by existing facilities and in compliance with all applicable regulatory requirements. Therefore, the provision of utility services for the construction and operation of the AC34 facilities and events would not result in a significant cumulative impact on the environment.

James R. Herman Cruise Terminal and Northeast Wharf Plaza

The proposed project would incrementally increase water, wastewater, and solid waste utility demand due to construction and operation of the new cruise terminal, Northeast Wharf Plaza, and ancillary commercial uses. However, as stated above, the cruise terminal would relocate an existing use, and the number of ship calls per year is expected to remain as it is under existing conditions. Therefore, the cruise terminal and wharf plaza would not contribute considerably to demand for water, wastewater, or solid waste services. Moreover, the Urban Water Management Plan, Sewer System Improvement Program, and long-term contract with Ostrom Road Landfill anticipate future growth in San Francisco and the associated demands on utilities. Any incremental increase in demand generated by the cruise terminal project is already incorporated into these planning processes.

Regarding stormwater, the cruise terminal would include construction of new stormwater facilities, but the construction of these facilities themselves would not contribute considerably to a cumulative impact.

Mitigation: Not required

5.13 Public Services

This section of the EIR addresses potential impacts associated with public services--including fire protection, emergency medical services, law enforcement, and public schools--due to implementation of the proposed 34th America's Cup (AC34) and the James R. Herman Cruise Terminal and Northeast Wharf Plaza projects. The section evaluates whether the projects would require new or physically altered governmental facilities to maintain adequate service ratios, response times, or other performance objectives, the construction of which would result in substantial adverse physical impacts on the environment. Effects on parks and recreational facilities are addressed in Section 5.11, Recreation. Effects on water, sewer, and solid waste disposal services are addressed in Section 5.12, Utilities and Service Systems.

5.13.1 Setting

As presented below, numerous public agencies would be responsible for providing fire protection, emergency medical, and law enforcement services for the AC34 events. Given the large crowds of spectators and staff, the America's Cup Event Authority would also contract with private emergency medical and security services to augment the public agencies' capabilities during the AC34 events.

5.13.1.1 Fire Protection and Emergency Medical Services

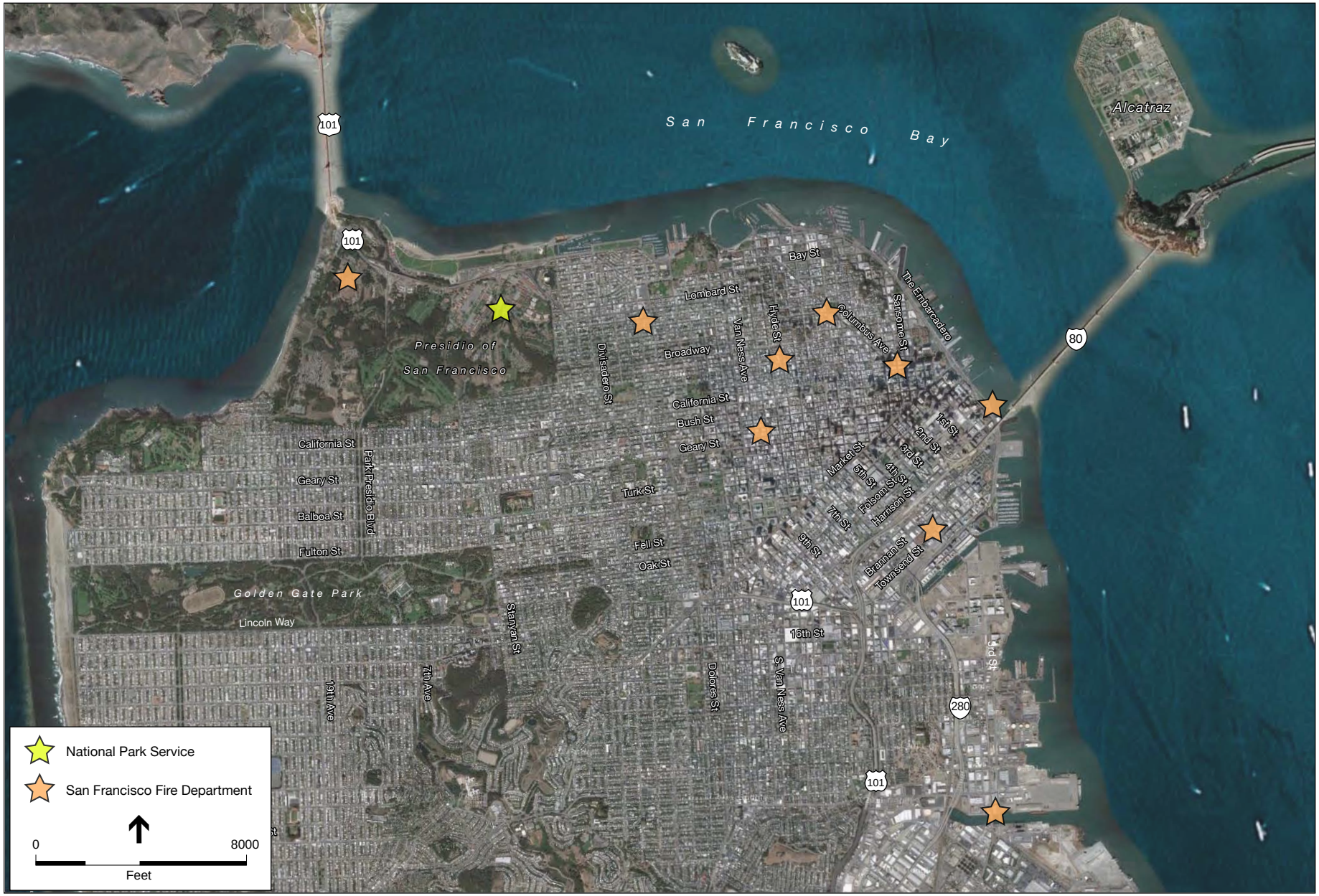
Fire protection and emergency medical services are provided by several agencies, although there are mutual aid agreements among the region's multiple fire protection agencies. **Figures 5.13-1** and **5.13-2** show the locations of fire protection and emergency services facilities in the project area, and **Table 5.13-1** lists the project sites and the closest fire station to each site.

National Park Service

The National Park Service ranger stations at Building 223 at the Presidio and Building 507 at Fort Baker provide first response basic life support within the Golden Gate National Recreation Area (GGNRA) and the other affected federal park lands in the project area.

United States Coast Guard

The United States Coast Guard (USCG) 11th District Headquarters is located on Coast Guard Island in Alameda. Sector San Francisco, whose area of responsibility covers Northern California, is stationed on Yerba Buena Island. Field units under the operational control of Sector San Francisco and located in the Bay Area include Station Golden Gate at the Marin County side of the Golden Gate Bridge, Station San Francisco on Yerba Buena Island, and two patrol boats at Yerba Buena Island. USCG personnel do not provide fire protection services except to save a life or in the early stages of a fire to avert a significant threat without undue risk. USCG personnel provide support to firefighting agencies under the supervision of a qualified fire officer. USCG personnel are trained to provide basic life support and CPR but do not have advanced lifesaving skills.



SOURCE: Google Maps; ESA

Case No. 2010.0493E: AC34 / Cruise Terminal and Northeast Wharf Plaza (210317)

Figure 5.13-1
Fire Protection and Emergency Medical Service Facilities in Project Vicinity - San Francisco

SOURCE: Google Maps; ESA

Case No. 2010.0493E: AC34 / Cruise Terminal and Northeast Wharf Plaza (210317)

Figure 5.13-2

Fire Protection and Emergency Medical Service Facilities in Project Vicinity - North Bay, and Alameda (Coast Guard)

TABLE 5.13-1
FIRE STATIONS IN THE PROJECT AREA

Project Site	Agency	Closest Station to Project Site	Distance
Pier 80	SFFD	Station 25	2 miles
Piers 30-32	SFFD	Station 35	0.3 mile
Brannan Street Wharf	SFFD	Station 35	0.6 mile
Seawall Lot 330	SFFD	Station 35	0.3 mile
Piers 26 and 28	SFFD	Station 35	0.1 mile
Rincon Point Open Water Basin	SFFD	Station 35	0.2 mile
Piers 19 and 19½	SFFD	Station 28	1 mile
Pier 23	SFFD	Station 28	1.1 mile
Piers 27-29	SFFD	Station 13	0.8 mile
	SFFD	Station 28	0.8 mile
Aquatic Park	SFFD	Station 28	0.8 mile
Fort Mason	SFFD	Station 16	1 mile
Marina Green	SFFD	Station 16	0.5 mile
Crissy Field	SFFD	Station 51	0.8 mile
Cavallo Point	SMFPD	Sausalito Station	2.5 miles
	MCFD	Marin City Station	4.9 miles
Justin Herman Plaza	SFFD	Station 13	0.3 miles
Union Square	SFFD	Station 1	0.5 miles
Civic Center	SFFD	Station 36	0.5 miles
Alcatraz	SFFD	Station 35	0.5 miles
Presidio and south side of Golden Gate Bridge	SFFD	Station 51	0.25 miles
Fisherman's Wharf	SFFD	Station 28	0.25 miles
Northeast Embarcadero (Pier 42 to Fisherman's Wharf)	SFFD	Stations 8, 13, 28, and 35	Varies according to location
Marin Headlands	SMFPD	Sausalito Station	Varies
Sausalito	SMFPD	Sausalito Station	Varies
Belvedere	TFPD	Stations 10 and 11	Varies
Tiburon	TFPD	Stations 10 and 11	Varies
Treasure Island	SFFD	Station 48	Stn on Island
Angel Island	CSPR	Angel Island	Stn on Island
San Francisco Bay	USCG	Yerba Buena Island	

NOTES:
SFFD = San Francisco Fire Department
SNFPD = Southern Marin Fire Protection District
MCFD = Marin County Fire Department
TFPD = Tiburon Fire Protection District
USCG = United States Coast Guard
CSPR = California State Park Rangers

SOURCE: DOEM, 2011

San Francisco Fire Department

The San Francisco Fire Department (SFFD) provides fire protection and emergency medical services for the City and County of San Francisco, including property under the jurisdiction of the Port of San Francisco (Port). The Port of San Francisco Fire Marshal is the SFFD's liaison to the Port and conducts construction and referral inspections, plan review, and pier surveys and issues permits along the Port's 7½ miles of waterfront jurisdiction. The Port Fire Marshal sits on the Joint Fire Operations Committee and is responsible for coordinating special events and activities of the Port with the SFFD and other agencies. The SFFD also provides fire protection and emergency medical services within the portions of the GGNRA that are located in San Francisco, the Presidio, and the San Francisco Maritime National Historic Park (SAFR). Emergency medical transportation to San Francisco hospitals is provided by a dynamically deployed fleet of both public and private ambulance services.

The following SFFD stations would provide the first response for fire suppression, rescue, and emergency medical service in the project area:

- Station 1 at 676 Howard Street and Third Street
- Station 2 at 1340 Powell Street and Broadway
- Station 3 at 1067 Post Street and Polk Street
- Station 8 at 36 Bluxome Street and Fourth Street
- Station 13 at 530 Sansome Street and Washington Street
- Station 16 at 2251 Greenwich Street and Fillmore Street
- Station 25 at 3305 Third Street and Cargo Way
- Station 28 at 1814 Stockton Street and Vallejo Street
- Station 35 at Pier 22½
- Station 36 at 109 Oak Street and Franklin Street
- Station 41 at 132 Leavenworth Street and Jackson Street
- Station 48 at Building 157 at Avenue D at 10th Street on Treasure Island
- Station 51 in the Presidio at 218 Lincoln Boulevard at Keys Avenue

Marin County Fire Department

The Marin County Fire Department (MCFD) provides fire protection and emergency medical services in the unincorporated areas of Marin County, including National Park Service lands, and provides mutual aid to the county's 11 cities. The MCFD Marin City Station at 850 Drake Avenue provides mutual aid to the Cities of Sausalito and Belvedere and the Town of Tiburon.

Southern Marin Fire Protection District

The Southern Marin Fire Protection District (SMFPD) is an independent special district that serves the communities of Tamalpais Valley, Almonte, Homestead Valley, Alto, Strawberry, approximately one third of the Town of Tiburon, and the City of Sausalito. The SMFPD also provides emergency medical and ambulance service to GGNRA and a regional rescue unit that serves all of the above areas, the Tiburon peninsula, and the Golden Gate Bridge area. The SMFPD has three stations, located at 308 Reed Boulevard and 309 Poplar Avenue in Mill Valley

and 333 Johnston Street in Sausalito. The Sausalito station has a rescue boat capable of providing open water rescue services.

Tiburon Fire Protection District

The Tiburon Fire Protection District (TFPD) provides fire protection and emergency medical services for Tiburon, Belvedere, and parts of San Francisco Bay to Angel Island State Park. The TFPD operates two stations, Station 10 at 4301 Paradise Drive and Station 11 at 1679 Tiburon Boulevard, both in the Town of Tiburon. It also has a marine unit consisting of one rescue boat stationed in Tiburon.

5.13.1.2 Law Enforcement Services

As further described below, law enforcement services for the AC34 2012 and AC34 2013 events would be provided by the United States Park Police; National Park Service; United States Coast Guard; Golden Gate Bridge, Highway and Transportation District; California Highway Patrol; California State Parks; San Francisco Police Department; San Francisco Sheriff's Department; Marin County Sheriff's Department; Belvedere Police Department; Sausalito Police Department; and Tiburon Police Department. Law enforcement services for the James R. Herman Cruise Terminal and Northeast Wharf Plaza would be provided by the San Francisco Police Department. **Figures 5.13-3** and **5.13-4** show the location of law enforcement services facilities in the project area, and **Table 5.13-2** lists the project sites and the closest law enforcement services facility to each site.

United States Park Police

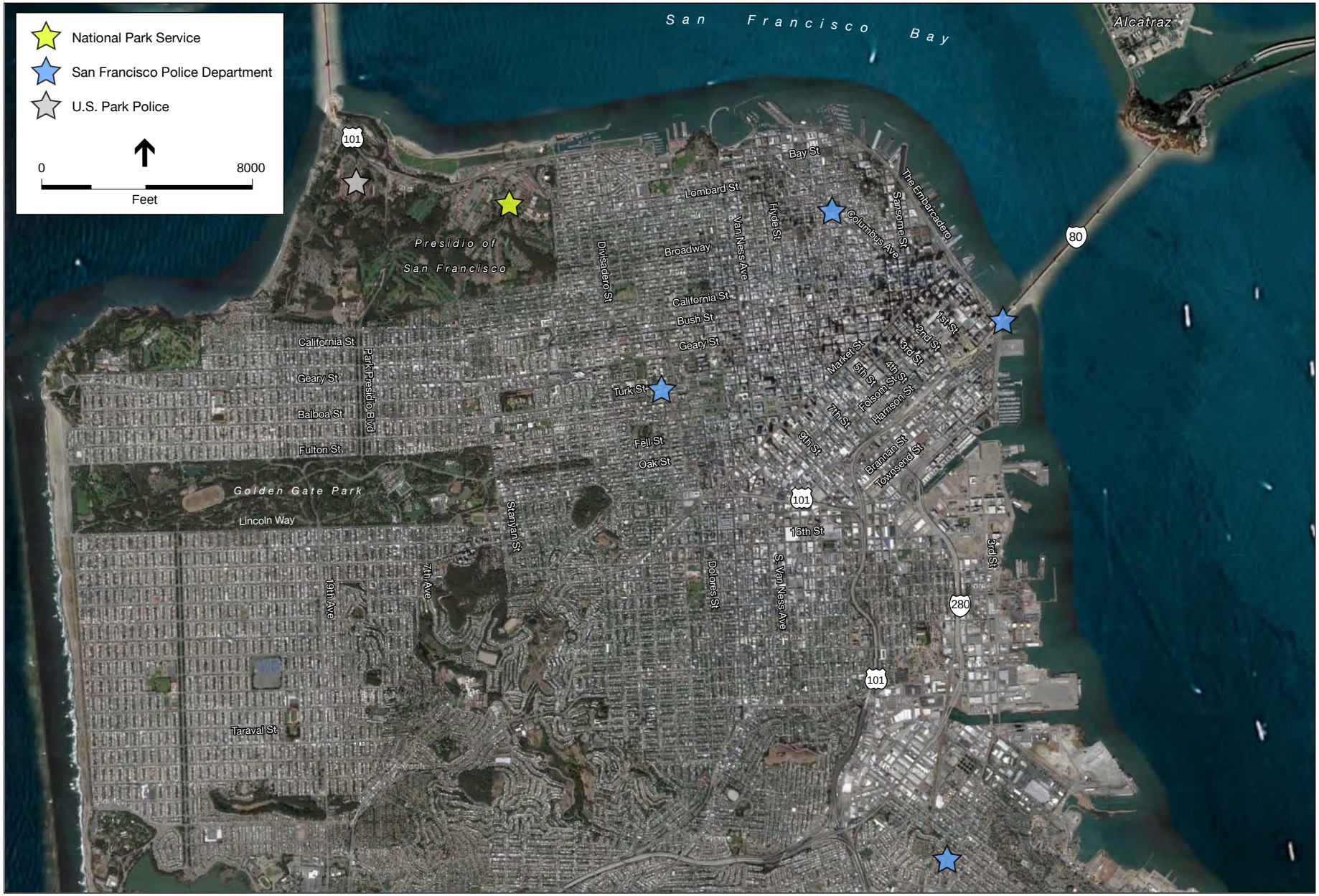
The United States Park Police San Francisco Field Office personnel are headquartered at Building 1217 in the Presidio with another office at Fort Mason. The United States Park Police provide law enforcement services within the Golden Gate National Recreation Area, Presidio, and SAFR.

National Park Service

In addition to the United States Park Police, National Park Service law enforcement rangers provide law enforcement services within the GGNRA lands and other national park facilities in the project area. Ranger stations are located at Building 223 at the Presidio and Building 507 at Fort Baker.

United States Coast Guard

The United States Coast Guard (USCG) is the lead federal agency for maritime security and law enforcement. USCG Sector San Francisco is responsible for overseeing port security and maritime law enforcement mission activities in the San Francisco Bay area. Aside from its own staff, Sector San Francisco has responsibility for seven USCG stations and four patrol boats with resources and personnel capable of enforcing federal laws and regulations associated with port security, living marine resources, drug laws, immigration laws, and marine environmental/pollution laws. For the AC34 and James R. Herman Cruise Terminal projects, the USCG law enforcement



SOURCE: Google Maps; ESA

Case No. 2010.0493E: AC34 / Cruise Terminal and Northeast Wharf Plaza (210317)

Figure 5.13-3

Law Enforcement Facilities in Project Vicinity – San Francisco

SOURCE: Google Maps; ESA

Case No. 2010.0493E: AC34 / Cruise Terminal and Northeast Wharf Plaza (210317)

Figure 5.13-4
Law Enforcement Facilities in Project Vicinity - North Bay, and Alameda (Coast Guard)

TABLE 5.13-2
LAW ENFORCEMENT SERVICES IN THE PROJECT AREA

Project Site	Agency	Closest Station to the Project Site
Pier 80	SFPD	Bayview District
Piers 30-32	SFPD	Southern District
Brannan Street Wharf Open Water Basin	USCG	Yerba Buena Island
Seawall Lot 330	SFPD	Southern District
Piers 26 and 28	SFPD	Southern District
Rincon Point Open Water Basin	USCG	Southern District
Piers 19 and 19½	SFPD	Central District
Pier 23	SFPD	Central District
Piers 27-29	SFPD	Central District
Aquatic Park	USPP	Fort Mason Station
	NPS	Presidio Station
	SFPD	Central District
Fort Mason	USPP	Fort Mason Station
	NPS	Presidio Station
	SFPD	Northern District
Marina Green	SFPD	Northern District
Crissy Field	USPP	Presidio Station
	NPS	Presidio Station
Cavallo Point	NPS	Fort Baker Station
Justin Herman Plaza	SFPD	Central District
Union Square	SFPD	Central District
Civic Center	SFPD	Northern District
Alcatraz	NPS	Alcatraz
Presidio and south side of Golden Gate Bridge	USPP	Presidio Station
	NPS	Presidio Station
Fisherman's Wharf	SFPD	Central District
NE Embarcadero (Pier 42 to Fisherman's Wharf)	SFPD	Southern and Central Districts
Marin Headlands	NPS	Fort Baker Station
Sausalito	SPD	Sausalito Station
Belvedere	BPD	Belvedere Station
Tiburon	TBP	Tiburon Station
Treasure Island	SFPD	Southern District
Angel Island	CSPR	Angel Island
San Francisco Bay	USCG	Yerba Buena Island

NOTES:
SFPD = San Francisco Police Department
USCG = United States Coast Guard
USPP = United States Park Police
NPS = National Park Service (law enforcement rangers)
CHP = California Highway Patrol
SPD = Sausalito Police Department
BPD = Belvedere Police Department
TPD = Tiburon Police Department
CSPR = California State Park Rangers

SOURCE: DOEM, 2011

responsibilities would include enforcement of safety/security zones, enforcement of safe boating laws, protection of high-value assets (e.g., ferries, cruise ships), and response to waterside security incidents.

Golden Gate Bridge, Highway and Transportation District

The Golden Gate Bridge, Highway and Transportation District, which operates the Golden Gate Bridge, the Golden Gate Ferry service, and the Golden Gate Transit bus service, provide law enforcement for the Golden Gate Bridge.

California Highway Patrol

The California Highway Patrol (CHP) provides law enforcement services on state highways including the San Francisco-Oakland Bay Bridge and the Golden Gate Bridge. CHP stations in the vicinity of the project area include Station 335 at 455 Eighth Street in San Francisco and Station 350 at 53 San Clemente Drive in Corte Madera.

California State Parks

The California State Parks provides law enforcement services within Angel Island State Park.

San Francisco Police Department

The San Francisco Police Department (SFPD) provides law enforcement services in the City and County of San Francisco. Patrol functions are performed by the police officers of the Field Operations Bureau from ten district stations. The Cruise Terminal and Northeast Wharf Plaza would be within the jurisdiction of the Central Police District. The AC34 2012 and AC34 2013 facilities, events, and spectator areas that are located within the City and County of San Francisco, including the "Live Sites," would be within the jurisdiction of the following police stations:

- Bayview Station at 201 Williams Avenue at Newhall Street
- Southern Station at 850 Bryant Street and Seventh Street
- Central Station at 756 Vallejo Street and Powell Street
- Northern Station at 1125 Fillmore Street and Turk Street
- Richmond Station at 461 Sixth Avenue and Geary Avenue

The SFPD Special Operations Bureau Homeland Security Unit and Tactical Company are responsible for coordinating and planning for special events. They would respond to incidents, keep the peace, and maintain public safety.

The Port of San Francisco employs one police officer based at Pier 26 who responds to complaints and actively patrols the Port property from Pier 90 to the Aquatic Park from 7:00 a.m. to 4:00 p.m., Monday through Friday. SFPD provides backup to the Port's officer and law enforcement services after 4:00 p.m. and on weekends. The SFPD also maintains a Marine Unit with four to six watercrafts available for law enforcement services on approximately one third of San Francisco Bay.

Two of the police boats are stationed at the Hyde Street Pier near Aquatic Park. The Marine Unit of SFPD is supported by the Neptune Coalition and USCG. Personnel of the Marine Unit can conduct inspections and enforcement on watercraft and piers and assist with rescue and assistance missions. The SFPD performs Explosive Ordinance Disposal (EOD) sweeps on land and waterside of piers and port property and has capabilities of an underwater recovery unit.

San Francisco Sheriff's Department

The San Francisco Sheriff's Department (SFSD) manages the San Francisco County Jail and protects City-owned critical infrastructure. In addition, the SFSD augments law enforcement at the request of the SFPD.

Marin County Sheriff's Department

The Marin County Sheriff's Department Southern Substation at 850 Drake Avenue in Marin City provides patrol service in the unincorporated areas of southern Marin County. The Marin County Sheriff's Department Marine Patrol Unit operates two patrol boats and two personal watercrafts.

Belvedere Police Department

The Belvedere Police Department is located at Belvedere City Hall, 1501 Tiburon Boulevard in Belvedere, and provides police services for the City of Belvedere.

Sausalito Police Department

The Sausalito Police Department has one station located at 29 Caledonia Street in Sausalito and provides police services for the City of Sausalito.

Tiburon Police Department

The Tiburon Police Department has one station located at 1155 Tiburon Boulevard in Tiburon and provides police services for the Town of Tiburon.

5.13.2 Regulatory Framework

5.13.2.1 Federal Regulations

Title 33 of the Code of Federal Regulations governs navigation and navigable waters in the U.S. and is implemented by the United States Coast Guard (USCG) and the United States Army Corps of Engineers. Section 100.35 of Title 33 addresses regattas and marine parades. Pursuant to this section, the USCG would be required to promulgate "Special Local Regulations" for the AC34 2012 and AC34 2013 events. The special local regulations would address life safety on San Francisco Bay immediately prior to, during, and immediately after the AC34 2012 and AC34 2013 regattas and races. The USCG would publish the Special Local Regulations in the local notices to mariners and the Federal Register.

5.13.2.2 State Regulations

California Master Mutual Aid Agreement

The California Master Mutual Aid Agreement is a framework agreement between the State of California and local governments for aid and assistance by the interchange of services and facilities, including but not limited to fire, police, medical and health, communication, and transportation services and facilities to cope with the problems of rescue, relief, evacuation, rehabilitation, and reconstruction.

California Fire Code

State fire regulations are set forth in Sections 13000, et seq. of the California Health and Safety Code, which includes regulations concerning building standards (as set forth in Title 24 of the California Code of Regulations, the California Building Code), fire protection and notification systems, fire protection devices (such as fire extinguishers and smoke alarms), high-rise building and child care facility standards, and fire suppression training. California Fire Code Section 403.2 addresses public safety for both indoor and outdoor gatherings, including emergency vehicle ingress and egress, fire protection, emergency medical services, public assembly areas and the directing of both attendees and vehicles (including the parking of vehicles), vendor and food concession distribution, and the need for the presence of law enforcement and fire and emergency medical services personnel at the event.

5.13.2.3 Local Regulations

San Francisco General Plan

The *San Francisco General Plan* provides general policies and objectives to guide land use decisions and development throughout the city, as described in Chapter 4, Plans and Policies. The Community Facilities Element of the General Plan contains the following objectives and policies relevant to public services:

> *Objective 1*: Distribute, locate and design police facilities in a manner that will enhance the effective, efficient and responsive performance of police functions.
>
> *Policy 1.1*: Locate police functions that are best conducted on a centralized basis in a police headquarters building.
>
> *Policy 1.2*: Provide the number of district stations that balance service effectiveness with community desires for neighborhood police facilities.
>
> *Policy 1.3*: Enhance closer police/community interaction through the decentralization of police services that need not be centralized.
>
> *Policy 1.4*: Distribute, locate, and design police support facilities so as to maximize their effectiveness, use, and accessibility for police personnel.

Policy 1.6: Design facilities to allow for flexibility, future expansion, full operation in the event of a seismic emergency, and security and safety for personnel, while still maintaining an inviting appearance that is in scale with neighborhood development.

Policy 1.7: Combine police facilities with other public uses whenever multi-use facilities support planning goals, fulfill neighborhood needs, and meet police service needs.

Policy 2.1: Provide expanded police/community relations and police services through outreach programs, primarily utilizing existing facilities.

Policy 2.2: Establish police district boundaries along natural neighborhood edges, and reinforce neighborhood identity by locating district stations near the centers of their service areas.

Policy 2.3: Design police facilities to maximize opportunities for promoting community/ police relations through dual use of facilities.

Objective 5: Development of a system of firehouses which will meet the operating requirements of the Fire Department in providing fire protection services and which will be in harmony with related public service facilities and with all other features and facilities of land development and transportation provided for other sections of the General Plan.

San Francisco Police Code

The San Francisco Police Code contains regulations for various types of activities such as automobile use, permitting and licensing, use of ports, and disorderly conduct.

San Francisco Fire Code

The San Francisco Fire Code was revised in 2007 to regulate and govern the safeguarding of life and property from fire and explosion hazards arising from the storage, handling, and use of hazardous substances, materials, and devices, and from conditions hazardous to life or property in the occupancy of buildings and premises; to provide for the issuance of permits, inspections, and other SFFD services; and to provide for the assessment and collection of fees for those permits, inspections, and services. The SFFD reviews building plans to ensure that fire and life safety is provided and maintained in the buildings that fall under its jurisdiction. SFFD plan review applies to all of the following occupancy types:

- All Assembly Occupancies (including restaurants and other gathering places for 50 or more occupants)
- All Educational Occupancies (including commercial day care facilities)
- All Hazardous Occupancies (including repair garages, body shops, fuel storage, and emergency generator installation)
- All Storage Occupancies where potential exists for high-piled storage as defined by Fire Code
- All Institutional Occupancies

- All High-Rise Buildings of all occupancies
- Residential Occupancies, such as hotels, motels, lodging houses, residential care facilities, apartment houses, small- and large-family day care homes, and R-1 artisan buildings (excluding minor residential repairs such as kitchen and bath remodeling and dry rot repair)
- Certified family-care homes, out-of-home placement facilities, halfway house, drug and/or alcohol rehabilitation facilities
- Tents, awnings, or other fabric enclosures used in connection with any occupancy
- All fire alarm and fire suppression systems

In coordination with the San Francisco Department of Building Inspection and the Port Building Department, the SFFD conducts plan checks to ensure that all structures, occupancies, and systems outlined above are designed in accordance with the San Francisco Building Code prior to the issuance of a building permit.

5.13.3 Impacts and Mitigation Measures

5.13.3.1 Significance Criteria

The City has not formally adopted significance standards for impacts related to public services, but generally consider that implementation of the project could have a potentially significant impact related to public services if the project were to:

- Result in substantial adverse physical impacts associated with the provision of or the need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any public services such as fire protection, law enforcement, schools, parks, or other services.

5.13.3.2 Approach to Analysis

Both the AC34 and the James R. Herman Cruise Terminal and Northeast Wharf Plaza projects could generate increased demands on emergency medical, fire protection, and law enforcement services. Potential environmental effects related to the construction of new or physically altered facilities to meet these service demands are therefore considered in the impact analysis below.

Because neither the AC34 events nor the James R. Herman Cruise Terminal and Northeast Wharf Plaza would include new residential uses (i.e., permanent dwelling units), they would not generate substantial increases in demand for public schools, libraries, or public health services. Therefore, these projects would have no impacts related to the construction of new or altered schools, libraries, or public health facilities and no further discussion of these topics is provided. Potential effects related to the construction of new or altered schools, libraries, or public health facilities to serve long-term development on Port property are evaluated below in Section 5.13.3.4, Programmatic Impacts.

As described in Section 5.1, Impact Overview, economic or social effects related to an increase in demand for public services would not be considered environmental impacts under CEQA or require mitigation unless related to a significant impact on the physical environment. In accordance with the significance criterion above, the proposed project could have a significant impact if (1) it would require the construction of new or physically altered governmental facilities in order to maintain acceptable levels of public services; and (2) the construction or alteration of such facilities would result in one or more substantial adverse impacts on the environment.

The impact analysis below first considers whether the projects would require the construction of new or altered governmental facilities, including temporary facilities, in order to maintain acceptable performance standards for public services. If new or altered public service facilities are determined to be required to serve the projects, then the analysis evaluates whether construction of such facilities would have a substantial adverse physical impact on the environment. For example, if the SFPD determined that a new police station would be required to be constructed to maintain adequate service levels for law enforcement during the AC34 events, the impact analysis would evaluate whether construction or operation of the new police station would have significant impacts on the physical environment such as transportation and circulation or noise.

Increased demand for law enforcement, fire protection, and emergency medical services could have economic impacts that are unrelated to the construction of new or altered facilities. For example, the National Park Service may incur costs related to providing additional park rangers during the AC34 races and events. However, as discussed above, economic and social effects absent a physical change to the environment are not considered environmental impacts under CEQA. Thus, costs incurred by the agencies that would provide law enforcement, fire protection, and emergency medical services during AC34 would not be considered an environmental impact in accordance with CEQA, and the EIR does not include mitigation measures to compensate public service agencies for such costs.

Although economic costs incurred for law enforcement, fire protection, and emergency medical services for AC34 are not required to be mitigated in accordance with CEQA, these costs are addressed in the Public Safety Plan.

For purposes of the impact analysis, it is assumed that all temporary and permanent improvements would be designed and constructed in compliance with all applicable building and fire codes, which include requirements for fire alarms, smoke detectors, sprinkler systems, fire extinguishers, and the number and location of exits.

5.13.3.3 AC34 Event and Cruise Terminal Impacts

America's Cup

Impact PS-1: Construction and operation of the America's Cup facilities and events would not result in substantial adverse physical impacts associated with the provision of or the need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for emergency medical services. (Less than Significant)

AC34 2012 and AC34 2013 Facilities Construction

Construction of the proposed facilities and improvements for the AC34 2012 and AC34 2013 events would occur at the various project sites (located primarily along the San Francisco waterfront) for a period of a few weeks to a few months in 2012 and 2013. As described in Chapter 3, the number of construction personnel present at the AC34 venue sites at any time during the construction period would range from 25 to 200 workers in total for all project sites. The presence of up to 200 construction workers at the multiple sites would result in a marginal and temporary increase in demand for emergency medical services at these locations. This marginal and temporary increase in demand for emergency medical services would be met by existing paramedic and ambulance services in the affected areas, and construction of new or physically altered public services facilities would not be required. Therefore, maintaining acceptable emergency medical services during construction of the facilities and improvements for the 2012 and 2013 AC34 events would have *no impact*, and no mitigation would be required.

AC34 2012 and AC34 2013 Events

Emergency Medical Services for Landside Visitors. The anticipated visitors associated with AC34, including spectators and staff (see Chapter 3, Table 3-1), would result in increased demand for emergency medical services in the affected areas, including programmed event facilities and spectator areas, secondary viewing areas, and San Francisco Bay. Based on the visitation estimates for spectators at the AC34 events, the increase in demand for emergency medical services on peak days at the major spectator areas would be substantial.

Although AC34 would generate a substantial increase in demand for emergency medical services, the increase would be limited in duration because AC34 would be a temporary event, and it would be similar to the increased demand from other major events. For example, the City of San Francisco regularly annually hosts Fleet Week, which draws thousands of spectators to the waterfront, as well as visitors to local hotels. During the 2012 and 2013 AC34 events, there would be up to 17 and 55 race days, respectively (see Chapter 3). Demand for emergency medical services would be highest on the five average peak race days, and higher than normal on non-peak race days. This demand would primarily be met through existing emergency medical facilities such that the construction of new or physically altered permanent facilities would not be required.

As described in Section 5.13.1, Setting, above, emergency medical services are provided by a number of public agencies, including the SFFD, MCFD, SMFPD, and TFPD, with additional

support from private ambulance companies. Figures 5.13-1 and 5.13-2 depict the locations of the fire stations in the project area and Table 5.13-1 indicates the distance of the nearest station(s) to each of the event facilities and viewing areas. In addition to the indicated stations, other stations and fire protection agencies would provide assistance if needed through mutual aid agreements among the region's many fire protection agencies. As such, the existing emergency medical services facilities in the affected areas would be adequate to meet the temporary increase in demand during the AC34 events, and no new or physically altered facilities would be constructed. Therefore, at these locations, AC34 would have *no impact* related to the construction of new or physically altered permanent emergency medical facilities.

Although no new or physically modified permanent emergency medical facilities would be constructed for AC34, temporary facilities would be required due to the large numbers of visitors anticipated at Marina Green, Crissy Field, and Piers 27-29 (see Chapter 3). These facilities would be required in accordance with the SFPD General Order Crowd Control Manual and the Events Management Manual[1], as well as the San Francisco Department of Emergency Management policy for Mass Gathering & Special Events.[2] These policies and manuals establish protocols to ensure that adequate emergency medical service is maintained at each of these sites.

The temporary emergency medical facilities would consist of tents or trailers and would be located on paved or lawn areas. The facilities would be relatively small (approximately 750 square feet or less in floor area and approximately 10 feet high). Ambulances would also be staged close to the event locations. Because the temporary emergency medical facilities would be located in existing paved or lawn areas with no sensitive habitat or other sensitive biological resources, would be relatively small and low in height, would not require ground disturbance, would not alter any existing structures, and would be removed following the AC34 events, these facilities at Marina Green, Crissy Field, and Piers 27-29 would not result in substantial adverse effects on the environment. Therefore, the provision of temporary emergency medical services at Marina Green, Crissy Field, and Piers 27-29 during the AC34 events would have a *less-than-significant* impact to emergency medical services for landside visitors, and no mitigation would be required.

Emergency Medical Services for Visitors on Boats. The AC34 2012 and AC34 2013 events would attract large numbers of spectators aboard private and commercial vessels on San Francisco Bay, with an estimated average weekend peak during the 2013 races of 18,000 spectators on boats (see Chapter 3). In addition, AC34 would involve numerous AC72 racing yachts and team support vessels, and a barge helipad would be stationed in the Bay to support media operations. The temporary increase in vessel traffic and uses on the Bay would result in increased demand for emergency medical services for vessels on the Bay. Emergency medical services for vessels in Central San Francisco Bay are provided by the USCG on Yerba Buena Island, SFFD operating from Station 35 at Pier 22½ (see Figure 5.13-1), and the SFPD Marine Unit. The anticipated increase in demand for emergency medical service for boaters on the Bay during the AC34 2012

[1] San Francisco Police Department, San Francisco Police General Orders, September 1999, available at http://sf-police.org/index.aspx?page=1720#organization, accessed May 12, 2011.
[2] San Francisco Emergency Medical Services Agency, "Emergency Medical Services for Special Events," http://www.sfdem.org/Modules/ShowDocument.aspx?documentid=120, September 1, 2009.

and AC34 2013 events would be similar to levels needed during peak days under other major events (i.e., Fleet Week). The increase in demand would be met using existing facilities, and no new or physically altered facilities would be constructed. Therefore, maintaining acceptable emergency medical service for spectator boats during the AC34 2012 and AC34 2013 events would have *no impact*.

Mitigation: Not required

Impact PS-2: Construction and operation of the America's Cup facilities and events would not result in substantial adverse physical impacts associated with the provision of or the need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for fire protection services. (No Impact)

AC34 2012 and AC34 2013 Facilities Construction

Construction of the proposed facilities and improvements for the AC34 2012 and AC34 2013 events would occur at the various project sites (located primarily along the San Francisco waterfront) for a period of a few weeks to a few months in 2012 and 2013. As described in Chapter 3, the number of construction personnel present at the AC34 venue sites at any time during the construction period would range from 25 to 200 workers in total for all project sites. The presence of up to 200 construction workers at the multiple sites would result in a marginal and temporary increase in demand for fire protection service at these locations. Construction of new or physically altered facilities would not be required to maintain adequate fire protection service in response to this small and temporary increase in demand. Therefore, maintaining acceptable fire protection service during construction of the facilities and improvements for the AC34 2012 and AC34 2013 events would have *no impact*, and no mitigation would be required.

AC34 2012 and AC34 2013 Events

Fire Protection Services for Landside Visitors. The anticipated visitors associated with AC34, including spectators and staff (see Chapter 3, Table 3-1), would result in temporary increases in demand for fire protection. Areas that could experience increased demand for these services include programmed event facilities and spectator areas, secondary viewing areas, and San Francisco Bay.

The temporary increase in demand for fire protection would not require construction of new or physically altered fire stations. Figures 5.13-1 and 5.13-2 depict the locations of the fire stations in the project areas, and Table 5.13-1 indicates the distance of the nearest station(s) to each of the event facilities and viewing areas. In addition to the indicated stations, other stations and fire protection agencies would provide assistance if needed through mutual aid agreements among the region's many fire protection agencies. As such, the existing fire stations in the affected areas would be adequate to meet the temporary increase in demand for service during the AC34 events, and no new or physically altered facilities would be constructed. Therefore, the landside

visitors associated with AC34 would have *no impact* related to the construction of new or physically altered fire protection facilities.

Fire Protection Services for Visitors on Boats. The AC34 2012 and AC34 2013 events would attract large numbers of spectators aboard private and commercial vessels on San Francisco Bay, with an estimated average weekend peak of 18,000 spectators on boats during the 2013 races (see Chapter 3). In addition, AC34 would involve numerous AC72 racing yachts and team support vessels, and a barge helipad would be stationed in the Bay to support media operations. The temporary increase in vessel traffic and uses on the Bay would result in increased demand for emergency response services for vessel fires and boating accidents. Emergency response services for vessels in Central San Francisco Bay are provided by the USCG on Yerba Buena Island and the SFFD operating from Station 35 at Pier 22½, (see Figure 5.13-1). The anticipated increase in demand for fire protection services for boaters on the Bay during the AC34 2012 and AC34 2013 events would be similar to levels needed during peak days under existing conditions. The increase in demand would be met using existing facilities, and no new or physically altered facilities would be constructed. Therefore, maintaining acceptable fire protection services for spectator boats during the AC34 2012 and AC34 2013 events would have *no impact*.

Mitigation: Not required

Impact PS-3: Construction and operation of the America's Cup facilities and events would not result in substantial adverse physical impacts associated with the provision of or the need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for law enforcement services. (No Impact)

AC34 2012 and AC34 2013 Facilities Construction

Construction of the proposed facilities and improvements for the AC34 2012 and AC34 2013 events would occur at the various project sites (located primarily along the San Francisco waterfront) for a period of a few weeks to a few months in 2012 and 2013. As described in Chapter 3, the number of construction personnel present at the AC34 venue sites at any time during the construction period would range from 25 to 200 workers in total for all project sites. The presence of up to 200 construction workers at the multiple sites would result in a marginal, temporary increase in demand for law enforcement services at these locations. Construction of new or physically altered facilities would not be required to maintain adequate law enforcement services in response to this negligible, temporary increase in demand. Therefore, maintaining acceptable law enforcement services during construction of the facilities and improvements for the AC34 2012 and AC34 2013 events would have *no impact*, and no mitigation would be required.

AC34 2012 and AC34 2013 Events

Law Enforcement Services for Landside Visitors. The anticipated visitors associated with AC34, including spectators and staff (see Chapter 3, Table 3-1), would result in temporary increases in

demand for law enforcement services in the affected areas, including programmed event facilities and spectator areas, secondary viewing areas, and San Francisco Bay.

The temporary increase in demand for law enforcement would not require construction of new or physically altered police stations or other facilities. Figures 5.13-3 and 5.13-4 depict the locations of the police stations in the project area, and Table 5.13-2 indicates the distances of the nearest station(s) to each of the event facilities and viewing areas. San Francisco regularly hosts temporary events and accommodates their associated increase in demand for law enforcement services. Because of the temporary nature of the AC34 events, and because the existing police stations in the affected areas would be adequate to meet the temporary increase in demand for law enforcement during the AC34 events, no new or physically altered facilities would be constructed. Therefore, AC34 would have *no impact* related to the construction of new or physically altered law enforcement facilities.

Law Enforcement Services for Visitors on Boats. The AC34 2012 and 2013 events could attract up to 18,000 visitors aboard vessels on San Francisco Bay, including racing yachts, sponsor and support vessels, and spectator boats on San Francisco Bay (see Chapter 3). In addition, a barge helipad would be stationed in the Bay to support media operations. The temporary increase in vessel traffic and uses on the Bay could result in increased demand for law enforcement services on the Bay.

The United States Coast Guard is the primary law enforcement agency for San Francisco Bay. Additionally, the SFPD Marine Unit has law enforcement jurisdiction over one third of San Francisco Bay within the vicinity of the AC34 project sites.

The anticipated increase in demand for law enforcement service on the Bay during the AC34 2012 and AC34 2013 events would be met using existing facilities, and no new or physically altered facilities would be constructed. Therefore, maintaining acceptable law enforcement service on the Bay during the AC34 2012 and AC34 2013 events would have *no impact*.

Mitigation: Not required

James R. Herman Cruise Terminal and Northeast Wharf Plaza

Impact PS-4: Construction and operation of James R. Herman Cruise Terminal and Northeast Wharf Plaza would not result in substantial adverse physical impacts associated with the provision of or the need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for fire protection and emergency medical services. (No Impact)

Cruise Terminal Construction

Construction of Phase 1 of the cruise terminal would be concurrent with the AC34 2013 facilities construction at Piers 27-29, and construction of Phase 2 would follow upon completion of all

AC34 events. The presence of construction crews at Piers 27-29 during these periods would result in marginal and temporary increases in demand for fire protection and emergency medical services at this location.

The SFFD Station 13 at 530 Sansome Street and Washington Street and Station 28 at 1814 Stockton Street and Vallejo Street are both approximately 0.8 mile from Piers 27-29 and would be the first to respond to calls for fire protection and emergency medical services at this location (see Figure 5.13-1 and Table 5.13-1). The fireboat stationed at Pier 22 would also be available to respond to fires at Pier 27 (see Figure 5.13-1 and Table 5.13-1). The minor increase in demand for these services during the Phase 1 and Phase 2 construction periods would be met using existing SFFD facilities, as these facilities regularly meet increased demand during construction for a variety of projects. No new or physically altered facilities would be constructed to serve the construction of the cruise terminal. Therefore, maintaining acceptable fire protection and emergency medical services during construction of the cruise terminal would have *no impact*, and no mitigation would be required.

Cruise Terminal Long-Term Operation

At present, Pier 35 is the Port's primary cruise terminal, with Pier 27 functioning as a secondary terminal when needed. Under the proposed project, Pier 27 would become the primary cruise terminal, with Pier 35 functioning as the secondary terminal when two cruise ships are in port. The number of cruise ship calls would not change from the existing 40 to 80 calls per year. As such, the proposed new cruise terminal would not increase the demand for fire protection and emergency medical services related to cruise ship calls at the Port's two cruise terminals compared to existing conditions.

Between cruise ship calls, the new cruise terminal building would be used for events, conferences, and other public or private gatherings, with an estimated 100 such shared use events per year. In addition, the cruise terminal would include new commercial uses. These uses could result in a marginal increase in demand for fire protection and emergency medical services at Pier 27 and in the vicinity. However, the up-to-date design of the new cruise terminal in compliance with the most recent Fire Code requirements would provide a higher level of fire protection than existing conditions at Pier 35, incrementally reducing the demand for fire protection services compared to existing conditions.

The SFFD Station 13 at 530 Sansome Street and Washington Street and Station 28 at 1814 Stockton Street and Vallejo Street are both approximately 0.8 mile from Piers 27-29 and would be the first to respond to calls for fire protection and emergency medical services at this location (see Figure 5.13-1 and Table 5.13-1). The fireboat stationed at Pier 22½ would also be available to respond to fires at Pier 27. In addition to the indicated stations, other stations and fire protection agencies would provide assistance if needed through mutual aid agreements among the region's many fire protection agencies. The marginal increase in demand for these services during operation of the proposed cruise terminal would be met using existing SFFD facilities, and no new or physically altered facilities would be constructed to serve operation of the cruise terminal. Therefore,

maintaining acceptable fire protection and emergency medical services during operation of the cruise terminal would have *no impact*, and no mitigation would be required.

Northeast Wharf Plaza

Construction of the proposed improvements for the Northeast Wharf Plaza would result in a temporary increase in demand for fire protection and emergency medical services at Piers 27-29 associated with construction workers onsite. Once completed, the Northeast Wharf Plaza would provide approximately 2½ acres of new open space that would support passive recreation and views of San Francisco Bay. Given the abundance of existing public open space in the project area, the Northeast Wharf Plaza would be expected to increase public use in the immediate vicinity of the project, redistributing existing levels of public uses currently occurring elsewhere along the waterfront, but it would not substantially increase the overall number of visitors to the San Francisco waterfront. Thus, the project would not result in a substantial increase in demand for fire protection or emergency medical services in the area compared to existing conditions.

The SFFD Station 13 at 530 Sansome Street and Washington Street and Station 28 at 1814 Stockton Street and Vallejo Street are both approximately 0.8 mile from Piers 27-29 and would be the first to respond to calls for fire protection and emergency medical services at this location (see Figure 5.13-1 and Table 5.13-1). The fireboat stationed at Pier 22½ would also be available to respond to fires at Piers 27-29. In addition to the indicated stations, other stations and fire protection agencies would provide assistance if needed through mutual aid agreements among the region's many fire protection agencies. The marginal increase in demand for these services, if any, during construction and operation of the Northeast Wharf Plaza would be similar to the increased demand from other construction projects in the City, which is met using existing SFFD facilities, and no new or physically altered facilities would be constructed as a result of this project. Therefore, maintaining acceptable fire protection and emergency medical services during construction and operation of the Northeast Wharf Plaza would have *no impact*.

Mitigation: Not required

Impact PS-5: Construction and operation of the James R. Herman Cruise Terminal and Northeast Wharf Plaza would not result in substantial adverse physical impacts associated with the provision of or the need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for law enforcement services. (No Impact)

Cruise Terminal Construction

Construction of Phase 1 of the cruise terminal would be concurrent with the AC34 2013 facilities construction at Piers 27-29, and construction of Phase 2 would follow upon completion of all AC34 events. The presence of construction crews at Piers 27-29 during these periods would result in marginal and temporary increases in demand for law enforcement services at this location.

SFPD Central Station at Vallejo Street near Stockton Street provides law enforcement services for Pier 27 and the surrounding area. The minor increase in demand for law enforcement services during construction of the cruise terminal would be similar to that for other construction projects in the City, and it would be met using existing SFPD facilities, and no new or physically altered facilities would be constructed to serve cruise terminal construction. Therefore, maintaining acceptable law enforcement services during construction of the cruise terminal would have *no impact*, and no mitigation would be required.

Cruise Terminal Long-Term Operation

At present, Pier 35 is the Port's primary cruise terminal, with Pier 27 functioning as a secondary terminal when needed. Under the proposed project, Pier 27 would become the primary cruise terminal, with Pier 35 functioning as the secondary terminal when two cruise ships are in port. The number of cruise ship calls per year would not change from the existing condition of 40 to 80 calls per year. As such, the proposed new cruise terminal would not increase the demand for law enforcement services related to cruise ship calls at the Port's two cruise terminals compared to existing conditions.

Between cruise ship calls, the new cruise terminal building would be used for events, conferences, and other public or private gatherings, with an estimated 100 such shared use events per year. In addition, the cruise terminal would include new commercial uses. These uses could result in a marginal increase in demand for law enforcement services at Pier 27 and in the vicinity.

SFPD Central Station at Vallejo Street near Stockton Street provides law enforcement services for Pier 27 and the surrounding area. The marginal increase in demand for law enforcement services during operation of the cruise terminal, northeast plaza, and other uses on the piers would be met using existing SFPD facilities, and no new or physically altered facilities would be constructed to serve operation of the cruise terminal. Therefore, maintaining acceptable law enforcement services during operation of the cruise terminal would have *no impact*, and no mitigation would be required.

Northeast Wharf Plaza

Construction of the proposed improvements for the Northeast Wharf Plaza would result in a temporary increase in demand for law enforcement services at Piers 27-29 associated with the construction workers onsite. Once completed, the Northeast Wharf Plaza would provide approximately 2½ acres of new open space that would support passive recreation and views of San Francisco Bay. Given the abundance of existing public open space in the project area, the Northeast Wharf Plaza would be expected to increase public use in the immediate vicinity of the project, redistributing existing levels of public uses currently occurring along the waterfront, but it would not substantially increase the overall number of visitors to the San Francisco waterfront. Thus, the project would not result in a substantial increase in demand for law enforcement services in the area compared to existing conditions.

SFPD Central Station at Vallejo Street near Stockton Street provides law enforcement services for Piers 27-29 and the surrounding area. The marginal increase in demand for law enforcement services during construction and operation of the Northeast Wharf Plaza would be met using

existing SFPD facilities, and no new or physically altered facilities would be constructed to serve this project. Therefore, maintaining acceptable law enforcement services during construction and operation of the Northeast Wharf Plaza would have *no impact*.

Mitigation: Not required

5.13.3.4 Future Long-Term Development Impacts

Impact LT-PS: Future long-term development under the Host Agreement would not result in impacts on public services. (Less than Significant)

As described in Chapter 3, the Host Agreement specifies that in compensation for infrastructure investment by the Event Authority, the City shall enter into Disposition and Development Agreements with the Event Authority, under which the City would lease to the Event Authority Piers 30-32 for a term of 66 years, and Seawall Lot 330 for a term of 75 years, and when conditions are satisfied, transfer fee title of Seawall Lot 330 to the Event Authority. In addition, the Host Agreement includes provisions that could lead to negotiations for long-term use of Piers 19, 23, 26, 28, and 29 and Open Water Basins at Rincon Point and Brannan Street Wharf after conclusion of the AC34 race events.

The Host Agreement directs that any such future development plans and uses allowed under the Transfer Agreement would be required to undergo separate environmental review to comply with CEQA, when site-specific development program details are proposed. Consequently, this EIR addresses the impacts associated with these potential future development rights at a conceptual level.

As described in Chapter 3, potential development of the sites could include a variety of retail, office, entertainment and assembly, and maritime uses for the identified pier locations and a residential building at Seawall Lot 330, totaling a maximum of approximately 1.4 million square feet of development, although about 500,000 square feet of this development would be in place of existing uses. The development of 1.4 million square feet of Port property including 250 new residential units would result in increased demand for public services.

Law Enforcement Services

The police stations serving each of the potential long-term development sites are identified above in Table 5.13-1. As stated in Section 5.13.1, Setting, above, these areas are well served by existing police stations. Specifically, SFPD law enforcement for the potential long-term development at Piers 30-32, Seawall Lot 330, Pier 26, and Pier 28 would be provided by the Southern District Station at 850 Bryant Street at the intersection of Bryant and Sixth Streets. Law enforcement for long-term development at Pier 19, Pier 23, and Pier 29 would be provided by Central Station located at 766 Vallejo Street at the intersection of Vallejo and Powell Streets. No new stations are proposed in the project vicinity. The Mayor's *Five Year Financial FY 2011-2102 through FY 2015-*

2016 proposes maintaining the SFPD police service staff at 2,681 personnel through fiscal year 2015-2016.[3]

Response Times

The Police Department maintains "Performance Measures" that establish target emergency response times for 2008-2009. The time that the SFPD takes to respond to emergency calls is measured as follows:[4]

- *Priority A* – calls that involve a "life-threatening emergency." The SFPD target response time is 4.4 minutes for Priority A calls.
- *Priority B* – calls that involve "potential harm to life and/or property." The SFPD target response time is 8.3 minutes.
- *Priority C* – calls that involve a "crime committed with no threat to life or property. Suspect left the crime scene." The SFPD target response time is 10.3 minutes for Priority C calls.

The 2007 citywide average response times were reported in the SFPD District Station Boundary Analysis. As stated above, of the 1.4 million square feet of development, about 500,000 square feet would be in place of existing uses. The other about 900,000 square feet would be located on Piers 30–32 and Seawall Lot 330, which are both in the service area of Southern Station. In 2007, the overall average response time for the Southern Station for Priority A calls was 4.8 minutes. The average response time for Priority B calls was 15.7 minutes, and the average response time for Priority C calls was 15.5 minutes. Out of the entire SFPD, only three districts (Park, Richmond, and the Tenderloin) met the Priority B target and only five districts (Bayview, Park, Richmond, Taraval, and the Tenderloin) met the Priority C standard in 2007.[5]

Need for Additional SFPD Staff or Facilities

Evaluating the need for increased SFPD staff when new development is planned involves considering the size, location, and character of the new development. In most instances, development within San Francisco occurs within a fully developed urban area, and the incremental increase in service area or service requirements associated with one project is minimal.

The long-term development rights would introduce additional uses (maritime, entertainment, office, residential, etc.) and replace existing uses to a largely built-out waterfront. The anticipated population increase from the long-term development rights would be approximately 528 new residents and up to 3,071 new employees at buildout, which is assumed to occur by 2035 (see Section 5.4, Population and Housing). This population increase would be minimal in comparison

[3] City and County of San Francisco. *Five Year Financial FY 2011-2102 through FY 2015-2016*, available at http://sfmayor.org/Modules/ShowDocument.aspx?documentid=108, accessed May 13, 2011.
[4] Police Executive Research Forum, *Organization Assessment of the San Francisco Police Department: A Technical Report,* December 2008, http://www.sfgov.org/site/uploadedfiles/police/ information/San_Francisco_ Organizational_Review.pdf, accessed October 19, 2009.
[5] Ibid.

to the population currently served by the Southern and Central Stations. Additionally, new residents and employees are not expected to decrease emergency response times, since the development would occur within existing developed areas and thus would not extend service demand beyond the current limits of the service area. Although the City has not adopted staffing ratio standards, the existing level of service at the SFPD can be determined by comparing citywide police force staffing to total city population (including both residents and workers). Using a total San Francisco daytime population of 1,351,410 (including workers who commute into the city) and the SFPD's 2011 staffing level of 2,681 officers, a citywide ratio of 1 officer per 504 people was calculated.

Impacts on police protection services are considered significant if an increase in population or development levels would result in inadequate staffing levels (as measured by the ability of the SFPD to respond to call loads) that would require the construction or expansion of new or altered facilities that might have an adverse physical effect on the environment. The ratio of 1 officer per 504 people, if applied to the total projected resident and employee population of the long-term development rights at full buildout, would result in a potential need for a total of about 7 police officers to provide a comparable level of service. Although additional stations or expanded facilities may be constructed in the future to meet projected growth in the city, the potential long-term development associated with the project would not, in and of itself, require new or expanded facilities. Therefore, there would be a *less than significant* impact related to the construction of new or physically altered police facilities, the construction of which would have a significant impact on the environment.

Fire Protection and Emergency Medical Services

The fire stations for each of these potential long-term development sites are identified above in Table 5.13-2. As stated in Section 5.13.1, Setting, above, these areas are well served by existing fire stations. Specifically, SFFD fire and emergency medical services for the potential long-term development at Piers 30-32, Seawall Lot 330, Pier 26, and Pier 28 would have provided by Station 35 at Pier 22½ at the intersection of Harrison Street and The Embarcadero. Fire protection and emergency medical services for long-term development at Pier 19, Pier 23, and Pier 29 would be provided by Station 28 located at 1814 Stockton Street at the intersection of Vallejo and Stockton Streets. No new stations are proposed in the project vicinity.

As discussed above, implementation of the long-term development rights would result in an increase in the population of the project area. The proposed development would be expected to increase the number of calls for services from the project area. The increase in calls would not likely be substantial in light of the existing demand and capacity for fire suppression and emergency medical services in the city. Moreover, new construction would be required to comply with all regulations of the 2001 California Fire Code, which establishes requirements pertaining to fire protection systems, including the provision of state-mandated smoke alarms, fire extinguishers, appropriate building access, and emergency response notification systems. For the purposes of this analysis, it is assumed that all development under the long-term development rights would be designed and constructed consistent with the most up-to-date Fire Code

applicable at the time and would at a minimum meet the requirements of the 2001 Fire Code. Implementation of the long-term development rights would not adversely affect service standards or require an increase in SFFD staff. Thus, implementation of the long-term development rights would not trigger the need for new fire facilities and the impact would be *less than significant*.

Schools

The San Francisco Unified School District (SFUSD) provides school services to the project area. The up to 250 residential units that could be built on Seawall Lot 330 as part of the long-term development scenario would generate additional students into the SFUSD.

Webster Elementary School (on Potrero Hill) is located within the attendance boundary that encompasses the South of Market area, including Seawall Lot 330. In addition, Carmichael K-8 School (at 55 Sherman Street), which serves the citywide population, is also located in the area. High schools and middle schools are located within 1 mile of the lot in the Chinatown and North Beach neighborhoods.[6]

In general, the SFUSD is under capacity; enrollment declined over the decade between 1998 and 2008. Elementary and middle-school enrollment is projected to increase by 2013. However, high school enrollment will continue to decline.[7] The estimated number of future students that would be anticipated as a result of development of Sewall Lot 330 with residential units was derived by multiplying the number of students per dwelling unit (the Student Yield Factor) by the number of projected dwelling units with the project (up to 250 units). The California State Allocation Board Office of Public School Construction reports that the Statewide student yield factor per dwelling unit is 0.5 students for grades K through 6th and 0.2 students for grades 7th through 12th, resulting in a unified school district average of 0.7 students per household. Using that yield factor, construction of up to 250 new units would result in an increase of approximately 175 new students.[8]

All development projects, including the infill development of Seawall Lot 330 contemplated under the long-term development scenario, are subject to Senate Bill (SB) 50 School Impact Fees (established by the Leroy F. Greene School Facilities Act of 1998). Section 65996 of the *State Government Code* explains that payment of school impact fees established by SB 50 is deemed to constitute full and complete mitigation for school impacts from development that may be required from a developer by any local or State agency. As such, the long-term development scenario would have a *less-than-significant* impact on the SFUSD and would not require the construction of new or expanded school facilities.

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6 SFUSD, 2011-2012 Schools Map, http://www.sfusd.edu/en/assets/sfusd-staff/enroll/files/all-in-one-school-map-2011-2012.pdf, accessed May 17, 2011.

7 SFUSD, 2010 – 2019 Capital Plan, http://www.sfusd.edu/en/assets/sfusd-staff/about-SFUSD/files/capital-plan-final-2010-2019.pdf, accessed May 17, 2011.

8 State Allocation Board, Office of Public School Construction, Enrollment Certification/Projection, http://www.documents.dgs.ca.gov/opsc/Forms/SAB_50-01.pdf, accessed May 17, 2011.

Mitigation: Not required

5.13.3.5 Cumulative Impacts

Impact C-PS: The project, in combination with other past, present, and reasonably foreseeable future projects, would not result in significant adverse cumulative impacts on public services. (No Impact)

AC34 2012 and AC34 2013 Facilities and Operations

The geographic scope of the potential cumulative impacts of AC34 related to public services includes the areas served by the fire and police stations and other facilities of the federal, state, and local government agencies that provide fire protection, emergency medical, and law enforcement services in the areas affected by AC34 (see Figures 5.13-1, 5.13-2. 5.13-3, and 5.13-4 and Tables 5.13-1 and 5.13-2).

As stated above, AC34 would temporarily increase demand for fire protection, emergency medical, and law enforcement services during the summer-fall 2012 and the summer-fall 2013. AC34 could have a significant cumulative impact on public services if (1) this increase in demand would make a cumulatively considerable contribution to the public service demands of other past, present, and future projects within the affected areas that, in combination, would require the construction of new or physically altered governmental facilities (i.e., fire or police stations); and (2) the construction of such facilities would have a significant adverse impact on the environment.

Because it would be short-term and temporary (limited to several months in 2012 and 2013), the public service demands of AC34 would not be considered in the capital improvements plans for future construction of any new or physically altered facilities of any of the fire protection, emergency medical, or law enforcement agencies that would provide services for the proposed AC34 facilities or events. Therefore, the AC34 facilities and events would not contribute to any cumulative impacts on the environment related to public services.

James R. Herman Cruise Terminal and Northeast Wharf Plaza

The geographic scope of the potential public services cumulative impacts of the James R. Herman Cruise Terminal and Northeast Wharf Plaza includes the areas served by SFFD Station 13 at 530 Sansome Street and Washington Street, the fireboat stationed at Pier 22, and SFPD Central Station at Vallejo Street near Stockton Street (see Figure 5.13-3 and Table 5.13-2).

As stated above, the cruise terminal and wharf plaza would result in marginal, if any, increases in demand for fire protection, emergency medical, and law enforcement services in the immediate area. These projects could have a significant cumulative impact on public services if (1) the increase in demand would make a cumulatively considerable contribution to the public services

demands of other past, present, and future projects within the affected area that, in combination, would require the construction of new or physically altered governmental facilities (e.g., fire or police stations); and (2) the construction of such facilities would have a significant adverse impact on the environment.

The cruise terminal and wharf plaza would be designed to serve existing uses along the waterfront; the new cruise terminal would replace existing uses at Pier 35, and the Northeast Wharf Plaza would redistribute existing public access uses along the waterfront. Therefore, they would not result in substantial new demand for services. Furthermore, with respect to fire protection services, the up-to-date design of the new cruise terminal in compliance with the most recent Fire Code requirements would provide a higher level of fire protection than existing conditions, incrementally reducing the demand for fire protection services. Thus, the proposed project would create a negligible increase in demand for public services and would not contribute to a cumulative impact.

Within the overall context of cumulative development, the marginal increases in demand for law enforcement, fire protection, and emergency medical services that would result from the cruise terminal and wharf plaza would be inconsequential. The public service demands that would be generated by planned development on Port properties and other sites in the project area would overshadow those of the cruise terminal and wharf plaza. Accordingly, the cruise terminal and wharf plaza would have little or no influence on future decisions to construct new or modified facilities to serve the planned growth in the project area. Therefore, the James R. Herman Cruise Terminal and Northeast Wharf Plaza projects would not make a considerable contribution to any cumulative impacts on the environment related to the provision of public services.

Mitigation: Not required

5.14 Biological Resources

This section addresses potential effects of the proposed 34th America's Cup (AC34) and James R. Herman Cruise Terminal and Northeast Wharf Plaza (Cruise Terminal) projects on biological resources. The section is divided into two main parts: Upland Resources (Sections 5.14.1 through 5.14.3) and Marine Resources (Sections 5.14.4 through 5.14.6). Upland resources include nontidal wetlands and terrestrial habitats and species, and waterfowl and seabirds that breed on land, while Marine Resources consist of marine habitats, marine mammals, fish, and other marine species.

5.14.1 Setting – Upland Resources

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

- California Department of Fish and Game (CDFG) January 2011 "Special Animals" list.
- California Department of Fish and Game (CDFG) California Natural Diversity Database (CNDDB) for 7.5-minute topographic quadrangle of *Point Bonita, San Francisco North,* and *Oakland West*, Commercial Version, March 2011.
- California Native Plant Society (CNPS), Electronic Inventory for 7.5-minute topographic quadrangles: *Point Bonita, San Francisco North,* and *Oakland West*, March 2011.
- United States Fish and Wildlife Service (USFWS), Federally Endangered and Threatened Species List for 7.5-minute topographic quadrangle of *Point Bonita, San Francisco North,* and *Oakland West*, Document Number 110304051519, Commercial Version, March 2011.

Existing project area characteristics, such as habitat types and plant and animal species present, are described based on site-specific information developed for the project and published relevant information, especially environmental impact reports prepared for other San Francisco waterfront and Golden Gate National Recreation Area (GGNRA) projects, and technical articles and agency reports as indicated in source citations. The National Park Service (NPS) provided Management Zone Planning Maps, included in Appendix PD to this EIR. In addition, Environmental Science Associates conducted a site visit of proposed AC34 venues at Port of San Francisco (Port) locations on February 28, 2011, a biological reconnaissance of Port wharfs and piers from the water on March 22, 2011, and a site visit to Angel Island with staff from the California Department of Parks and Recreation (CDPR) on June 2, 2011.

5.14.1.1 Regional Setting

The AC34 and Cruise Terminal projects area (project area) is located in the Bay Area-Delta Bioregion, as defined by the state's Natural Communities Conservation Program. This bioregion consists of a variety of natural communities that range from the open waters of the Bay and Delta to salt and brackish marshes to chaparral and oak woodlands. The temperate climate is Mediterranean in nature, with relatively mild, wet winters and warm, dry summers. The high diversity of vegetation and wildlife found in the region is a result of soils, topographic, and

micro-climate diversity that also promotes high levels of endemism.[1] This, in combination with the rapid pace of development in the region, has resulted in a substantial amount of endangerment for local flora and fauna.

The San Francisco Bay-Delta is the second largest estuary in the United States and supports numerous aquatic habitats and biological communities. It encompasses 479 square miles, including shallow mudflats. San Francisco Bay is divided into four main basins: South Bay, Central Bay, San Pablo or North Bay, and Suisun Bay. This assessment focuses on the Central Bay, which is located between the San Francisco-Oakland Bay Bridge (Bay Bridge) and the Richmond-San Rafael Bridge and connects to the Pacific Ocean through the Golden Gate. The regional setting for purposes of this evaluation includes the shallow water habitats around San Francisco Bay – the "baylands."[2] The Central Bay subregion of the baylands includes the main body of San Francisco Bay. Its major streams, all relatively small, include Codornices, Corte Madera, Temescal, and Wildcat Creeks. Lands within this subregion are in Alameda, Contra Costa, Marin, San Francisco, and San Mateo Counties. Together, there are about 33,000 acres of baylands in the Central Bay subregion.

Lastly, the regional setting comprises the waters of the Bay itself, its islands, and the coastal beaches and bluffs north and south of the Golden Gate.

5.14.1.2 Project Area Setting

Port of San Francisco Piers, Water Areas, and Seawall Lots

These sites are discussed collectively and include all of the proposed project sites on Port of San Francisco piers, water areas, and seawall lots described in Chapter 3, Project Description. They are located on The Embarcadero on the waterfront of the City of San Francisco. Vegetation along The Embarcadero is limited to palm trees, sycamores and a variety of other ornamental plantings; no natural vegetation communities occur there, and the structural attributes (the buildings and the piers themselves) have limited, but not negligible, value for wildlife. Western gulls (*Larus occidentalis*) may nest or perch on the roofs and bats may establish interior roosts. Cliff swallows (*Petrochelidon pyrrhonota*) were observed probably nesting under Piers 27-29 during field surveys for this EIR; Caspian terns (*Sterna caspia*) nest near Pier 64 and the black oystercatcher at Pier 98. Pelicans and other seabirds use the pilings as temporary perches.

Central Bay

The Central Bay contains the deepest areas of the Bay-Estuary and both natural and manmade hard bottom substrate. Beneath the Golden Gate the seafloor reaches depths of 361 feet with strong tidal currents running through the Golden Gate and throughout the Central Bay. These

[1] *Endemism* refers to the degree to which organisms or taxa are restricted to a geographical region or locality and are thus individually characterized as endemic to that area.

[2] Goals Project, *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, California/S.F. Bay Regional Water Quality Control Board, Oakland, California, 1999.

strong tidal flows maintain deeper water depths, despite the large volume of sediment that has historically moved through the Bay from the Delta and local streams. Because of its close proximity to the Golden Gate and open ocean waters, Central Bay biota most closely resembles open coast plant, invertebrate, and vertebrate marine communities that shift to estuarine communities farther upstream into the estuary.

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 guilds that use the open waters of the Central Bay include the diving birds, which feed in deeper water on benthic invertebrates; dabblers, which feed in the upper water column of shallow subtidal areas; piscivores, which feed on fish; and opportunistic predators.[3] Typical marine birds regularly inhabiting or using the project area include cormorants (*Phalacrocorax* spp.), pigeon guillemot (*Cepphus columba*), herring gull (*Larus argentatus*), mew gull (*L. canus*) and California brown pelican (*Pelecanus occidentalis californicus*). Among the diving benthivores guild, canvasback (*Aythya valisineria*), greater scaup (*A. marila*), lesser scaup (*A. affinis*), and surf scooter (*Melanitta perspicillata*) are common.

Please refer Section 5.14.4, Setting – Marine Resources, for further discussion of open water habitat.

America's Cup Spectator Venues

Fort Baker, Marin County

The Fort Baker Plan Environmental Impact Statement (EIS)[4] described the vegetation of the area of Cavallo Point as "Urban/Disturbed" as a result of historic use and landscape plantings, and consisting of such non-native species as pampas grass (*Cortaderia selloana*), ivy (*Delairia odorata*), broom (*Cytisus* spp.), fennel (*Foeniculum vulgare*), and various annual grasses. However, the nearby Battery Cavallo supports a population of lupine *(Lupinus albifrons*), a host plant of the federally listed endangered Mission blue butterfly (*Icaricia icariodes missionensis*).

Alcatraz Island

For the most part, vegetation on Alcatraz Island, formerly a relatively barren rock, comprises grasses that have colonized the island as windblown seed and plants that have naturalized from the gardens planted by prison guards. Two species of cormorants (*Phalacrocorax sp.*), the Brandt's cormorant and the pelagic cormorant, breed on Alcatraz. Although neither species is considered special-status, Alcatraz is the only breeding colony site for these two species in the San Francisco Bay.[5] Other nesters include black-crowned night heron (*Nycticorax nycticorax*) and snowy egret (*Egretta thula*). For both these latter species, nesting colonies are listed as special-status on the CDFG "Special Animals" list.

[3] NOAA. *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. 86 pages.
[4] National Park Service, Fort Baker Plan Final Environmental Impact Statement, 2009.
[5] National Park Service, Seabirds of Alcatraz, http://www.nps.gov/alca/naturescience/index.htm, 2011.

Aquatic Park

Aquatic Park is a thoroughly developed recreational area with only landscaped vegetation and minimal biological resources.

Crissy Field

Crissy Field is the former Presidio Army Base Airfield, with turf grasses and ornamental landscaping. Twenty-two acres were converted into a tidal marsh (Crissy Marsh), which support salt marsh species such as Pacific cordgrass (*Spartina foliosa*), pickleweed (*Salicornia* sp.), salt grass (*Distichlis spicata*), alkali heath (*Frankenia salina*), san-spurrey (*Spergularia* sp.), fleshy jaumea (*Jaumea carnosa*), and marsh rosemary (*Limonium californicum*). Northern Foredune, Central Dune Scrub and wetland communities are also present. Both the National Park Service (NPS) and the Presidio Trust consider natural communities in the Crissy Marsh important, and the Crissy Field dune community is identified as a Special Ecological Area (SEA) by the NPS. San Francisco lessingia (*Lessingia germanorum*), which is both federally and state-listed, occurs at Crissy Marsh.[6]

The marsh provides habitat for a variety of waterfowl. In surveys performed for the Doyle Drive (Presidio Parkway) project,[7] the most common species observed were ring-billed and western gulls (*Larus* spp.), ruddy ducks (*Oxyura jamaicensis*), and western and least sandpipers (*Calidrus mauri* and *C. minutilla*). Double-crested cormorants (*Phalacrocorax auritus*), greater scaup, and eared grebes (*Podicpes nigricollis*) commonly foraged in the open water. Western snowy plover (*Charadrius alexandrinus nivosus*), federally listed as threatened, are present in the non-breeding season at the Crissy Field Wildlife Protection Area (WPA).

Marina Green, Fort Mason, Aquatic Park, and AC34 Live Sites (Union Square, Embarcadero, Justin Herman Plaza, Civic Center, etc.)

These locations are thoroughly developed urban or urban/recreational areas with only landscaped vegetation and minimal biological resources.

America's Cup Secondary Viewing Areas and Vicinity

Golden Gate National Recreation Area, Southern Marin County

This area is assumed to include Fort Baker (described above along with Cavallo Point) and the Marin Headlands extending west to Bird Island. The bluffs above Conzelman Road are mostly on Gabbro Formation, an ultramafic soil type with chemical properties that support a distinct suite of native plants and wildlife species. In addition, this area is heavily influenced by coastal weather, with cool foggy summers, high winds, and fog drip that provides more or less year round moisture to support vegetation. Coastal scrub and chaparral communities dominate the Marin Headlands, with some areas of serpentine coastal scrub and annual grasslands. The coastal scrub community supports coyote brush (*Baccharis pilularis*), California sagebrush (*Artemisia californica*), bush lupine

[6] Federal Highway Administration, South Access to the Golden Gate Bridge Environmental Impact Statement/Report (CEQ #20050545), 2008.

[7] Environmental Science Associates, Presidio Parkway Project, Avian and Noise Monitoring–First Quarter 2010 Report, prepared for Arup–Parsons Brinkerhoff Joint Venture, 2010.

(*Lupinus arboreus*), and poison oak (*Toxicodendron diversilobum*).[8] The NPS considers suitable – and potentially occupied – Mission blue butterfly habitat to extend west along the Marin Headlands south of Conzelman Road, and especially in the vicinity of Kirby Cove. For detailed maps of this area, see Appendix PD (NPS Management Zone Planning Maps for Hawk Hill).

The wildlife is varied, but a particularly unique feature is Hawk Hill, a 920-foot elevation point in the midst of the largest known migratory flight corridor of diurnal raptors in the Pacific states.

Angel Island

Angel Island is a California state park, 740 acres in extent and 788 feet at its highest point. The vegetation has been altered by human use over many years. Historically, Angel Island had the most diverse flora of all the bay islands, including coastal live oak, toyon, bay, madrone, and buckeye.[9] CALVEG[10] now classifies Angel Island (and much of the Marin bay shoreline) as Coastal Scrub, which is described below where it occurs as an intact vegetation community on Yerba Buena Island. It is actually more varied, with mixed evergreen forest, grassland, coastal scrub and coastal strand as described by Ripley[11] and the island is the focus of much restoration attention, especially in the replacement of eucalyptus (*Eucalyptus globulus*) by native trees and shrubs. Many non-native trees persist, such as Monterey pine (*Pinus radiata*) and Monterey cypress (*Cupressus macrocarpa*).

There are no recent rare plant surveys for Angel Island.[12] However, although the geological structure of the island is predominantly sandstone, there is a near vertical serpentine dike extending across the western portion of the island which likely supports special status plants.[13] Mule deer (or Pacific coast black-tailed deer, *Odocoileus hemionus*) are common on Angel Island. The island also supports an endemic species, the Angel Island mole (*Scapanus latimanus insularis)*, and Townsend's western big-eared bat, a California Species of Special concern.

Treasure Island and Yerba Buena Island

Treasure Island is a flat, engineered island composed of artificial fill. Habitat types on Treasure Island are landscaped areas and developed areas, and neither area represents a defined vegetation or wildlife habitat type. Landscaped areas include mature ornamental trees, shrubs, and grasses. Much of the vegetation found on Treasure Island consists of introduced species, such as blue gum eucalyptus, Monterey pine, and Monterey cypress. Native plant species are not likely to be found in landscaped areas due to frequent disturbance, human control, and lack of proper soils. For these reasons, this habitat type is of low value to wildlife.

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8 GGNRA, Dog Management Plan/Draft Environmental Impact Statement (Plan/DEIS), 2011.

9 *San Francisco Breeding Bird Atlas*, San Francisco Field Ornithologist's Home Page, http://www.sffo.org, accessed March 15, 2011.

10 CALVEG is a hierarchical classification system of actual vegetation designed to assess vegetation-related resources throughout California. The system was devised in the late 1970s and a statewide map was produced at the "series" level, with series defined by the dominant overstory species of the community.

11 Ripley, JD. Plants of Angel Island, Marin County, California. Great Basin Naturalist Vol. 40, No. 4, Dec., 1980. pp. 385-407.

12 A. Brees, California Department of Parks and Recreation, pers. comm. with T. Roberts, Environmental Science Associates.

13 Ibid.

Yerba Buena Island, in contrast, is a natural feature in the Central Bay, and markedly different from Treasure Island. It is approximately 150 acres in size. Historically, topography was broadly sloping from Yerba Buena Island's summit about 350 feet above mean sea level, becoming steeper farther from the summit. Current topography includes a series of terraces engineered for development beginning at the top of the island, with steep slopes and cliffs down to the Bay on all sides. It supports a variety of vegetation types, including 14 acres of Northern Coastal (*Franciscan*) Scrub vegetation along the steep bluffs, characterized by small- to medium-sized shrubs such as California sagebrush (*Artemisia californica*), sticky monkey flower (*Diplacus aurantiacus*), lizard tail (*Saururus cernuus*), and yellow bush lupine. Much of it is relatively undisturbed and has a high diversity of native plant species, including populations of the special-status dune gilia (*Gilia capitata*).

Golden Gate National Recreation Area and Northern San Francisco

These locations are extensively developed in the project area to support urban or urban/recreational areas but interspersed with the presence of restored or protected valuable habitat areas such as Crissy Field and Crissy Marsh (described above), as well as Baker Beach, both of which support Dune Scrub, and naturally occurring or introduced sensitive plants. Dune Scrub is considered a sensitive natural community in this EIR.

San Francisco Northern Waterfront and Northern San Francisco Hillside Locations

These locations are thoroughly developed urban or urban/recreational areas with only landscaped vegetation and minimal biological resources.

5.14.1.3 Special-Status Species and Sensitive Natural Communities

Special-Status Species

The term "special-status species" refers to those species that are listed and receive specific protection defined in federal or state endangered species legislation, as well as species not formally listed as "Threatened" or "Endangered" but designated as "Rare" or "Sensitive" on the basis of adopted policies and expertise of state resource agencies or organizations, or local agencies such as counties, cities, and special districts. A principal source for this designation is the California "Special Animals List."[14] For purposes of this analysis, "special-status species" also include raptors (birds of prey), which, along with other taxa, are specifically protected by CDFG (under Fish and Game Code Section 3511 Birds, Section 4700 Mammals, Section 5050 Reptiles and Amphibians, and Section 5515 Fish) and by Fish and Game Code Section 3503.5, which prohibits the take, possession, or killing of raptors and owls, their nests, and their eggs. The inclusion of birds protected by Fish and Game Code Section 3503.5 is in recognition of the fact that these birds are substantially less common in California than most other birds, having lost much of their habitat to development, and that the populations of these species are therefore substantially more vulnerable to further loss of habitat and to interference with nesting and breeding than are most other birds.

[14] http://www.dfg.ca.gov/biogeodata/cnddb/pdfs/spanimals.pdf.

Lastly, disruption of any of any nesting migratory bird is not permitted under the Migratory Bird Treaty Act and the Fish and Game Code (see below). As such, nesting migratory birds are considered special-status in this EIR.

The special-status species list presented in **Table 5.14-1** includes upland species for which potential habitat (i.e., general habitat types for breeding or foraging) occurs on or in the vicinity of the project area. Species for which generally suitable habitat occurs but that were nonetheless determined to have low potential to occur in the project area are also listed in Table 5.14-1. This table also provides the rationale for each potential-to-occur determination. Species observed or with a moderate to high potential to occur in the project area are discussed in further detail below.

In addition, the Golden Gate National Recreation Area maintains a list of *Species of Management Concern*. These species are listed below. Those marked with an asterisk were analyzed as part of this EIR. The others were either not in the project impact area or were not considered exposed to impacts.

- sanderling *Calidris alba*
- willet *Catoptrophorus semipalmatus*
- pigeon guillemot *Cepphus columba*
- *snowy egret *Egretta thula*
- *western gull *Larus occidentalis*
- marbled godwit *Limosa fedoa*
- *black-crowned night-heron *Nycticorax nycticorax*
- *pelagic cormorant *Phalacrocorax pelagicus*
- *brandt's cormorant *Phalacrocorax penicillatus*
- *bank swallow *Riparia riparia*
- *Caspian tern *Sterna caspia*
- Elegant tern *Sterna elegans*
- barred owl *Strix varia*
- coyote *Canis latrans*
- *harbor seal *Phoca vitulina*
- mountain lion *Puma concolor*
- pink sand verbena *Abronia umbellata ssp. breviflora*
- rose rockcress *Arabis blepharophylla*
- Marin manzanita *Arctostaphylos virgata*
- Nuttall's milkvetch *Astragalus nuttallii* var. *virgatus*
- California saltbush *Atriplex californica*
- Oakland mariposa lily *Calochortus umbellatus*
- coast Indian paintbrush *Castilleja affinis ssp. affinis*
- Glory bush *Cean*othus gloriosus var. exaltatus
- Point Reyes ceanothus *Ceanothus gloriosus var. gloriosus*
- Mason's ceanothus *Ceanothus masonii*
- *San Francisco spineflower *Chorizanthe cuspidata* var. *cuspidata*
- *Franciscan thistle *Cirsium andrewsii*
- Pt. Reyes bird's-beak *Cordylanthus maritimus* ssp. *palustris*
- California croton *Croton californicus*
- California bottlebrush grass *Elymus californicus*
- San Francisco wallflower *Erysimum franciscanum*
- *bluehead gilia *Gilia capitata* ssp. *chamissonis*
- hairy gumweed *Grindelia hirsutula*
- wedgeleaf horkelia *Horkelia cuneata ssp. sericea*
- Arcuate bush mallow *Malacothamnus arcuatus*
- elegant piperia *Piperia elegans*
- artist's popcornflower *Plagiobothrys chorisianus var. chorisianus*
- coast redwood *Sequoia sempervirens*
- *San Francisco campion *Silene verecunda* ssp. *verecunda*
- California cordgrass *Spartina foliosa*
- Santa Cruz microseris *Stebbinsoseris decipiens*
- camphor tansy *Tanacetum camphoratum*
- *San Francisco owl's-clover *Triphysaria floribunda*
- *Franciscan manzanita *Arctostaphylos franciscana*

TABLE 5.14-1
SPECIAL-STATUS UPLAND SPECIES CONSIDERED IN EVALUATION OF THE PROJECT AREA

Common Name *Scientific Name*	Listing Status USFWS/ CDFG/CNPS[a]	General Habitat	Potential for Species Occurrence Within Project Area
STATE OR FEDERALLY LISTED SPECIES			
San Bruno elfin butterfly *Callophrys mossii bayensis*	FE/--	Inhabits rocky outcrops and cliffs on north-facing, often shady slopes in coastal scrub and relatively undisturbed grasslands. Larval host plant is *Sedum spathulifolium*.	Low. Species occurrences at Milagra Ridge but no suitable habitat in project area.
Bay checkerspot butterfly *Euphydras editha bayensis*	FT/--	Restricted to native grasslands on outcrops of serpentine, with dwarf plantain and owl's clover as host plants.	Low. Suitable native serpentine grasslands do not occur on project area.
Mission blue butterfly *Icaricia icariodes missionensis*	FE/--	Coastal scrub and grassland habitat. Requires *Lupinus albifrons, L. variicolor, or L. formosus* as larval host plant.	Present. Found in Tennessee Valley, Marin Headlands including Fort Baker.
Callippe silverspot butterfly *Speyeria callippe callippe*	FE/--	Occurs in grasslands with a native component. Host plant is *Viola pedunculata.*	Absent. Current populations known only south of San Francisco.
California red-legged frog *Rana draytonii*	FT/CSC	Breeds in stock ponds, pools, and slow-moving streams.	Absent. Although present at various localities within Marin County, including Muir Beach and Rodeo Lagoon, no suitable habitat in project area.
San Francisco garter snake *Thamnophis sirtalis tetrataenia*	FE/CE	Most often observed in the vicinity of standing water; ponds, lakes, marshes, and sloughs. Temporary ponds and seasonal bodies of water are also used. Banks with emergent and bankside vegetation are preferred and used for cover.	Absent. Historically occurred on San Francisco peninsula but current populations known only south of San Francisco.
American peregrine falcon *Falco peregrinus anatum*	DL/DL	Woodlands, coastal habitats, riparian areas, coastal and inland waters, humanmade structures that may be used as nest or temporary perch sites.	Moderate. Although the species is present near the Bay Bridge, it is unlikely to forage in the project area.
Western snowy plover *Charadrius alexandrius nivosus*	FT/CSC	Sandy coastal beaches, salt pans, coastal dredged spoils sites, dry salt ponds, salt pond levees, and gravel bars. Nests in sandy substrate and forages in sandy marine and estuarine bodies.	Present. Overwintering populations on Ocean Beach and smaller population at Wildlife Protection Area at Crissy Field. Periodically sighted at other beaches such as Baker Beach and Rodeo Beach.
Brown pelican *Pelecanus occidentalis*	DL/DL&FPS	Nests on protected islets near freshwater lakes and marine waters.	Present. Forage and roost within the project area.
California least tern *Sterna antillarum browni*	FE/FPS	Feeds in relatively shallow, near-shore waters, coastal freshwater ponds, channels, and lakes occupied by small fish. Colonial nesters on sand, gravel, or shell beaches where visibility is good.	Present. Forages within the project area. Nearest extant breeding colony in San Francisco Bay is located at the former Alameda Naval Air Station.
Bank swallow *Riparia riparia*	--/ST	Requires vertical banks/cliffs with fine textured/sandy soils near streams, rivers, lakes, ocean to dig nesting burrows.	Present. Species nests in the Fort Funston cliffs.

TABLE 5.14-1 (Continued)
SPECIAL-STATUS UPLAND SPECIES CONSIDERED IN EVALUATION OF THE PROJECT AREA

Common Name *Scientific Name*	Listing Status USFWS/ CDFG/CNPS[a]	General Habitat	Potential for Species Occurrence Within Project Area
STATE OR FEDERALLY LISTED SPECIES (cont.)			
San Francisco lessingia *Lessingia germanorum*	FE/CE/List 1B	Remnant dunes in coastal scrub	Present. Extant at Crissy Field dune habitat.
Presidio manzanita *Arctostaphylos hookeri* ssp. *ravenii*	FE/CE/1B	Chaparral, coastal prairie, coastal scrub.	Present. Extant at Baker Beach.
Marin dwarf-flax (Marin western flax) *Hesperolinon congestum*	FT/CT	Serpentine chaparral (coastal prairie-grassland) habitat.	Present. Extant at Baker Beach, Crissy Marsh.
California seablite *Suaeda californica*	FE/ 1B.1	Coastal salt marshes.	Absent. Species was reintroduced into Crissy Marsh; however, no transplants survived.
Presidio clarkia *Clarkia franciscana*	FE/CE/List 1B.1	Inhabits coastal scrub, valley and foothill grasslands.	Present. Known from Inspiration Point and along bluffs east and north of Baker Beach.
OTHER SPECIAL-STATUS SPECIES			
ANIMALS			
San Francisco forktail damselfly *Ischnura gemina*	None	Permanent freshwater marshes	Low. The damselfly is limited to wetland vegetation.
Tree lupine moth *Actinemys marmorata*	FSC/--	Coastal sand dunes are typically associated with the moth's larval host plant, yellow bush lupine (*Lupinus arboreus*).	Moderate. The tree lupine moth is found at several locations south of the Golden Gate Bridge.
Western pond turtle *Actinemys marmorata*	FSC/CSC	Freshwater ponds and slow streams edged with sandy soils for laying eggs.	Low. Aquatic habitat not available in the project area. Nearest occurrence is Lake Merced.
Great blue heron *Ardea herodias*	--/* Rookeries only	Nest colonially in groves of trees. Rookery sites located near marshes, tide-flats, irrigated pastures, and margins of rivers and lakes.	Low. Breeding has been observed at Stow Lake in Golden Gate Park, and at Lake Merced, but project area lacks suitable habitat.
Great horned owl *Bubo virginianus*	--/3503.5	Often uses abandoned nests of corvids or squirrels; nests in large oaks, conifers, eucalyptus.	Present. Breeds in the historic forest of the Presidio.
Sharp-shinned hawk *Accipiter striatus*	--/CSC	Nests in forest canopy	Present. Breeds in the historic forest of the Presidio.
Red-shouldered hawk *Buteo lineatus*	--/3503.5	Usually nests in large trees, often in woodland or riparian deciduous habitats. Forages over open grasslands and woodlands.	Present. Breeds in the historic forest of the Presidio.
Red-tailed hawk *Buteo jamaicensis*	--/3503.5	Usually nests in large trees, often in woodland or riparian deciduous habitats.	Present. Breeds in the historic forest of the Presidio.
Northern harrier *Circus cyaneus*	--/CSC	Mostly nests in emergent vegetation, wet meadows or near rivers and lakes, but may nest in grasslands away from water.	Probable. Breeds in the historic forest of the Presidio.

TABLE 5.14-1 (Continued)
SPECIAL-STATUS UPLAND SPECIES CONSIDERED IN EVALUATION OF THE PROJECT AREA

Common Name *Scientific Name*	Listing Status USFWS/ CDFG/CNPS[a]	General Habitat	Potential for Species Occurrence Within Project Area
OTHER SPECIAL-STATUS SPECIES (cont.)			
ANIMALS (cont.)			
American kestrel *Falco sparverius*	--/3503.5	Nests in cavities in large trees near open areas.	Probable. Breeds in the historic forest of the Presidio.
Double-crested cormorant *Phalacrocorax auritus*	--/CSC	Nests colonially on coastal cliffs, offshore islands, and along lake margins.	Present. Breeds on Yerba Buena Island and Alcatraz and forages throughout the project area.
Allen's hummingbird *Selasphorus sasin*	FSC/* (AWLY)	Inhabits coastal scrub and a variety of woodlands and riparian habitat, as well as gardens in the urban-wildland interface.	Low. Suitable nesting and foraging habitat is present throughout San Francisco, but not along the northern waterfront at spectator sites or secondary viewing areas.
Black-crowned night-heron *Nycticorax nycticorax*	*(Nesting colony)	Nests colonially on along margins of water bodies.	Present. Breeds on Alcatraz and forages throughout the project area.
Snowy egret *Egretta thula*	*(Nesting colony)	Nests colonially on along margins of water bodies.	Present. Breeds on Alcatraz and forages throughout the project area.
Black oystercatcher *Haematopus bachmani*	*(Nesting colony)	Nests frequently on islands, where a pair builds a nest above the high tide mark and then defends an adjacent feeding area.	Present. Nests near Pier 98.
Caspian tern *Sterna caspia*	*(Nesting colony)	Nests in colonies on sandy estuarine shores, on levees in salt ponds, and on islands in alkali and freshwater lakes	Present. Nests at Pier 64.
Townsend's Pacific big-eared bat *Corynorhinus townsendii townsendii*	FSC/CSC	Inhabits a variety of habitats, requires caves or human made structures for roosting.	Present. Potential roosting habitat is available in abandoned or underused buildings throughout the project area. Recorded CNDDB occurrence at Angel Island.
Fringed myotis *Myotis thysanodes*	FSC/--	Inhabits a variety of woodland habitats, roosts in crevices or caves, and forages over water and open habitats.	Low. Potential roosting abandoned or underused buildings in the project area.
Angel Island mole *Scapanus latimanus insularis*	/CSC	Inhabits northern coastal scrub and chaparral.	Presumed present on Angel Island.
PLANTS			
Dune gilia *Gilia capitata ssp. chamissonis*	//List 1B.1	Restricted to coastal dunes and sandy openings in coastal scrub from San Francisco to Bodega Bay.	Present. Know from Yerba Buena Island and introduced at Crissy Field, Baker Beach, and Lobos Creek Valley.
Presidio manzanita *Arctostaphylos montana* ssp *ravenii*	//List 1B.1	Inhabits coastal scrub, occasionally serpenitinite.	Present. Introduced west of Lincoln Boulevard, near Baker Beach.
Franciscan manzanita *Arctostaphylos franciscana*	//List 1B.1	Inhabits coastal scrub, occasionally serpenitinite.	Present. Recently re-discovered near the project area.
San Francisco Bay spineflower *Chorizanthe cuspidata* var. *cuspidate*	//List 1B.2	Inhabits coastal scrub, coastal dunes.	Probable. California Natural Diversity Database (CNDDB) records in project area.

TABLE 5.14-1 (Continued)
SPECIAL-STATUS UPLAND SPECIES CONSIDERED IN EVALUATION OF THE PROJECT AREA

Common Name *Scientific Name*	Listing Status USFWS/ CDFG/CNPS[a]	General Habitat	Potential for Species Occurrence Within Project Area
OTHER SPECIAL-STATUS SPECIES (cont.)			
PLANTS (cont.)			
Franciscan thistle *Cirsium andrewsii*	//List 1B.2	Inhabits coastal scrub, coastal bluff scrub.	Present. Occurs in Marin Headlands. 2008 CNDDB record from Fort Pont vicinity.
Blue coast gilia *Gilia capitata* ssp. *chamissoni*	//List 1B.1	Inhabits coastal scrub, coastal dunes.	Probable. Multiple current CNDDB records in project area.
Point Reyes bird's beak *Cordylanthus maritimus ssp. palustris*	//List 1B.2	Inhabits coastal salt marsh, wetland-riparian.	Present. Reintroduced into Crissy Field area.
San Francisco gumplant *Grindelia hirsutula* var. *maritime*	//List 1B.2	Inhabits coastal scrub, valley and foothill grasslands.	Present. Known from Baker Beach.
San Francisco campion *Silene verecunda* ssp. *verecunda*	//List 1B.2	Inhabits coastal scrub, valley and foothill grasslands.	Present. Known from Crissy Field area.
San Francisco owl's clover *Triphysaria floribunda*	//List 1B.2	Inhabits coastal scrub, valley and foothill grasslands.	Present. Known from Doyle Drive area.

[a] STATUS CODES

Federal (United States Fish and Wildlife Service [USFWS]):
DL = De-listed
FE = Listed as Endangered (in danger of extinction) by the federal government.
FT = Listed as Threatened (likely to become Endangered within the foreseeable future) by the federal government.
FP = Proposed for Listing as Endangered or Threatened.
FC = Candidate to become a *proposed* species.
FSC = Former Federal Species of Concern. The USFWS no longer lists Species of Concern but recommends that species considered to be at potential risk by a number of organizations and agencies be addressed during project environmental review.

State (California Department of Fish and Game [CDFG]):
CE = Listed as Endangered by the State of California.
CT = Listed as Threatened by the State of California.
CR = Listed as Rare by the State of California (plants only).
CSC = California Species of Special Concern.
FPS = California Fully Protected Species.
3503.5 = Protection for nesting species of Falconiformes (hawks) and Strigiformes (owls).
*Special animal—listed on CDFG's Special Animals List.

California Native Plant Society (CNPS):
List 1A = Plants presumed extinct in California.
List 1B = Plants rare, threatened, or endangered in California and elsewhere.
List 2 = Plants rare, threatened, or endangered in California but more common elsewhere.

An extension reflecting the level of threat to each species is appended to each rarity category as follows:
.1 – Seriously endangered in California.
.2 – Fairly endangered in California.
.3 – Not very endangered in California.

Audubon Watch List (AWL):
AWLR = Red List; species that are declining rapidly, have very small populations or limited ranges, and face major conservation threats. These typically are species of global conservation concern.
AWLY = Yellow List; species that are also declining but at a slower rate than those in the red category. These typically are species of national conservation concern.

SOURCE: CDFG, 2011; CNDDB, 2011; CNPS, 2011; USFWS, 2011.

Species Not Assessed in Detail

The **tree lupine moth** is a federal special species of concern and is found at several locations south of the Golden Gate Bridge. Coastal sand dunes are typically associated with the moths larval host plant, *Lupinus arboreus*. The project would not remove any woody plants, and these areas would be protected by exclusion fencing described in **Mitigation Measure M-BI-1a** (Protecting Sensitive Areas for Mission Blue Butterfly). The species is not likely to be affected by either AC34 activities or the Cruise Terminal project.

According to past surveys, suitable habitat for **San Francisco forktail damselfly**, which has no state or federal status other than its inclusion on the Special Animals List, is sparse within the project area, and all wetlands (i.e., suitable habitat) would be avoided by the project.[15] The **Angel Island mole** is confined to woodland habitats on Angel Island (e.g., mixed evergreen forest, northern coastal scrub and chaparral).16 As a fossorial (subterranean) mammal, it would not be exposed to project impacts.

Species Assessed in Detail

Potential impacts of the project on special-status species were assessed based on literature review, professional judgment, and the following criteria:

1. A determination of susceptibility. This determination is a three-level process that evaluated for each species: (a) potential occurrence in the project area (generally defined as the terrestrial and aquatic habitats of the project area and areas immediately adjacent to the project area with the potential to be affected by the project); (b) potential occurrence within the project footprint (i.e., proposed sites developed for spectators with seating, restrooms, etc.); or (c) absence from either the study area or proposed project footprint. If the species was determined unlikely to be found in the study area (for example, if no potential habitat exists for the species in the vicinity), then the species was given no further consideration.

2. If a species was determined to have the potential to occur in the project area, further analyses were made of life history and habitat requirements, as well as the suitability of habitat for the species found within the study area or its immediate vicinity. The results of this determination for each species are provided in the "Potential for Species Occurrence" column of Table 5.14-1.

3. If suitable habitat was determined present within the project area and the species has been documented as observed within the study area or has at least a moderate potential to occur, additional analysis considered whether the species would be affected by the project. Both direct effects (e.g., displacement of habitat) and indirect effects (e.g., noise) were considered. In addition, life history and habitat requirements were evaluated to ascertain the likelihood and severity of impact.

[15] Federal Highway Administration, South Access to the Golden Gate Bridge–Doyle Drive FEIS/R (CEQ #20050545), 2008.
[16] Bolster, B.C., Ed., *Terrestrial Mammal Species of Special Concern in California,* California Department of Fish and Game, 1998.

Unless otherwise indicated, the descriptions of the species considered below are taken from the Golden Gate Recreation Area's Draft Dog Management Plan/EIS[17] or general biological literature, as noted. The general locations of these resources are shown in **Figure 5.14-1**.

State or Federally Listed or Recently Delisted Species

Mission Blue Butterfly (*Icaricia icariodes missionensis*)

Federally listed as endangered, the Mission blue butterfly occurs in grassland and coastal scrub with its larval food plants (*Lupinus albifrons*, *L. variicolor* and *L. formosus*). This species is primarily known from San Mateo County, but occurs at Twin Peaks and at the north end of Golden Gate Bridge in Marin County. The species was collected in 1981 from Fort Baker, Marin County, and also at the northern terminus of the Golden Gate Bridge (CNDDB, 2011). Outside of Fort Baker, the NPS considers suitable – and potentially occupied -- habitat to extend west along the Marin Headlands south of Conzelman Road, and especially in the vicinity of Kirby Cove.

Western Snowy Plover (*Charadrius alexandrinus nivosus*)

The western snowy plover, a federally listed threatened species and a California Species of Special Concern, uses areas with wide, sandy, dune-backed beaches for roosting and foraging during the nonbreeding season. This species forages above and below the mean high waterline, typically gathering food from the surface of the sand, wrack line, or low foredune vegetation. Snowy plovers overwinter at Ocean Beach and at Crissy Field, from July through May.

California Brown Pelican (*Pelecanus occidentalis californicus*)

A state Fully Protected Species (see Section 5.14.2.2), brown pelicans are found in estuarine, marine subtidal, and marine pelagic waters throughout coastal California.[18] Important habitat for pelicans during the nonbreeding season includes roosting and resting areas, such as offshore rocks, islands, sandbars, breakwaters, and pilings. Suitable areas need to be free of disturbance. This species rests temporarily on the water or isolated rocks, but roosting requires a dry location near food and a buffer from predators and humans. The California brown pelican is a common post-breeding resident (May through November) of the open waters of central San Francisco Bay.

California Least Tern (*Sterna antillarum browni*)

Least terns usually arrive at breeding territory in late April in southern California to mid-May in Northern California. The species is federally listed as threatened and a California Fully Protected Species. Breeding colonies are located in Southern California along marine and estuarine shores, and in San Francisco Bay in abandoned salt ponds and at the former Alameda Naval Air Station in Alameda County. The species feeds in nearby shallow, estuarine waters. Terns may use the project area for foraging.

[17] GGNRA, Dog Management Plan/Draft Environmental Impact Statement (Plan/DEIS), 2011.
[18] Zeiner et al., *California's Wildlife Volume II*, *Birds*, California Department of Fish and Game, 1990.

SOURCE: Google Maps; ESA; CNDDB, 2001

Case No. 2010.0493E: AC34 / Cruise Terminal and Northeast Wharf Plaza (210317)

Figure 5.14-1
General Locations of Special Status Species and Sensitive Habitat in the Project Area

Bank Swallow (*Riparia riparia*)

The bank swallow is state-listed as threatened. The bank swallow is the only swallow that does not build a nest, instead occupying burrows and holes in bluffs and cliffs. Channelization and stabilization of banks of nesting rivers, as well as other destruction and disturbance of nesting areas, have caused a decline of the species. A nesting colony of bank swallows occupies burrows in the coastal bluff habitat at Fort Funston, which is currently one of only two remaining colonies for the species along the outer coast in California. Bank swallows are present at Fort Funston during their nesting season (April 1 to August 15).

Presidio Clarkia (*Clarkia franciscana*),

Presidio clarkia is federally and state-listed as endangered, and is a slender, branched annual species with stems about 12 inches tall and with few, small, slender entire lance-shaped leaves. The sparse flowers have four wedge-shaped petals that are lavender to pink. The middle of the flower is lighter in color with a reddish-purple basal spot. Blooming time is from May to July. The "serpentine endemics," which include Presidio Manzanita and Marin dwarf-flax in addition to Presidio clarkia, all inhabit low-growing serpentine coastal scrub and rock outcrops and exist adjacent to coastal and bluff scrub communities, which lie along bluffs east and north of Baker Beach (GGNRA, 2011).

Presidio (Raven's) Manzanita (*Arctostaphylos hookeri* ssp. *ravenii*)

Presidio manzanita is federally and state-listed as endangered and is a perennial, prostrate to low-growing, shrub. As part of restoration efforts to reintroduce this species at the Golden Gate National Recreation Area (GGNRA), the plant has been introduced west of Lincoln Boulevard, near Baker Beach, in suitable serpentine habitat.

Marin Dwarf-Flax (*Hesperolinon congestum*)

Marin dwarf-flax (or Marin western flax) is federally and state-listed as threatened and is a small herbaceous annual of the flax family with slender threadlike stems. Marin dwarf-flax occurs in serpentine grassland soil outcrops above Baker Beach, near the one remaining natural Presidio manzanita location.

San Francisco Lessingia (Lessingia germanorum)

San Francisco lessingia is federally and state-listed as endangered and is a low-growing, slender-stemmed annual herb of the sunflower family (*Asteraceae*). Populations of this species occur primarily in small, local remnants of dune scrub in the Presidio. Dune scrub is found on the sand terrace slopes above Baker Beach, at Crissy Field,[19] and in the Lobos Creek Dunes, and San Francisco lessingia is found in association with this community at Baker Beach. Both Fort Funston and Baker Beach have been designated as San Francisco lessingia recovery and enhancement sites.

[19] Federal Highway Administration, South Access to the Golden Gate Bridge Environmental Impact Statement/Report (CEQ #20050545), 2008.

Other Special-Status Animal Species

Raptor Species

The following raptor species are protected by the Fish and Game Code or are California Species of Special Concern, and breed in large trees or tree cavities in the Presidio's historic forest:[20] great horned owl (*Bubo virginianus*), sharp-shinned hawk (*Accipiter striatus*), red-shouldered hawk (*Buteo lineatus*), red-tailed hawk (*Buteo jamaicensis*), northern harrier (*Circus cyaneus*), and American kestrel (*Falco sparverius*).The peregrine falcon (*Falco peregrinus anatum***)** forages near the Bay Bridge and in the City of San Francisco.

Black-Crowned Night-Heron (*Nycticorax nycticorax*) and Snowy Egret (*Egretta thula*)

Both of these species feed on small fish, crustaceans, and large insects, in shallow water or along shores of wetlands or aquatic habitats. For the snowy egret, San Francisco Bay colonies nest at ground level on *Grindelia humilis* and *Salicornia pacifica*, more commonly on *Baccharis pilularis.* Night herons nest in the reeds or thicket, and occasionally, in trees. Nesting colonies of both species are named resources on the California Special Animals List. Both species breed on Alcatraz.

Double-Crested Cormorant (*Phalacrocorax auritus*)

The double-crested cormorant is a Species of Special Concern in California. 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. It sometimes feeds cooperatively in flocks of up to 600, often with pelicans, and nests in colonies of a few to hundreds of pairs.[21] There are breeding colonies on Yerba Buena Island and Alcatraz, and there are also roosts and potential breeding sites at the base of the Golden Gate Bridge towers. The species forages throughout the project area.

Caspian tern (*Sterna caspia*)

These terns, whose nesting areas are listed as a 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 adult often flies substantial distances to forage in lacustrine, riverine, and fresh and saline emergent wetland habitats. They occur at Pier 64 adjacent to the Mission Bay Bayfront Park.

Townsend's Pacific Big-Eared Bat (*Corynorhinus townsendii townsendii*) and Fringed Myotis (*Myotis thysanodes*)

Both of these species are Species of Special Concern in California. Although found throughout the state, the details of their distribution are not well known. Both species are known to use old

[20] The historic forest is 300 acres of planted eucalyptus, pine, and cypress within the Presidio.
[21] Zeiner et al., *California's Wildlife Volume II*, *Birds*, California Department of Fish and Game, 1990.

buildings as roost sites.[22] The species is recorded in the CNDDB (2008) as occurring at the Immigration Station (North Garrison) on Angel Island.

Other Special-Status Plant Species

Other special-status plant species include Point Reyes bird's beak (*Cordylanthus maritimus*), Franciscan manzanita (*Arctostaphylos montana* ssp. *ravenii*), San Francisco Bay spineflower (*Chorizanthe cuspidata* var. *cuspidate*), Franciscan thistle (*Cirsium andrewsii*), blue coast gilia (*Gilia capitata* ssp. *chamissonis*), San Francisco gumplant (*Grindelia hirsutula* var. *maritime*), San Francisco campion (*Silene verecunda* ssp. *verecunda*), and San Francisco owl's clover (*Triphysaria floribunda*).

These are mostly CNPS List 1B or List 2 plants, associated with coastal scrub or coastal bluff scrub and known to occur on or near the Presidio at Baker Beach, Crissy Field, Fort Point, and other areas. Point Reyes bird's beak is a marsh plant present at Crissy Marsh.[23] Franciscan thistle is recorded by CNDDB in the Marin Headlands as well.

5.14.1.4 Sensitive Natural Communities

The project area supports five sensitive natural communities. Occurrences include California Buckeye Woodland on Yerba Buena Island, Coastal Bluff Scrub south and east of the Golden Gate Bridge in the Presidio and along the Marin Headlands, and Coastal Salt Marsh developed as part of the Crissy Field Restoration Project. Crissy Marsh, along with the Baker Beach, also supports Coastal Dune habitat. The Baker Beach Dune Scrub is one of the few remaining intact stands of this vegetation type in San Francisco. Dune scrub is found on the sand terrace slopes above Baker Beach and in the Lobos Creek Dunes, and the listed San Francisco lessingia is found in association with this community. Inspiration Point supports the only Serpentine Grassland within the Golden Gate National Recreation Area. For the purposes of this EIR, the serpentine area on Angel Island is considered a sensitive natural community as well.

5.14.2 Regulatory Framework – Upland Biological Resources

This section focuses on the regulatory framework for upland biological resources and complements the discussion below in Section 5.14.5, which addresses regulations relevant to marine resources.

5.14.2.1 Federal Regulations

Federal Endangered Species Act

Under the Federal Endangered Species Act (FESA), the Secretary of the Interior and the Secretary of Commerce jointly have the authority to list a species as threatened or endangered (16 United States Code [USC] 1533(c)). Pursuant to the requirements of FESA, an agency reviewing a proposed project within its jurisdiction must determine whether any federally listed threatened or

[22] Zeiner et al., *California's Wildlife Volume III, Mammals*, California Department of Fish and Game, 1990.
[23] National Park Service, Golden Gate; Wetlands, Marshes, and Swamps, http://www.nps.gov/goga/naturescience/wetlands.htm, 2010.

endangered species may be present in the project area and determine whether the proposed project may affect or "take"[24] such species. In addition, the agency is required to consult with the United States Fish and Wildlife Service (USFWS) to determine whether the project is likely to jeopardize the continued existence of any species proposed to be listed under FESA or result in the destruction or adverse modification of critical habitat (see below) proposed to be designated for such species (16 USC 1536(3)). Therefore, project impacts on listed or candidate species or their habitats would be considered "significant" in this EIR. Consultation with either the USFWS or the National Oceanic and Atmospheric Administration, National Marine Fisheries Service ("NOAA Fisheries" or NMFS) would likely be required for the project since there are various federal agencies who will need to issue a permit for the project (including USACE, USCG and National Park Service). During consultation, the potential for take would be determined and, if take is expected to occur, the necessary conditions to allow the issuance of an incidental take permit would be imposed.

Areas of habitat considered essential to the conservation of a listed endangered or threatened species may be designated as critical habitat (referred to above), which is protected under FESA. Although critical habitat may be designated on private or government property, activities on these properties are not restricted unless there is federal involvement in the activities or direct harm to listed wildlife. There is no critical habitat in the project area. The nearest has been established for the federally listed endangered tidewater goby (*Eucyclogobius newberryi*) at Rodeo Lagoon, to the north along the western Marin County shoreline.

Migratory Bird Treaty Act

The federal Migratory Bird Treaty Act (16 USC, Section 703, Supp. I, 1989) prohibits killing, possessing, or trading in migratory birds except in accordance with regulations prescribed by the Secretary of the Interior. This act applies to whole birds, parts of birds, and bird nests and eggs. Marine birds that are covered by provisions of the Migratory Bird Treaty Act and could be expected to be present in the project area include the brown pelican (*Pelicanus Occidentalis*), double-crested cormorant (*Phalacrocorax auritus*), and the western gull (*Larus occidentalis).*

Marine Mammal Protection Act

The Marine Mammal Protection Act of 1972 and as amended in 1981, 1982, 1984, and 1995 establishes a federal responsibility for the protection and conservation of marine mammal species by prohibiting the harassment, hunting, capture, or killing of any marine mammal. The primary authority for implementing the act belongs to the USFWS and NOAA Fisheries. Please see Section 5.14.5.1, below, for further description.

Federal Regulation of Wetlands and Other Waters

The regulations and policies of various federal agencies (e.g., Corps, U.S. Environmental Protection Agency [EPA], and USFWS) mandate that the filling of wetlands be avoided unless it

[24] 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.

can be demonstrated that there is no practicable alternative to filling. The Corps has primary federal responsibility for administering regulations that concern waters and wetlands in the project area under statutory authority of the Rivers and Harbors Act (Sections 9 and 10) (see below) and the Clean Water Act (Section 404).

Pursuant to Section 10 of the Rivers and Harbors Appropriation Act of 1899 (33 U.S.C. 403), the Corps regulates the construction of structures in, over, or under, excavation of material from, or deposition of material into "navigable waters." 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.

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 Corps. The CWA prohibits the discharge of any pollutant without a permit. Implicit in the CWA definition of "pollutant" is the inclusion of dredged or fill material regulated by Section 404 (22 USC 1362). The discharge of dredged or fill material typically means adding into waters of the U.S. materials such as concrete, dirt, rock, pilings, or side cast material that are for the purpose of replacing an aquatic area with dry land or raising the elevation of an aquatic area. Activities typically regulated under Section 404 include the use of construction equipment such as bulldozers, and the leveling or grading of sites where jurisdictional waters occur.

Section 10 of the federal Rivers and Harbors Appropriations Act of 1899 (30 Stat. 1151, codified at 33 U.S.C. Sections 401, 403) prohibits the unauthorized obstruction or alteration of any navigable water (33 U.S.C. Section 403). 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). 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. Please see Section 5.14.5.1, below, for further description of federal regulation of wetlands and other waters.

The Presidio Trust Management Plan

The Presidio Trust Management Plan declares that the following principles will guide future actions and decisions for biological resources within the Presidio:

6. Identify, protect, enhance, restore, and expand the Presidio's ecosystems. Protect, establish, and manage areas of native vegetation.

7. Identify, monitor, and protect sensitive wildlife species, and restore and maintain their habitats.

8. Rehabilitate and enhance natural water resources. Manage onsite water resources to protect ground and surface water, natural wetland and riparian habitat, and water supplies for the Presidio community. Protect important native geologic and soil components.

Golden Gate National Recreation Area General Management Plan

The NPS is working on an update to the General Management Plan for the GGNRA and Muir Woods National Monument. The NPS will complete an environmental impact statement (EIS) for the new General Management Plan. Numerous public scoping workshops were conducted in Spring 2006 to gather public input. The NPS is currently analyzing public comments and gathering data.[25]

5.14.2.2 State Regulations

California Endangered Species Act

Under the California Endangered Species Act (CESA), CDFG maintains a list of threatened species and endangered species (California Fish and Game Code Section 2070). CDFG also maintains a list of "candidate species," which are species that CDFG has formally recognized as being under review for addition to either the list of endangered species or the list of threatened species. CDFG also maintains lists of "Species of Special Concern." Pursuant to the requirements of CESA, an agency reviewing a proposed project within its jurisdiction must determine whether any state-listed endangered or threatened species may be present in the project area and determine whether the proposed project will have a potentially significant impact on such species. In addition, CDFG encourages informal consultation on any proposed project that may affect a candidate species. Project impacts on species on the CESA endangered list or threatened list would be considered significant in this EIR. Impacts on Species of Special Concern would be considered significant under certain circumstances, as discussed below.

Fish and Game Code Sections 3503, 3511, 4700, 5050, and 5515

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. Project impacts on birds of prey would not be considered "significant" in this EIR unless the species are known or have a high potential to nest on the site or rely on it for primary foraging.

CDFG Fully Protected Species may not be taken or possessed at any time without a permit from CDFG (Section 3511 Birds, Section 4700 Mammals, Section 5050 Reptiles and Amphibians, and Section 5515 Fish).

[25] National Park Service, Golden Gate; GGNRA General Management Plan, http://www.nps.gov/goga/parkmgmt/gmp_update.htm, 2008.

California Plant Conservation Program

The legal framework and authority for the state's program to conserve plants is derived from various legislative sources, including CESA, the California Native Plant Protection Act (Fish and Game Code Sections 1900–1913), the CEQA Guidelines, and the Natural Communities Conservation Planning Act. Vascular plants listed as rare or endangered by the CNPS99, 100 but which may have no designated status or protection under federal or state endangered species legislation, are defined as follows:

- List 1A: Plants Presumed Extinct
- List 1B: Plants Rare, Threatened, or Endangered in California and elsewhere
- List 2: Plants Rare, Threatened, or Endangered in California, but more numerous elsewhere
- List 3: Plants About Which More Information is Needed – A Review List
- List 4: Plants of Limited Distribution – A Watch List

In general, plants that appear on CNPS List 1B are considered to meet the criteria of Section 15380 of the CEQA Guidelines, and effects on these species may be considered significant in this EIR. Additionally, plants listed on CNPS List 1A, List 1B, or List 2 meet the definition of Section 1901, Chapter 10 (Native Plant Protection Act) and Sections 2062 and 2067 (California Endangered Species Act) of the California Fish and Game Code, i.e., that the species is at risk of extirpation.

State Regulation of Wetlands and Other Waters

The state's authority in regulating activities in wetlands and waters in the project area resides primarily with the State Water Resources Control Board (SWRCB). The SWRCB, acting through the San Francisco Regional Water Quality Control Board (RWQCB), must certify that a Corps permit action meets state water quality objectives (CWA Section 401). Any condition of water quality certification is then incorporated into the Corps Section 404 permit authorized for the project.

The SWRCB and RWQCB also have jurisdiction over waters of the state under the Porter-Cologne Water Quality Control Act (Porter-Cologne). The SWRCB and RWQCB evaluate proposed actions for consistency with the RWQCB's Basin Plan, and authorize impacts on waters of the state by issuing Waste Discharge Requirements (WDR) or in some cases, a waiver of WDR.

The San Francisco Bay Conservation and Development Commission (BCDC) has jurisdiction over coastal activities occurring within the San Francisco Bay area and Suisun Marsh. BCDC was created by the McAteer-Petris Act (California Government Code Sections 66600–66682). BCDC regulates fill, extraction of materials, and substantial change in use of land, water, and structures in San Francisco Bay and development within 100 feet of the Bay. BCDC has jurisdiction over all areas of the Bay that are subject to tidal action, including subtidal areas, intertidal areas, and tidal marsh areas that are between mean high tide and 5 feet above mean sea level. BCDC's permit jurisdiction does not extend to federally owned areas, such GGNRA lands, because they are excluded from state coastal zones pursuant to the Coastal Zone Management Act of 1972 (CZMA). However, the CZMA requires that all applicants for federal permits and federal agency sponsors obtain certification from the state's approved coastal program that a proposed project is

consistent with the state's program. In San Francisco Bay, BCDC is charged with making this consistency determination. (See Coastal Zone Management Act under Section 5.14.5.1 Federal Regulations below.)

California Department of Parks and Recreation Angel Island Resource Management Plan

The Resource Objectives of the Angel Island Resource Management Plan[26] are:

1. To preserve and perpetuate the history of Angel Island, through reconstructing, restoring, maintaining or stabilizing, and interpreting the historic cultural developments found on the island.

2. To protect, preserve, and interpret the archeological sites.

3. To perpetuate, maintain and interpret the scenic and natural beauty of Angel Island.

4. To maintain, protect and encourage native vegetation in all natural areas that have not been modified by human use of the island, and to interpret these natural areas.

5. To control and/or eliminate aggressive introduced plant species that are not a part of either the natural or historic environment, but are extending their ranges and crowding out native species.

6. To maintain desirable introduced and exotic plant species at their original planting sites, when associated with cultural values.

7. To prevent importation to the island of new species or sub-species of plants that are not already present, and are not part of the island's historic past.

8. To manage and regulate animal populations when necessary, so they are in balance with their natural food supplies, without allowing them to destroy or deplete the native and desirable introduced flora or native fauna.

9. To keep wild animals in a natural condition, so they will rely on natural foods, and to prevent them from relying on artificial sources of food.

10. To refrain from introducing animal species or sub-species not already present on the island.

11. To control erosion caused by excessive human or animal use, and to heal human scarring by appropriate soil conservation methods.

San Francisco Bay Plan

The *San Francisco Bay Plan* specifies goals, objectives, and policies for existing and proposed waterfront land use and other areas under the jurisdiction of BCDC. Refer to Chapter 4, Plans and Policies, for a more detailed description of the *San Francisco Bay Plan*. Major policies of the *San Francisco Bay Plan* applicable to wildlife include the following:

[26] California Department of Parks and Recreation, Angel Island Resource Management Plan, General Management Plan, and Environmental Impact Report, 1978.

5. Effects of Bay Filling. Bay filling should be limited to the purposes listed above, however, because any filling is harmful to the Bay, and thus to present and future generations of Bay Area residents. All Bay filling has one or more of the following harmful effects:

    a. Filling destroys the habitat of fish and wildlife. Future filling can disrupt the ecological balance in the Bay, which has already been damaged by past fills, and can endanger the very existence of some species of birds and fish. The Bay, including open water, mudflats, and marshlands, is a complex biological system, in which microorganisms, plants, fish, waterfowl, and shorebirds live in a delicate balance created by nature, and in which seemingly minor changes, such as a new fill or dredging project, may have far-reaching and sometimes highly destructive effects.

5.14.2.3 Local Regulations and Plans

San Francisco General Plan

The Environmental Protection Element of the *San Francisco General Plan* contains the following objectives and policies related to biological resources protection that are relevant to the proposed project.

General

***Objective 1*:** Achieve a proper balance among the conservation, utilization, and development of San Francisco's natural resources.

Policy 1.1: Conserve and protect the natural resources of San Francisco.

Policy 1.2: Improve the quality of natural resources.

Policy 1.3: Restore and replenish the supply of natural resources.

Policy 1.4: Assure that all new development meets strict environmental quality standards and recognizes human needs.

Bay, Ocean and Shorelines

***Objective 3*:** Maintain and improve the quality of the bay, ocean, and shoreline areas.

Policy 3.1: Cooperate with and otherwise support regulatory programs of existing regional, State, and Federal agencies dealing with the Bay.

Policy 3.2: Promote the use and development of shoreline areas consistent with the General Plan and the best interest of San Francisco.

Land

***Objective 7*:** Assure that the land resources in San Francisco are used in ways that both respect and preserve the natural values of the land and serve the best interests of all the City's citizens.

Policy 7.3: Require that filling of land adhere to the highest standards of soils engineering consistent with the proposed use.

Flora and Fauna

***Objective 8*:** Ensure the protection of plant and animal life in the City.

Policy 8.1: Cooperate with and otherwise support the California Department of Fish and Game and its animal protection programs.

Policy 8.2: Protect the habitats of known plant and animal species that require a relatively natural environment.

Policy 8.3: Protect rare and endangered species.

5.14.3 Impacts and Mitigation Measures – Upland Resources

5.14.3.1 Significance Criteria

The City has not formally adopted significance standards for impacts related to biological resources, but generally considers that implementation of the project could have a potentially significant impact related to biological resources if it were to:

- 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 Game or U.S. Fish and Wildlife Service;

- Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations;

- 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;

- 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;

- Conflict with any applicable local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance; or

- Conflict with the provisions of an adopted habitat conservation plan, natural community conservation plan, or other approved local, regional, or state habitat conservation plan.

The following criterion is not analyzed in this section for the reason described below:

- ***Conflict with the provisions of an adopted habitat conservation plan, natural community conservation plan, or other approved local, regional, or state habitat conservation plan.*** There are no adopted Habitat Conservation Plans, Natural Community Conservation Plans, or other approved local, regional, or state habitat conservation plans related to upland biological resources applicable to the project area. As such impacts related to conflicts with any such plans are not discussed further.

5.14.3.2 Approach to Analysis

The following sections of the CEQA Guidelines, which expand and define some of the terms used in the criteria presented above, were also considered when using the criteria to determine impact significance:

- CEQA Guidelines Section 15065 directs lead agencies to find that a project may have a significant effect on the environment if it has the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish and wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or wildlife community, or substantially reduce the number or restrict the range of an endangered, rare, or threatened species.

- CEQA Guidelines Section 15380 further provides that a plant or wildlife species, even if not on one of the official lists, may be treated as "rare or endangered" if, for example, it is likely to become endangered in the foreseeable future.

- CEQA Guidelines Section 15382 identifies a significant effect on the environment as a "…substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project including land, air, water, minerals, flora, fauna, ambient noise, and objects of historic or aesthetic significance."

For the purposes of this EIR, the definition of the word "substantial" as used in the significance criteria above has three principal components:

- Magnitude and duration of the impact (e.g., substantial/not substantial);
- Rarity of the affected resource; and
- Susceptibility of the affected resource to disturbance.

The evaluation of significance must also consider the interrelationship of these three components. For example, a relatively small magnitude impact on a state- or federally listed species could be considered significant because the species is rare and believed to be very susceptible to disturbance. Conversely, a natural community such as California annual grassland is not necessarily rare or sensitive to disturbance, and thus a much larger magnitude of impact might be required to result in a significant impact. Impacts on biological resources are considered *significant* when project-related habitat modifications (e.g., development, introduction of non-native plant and animal species, increased human intrusion, barriers to movement, or landscape management) could reduce species populations to the extent that they become locally less numerous; impacts on habitats are considered *significant* when the habitats could not continue to support viable populations of associated plant and animal species as a result of project implementation. *Potentially significant* impacts are those that may not be sufficiently reduced through nondiscretionary regulatory standards; in those cases, the lead agency would need to implement mitigation measures, where feasible, to reduce the potential level of an impact to less than significant.

It is important to note, in the following discussion of impacts and mitigation, that the assessment of significance pays special attention to the first of the components comprising the definition of "substantial" in this EIR: *duration of the impact*. For the America's Cup events, when the races are

over there would be no permanent, ongoing effect, especially from the race events and arguably from the project components along the waterfront, none of which would permanently expand the current "footprint" of the area.

5.14.3.3 AC34 Event and Cruise Terminal Impacts and Mitigation Measures—Upland Resources

America's Cup

Impact BI-1: The America's Cup facilities and events could have a substantial adverse effect, either directly or through habitat modifications, on upland species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service. (Less than Significant with Mitigation)

Species considered special-status and analyzed in this EIR that have a moderate or high potential to occur *and* to be exposed to project impacts are as follows:

State- or Federally Listed or Recently Delisted Species

- Mission blue butterfly
- Western snowy plover
- California brown pelican
- California least tern
- Peregrine falcon
- Bank swallow
- San Francisco lessingia
- Presidio manzanita
- Marin dwarf-flax
- Presidio clarkia

Other Special-Status Species

- Raptor species: great horned owl, sharp-shinned hawk, red-shouldered hawk, red-tailed hawk, northern harrier, American kestrel.
- Black-crowned night-heron and snowy egret
- Double-crested cormorant
- Caspian tern
- Nesting birds covered by the MBTA
- Townsend's Pacific big-eared bat and fringed myotis
- Special-status plants: dune gilia, Franciscan manzanita, San Francisco Bay spineflower, Franciscan thistle, blue coast gilia, San Francisco gumplant, San Francisco campion, San Francisco owl's clover

Impact Overview

There are two broad categories of impacts on special-status species. *Construction activities* that would be associated with the project are anticipated to occur continuously for approximately two years. Construction activities would vary depending on the needs of the project area and may include site preparation, placement of infrastructure, and fabrication of structures. Depending on

the specific site requirements, demolition (at Piers 27-29 only) and construction activities could require the use of heavy trucks, material loaders, cranes, concrete breakers, and other mobile and stationary construction equipment. Pile driving would be required for pile replacement and installation of floating boat slips, docks and wave attenuators. These disturbances would mainly be along the San Francisco waterfront and generally, vegetation and wildlife in the project area are already exposed to a high level of ambient disturbance.

AC34 spectator activities would have partially direct impacts and partially indirect impacts. Direct impacts would involve crushing or removal of sensitive vegetation, some of it rare or endangered, some the host plants of a listed species of butterfly. Indirect impacts would include the noise generated by spectators, their movement into and out of the spectator areas (on land or by boat), and their food trash and litter, which could affect resident wildlife by attracting disturbance-tolerant species. The baseline includes urban harassment in the project area within San Francisco and visitor and tourist disturbance at all the sites and venues – Alcatraz, for example, hosts 1.4 million people per year, according to the National Park Service (NPS)[27] – generating noise, people, vehicle and aircraft traffic, feral animals, and recreational and commercial ship and boat activity on the water.

The extant environment for biological resources suggests that this is an area that could theoretically host an event the size of the America's Cup without breaching disturbance or impact thresholds that plants and wildlife already experience, i.e., the CEQA baseline. While the influx of thousands of visitors to spectator sites and on-water traffic would have the same indirect impacts of any special event, however, it would be on a qualitatively larger scale due to the prolonged schedule of AC34 events. That level of disturbance requires a closer analysis. For plants, the spectator sites would be particularly problematic, because impact on vegetation is a predictable result of large crowds whose attention is elsewhere.

For wildlife, Impact BI-1 deals first with the sensitive wildlife species exposed to impacts in their general use of areas for feeding, roosting, and resting and sensitive plant species likely to be present. Because some of these species are at risk also in their breeding and nesting areas, and because boat traffic of all kinds would have effects on many species that may alter their movement patterns throughout the Bay, discussion of and mitigation for these impacts is discussed under Impact BI-4, which covers *movement of native wildlife* and *native wildlife nursery sites.* Impact BI-1 also includes the three listed plants and their exposure to impacts at spectator sites.

The impact discussion for BI-1 is organized by the major categories of species sensitivity, i.e., species listed under CESA or FESA, followed by species still sensitive but without being state- or federally listed. Under these categories, in turn, are the project venues where the impacts are considered most likely.

[27] PRBO Conservation Science, *Connecting People with Birds on Alcatraz Island,* The Observer Number 148, http://www.prbo.org/obs_cms/index.php?module=browse&browse_issue_num=148&browse_article_num=140&chooseIssue=1, 2007.

Impacts on Sensitive Listed Species: Snowy Plover, Mission Blue Butterfly, Bank Swallow, Presidio Manzanita, Marin Dwarf-Flax, Presidio clarkia, and San Francisco Lessingia

Crissy Field and Crissy Marsh, Fort Funston, and Ocean Beach. The proposed spectator area at Crissy Field would provide a range of hospitality services, including general merchandise sales, food and beverage concessions, and sponsor displays, and as described in Chapter 3, is expected to attract hundreds of thousands of visitors over the course of the AC34 events.

The Crissy Wildlife Protection Area to the west of the marsh and along the beach/offshore area is set aside for the protection of shorebirds, and in particular the western snowy plover (a federally listed threatened species), which occupies the area from July through May. The area is currently enclosed with post-and-cable fencing backed by 2-inch-by-4-inch welded mesh. The fencing may be inadequate given the crowd sizes expected. Also, the Crissy Field dune community is identified as a Special Ecological Area (SEA) by the NPS, and Marin dwarf flax and San Francisco lessingia occur here.[28] Overall, the threat to these species from thousands of spectators is *potentially significant*.

Both the plover and the bank swallow (federally listed as threatened and state-listed as endangered) occur in the dunes at the south end of Ocean Beach, near Fort Funston, but impacts would be minimal (i.e., *less than significant*) there because the distance to the proposed course of the races would make this an unlikely spectator destination.

Baker Beach. Baker Beach and dunes support all three of the listed plant species. Although Baker Beach is not within the primary or secondary spectator areas, this EIR assumes that it would receive heavier than normal use during the race events because people would be displaced from formally designated areas and others may simply prefer Baker Beach. Much of the dune area is fenced with post and cable fencing in various states of repair, but new plantation areas indicated by pin flags are in close proximity to trails and unprotected. The impacts here would thus be *potentially significant*.

Fort Baker and Marin Headlands. A concern over much of the Fort Baker (Battery Cavallo, Battery Yates, and the upland area between the Lodge and East Road) is the presence of Mission blue butterfly, a federally listed endangered species. In Mission blue butterfly habitat, the park requires visitors to stay on trails, which are fenced with post and cable fencing. Similar fencing indicates trails that are closed in Mission blue butterfly habitat (e.g., Drown Fire Road). This type of fencing could be inadequate to contain a large increase in visitors during race days, and degradation of habitat from offtrail use is likely. Moreover, outside of Fort Baker, the NPS considers suitable – and potentially occupied -- habitat to extend west along the Marin Headlands south of Conzelman Road, (a likely spectator route) and especially in the vicinity of Kirby Cove. The impact would be *potentially significant*.

[28] National Park Service, comment letter on Notice of Preparation, to John Rahaim, Director, San Francisco Planning Department, March 11, 2011.

Impacts on Other Sensitive Species: California Brown Pelican, California Least Tern, Double-Crested Cormorant, Black-Crowned Night-Heron, and Snowy Egret

The pelican and the cormorant forage in the deep waters of the Central Bay, although both are frequently associated also with shallower waters.[29] Least terns are seen in the Central Bay, but authors have noted that it forages more frequently in shallower water; in one study, approximately 90 to 95 percent of foraging was in water less than 60 feet deep.[30] The same holds true for the black-crowned night-heron and the snowy egret, as both species tend to "still-fish" in shallow water.[31] Considering the Central Bay as the center of the race route, and presuming spectator boats would generally be limited to defined areas and mostly stationary during the races under **Mitigation Measure M-BI-4a** (Restrictions on Spectator Craft within Race Course Boundaries) below, there would likely be limited race-related traffic in shallow water habitats while the events are taking place, with the possible exception of low-flying helicopters. Given the temporary nature of the events and the availability of forage in shallower waters in other parts of the bay, the impact of AC34 events on open water feeding would be *less than significant* for these species and no mitigation is required. For a discussion of potential disturbance to breeding areas for these taxa, see Impact BI-4.

Impacts on Other Sensitive Species: Bats, Raptors, and Other Nesting Birds

As noted in Table 5.14-1, historic forest areas offer nesting and roosting habitat for birds and bats, as do the piers and associated structures, many of which would be used and modified for AC34 events. Birds nesting in the historic forest are currently subject to a high level of disturbance (i.e., activities associated with the reconstruction of Doyle Drive), and the forest offers little by way of viewing sites; impacts are therefore considered *less than significant* for these taxa. For a discussion of potential disturbance to breeding areas for bats and birds along the San Francisco waterfront, please see Impact BI-4. Apart from interference with breeding, the activity areas for these species are not likely to be affected by the project and the impacts are considered *less than significant*.

Impacts on Other Sensitive Plant Species: Dune Gilia, Franciscan Manzanita, San Francisco Bay Spineflower, Franciscan Thistle, Blue Coast Gilia, San Francisco Gumplant, San Francisco Campion, and San Francisco Owl's Clover

These species are most frequently known from the same areas as the listed plants: Crissy Field, Crissy Marsh, and Baker Beach and dunes. However, other observations are more widely scattered and include Fort Point, Inspiration Point, and in at least one case (Franciscan thistle), on the Marin Headlands. The wider distribution poses some greater challenges, as it limits the effectiveness of fencing. The impacts would thus be *potentially significant*.

[29] Ainley, D. G., D. W. Anderson, and P. R. Kelly, Feeding ecology of marine cormorants in southwestern North America. Condor 83:120-131, 1981.
[30] Atwood, J.L. and D. E. Minsky, Least tern foraging ecology at three major California breeding colonies, Western Birds 14: 57-72, 1983, p. 62.
[31] Terres, John K., Ed., Audubon Society Encyclopedia of North American Birds, 1991, p. 498.

Impact Summary

For snowy plover, San Francisco lessingia, and Mission blue butterfly, AC34 events and venues would have potentially significant impacts, at the Crissy Field/Crissy Marsh areas for the plover and lessingia and at Fort Baker for the butterfly. For other listed plants, the Baker Beach dune area is especially sensitive. These impacts can be mitigated through additional signing and fencing required by **Mitigation Measure M-BI-1a** (Protecting Sensitive Areas for Mission Blue Butterfly) and **M-BI-1b** (Protecting Listed and Other Special Status Plant Areas), by offshore restrictions discussed in **Mitigation Measure M-BI-1c** (Protecting the Crissy Beach Wildlife Protection Area) and **M-BI-1d** (Protecting Offshore Portion of the Wildlife Protection Area), and noise and light limits described in **M-BI-1e** (Restrictions on Fireworks and Night Lighting).

For the other sensitive plant species, mitigation requires a combination of fencing, signage, area closures, and resource monitors in secondary spectator sites and in areas where "overflow" public use is expected, such as Baker Beach and dunes, under **Mitigation Measure M-BI-1b** (Protecting Listed and Other Special Status Plant Areas).

Due to the distance between bank swallow nesting at Fort Funston and race events, no impact is anticipated. For the other sensitive species, impacts would be *less than significant*, although additional consideration is given in Impact BI-4, below.

Mitigation Measure M-BI-1a: Protecting Sensitive Areas for Mission Blue Butterfly

The AC34 project sponsor shall ensure that areas supporting the habitat for Mission blue butterflies (*Lupinus albifrons*) are adequately protected against incidental impacts by spectators for AC34 events. These areas shall be avoided. This shall be accomplished by working with the NPS to develop a detailed strategy for protecting sensitive butterfly areas, including area closures, fencing, signage, and staffing. Federal and state agencies would likely require these or similar measures pursuant to their mission and obligations under federal and state law. The project sponsor shall work with NPS to implement an appropriate combination of the following conservation measures to ensure that these areas will be avoided:

- New fence or fence augmentation. Fencing could consist of, as an example, higher fencing with additional cabling or wire mesh backing. If NPS requires fencing in 2012, these fences will be light enough for removal between 2012 and 2013 race events, and will be obvious deterrents to visitors. Fences, if required, will be in place prior to the start of the AC events. Areas fenced will have signs at frequent intervals announcing that these are sensitive wildlife/ botanical areas. Final fencing type and signage will be coordinated with the NPS.

- Trail, area, or roads could be closed during race events. For Mission blue butterfly, this could include closure of roads and trails at Fort Baker and the Marin Headlands, including closure of Conzelman Road in the Marin Headlands during race events.

- Resource monitors. Resource monitors will be placed at areas of greatest spectator density or as an augmentation of the signage and fencing protection measures. The monitors shall be trained in both the sensitive species of the area and in the proper

manner to interact with and inform spectators. In coordination with NPS, NPS law enforcement personnel would provide additional support as needed.

Mitigation Measure M-BI-1b: Protecting Listed and Other Special Status Plant Areas

The project sponsor shall ensure that areas supporting special-status plants are adequately protected against incidental impacts by spectators for AC34 events or displaced park visitors. These areas shall be avoided. These plants are largely concentrated in the dunes and serpentine soils of the Presidio at and above Baker Beach and along Lincoln Boulevard, the serpentine areas on Angel Island and at Crissy Marsh and Beach. Federal and state agencies would likely require these or similar measures pursuant to their mission and obligations under federal and state law. The project sponsor will work closely with the NPS and the California Department of Parks and Recreation (CDPR) to develop a detailed strategy for protecting plant populations by implementing an appropriate combination of the same three measures that are identified in **Mitigation Measure M-BI-1a** (Protecting Sensitive Areas for Mission Blue Butterfly): (1) fencing as necessary; (2) resource monitors; and/or (3) trail/area closures.

Mitigation Measure M-BI-1c: Protecting the Crissy Beach Wildlife Protection Area (WPA)

The project sponsor shall ensure that areas supporting western snowy plover are adequately protected against incidental impacts by spectators or AC34 events. These areas shall be avoided. The western snowy plovers are concentrated within the Crissy Beach WPA, which is managed by NPS. Similar to the measures identified in **Mitigation Measures M-BI-1a** (Protecting Sensitive Areas for Mission Blue Butterfly**)** and **M-BI-1b** (Protecting Listed and Other Special Status Plant Areas**)**, NPS would likely require these or similar measures pursuant to their mission and obligations under federal law, and the project sponsor will work with NPS to develop a detailed strategy for protecting western snowy plover populations within the project area, which will include an appropriate combination of the following three measures as identified above: (1) signage and fencing as necessary; (2) resource monitors; and/or (3) area closures. In particular, NPS may decide to close temporarily the WPA on race days.

Mitigation Measure M-BI-1d: Protecting Offshore Portion of the Wildlife Protection Area (WPA)

The project sponsor shall work with the necessary governmental authorities to create a 100-yard offshore buffer in the form of a marked, marine-protected zone established offshore of the Crissy Beach WPA to mitigate impacts on western snowy plover. For a detailed map of Crissy Beach, see Appendix PD-3, *NPS Management Zone Planning Maps* for West Crissy Field. The protected zone will exclude all boat traffic throughout the duration of the AC34 events, which could include the use of trained boat-based resource monitors. Information regarding protection zones will be included within a detailed 'Notice to Mariners' that will be administered by the United States Coast Guard (see also **Mitigation Measure M-BI-12**, (Visiting Mariners Information). See also **Mitigation Measure M-BI-4b** (Offshore Buffers for Breeding Birds and Snowy Plover). A reduced buffer could be provided on a case-by-case basis to the extent approved by necessary governmental authorities based on site-specific conditions.

Mitigation Measure M-BI-1e: Restrictions on Fireworks and Night Lighting

In consultation with the NPS, fireworks or cannon fire will be limited to protect plovers from harassment. Such restrictions are likely to limit where such activities are staged, or stipulate maximum allowable noise (decibels) at the Crissy Field WPA. Where exterior lights are to be left on at night, the AC34 project sponsor shall install fully shielded and downward cast lights to contain and direct light away from habitat, the sky, and Bay waters.[32]

*Impacts Associated with Implementation of Mitigation Measures M-BI-1a and M-BI-1b.*CEQA Section 15126.4 states that "if a mitigation measure would cause one or more significant effects in addition to those that would be caused by the project as proposed, the effects of the mitigation measure shall be discussed but in less detail than the significant effects of the project as proposed." Implementation of Mitigation Measures M-BI-1a (Protecting Sensitive Areas for Mission Blue Butterfly) and M-BI-1b (Protecting Listed and Other Special Status Plant Areas) could result in closure of trails and roads. It is likely that on closure days, some recreationists who currently use these areas may instead use other similar regional recreational facilities and shoreline areas, including those described in Section 5.11, Recreation, such as the Presidio, other Crissy Field or Fort Mason areas, as well as other nearby recreational areas such as Golden Gate Park, Baker Beach, and Ocean Beach, resulting in occasional increases in use of other recreational facilities in San Francisco during the AC34 events. However, given the availability of recreational facilities in the region, increased use of regional recreational facilities would not result in substantial physical deterioration of recreational resources, or otherwise result in physical degradation of existing recreational resources, and the impact of these mitigation measures would be less than significant and would not change the conclusions of the recreation impact analysis presented in Section 5.11, Recreation.

Impact BI-2: The America's Cup facilities and events could have a substantial adverse effect on riparian habitat or other sensitive natural upland community identified in local or regional plans, policies, or regulations. (Less than Significant with Mitigation)

There is no riparian habitat within the project area, except those areas described as "Cowardin" wetlands under Impact BI-3.

As noted above in Section 5.14.1.5, the project area supports five sensitive natural communities recognized by CDFG: California Buckeye Woodland on Yerba Buena Island; Coastal Bluff Scrub (including northern coastal [*Franciscan*] scrub) on Yerba Buena Island, south and east of the Golden Gate Bridge in the Presidio, and along the Marin Headlands; and Coastal Salt Marsh developed as part of the Crissy Field Restoration Project. In addition, the Crissy Field dune community is identified as a Special Ecological Area (SEA) by the NPS, a community that also occurs at Baker Beach.

[32] According to the International Dark Sky Association's *Outdoor Lighting Code Handbook* (2000), a fully shielded fixture is "A light fixture constructed in such a manner that all light emitted by the fixture, either directly from the lamp or a diffusing element, or indirectly by reflection or refraction from any part of the luminaire, is projected below the horizontal."

The buckeye woodland and coastal brush scrub are not likely to become active viewing sites, except perhaps at the Marin Headlands, where spectators may descend short distances from the paved road and into coastal scrub. As noted above, Inspiration Point (in the southeast part of the Presidio) supports the only Serpentine Grassland within Golden Gate National Recreation Area, but it is too remote from other spectator sites and the course itself to need any special protection. Serpentine areas on Angel Island area are considered sensitive in this EIR. Portions of Crissy Marsh and Baker Beach would have improved fencing and signage as part of **Mitigation Measure M-BI-1b** (Protecting Listed and Other Special Status Plant Areas) **and M-BI-1c** (Protecting the Crissy Beach Wildlife Protection Area), but it is impractical to fence extensive areas. Adequate mitigation for sensitive natural communities would be provided by signage and restrictions as described in **Mitigation Measure M-BI-2** (Signage at Sensitive Natural Community Areas; "No Spectator" Zone on Yerba Buena Island), below, and would reduce the impact to less than significant.

> **Mitigation Measure M-BI-2: Signage at Sensitive Natural Community Areas; "No Spectator" Zone on Yerba Buena Island**
>
> The project sponsor shall ensure that adequate signage is established in every area that meets the criteria for sensitive natural community.[33] Signage type and placement shall be coordinated with and approved by the appropriate land authority – NPS, Presidio Trust, CDPR, or the Treasure Island Development Authority (for signage on Yerba Buena Island only) – through the preparation and submittal of a formal Fencing and Signage Plan that will exclude visitors from the sensitive natural community areas.
>
> No spectators shall be permitted on the western slope of Yerba Buena Island west of Treasure Island Road, to protect sensitive habitats (northern coastal [*Franciscan*] scrub vegetation).
>
> **Mitigation Measure M-BI-1b: Protecting Listed and Other Special Status Plant Areas**
>
> **Mitigation Measure M-BI-1c: Protecting the Crissy Beach Wildlife Protection Area**

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Impact BI-3: The America's Cup facilities and events could have a substantial adverse effect on federally protected wetlands or navigable waters. (Less than Significant with Mitigation)

The only wetlands within the project area and potentially exposed to impacts on the San Francisco Peninsula are in the vicinity of Crissy Marsh and the Doyle Drive (Presidio Parkway) construction corridor, and a few small seeps along the bluffs above Baker Beach. Crissy Marsh has been delineated as jurisdictional waters of the United States in the project area, and the NPS or the Trust

[33] Sensitive biological communities are defined as those communities that are given special protection under CEQA and other applicable federal, state, and local laws, regulations and ordinances.

protect a series of small "Cowardin"[34] wetlands within the Doyle Drive construction corridor. These wetlands are not within the Corps jurisdiction under Section 404 of the Clean Water Act as waters of the United States. The dominant species in these wetlands consist of arroyo willow and California blackberry, and the wetlands lie along the steep hillside slopes north of Doyle Drive and south of Mason Street.[35] These wetlands would be classified as riparian habitat or a sensitive natural community as discussed in Impact BI-2, but are described here because of their wetland status as defined by the NPS. All of these sites are densely vegetated and would not normally attract visitor interest. The locations of these wetlands (with the exception of the seeps at Baker Beach) are displayed on **Figure 5.14-2**.

All of these areas could be avoided and protected from direct or indirect impacts, with such protection provided by warning signs as required in **Mitigation Measure M-BI-3** (Signage at Wetland Sites). Due to the sensitivity of these areas and the large numbers of spectators expected in the vicinity of these during AC34 events, there would be a *potentially significant* possibility for direct and indirect impacts. However, with implementation of this mitigation measure, the impact would be considered less than significant.

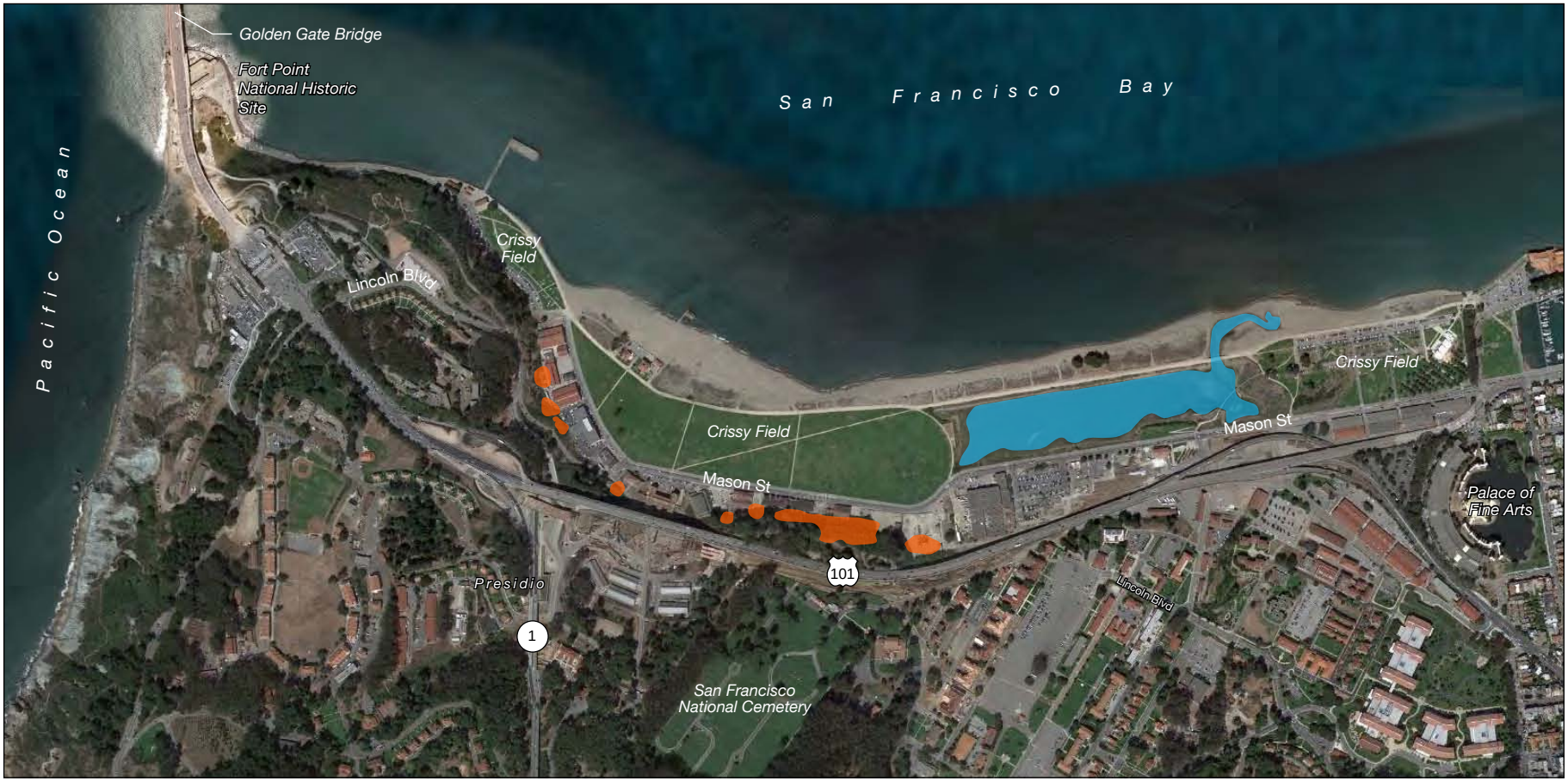
Along the San Francisco waterfront, the wetland closest to proposed AC34 facilities and events is in the vicinity of Pier 94. The wetland is the result of subsided dredged and fill materials. On Angel Island, numerous water seepages occur in the canyons formed by the radiating ridges, but it is only in the canyon extending from the summit of Mt. Livermore to Perle's Beach that any significant water flow occurs.[36] The damming of this small stream in two locations has resulted in the formation of two small ponds. Neither the wetlands in the vicinity of Pier 94 nor the ponds on Angel Island would be directly or indirectly affected by the project.[37] However, Angel Island does support a perennial spring above the eastern intersection of the Battery Drew bypass and Perimeter Road, which is accessible to the public, as shown in **Figure 5.14-3**. Similar to the NPS wetlands near Doyle Drive, the spring and associated wetland would be protected by **Mitigation Measure M-BI-3** (Signage at Wetland Sites), and with implementation of this measure, no significant impact is expected.

[34] The Cowardin definition of wetlands includes more habitat types than the definition (33 CFR 328.3) and delineation manual used by the United States Army Corps of Engineers (Corps). The 1987 Corps *Wetlands Delineation Manual* requires that three parameters (hydrophytic vegetation, hydric soil, wetland hydrology) be present for a habitat to be considered a wetland. The Cowardin wetland definition includes wetlands, but also adds some habitats that, though lacking vegetation or soils, are still saturated or shallow inundated environments that support aquatic life. Such wetlands, which also qualify as waters of the state of California, are protected by the NPS.

[35] Federal Highway Administration, South Access to the Golden Gate Bridge–Doyle Drive FEIS/R (CEQ #20050545), 2008.

[36] Ripley, JD. Plants of Angel Island, Marin County, California. Great Basin Naturalist Vol. 40, No. 4, Dec., 1980. pp. 385-407.

[37] San Francisco Planning Department, *Southern Waterfront Supplemental Environmental Impact Report, Case No. 1999.377E.*



SOURCE: Google Maps; ESA, 2011

Case No. 2010.0493E: AC34 / Cruise Terminal and Northeast Wharf Plaza (210317)

Figure 5.14-2
Wetlands in the Crissy Field Area

Case No. 2010.0493E: AC34 / Cruise Terminal and Northeast Wharf Plaza (210317)

SOURCE: Google Maps; California State Parks; ESA

Figure 5.14-3
Spring/Wetland on Angel Island

Mitigation Measure M-BI-3: Signage at Wetland Sites

The project sponsor shall ensure that adequate "keep out" signage is established in every area that meets the criteria for federally-protected wetlands (by Clean Water Act or National Park Service authority) in the area of Crissy Field in the Presidio. These include Crissy Marsh itself and those Cowardin wetlands shown in Figure 5.14-2,[38] and the spring on Angel Island shown in Figure 5.14-3. Signage type and placement shall be coordinated with and approved by the appropriate land authority –NPS, CDPR, or Presidio Trust – through the preparation and submittal of a formal Fencing and Signage Plan, designed to exclude visitors from the federally protected wetlands.

Impact BI-4: The America's Cup facilities and events could interfere with the movement of native upland wildlife species or with established native resident or migratory wildlife corridors or impede the use of native wildlife nursery sites. (Less than Significant with Mitigation)

Movement of Native Wildlife Species

In the Central Bay, increased boat traffic associated with the races to and from the race sites to marine facilities onshore could have a negative effect on "rafting" (i.e., aggregating on water) bird species. Moreover, the open waters of San Francisco Bay are foraging habitats for many species of resident and migratory birds, and nesting sites are often on shores and rocky cliffs near boat traffic. Many waterfowl species are declining along the West Coast, and human impacts from the heavily urbanized San Francisco Bay Area are often detrimental to them. Rafting or foraging birds look, swim, dive, or fly away as watercraft approach them and become distracted from their normal activities.[39] Increased vigilance and escape behavior reduces their limited energy supply and induces stress. Different species have varying distance tolerances before becoming disturbed, but if disturbed they can be flushed from foraging or resting areas. Diving ducks such as scaup and scoter are especially sensitive to maritime traffic. Long-term effects could be site abandonment, reduced migration, and reduced reproductive success.[40,41,42]

However, as noted above in Impact BI-1, the most sensitive species in the Central Bay (California brown pelican, California least tern, double-crested cormorant, black-crowned night-heron, snowy egret) have alternate foraging locations. Furthermore, the greatest period of sensitivity for rafting waterfowl (and the time of year when rafting is common) is winter, when both foraging and flight require greater energy expenditure. The America's Cup schedule would therefore

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38 Federal Highway Administration, South Access to the Golden Gate Bridge–Doyle Drive FEIS/R (CEQ #20050545), 2008, p. 3-277.

39 Huffman, K., San Diego South Bay survey report – *Effects of Human Activity and Water Craft on Wintering Birds in the South San Diego Bay*. 1999, 42 pp.

40 Belanger, L. and J Bedard, *Energetic Cost of Man-induced Disturbance to Staging Snow Geese*, Journal of Wildlife Management 54:36-41, 1990.

41 Knapton, R. W., S. A. Petrie, and G. Herring, *Human disturbance of diving ducks on Long Point Bay, Lake Erie*, Wildlife Society Bulletin 28:923-930, 2000.

42 Mori, Y., N. S. Sodhi, S. Kawanishi, S. Yamagishi, *The Effect of Human Disturbance and Flock Composition on the Flight Distances of Waterfowl Species*, Journal of Ethology 19:115-119, 2001.

moderate this impact. Restrictions on spectator traffic for the interior of the area bounded by the race course prescribed in **Mitigation Measure M-BI-4a** (Restrictions on Spectator Craft within Race Course Boundaries) would further reduce potential impacts, such that with mitigation impacts would be less than significant.

Wildlife Nursery Sites

Alcatraz. In 2012 and 2013, the proposed spectator venue at Alcatraz would be used exclusively for corporate and private functions. As described in Chapter 3, thousands of visitors over the course of the AC34 events are expected to view the races from Alcatraz.

As noted by the NPS, several thousand colonial seabirds of several species nest, roost, and/or forage on the island, including several considered special-status in this EIR. Two species of cormorants (*Phalacrocorax sp.*) – the Brandt's cormorant and the pelagic cormorant – breed on Alcatraz. Other nesters include black-crowned night-heron (*Nycticorax nycticorax*) and snowy egret (*Egretta thula*). For both of these latter species, nesting colonies are listed as special-status on the CDFG 'Special Animals" list. These species are particularly sensitive to disturbance during nesting season, which extends from February 1 through September 15. Colonial nesting species are especially vulnerable as one major disturbance event risks complete breeding season failure for the entire colony. These species occupy large areas of the island, including the coastal cliffs as well as other parts of the island that are closed to the public during the nesting season. Protective "buffer" distances prescribed in **Mitigation Measure M-BI-4b** (Offshore Buffers for Breeding Birds and Snowy Plover) would reduce impacts to less than significant for offshore disturbances.

Onshore, AC34 events are more problematic. A 2007 study examined the effect of a Special Park Uses-permitted event held in 2007 in the Laundry Building on Alcatraz. The event was monitored for effects on cormorants, and the authors concluded that the cormorant population on Alcatraz experienced lasting effects from the event.[43] The scale of disturbance that was monitored is assumed to be not substantially different from AC34 events. The impacts are thus assumed to be *potentially significant* but, through the implementation of **Mitigation Measure M-BI-4e** (Protection for Colonial Breeding Birds on Alcatraz), could be reduced to less than significant.

Piers 27 and 29; Piers 30-32 and Apron Repairs. The improvements required to support AC34 activities would demolish the Pier 27 shed in its entirety, along with a portion of the Pier 29 shed to create an area for a proposed expansive temporary public viewing platform at the east end of Piers 27-29. The Pier 27 Annex office building would also be demolished. These structures proposed for demolition are potential roosting habitats for bats, but implementation of **Mitigation Measure M-BI-4d** (Protection for Bat Roosts on Piers and Associated Structures) would reduce potential impacts to bat species to less than significant. Western gulls may use the roofs of any of these for nesting, and nests have been observed on Pier 36.[44] Cliff swallows are probable nesters under at least some of the piers where construction would occur, most notably at Piers 30-32, where

[43] Acosta, S.; Thayer, J.; Merkle, W. and C. Hellwig, *Alcatraz Island Special Event Seabird Disturbance Monitoring Report,* Final Report to the Golden Gate National Recreation Area (GGNRA), National Park Service, 2007.
[44] San Francisco Planning Department, *Pier36/Brannan Street Wharf Project Environmental Impact Report. Case No. 2009.0418E,* 2011.

a number of permanent upgrades would be carried out in addition to repairs to support full access for the AC34 events. To increase lateral capacity, large diameter steel piles and pile caps would be installed at numerous locations tied to the structure. However, pile driving could potentially occur at any pier where apron repairs are needed. Seasonal restrictions, nest avoidance, or nest deterrent devices from **Mitigation Measure M-BI-4c** (Protection for Breeding Birds on Piers and Associated Structures) would reduce this *potentially significant* impact to less than significant.

Other Sites. Bird nesting and roosting also occurs at Point Bonita and Bird Island (north of Point Bonita) in Marin Headlands and Seal Rocks (near the Cliff House) in San Francisco, where impacts would also be reduced through the prescriptions in **Mitigation Measure M-BI-4b** (Offshore Buffers for Breeding Birds and Snowy Plover).

Mitigation Measure M-BI-4a: Restrictions on Spectator Craft within Race Course Boundaries

As part of the proposed project, the AC34 project sponsor will be working with the United States Coast Guard (USCG) to implement a Water and Air Traffic Plan to provide navigational and operational safety guidelines for race team, support, spectator, and large luxury yacht vessel activities associated with the AC34 events that meet USCG regulations. As part of this effort, the plan shall include provisions and restrictions to minimize the movement of spectator boats and thereby minimize disruption of feeding or resting least terns and other birds. Specifically, this may include requiring spectator vessels to be either anchored or as stationary as possible, maneuvering only to maintain safe distances from other vessels within the boundaries of the race course when races are occurring.

Mitigation Measure M-BI-4b: Offshore Buffers for Breeding Birds and Snowy Plover

The AC34 project sponsor shall work with the necessary governmental authorities to create a 100-yard offshore buffer in the form of a marked, marine-protected zone established offshore of areas with colonial breeding birds and other sensitive biological resources (such as snowy plovers at Crissy Beach) in order to exclude vessels from the area. For detailed maps of Alcatraz Island and Crissy Beach sensitive natural resource areas, see Appendix PD (NPS Management Zone Planning Maps for Alcatraz Island and West Crissy Field.) As a practical matter, this will be defined as a 100-yard buffer between any event or motorized spectator vessel and the undeveloped shoreline of the mainland or any island in the Bay. The protected zones at Alcatraz Island and Crissy Beach will exclude all boat traffic throughout the duration of the AC34 race events, which could include the use of trained boat-based resource monitors. Information regarding protection zones will be included within a detailed 'Notice to Mariners' that will be administered by the United States Coast Guard under **Mitigation Measure M-BI-12**, (Visiting Mariners Information). Aircraft overflights shall also be restricted within 1,000 feet of the airspace and marine perimeter of these areas.[45] A reduced buffer could be provided on a case-by-case basis to the extent approved by necessary governmental authorities based on site-specific conditions. See also **Mitigation Measure M-BI-1d** (Protecting Offshore Portion of the Wildlife Protection Area).

[45] Subject to the review and approval of the Federal Aviation Administration

Mitigation Measure M-BI-4c: Protection for Breeding Birds on Piers and Associated Structures

The AC34 project sponsor shall avoid demolition of structures on piers between March 1 and August 1. If demolition must occur during the nesting season, these areas shall be "netted" to prevent gulls from nesting there. Netting materials to be used shall be those developed specifically for bird exclusion. For possible cliff swallow nesting under piers, and in addition to netting, work in these areas shall be preceded by a pre-construction survey if work proceeds during the nesting season. The survey shall take place within two weeks of the start of work, and the nests avoided by at least 50 feet, or other actions developed in coordination with CDFG.

Mitigation Measure M-BI-4d: Protection for Bat Roosts on Piers and Associated Structures

Within two weeks before demolition, buildings showing evidence of bat activity shall be surveyed by a qualified bat biologist. If active maternity roosts are found they shall be avoided, unless disturbance is authorized by CDFG. If no maternity roosts are found, the bat biologist shall take actions under CDFG guidance to make such roosts unsuitable habitat prior to building demolition, such as sealing access routes used by bats when the bats are absent.

Mitigation Measure M-BI-4e: Protection for Colonial Breeding Birds on Alcatraz

The AC34 project sponsor shall allow no event-related public visitation, special events, or construction activities to be carried out near the western cliffs used by breeding seabirds. NPS would likely require these or similar measures pursuant to their mission and obligations under federal law. If required by NPS, the project sponsor shall install durable visual barriers, such as shade cloth fastened to 2-by-4-inch welded mesh, prior to arrival of birds for pre-nesting (February 1). All such areas will be considered "closed areas" with signs, similar to those described in **Mitigation Measure M-BI-1a** (Protecting Sensitive Areas for Mission Blue Butterfly), explaining the presence of the seabird colony and why it is important to stay behind barricades and view from a distance.

Impact BI-5: The America's Cup facilities and events would not conflict with any applicable local policies or ordinances protecting upland biological resources. (No Impact)

There would be no conflicts with any local policies or ordinances protecting biological resources from the construction and operation of the proposed AC34 events. The project area is a heavily regulated environment. The policies and ordinances have been developed in an urbanized area and deal with most of the types of impacts associated with such venues, including large scale public gatherings. The biological aspects of these provisions and restrictions were fully analyzed and reinforced, where necessary, in the mitigation measures developed in this document. Also, AC34 events are temporary, with sufficient flexibility to adapt their operations to comply.

Mitigation: Not required

James R. Herman Cruise Terminal and Northeast Wharf Plaza

Impact BI-6: The construction and operation of the James R. Herman Cruise Terminal and Northeast Wharf Plaza could have a substantial adverse effect, either directly or through habitat modifications, on upland species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations. (Less than Significant with Mitigation)

Apart from the marine mammals discussed in Sections 5.14.4 to 5.14.6 below, there are no special-status wildlife or plant species considered at risk of direct or indirect impact in this EIR for the Cruise Terminal project. Impacts associated with demolition of sheds at Piers 27 and 29, necessary for both the AC34 and the Cruise Terminal projects, are analyzed above as part of the AC34 project, and impacts would be mitigated as part of **Mitigation Measures M-BI-4c** (Protection for Breeding Birds on Piers and Associated Structures) and **M-BI-4d** (Protection for Bat Roosts on Piers and Associated Structures).

However, under both the AC34 and Cruise Terminal projects, the Port proposes to request amendments to the BCDC Special Area Plan. As part of the proposed amendments, fill removal is included in the scope of issues to be reviewed by BCDC. The Port has identified five possible fill removal sites in the vicinity of Piers 98, 88, 84, 70, 64, and 60, including Wharves 6, 7, and 8 adjacent to Pier 70. These sites include dilapidated piers, wharfs, and remnant pilings that were constructed with creosote-treated wood and have no current maritime uses. One special-status species, the Caspian tern, has been identified breeding in the area of Pier 64, and could potentially be affected by fill removal activities. Similar to the impacts at Piers 27-29, potential impacts to this species would be reduced to less than significant with implementation of **Mitigation Measure M-BI-4c** (Protection for Breeding Birds on Piers and Associated Structures). In addition, as described in Chapter 3, Project Description, the Port has indicated that to the extent that fill removal activities affect nesting areas for the Caspian tern, the Port would install alternative, replacement nesting platforms.

It is likely that the cruise terminal would employ considerable night lighting. At night, many birds are attracted to light. While not widely understood, it is thought that many navigation cues for migrating birds include sources of light, such as the stars or the moon. These birds may be confused by artificial light, rendering them more vulnerable to predation and exhaustion. In addition, large expanses of glass on structures such as the proposed cruise terminal would be a potential day time threat for bird collisions. Thus, depending on the final design, the cruise terminal could pose a *potentially significant* impact to numerous bird species. Implementation of **Mitigation Measures M-BI-6a** (Bird-Sensitive Night Lighting at the Cruise Terminal) and **M-BI-6b** (Bird-Building Collision Avoidance) would reduce these potential impacts to less than significant.

Mitigation Measure M-BI-6a: Bird-Sensitive Night Lighting at the Cruise Terminal

Where exterior lights are to be left on at night, the project sponsor shall install fully shielded lights to contain and direct light away from the sky.[46]

Mitigation Measure M-BI-6b: Bird-Building Collision Avoidance

The project sponsor shall ensure that windows at the cruise terminal are treated to minimize bird strikes, through a combination of fritting, permanent stencils, frosted glass, exterior screens, physical grids placed on the exterior of glazing or UV patterns visible to birds. Windows shall consist of no more than 10 percent untreated glazing.

Mitigation Measure M-BI-4c: Protection for Breeding Birds on Piers and Associated Structures

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Impact BI-7: The James R. Herman Cruise Terminal and Northeast Wharf Plaza would not have a substantial adverse effect on any riparian habitat or other sensitive natural upland community identified in local or regional plans, policies, or regulations. (No Impact)

There are no sensitive natural communities at risk of significant impacts from the construction and operation of the James R. Herman Cruise Terminal and Northeast Wharf Plaza.

Mitigation: Not required

Impact BI-8: The James R. Herman Cruise Terminal and Northeast Wharf Plaza would not have a substantial adverse effect on federally protected wetlands. (No Impact)

There are no federally protected wetlands at risk of significant impacts from the construction and operation of the James R. Herman Cruise Terminal and Northeast Wharf Plaza.

Mitigation: Not required

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[46] According to the International Dark Sky Association's *Outdoor Lighting Code Handbook* (2000), a fully shielded fixture is "A light fixture constructed in such a manner that all light emitted by the fixture, either directly from the lamp or a diffusing element, or indirectly by reflection or refraction from any part of the luminaire, is projected below the horizontal."

Impact BI-9: The James R. Herman Cruise Terminal and Northeast Wharf Plaza could interfere with the movement of native upland wildlife species or with established native resident or migratory wildlife corridors or impede the use of native wildlife nursery sites. (Less than Significant with Mitigation)

There are no significant impacts on wildlife movement corridors or the use of native wildlife nursery sites that would result from the construction and operation of the James R. Herman Cruise Terminal and Northeast Wharf Plaza. As noted above under Impact BI-6, the Port has identified five possible fill removal sites encompassing Piers 98, 88, 84, 70, 64, and 60, including Wharves 6, 7, and 8 adjacent to Pier 70. These sites include dilapidated piers, wharfs, and remnant pilings that were constructed with creosote-treated wood and have no current maritime uses. The potential for nesting birds is high, and the destruction of a building on Pier 60 (former Carmens restaurant) in China Basin Channel suggests that roosting bats are also a possibility. For this reason, potential impacts to these species would be reduced to less than significant with implementation of **Mitigation Measures M-BI-4c** (Protection for Breeding Birds on Piers and Associated Structures) and **M-BI-4d** (Protection for Bat Roosts on Piers and Associated Structures).

Mitigation Measure M-BI-4c: **Protection for Breeding Birds on Piers and Associated Structures**

Mitigation Measure M-BI-4d: Protection for Bat Roosts on Piers and Associated Structures

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Impact BI-10: The James R. Herman Cruise Terminal and Northeast Wharf Plaza would not conflict with any applicable local policies or ordinances protecting upland biological resources. (No Impact)

There are no conflicts with any local policies or ordinances protecting biological resources that would result from the construction and operation of the James R. Herman Cruise Terminal and Northeast Wharf Plaza. The project area is a heavily regulated environment. The policies and ordinances have been developed in an urbanized area and deal with most of the types of impacts associated with such venues, including large scale development/redevelopment projects. The biological aspects of these provisions and restrictions were fully analyzed and reinforced, where necessary, in the mitigation measures developed in this document.

Mitigation: Not required

5.14.3.4 Future Long-Term Development Impacts and Mitigation Measures—Upland Resources

Impact LT-BIa: Long-term development could result in impacts on upland biological resources. (Less than Significant with Mitigation)

As described in Chapter 3, the 34th America's Cup Host and Venue Agreement (Host Agreement) provides the Event Authority with certain long-term development rights under specified conditions. Although no site-specific development projects or programs have been developed, this EIR analyzes at a conceptual level an assumed type and level of development based on current land use policies and guidelines.

As indicated in Section 5.14.1.2, above, the piers and seawall lots within the Port of San Francisco's jurisdiction, including those subject to long-term development under the Host Agreement, have no natural vegetation communities and limited value for wildlife. No impacts on riparian or other sensitive natural communities would be expected. Depending on the specific development proposal, the potential impacts on biological resources and mitigations to reduce impacts would be similar to those described above for the AC34 and Cruise Terminal projects in Impacts BI-1 through BI-10. Future development on the piers, seawall lots, and open water basin could result in *potentially significant* impacts associated with nesting birds, roosting bats, bird strikes, nighttime lighting, and rooftop structures. At a conceptual level, implementation of **Mitigation Measure M-LT-BIa** (Long-Term Development Mitigation for Upland Biological Resources), subject to refinement during the project-specific CEQA analysis, would reduce impacts to less than significant.

> **Mitigation Measure M-LT-BIa: Long-Term Development Mitigation for Upland Biological Resources**
>
> ***Pre-project Surveys for Nesting Birds.*** Pre-project surveys shall be conducted by a qualified biologist for nesting birds between February 1st and August 15th if ground disturbance or tree removal is scheduled to take place during that period. If bird species protected under the Migratory Bird Treaty Act (MBTA) or the California Fish and Game Code are found to be nesting in or near any work area, an appropriate no-work buffer zone (e.g., 100 feet for songbirds) shall be designated by the biologist. Depending on the species involved, input from the California Department of Fish and Game (CDFG) and/or the U.S. Fish and Wildlife Service (USFWS) Division of Migratory Bird Management may be warranted. As recommended by the biologist, no activities shall be conducted within the no-work buffer zone that could disrupt bird breeding. Outside of the breeding season (August 16 – January 31), or after young birds have fledged, as determined by the biologist, work activities may proceed.
>
> ***Minimizing Disturbance to Bats.*** Removal of trees or demolition of buildings showing evidence of bat activity shall occur during the period least likely to impact the bats as determined by a qualified bat biologist (generally between August 15 and April 15 for winter hibernacula and February 15 and October 15 for maternity roosts). If active day or night roosts are found, the bat biologist shall take actions to make such roosts unsuitable

habitat prior to tree removal or building demolition. A no-disturbance buffer shall be created around active bat roosts being used for maternity or hibernation purposes at a distance to be determined in consultation with CDFG. Bat roosts initiated during construction are presumed to be unaffected, and no buffer would necessary.

Minimizing Bird Strikes.

Windows and Landscaping. Prior to the issuance of the first building permit for each building in the proposed project, the project sponsor shall have a qualified biologist experienced with bird strikes review and approve the design of the building to ensure that it sufficiently minimizes the potential for bird strikes. The Port may consult with resource agencies such as the California Department of Fish and Game or others, as it deems appropriate.

The building developer shall provide to the Port a written description of the measures and features of the building design that are intended to address potential impacts on birds. Building developers are encouraged to coordinate with the Port early in the design process regarding design features intended to minimize bird strikes. The design shall include some of the following measures or measures that are equivalent to, but not necessarily identical to, those listed below, as new, more effective technology for addressing bird strikes may become available in the future:

- Employ design techniques that create "visual noise" via cladding or other design features that make it easy for birds to identify buildings as such and not mistake buildings for open sky or trees;
- Decrease continuity of reflective surfaces using "visual marker" design techniques, which techniques 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.
- Up to 40 feet high on building facades facing the shoreline, decrease reflectivity of glass, using design techniques such as plastic or metal screens, light-colored blinds or curtains, frosting of glass, angling glass towards the ground, UV-A glass, or awnings and overhangs;
- Eliminate the use of clear glass on opposing or immediately adjacent faces of the building without intervening interior obstacles such that a bird could perceive its flight path through the glass to be unobstructed;
- Mute reflections in glass using strategies such as angled glass, shades, internal screens, and overhangs; and
- Place new landscapes 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. The project sponsor shall similarly ensure that the design and specifications for buildings implement design elements to reduce lighting usage, change light direction, and contain light. These include, but are not limited to, the following considerations:

- Avoid installation of lighting in areas where not required for public safety;
- 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, and
- Installing fixtures that use lower-wattage, sodium, and blue-green lighting.
- Install strobe or flashing lights in place of continuously burning lights for obstruction lighting.
- Use rotating beams instead of continuous light; and
- Where exterior lights are to be left on at night, install fully shielded lights to contain and direct light away from the sky, as illustrated in the City of Toronto's Bird Friendly Building Guidelines.

Antennae, Monopole Structures, and Rooftop Elements. The Port shall ensure, as a condition of approval for every building permit, that buildings minimize the number of and co-locate rooftop-antennas and other rooftop equipment, and that monopole structures or antennas on buildings, in open areas, and at sports and playing fields and facilities do not include guy wires.

Educating Residents and Occupants. The Port shall ensure, as a condition of approval for every building permit, that the permit applicant agrees to provide educational materials to building tenants and occupants, hotel guests, 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 Port shall review and approve the educational materials prior to building occupancy.

Documentation. The project sponsor and/or Port 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.

5.14.3.5 Cumulative Impacts—Upland Resources

Impact C-BIa: The project, in combination with other past, present, and reasonably foreseeable future projects, would not result in significant adverse cumulative impacts on upland biological resources. (Less than Significant)

The geographic scope of potential cumulative impacts on biological resources encompasses the sensitive natural communities, species occurrences, and habitats within the AC34 and Cruise Terminal project areas as well as biologically linked areas sharing the Central Bay and its waters and islands. The EIR evaluates the impacts of the project on biological resources and presents mitigation measures that would support a conclusion of "less than significant with mitigation" for all impacts on biological resources. Specifically, this EIR found no substantial adverse effect on special-status species, sensitive natural communities, federally protected wetlands, native movement wildlife corridors, or native wildlife nursery sites with the application of the mitigation measures prescribed herein. It found no conflict (no impact) with any applicable local policies or ordinances or the provisions of an adopted habitat conservation plan. The purpose of this section is to assess whether the project's impacts, in combination with impacts from other past, present, and reasonably foreseeable future projects, would result in a significant adverse cumulative impact.

The majority of projects considered for cumulative impacts listed on Table 5.1-1 involve the ongoing development and restoration of the San Francisco waterfront. As discussed above, these areas have limited habitat value for wildlife, except where they involve the destruction or rehabilitation of piers (for example, the Pier 48/Seawall Lot project and Brannan Street Wharf Public Open Space Project 47), or demolish or rehabilitate older buildings (for example, the refurbishment of the historic Pier 40 shed completed in 2009). In these cases, less-than-significant cumulative impacts on nesting/roosting bats and birds might occur. Given the types of mitigation normally proposed (deterring birds from nesting, avoiding nests/roosts, or avoiding construction during the nesting/roosting season) and the abundance of what amounts to "structural" habitat in the overall waterfront, the cumulative impacts would be *less than significant* for these projects.

The proposed redevelopment of Treasure Island, the completion of the new eastern span of the Bay Bridge and associated highway projects on Yerba Buena Island, the construction and operation of a 400-berth marina in Clipper Cove, and new East Span of the Bay Bridge, Phase 3A of the Golden Gate Bridge Seismic Retrofit of the North Anchorage Housing/North Pylon project, and the Doyle Drive rebuild project all have similar effects on biological resources as the AC34 component of the proposed project, especially regarding wildlife movement. Potential cumulative projects were reviewed from the perspective that, first of all, these projects were themselves evaluated and modified to minimize impacts. Secondly, the biological resources at risk for the proposed project are in areas of public ownership (the GGNRA, NPS, Presidio Trust, or the California Department of Parks and Recreation [CDPR]) by agencies required to protect

[47] The Port is working jointly with the United States Army Corps of Engineers to design and construct this project, which is undergoing separate, concurrent environmental review and permitting. The Brannan Street Wharf Draft EIR (Case File 2009.0418E) was published in February 2011.

these resources in perpetuity, and the mitigation measures applied can thus be considered effective with some confidence. Therefore, there would be minimal residual impact. Thirdly, the impacts of the AC34 project would be temporary and would not cumulatively combine to create a significant adverse cumulative impact on biological resources.

Beyond the project area, there could be cumulative impacts on sensitive biological resources located throughout the bay. The proposed project might affect birds that use not only the project area's foraging and nesting habitats but also other habitats quite distant from the project area; these birds could therefore be affected by other projects. Cumulative impact assessment at this scale is speculative, and offsetting these impacts are large-scale habitat improvement projects such as the South Bay Salt Pond Restoration Project (see for example http://www.southbay restoration.org/index.html/) that are intended to provide a net benefit to biological resources.

In light of the above discussion, the change in the environment that would result from the incremental impact of the proposed project when added to other closely related past, present, and reasonably foreseeable future projects would not be cumulatively considerable.

Mitigation: Not required

5.14.4 Setting – Marine Resources

Many sources of information were used to prepare this section on marine biological resources. The primary sources of information referenced include:

- National Oceanographic and Atmospheric Administration (NOAA), National Marine Fisheries Service (NMFS) 2007 Report on the Subtidal Habitats and Associated Biological Taxa in San Francisco Bay
- California Department of Fish and Game (CDFG) January 2011 "Special Animals" list
- California Department of Fish and Game (CDFG) Interagency Ecological Program monthly fish trawl data from the Joint Ecosystem Database
- Treasure Island/Yerba Buena Island Redevelopment Project Draft EIR. 2010 Case No. 2007.0903E Final Draft dated March 16, 2011
- San Francisco Bay Subtidal Habitat Goals Report, Conservation Planning for the Submerged Areas; 50-Year Conservation Plan, dated 2010

These primary sources were augmented by pertinent published scientific studies from the scientific literature and other relevant environmental impact reports. In addition, Applied Marine Sciences, Inc. conducted a site visit of proposed AC34 venues at Port of San Francisco (Port) locations on February 28, 2011 and a biological reconnaissance of Port wharfs and piers from the water on March 22, 2011. A baseline period of 2005-2011 was used for describing marine resources in order to account for natural fluctuations in fish, algae, and invertebrate marine communities.

For more detail on the existing conditions including Marine Communities and Wildlife Habitats, refer to Appendix BI (Marine Biological Resources Supporting Information).

5.14.4.1 Regional Setting

The AC34 and Cruise Terminal project area is located within the Central Bay area of the San Francisco Bay-Delta. The San Francisco Bay-Delta is typically divided into three subregions or basins: South Bay, Central Bay, and North Bay. For the purposes of this assessment, the Central Bay is defined on the north as the area between San Pablo Strait and the Richmond-San Rafael Bridge area and the southern boundary is the San Bruno shoal. What distinguishes the Central Bay from the other two regions is that it connects to the Pacific Ocean through the Golden Gate and as a result has the most "coastal" aspects of the Bay-Delta.

This assessment focuses on the Central Bay subregion or basin and encompasses all of the proposed project sites. The regional setting for purposes of this evaluation includes both the above and below habitats around San Francisco Bay – the "baylands,"[48] the artificial habitat provided by Port infrastructure (primarily docks and piers), the open waters of the Bay itself, and the subtidal and intertidal habitats included throughout this region.

The Central Bay sub-region of the baylands includes the main body of San Francisco Bay and includes the deepest areas of the Bay and the most natural and man-made hard bottom substrate.[49] Beneath the Golden Gate the seafloor reaches depths of 361 feet with strong tidal currents running through the Golden Gate and throughout the Central Bay.[50] These strong tidal flows maintain deeper water depths, despite the large volume of sediment that has historically moved through the Bay from the Delta and local streams. Because of its proximity to the Golden Gate and open ocean waters, Central Bay biota most closely resembles open coast plant, invertebrate, and vertebrate marine communities that shift to estuarine communities that become established farther into the Bay-Delta estuary from the Golden Gate.

The marine biological biota found in the Central Bay area 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 in Section 5.14.4.2 below.

48 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, California.

49 NOAA, *Report on the Subtidal Habitats and Associated Biological Taxa in San Francisco Bay*, prepared by NOAA National Marine Fisheries Service. Santa Rosa, CA, June 2007.

50 Ibid.

5.14.4.2 Project Area Setting

The project area includes Port and City of San Francisco waterfront sites, the open water region of Central San Francisco Bay-Delta and Richardson Bay, and shoreline areas of Treasure, Alcatraz, and Angel Islands, the Marin Headlands, and the Tiburon Peninsula.

Spanning the entrance to the ocean, the Central Bay contains the deepest regions of the estuary and contains the greatest amount of natural and man-made hard bottom substrate in the Bay-Delta.[51] In the western part of the Central Bay, including the proposed AC34 race area, the substrate is mostly coarse mobile sand intermixed with pebble, cobble and gravel.[52,53] Pockets of mud are also interspersed with the coarser sediment material. Although tidal mud flats and shallows do occur in the Central Bay, the areal extent of these habitats is substantially lower than in either the North Bay or South Bay and the habitats are located along the fringes of the region.[54] Similarly, the amount of shoreline devoted to wharfs, piers, and docks is substantially greater than in either the North (San Pablo) Bay or South Bay.

Typically the water in the Central Bay is colder and more saline than other regions of the Bay-Delta. During the winter, average temperatures of the Bay do not drop lower than 51°F (10.4°C) and in the summer, the Central Bay averages 60°F (15.8°C).[55]

The marine habitats present within the project area include natural and artificial intertidal, subtidal, and open water. The geographic distribution of these habitats stretches between Pier 80 in South San Francisco northward to Angel Island and Richardson Bay, westward to the north and south headlands of the Golden Gate, and eastward to Treasure Island and Alcatraz Island. 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, sandy beaches, soft and hard substrate subtidal habitat and open water. Each of these habitats is discussed below with additional detail provided in Appendix BI of this EIR.

5.14.4.3 Marine Communities and Wildlife Habitats

Open Water (Pelagic) Habitat

Because of its close proximity to the Pacific Ocean, the open water (pelagic zone) environment of the Central Bay is very similar to the open water coastal environment. Pelagic habitat is the predominant marine habitat in Central San Francisco Bay and includes the area between the water's surface and the seafloor. The physical conditions of the open water environment are

51 Ibid.
52 Ibid.
53 Applied Marine Sciences, Inc. (AMS), *Benthic Survey of Commercial Aggregate Sand Mining Leases in San Francisco Bay and Western Delta*, August 2008. San Francisco Bay and Delta Sand Mining Draft Environmental Impact Report (EIR), CSLC EIR NO. 742. State Clearinghouse No. 2007072036. Appendix F. Prepared by ESA for the California State Lands Commission. Dated July 2010. 2009.
54 NOAA, *Report on the Subtidal Habitats and Associated Biological Taxa in San Francisco Bay*, prepared by NOAA National Marine Fisheries Service. Santa Rosa, CA, June 2007.
55 Ibid.

constantly changing with tidal flow and season. As a result, they vary in temperature, salinity, dissolved oxygen, and turbidity within the water column depending on water depth, location, and season. The water column can be further subdivided into shallow-water/shoal and deepwater/channel areas.[56] The AC34 race activities are proposed to occur on the surface waters within the deepwater/channels of the Central Bay with proposed docking/mooring occurring adjacent to existing Port wharfs in shallower water areas. No activities are proposed to occur in regions of the Bay characterized as shoals or mud flats. 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.

Plankton Communities

The Central Bay is inhabited by phytoplankton and zooplankton communities that are predominantly marine in composition and seasonality. Plankton species throughout the Bay-Delta are typically tolerant of broad salinity and temperature ranges because of the normal annual fluctuations between marine and freshwater influences.[57] See Appendix BI for more details on the plankton communities in the Central Bay.

Pelagic Fish Community

Thirty-three species of fish have been documented inhabiting Central Bay pelagic waters in recent years, of which three species account for 99 percent of the total abundance of fish regularly sampled in both the deep water and shallow areas of the Central Bay. Northern anchovy (*Engraulis mordax*) is the overwhelming dominant species, accounting for up to 94 percent of those fish inhabiting the water column. Pacific herring (*Clupea pallasii*) and jacksmelt (*Atherinopsis californiensis*) are the second and third most common fish taxa in Central Bay waters, together accounting for an additional 5 percent of the fish sampled on an annual basis. The remaining 30 species collectively account for less than 1 percent of the fish species present annually. Important managed fish species or sensitive species of concern that are present in Central Bay pelagic waters include Northern anchovy (*E. mordax*), longfin smelt (*S. thaleichthys*), Chinook salmon (*Oncorhynchus tshawytscha*), Pacific sardine, (*Sardinops sagax*), and English sole (*Parophrys vetulus*).

Marine Mammals

Seven species of marine mammals are known to currently occupy or use Central Bay waters. The most common and predominant are the harbor seal (*Phoca vitulina*), California sea lion (*Zalophus californianus*), and harbor porpoise (*Phocoena phocoena*). Additionally, *the* humpback whale (*Megaptera novaengliae*), California gray whale (*Eschrichtius robustus*), the stellar sea lion (*Eumetopias jubatus),* and the California sea otter (*Enhydra lutra*) are occasionally observed in the Bay.

[56] Ibid.
[57] Ibid.

In general, the presence of marine mammals in San Francisco Bay is related to distribution and presence of prey species and foraging habitat. Additionally, harbor seals and sea lions use various intertidal substrates that are exposed at low to medium tide levels for resting and breeding.[58]

Harbor seals and Harbor porpoises are the only year-round residents of the Bay-Delta, although sea lions can be observed most of the year. Harbor seals have permanent colonies at Castro Rocks in San Pablo Bay, Yerba Buena Island in the Central Bay, and Mowry Slough in the South Bay.[59] The year-around harbor seal "haul-out" on Yerba Buena Island's southwestern corner is part of the United States Coast Guard lands on the island and is not identified as a site for use by the project. This haul-out was not historically identified as a pupping site for harbor seals, but recent observations suggest that occasional pupping does occur there.[60] The current Bay-Delta harbor seal population is estimated at between 500 and 700 individuals.[61] Harbor seals forage throughout the Bay-Delta, feeding on schooling fish such as smelt, anchovies, herring, rockfish, sculpin, perch, and midshipmen, along with squid and mysid shrimp, all of which are present in the waters to be used by the project.

Harbor porpoises can be observed in the Bay at any time of the year, although they do not solely inhabit the Bay-Delta but utilize both the waters of the Bay-Delta as well as nearshore coastal waters. The harbor porpoise is a nearshore species, commonly observed near the Golden Gate Bridge and open water areas of the Central Bay. The San Francisco Bay-Russian River stock, identified as a unique genetic group, ranges from Point Arena to Monterey Bay. At present, no accurate estimates of the size of the San Francisco Bay-Russian River population exist.[62] Unlike some of their cousins, harbor porpoises typically avoid boats and humans. Harbor porpoise eat mostly small schooling fish and invertebrates and, along with seals and sea lions, will feed on herring and anchovies.

California sea lions use the San Francisco Bay-Delta for refuge and foraging but do not breed or pup within the Bay. California sea lions occur within the Bay-Delta in their highest numbers while migrating to and from their primary breeding areas on the Farallon and California Channel Islands, and when Pacific herring and salmon inhabit Bay-Delta waters to spawn or migrate to upriver spawning areas. Sea lions are known to swim up into the Delta along with migrating salmon, but most concentrate feeding in the Central Bay and where herring spawn. Similar to harbor seals, sea lions haul out onshore, often using anthropogenic structures such as boat docks and navigational buoys, although individuals may also haul out on islands within San Francisco

58 Ibid.
59 Ibid.
60 Green, D.E., E. Grigg, S. Allen, and H. Markowitz, *Monitoring the potential impact of the seismic retrofit construction activities at the Richmond-San Rafael Bridge on harbor seals (Phoca vitulinarichardsi) May 1, 1998-September 15, 2005*, 2006.
61 NOAA, *Report on the Subtidal Habitats and Associated Biological Taxa in San Francisco Bay*, prepared by NOAA National Marine Fisheries Service. Santa Rosa, CA, June 2007; citing Grigg, E. K., S. G. Allen, D. E. Green, and H. Markowitz, *Harbor Seal, Phoca vitulina richardii, Population Trends in the San Francisco Bay Estuary, 1970-2002*, California Fish and Game 90(2), pp. 51-70, 2004.
62 NOAA, *Report on the Subtidal Habitats and Associated Biological Taxa in San Francisco Bay*, prepared by NOAA National Marine Fisheries Service. Santa Rosa, CA, June 2007.

Bay, such as Alcatraz and Angel Islands. The largest California sea lion haul-out in San Francisco Bay has been at the Port of San Francisco Pier 39, where up to 800 sea lions have been historically counted. This group of sea lions has decreased in size in recent years, coincident with a fluctuating decrease in the herring population in the Bay. Sea lions often float on the surface in large groups of 10 to 20 after feeding.

The California gray whale, migrates between its mating/calving grounds in Baja, Mexico to its primary feeding grounds in Alaska and Canada on an annual basis. Gray whales are commonly sighted offshore San Francisco Bay during peak migration periods in spring (northward) and winter (southward). North Pacific coastal waters also contain at least three separate populations of humpback whales, of which one inhabits the waters of California, Oregon, and Washington. This population winters in coastal Central America and Mexico and migrates to areas ranging from California to southern British Columbia in summer and fall. When migrating, both humpbacks and California gray whales stay near the surface of the ocean.

California gray whales and humpback whales are infrequent transients into the Bay, with gray whales being potentially present December through April and humpback whales potentially present April through December. Humpback and California gray whales are both occasional visitors to the San Francisco Bay-Delta[63] with sightings as recent as 2007 for humpbacks when a pair swam up the Sacramento River as far as Sacramento before returning south to the Bay and the Pacific Ocean.[64]

Intertidal and Subtidal Habitats

Intertidal Habitats

Intertidal habitats, or the regions of the Bay that lie between low and high tides, in the Central Bay include sandy beaches; natural and artificial rock (quarried riprap); concrete bulkheads; concrete, composite, and wood pier pilings; and mud flats. These intertidal habitats provide highly diverse and varied locations for marine flora and fauna. Proximity to the Golden Gate and Pacific Ocean has resulted in an intertidal zone inhabited by many coastal as well as estuarine species. The natural bluff and exposed rocky shorelines of Yerba Buena, Alcatraz, and Angel Islands, the Marin Headlands, Tiburon Peninsula, and portions of San Francisco's north shoreline and area within the Golden Gate National Recreation Area, interspersed with sandy pocket beaches, provide a different assortment of ecological niches than the quarried riprap rock areas found along Treasure, Alcatraz, and Angel Islands, areas along the north shoreline of San Francisco, and Marin County.

63 Green, D.E., E. Grigg, S. Allen, and H. Markowitz, 2006. *Monitoring the potential impact of the seismic retrofit construction activities at the Richmond-San Rafael Bridge on harbor seals (Phoca vitulinarichardsi) May 1, 1998-September 15, 2005*.

64 Associated Press International (API). 2007. Two Humpback Whales Head Up California River, Associated Press, May 17, 2007. http://www.foxnews.com/story/0,2933,272692,00.html. Accessed March 18, 2011.

Because of their proximity to and influence by coastal ocean water flowing through the Golden Gate, Central Bay intertidal invertebrate and algae communities contain many coastal hard substrate taxa[65] interspersed with typical estuarine taxa.[66] The intertidal biological communities in the Central Bay also include both native and non-native species.[67]

The angular and piled rip-rap rocks that have been placed to protect numerous shoreline locations in Central Bay have been observed to provide additional habitat for a more diverse invertebrate community than observed in natural hard substrate intertidal locations because of the increased and protected surface area created by the piled rocks. These protected pockets provide numerous havens in which assorted marine species are able to survive and flourish.[68]

The concrete, wood, and composite pier and wharf pilings in Central San Francisco Bay also provide both intertidal and subtidal habitat for marine biota. A reconnaissance survey of marine biota attached to Port pilings at Piers 19-29, 26-32, and along the Marina Green and Aquatic Park in March 2011 observed multiple species of barnacles, chitons, limpets, mussels, bryozoans, and tunicates, along with the native oyster (*Ostrea lurida*) and the sea star *Pisaster ochraceous*. Observed algae included the green algae *Ulva spp*., the brown algae (*Egregia menziesii*), and the red algae (*Polyneura latissima*). Additional species of algae are expected to be present but were difficult to identify due to the season of the survey. Both the hybridized bay mussel (*Mytilus trossulus/ galloprovencialis*) and the coastal mussel (*M. californianus)* were observed.[69]

Subtidal Habitat

Central San Francisco Bay contains both soft sediment and hard substrate subtidal (submerged) habitat. Soft bottom substrate ranges between soft mud with high silt and clay content and areas of coarser sand. These latter tend 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.

The Central Bay region has the largest accumulation of natural hard substrate in the Bay-Delta. The hard substrate benthos in San Francisco Bay consists of both natural and artificial surfaces. Natural substrates include boulders, rock face outcrops, and low relief rock. Artificial hard substrate includes submerged concrete breakwalls, bulkheads, vessel structures, pilings, riprap, and pipelines. Pilings, riprap, and pipelines can be found in every San Francisco Bay region and

[65] Applied Marine Sciences, Inc. (AMS). *Survey of Intertidal Habitat and Marine Biota at Treasure Island and Along the Western Shoreline of Yerba Buena Island*. April 2009 (prepared in support of Treasure Island/Yerba Buena Island Redevelopment Project Draft EIR. 2010 Case No. 2007.0903E Final Draft dated March 16, 2011).

[66] Applied Marine Sciences, Inc. (AMS). *Technical Memo: Reconnaissance Survey of the Intertidal Marine Community Inhabiting Pier Pilings at the Port of San Francisco.* March 22, 2011 (prepared for ESA and the Port of San Francisco in support of the AC34 CEQA analysis).

[67] Applied Marine Sciences, Inc. (AMS). *Survey of Intertidal Habitat and Marine Biota at Treasure Island and Along the Western Shoreline of Yerba Buena Island*. April 2009 (prepared in support of Treasure Island/Yerba Buena Island Redevelopment Project Draft EIR. 2010 Case No. 2007.0903E Final Draft dated March 16, 2011).

[68] Ibid.

[69] Applied Marine Sciences, Inc. (AMS). *Technical Memo: Reconnaissance Survey of the Intertidal Marine Community Inhabiting Pier Pilings at the Port of San Francisco.* March 22, 2011 (prepared for ESA and the Port of San Francisco in support of the AC34 CEQA analysis).

are a dominant feature along the Port's waterfront. The western portion of the Central Bay, between Alcatraz Island and the Golden Gate, contains four submerged rocks or pinnacles: Arch Rock, Harding Rock, Shag Rock, and Blossom Rock. Several of these rise to within 40 feet of the sea surface. Most of these rock features were flattened to minimize navigation hazards when transiting the Bay. As a result, each of these natural features is surrounded by rubble and boulder fields.

These hard substrate areas provide habitat for an assemblage of marine algae, invertebrates and fishes, similar to the hard substrate in the intertidal zone of the Central Bay. Submerged hard bottom substrate is typically covered with a mixture of turf organisms that is 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.[70] The Pacific and red rock crabs are frequent targets of sport anglers from piers and jetties.

The predominant seafloor habitat in the project area is unconsolidated soft sediment composed of combination of mud/silt/clay, sand, and pebble/cobble, with varying amounts of intermixed shell fragments. Exposure to wave and current action, temperature, salinity, and light penetration determine the composition and distribution of organisms within these soft sediments.[71] The unconsolidated gravel, sand, and silt sediments of the Central Bay can be subdivided into deepwater channels, slough channels, harbor, and shallow subtidal topographies, each exhibiting different sediment and ecological compositions and associated biological communities.[72] The western portion of the Central Bay, including the proposed AC34 race area, is characterized as coarse sand and gravel with shifting sands, muddy-sand and sandy-mud in the lee of the islands, and sand and sandy mud in the shallows and Port areas.[73]

The muddy-sand benthic community of the Central Bay consists of a diverse polychaete community.

The harbor and main channel areas of the Central Bay are characterized as a mix of the benthic communities from surrounding areas (deep and shallow-water and slough marine communities. As a result of increased water flow and sedimentation in the harbor areas of the Central Bay, the majority of the species reported inhabiting seafloor sediments in this region of the Bay-Delta are deposit and filter feeders.

The most common large mobile invertebrate organisms in the Central Bay include blackspotted shrimp (*Crangon nigromaculata*), Bay shrimp (*Crangon franciscorum*), Dungeness crab (*Metacarcinus magister*), and slender rock crab (*Cancer g*racilis). Although other species of shrimp are present in

[70] Hieb, K., *Cancer* Crabs. *In*: James J. Orsi. 1999. Report on the 1980-1995 Fish, Shrimp, and Crab Sampling in the San Francisco Estuary, California. http://www.estuaryarchive.org/archive/orsi_1999, 1999.
[71] NOAA, *Report on the Subtidal Habitats and Associated Biological Taxa in San Francisco Bay*, prepared by NOAA National Marine Fisheries Service. Santa Rosa, CA, June 2007.
[72] Ibid.
[73] Ibid.

the Central Bay, their numbers are substantially lower when compared to the number of bay and blackspotted shrimps present.[74] The abundance of blackspotted shrimp typically peaks from May through August, and again from December to February.[75] These shrimp most likely use San Francisco Bay as an extension of their coastal habitat.[76] All of these mobile invertebrates are present throughout the Central Bay and provide an important food source for carnivorous fishes, marine mammals, and birds in San Francisco Bay's food web. Dungeness crabs use most of the Bay as an area for juvenile growth and development prior to returning to the ocean as sexually mature adults.[77]

Submerged Aquatic Vegetation

Subtidal plants and submerged aquatic vegetation occur throughout the Central Bay on both soft and hard substrate. On the shallow unconsolidated subtidal habitat within the Central Bay, such as in Clipper Cove and along the intertidal mudflats in Richardson Bay, the green algae, *Ulva/Enteromorpha*, *Gracillaria verrucosa* (formerly *pacifica*), *Ruppia maritime, Potamogeton pectinatus,* and *Zostera marina* (eelgrass) frequently occur.[78] *Zostera* is a shallow subtidal as well as intertidal flowering plant found inhabiting bays, estuaries, and the leeside of islands, such as Treasure, Angel, Yerba Buena, and Alcatraz.[79] More information on Central Bay eelgrass beds is presented in Section 5.14.4.5 below. Submerged aquatic vegetation beds and plants are primary spawning habitat for many invertebrate and vertebrate species in San Francisco Bay, most notably Pacific herring.[80]

In addition to eelgrass beds discussed above, because of the strong ocean influence in the Central Bay, additional species of red and brown algae are found attached to submerged and intertidal hard substrate, including pier pilings. All submerged aquatic vegetation in the Central Bay is considered critical essential fish spawning habitat for Pacific herring (see Section 5.14.4.4, below).[81]

Demersal Fish

Many different fish species spend all or part of their life cycle in association with the demersal (seafloor) zone. These species include flatfish, gobies, poachers, eelpouts, and sculpins, who all live in close association with the benthos during their sub-adult and adult life. Others, such as salmon, steelhead, longfin smelt, and other fish species, will use the benthos for foraging. In total,

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74 NOAA, *Report on the Subtidal Habitats and Associated Biological Taxa in San Francisco Bay*, prepared by NOAA National Marine Fisheries Service. Santa Rosa, CA, June 2007.

75 Hieb, K., *Caridean shrimp. In*: James J. Orsi. 1999. Report on the 1980-1995 Fish, Shrimp, and Crab Sampling in the San Francisco Estuary, California. http://www.estuaryarchive.org/archive/orsi_1999, 1999.

76 Ibid.

77 Tasto, R. N., "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.

78 NOAA, *Report on the Subtidal Habitats and Associated Biological Taxa in San Francisco Bay*, prepared by NOAA National Marine Fisheries Service. Santa Rosa, CA, June 2007.

79 Merkel & Associates, "San Francisco Bay Eelgrass Inventory; October-November 2009," prepared for the California Department of Transportation and NOAA National Marine Fisheries Service., November 2010.

80 NOAA, *Report on the Subtidal Habitats and Associated Biological Taxa in San Francisco Bay*, prepared by NOAA National Marine Fisheries Service. Santa Rosa, CA, June 2007.

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

53 demersal fish species have been collected from the CDFG Interagency Ecological Program monthly bottom trawl fish collections between 2005 and 2009.[82] Of these species, the following 12 dominate the community structure, constituting 98 percent of the species commonly inhabiting the seafloor and immediately adjacent waters in both the deep and shallow water regions of the Central Bay:[83] Bay goby (*Lepidogobius lepidus*), English sole (*Parophrys vetulus*), speckled sanddab (*C. stigmaeus*), plainfin midshipmen (P. notatus), Pacific staghorn sculpin (*Leptocottus armatus*), shiner perch (C. aggregata), cheekspot goby (*llypnus gilberti*), Longfin smelt (*S. thaleichthys*), white croaker (*G. lineatus*), bonyhead sculpin (*Artedius notospilotus*), Pacific sandab (*Citharichthys sordidus*), and bay pipefish (*Syngnathus leptorhynchus*). The remaining 41 taxa account for less than 0.1 percent.

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).*

Anadromous species use the San Francisco Bay estuary on their way up rivers to spawn and as a rearing area for juveniles on their way down from their birthplace in the river to the open ocean.[84] Native anadromous species include Chinook salmon (*Oncorhynchus tshawytscha*), steelhead trout (*O. mykiss gairdneri*) and both green and white sturgeon (*Acipenser medirostris* and *A. transmontanus*). Central San Francisco Bay is designated as essential fish habitat for Chinook and Coho salmon, Green sturgeon, steelhead, and assorted fish species included in the Coastal Pelagic, Pacific Groundfish, and Pacific Coast Salmon Fishery Management Plans. Section 5.14.4.4, under Managed U.S. Fisheries Species, and Section 5.14.5.1, under the Magnuson-Stevens Fishery Conservation and Management Act (MSA), provide additional information concerning essential fish habitat for protected and managed fish species.

5.14.4.4 Special-Status Species

As explained in Section 5.14.1.3 for special status terrestrial species, the term "special-status" species includes those species that are listed and receive specific protection defined in federal or state endangered species legislation, as well as species not formally listed as "Threatened" or "Endangered" but designated as "Rare" or "Sensitive" on the basis of adopted policies and expertise of state resource agencies or organizations, or local agencies such as counties, cities, and special districts. For the purposes of this analysis, special-status species include:

[82] Interagency Ecological Program for the San Francisco Bay Estuary (IEP), *San Francisco Bay Study, 2005-2009,* unpublished raw bottom trawl data, 2005-2009.
[83] Ibid.
[84] NOAA, *Report on the Subtidal Habitats and Associated Biological Taxa in San Francisco Bay*, prepared by NOAA National Marine Fisheries Service. Santa Rosa, CA, June 2007.

- Species that are listed or proposed or are candidate species for listing as Threatened or Endangered by the United States Fish and Wildlife Service (USFWS) pursuant to the Federal Endangered Species Act (FESA);
- Species listed as Rare, Threatened, or Endangered by the California Department of Fish and Game (CDFG) pursuant to the California Endangered Species Act (CESA);
- Species managed and regulated under the Magnuson-Stevens Fisheries Act (Magnuson-Stevens Act or MSA);
- Species protected under the Marine Mammals Protection Act;
- Species designated by CDFG as California Species of Concern; and
- Species not currently protected by statute or regulation but considered rare, threatened, or endangered under CEQA (Section 15380).

Protected Federal and California Species

The special-status species list presented in **Table 5.14-2** for marine species includes those taxa for which potential habitat (i.e., general habitat types for breeding or foraging) occur within the general vicinity of the project sites and 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 in the project area are also listed in Table 5.14-2. This table provides the rationale for each potential-to-occur determination. Species observed or with a moderate to high potential to occur in the project area are discussed in further detail below.

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[85] (see Section 5.14.5, Regulatory Framework, for a further explanation of this term) includes all waters of San Francisco Bay north of the Bay Bridge. The AC34 race activities and most of the Port facilities to be used in support of the AC34 race activities lie within this critical habitat area.

[85] Critical habitat is a specific geographic area(s) that is essential for the conservation of a threatened or endangered species and that may require special management and protection.

TABLE 5.14-2
SPECIAL-STATUS FISH AND MARINE MAMMAL SPECIES THAT MAY OCCUR WITHIN THE BAY WATERS OF THE PROJECT AREA

Common Name *Scientific Name*	Listing Status		General Habitat	Potential for Species Occurrence Within Project Area	Time Period Present in Project Area Waters
	Federal FESA/ MMPA	State CESA			
Sacramento River winter-run ESU Chinook salmon *Oncorhynchus tshawytscha*	FE/-	CE	Ocean waters, Sacramento and San Joaquin Rivers; Migrates from ocean through San Francisco Bay-Delta to freshwater spawning grounds	P	Adults - November and December Juveniles – fall and winter
Central Valley spring-run ESU Chinook salmon *O. tshawytscha*	FT/-	CT	Ocean waters, Sacramento and San Joaquin Rivers; Migrates from ocean through San Francisco Bay-Delta to freshwater spawning grounds	P	Adults - late winter to spring Juveniles - fall though spring
Central Valley fall-run/late fall-run Chinook salmon *O. tshawytscha.*	FSC/-	-	Ocean waters, Sacramento and San Joaquin Rivers; Migrates from Ocean through San Francisco Bay-Delta to freshwater spawning grounds	P	Adults - June through September Juveniles - winter through summer
Central California coast ESU Coho salmon *Oncorhynchus kisutchs*	FE/-	CE	Ocean waters, Sacramento and San Joaquin Rivers; Migrates from ocean through San Francisco Bay-Delta to freshwater spawning grounds	P	Adults - fall and winter Juveniles - spring through fall
Central Valley DPS steelhead trout *O. Mykiss*	*FT*/-	-	Ocean waters, Sacramento and San Joaquin Rivers; Migrates from ocean through San Francisco Bay-Delta to freshwater spawning grounds	P	Adults - winter and spring Juveniles - year-round
Central California coast DPS steelhead trout *O. mykiss*	FT/-	CSC	Ocean waters, Sacramento and San Joaquin Rivers; Migrates from Ocean through San Francisco Bay-Delta to freshwater spawning grounds	P	Adults - winter Juveniles – year-round
Green Sturgeon (Southern DPS) *Acipenser medirostris*	FT/-	CSC	Marine and estuarine environments and Sacramento River; All of San Francisco Bay-Delta	C	year-round
Tidewater goby *Eucyclogobius newberryi*	FE/-	CSC	Coastal lagoons, estuaries, and marshes in coastal California from the Smith River (Del Norte County) to Aqua Hedionda Lagoon (San Diego County)	NP - species presumed to be extirpated from San Francisco Bay-Delta	NA
Delta smelt *Hypomesus transpacificus*	FT'-	CE	Sacramento-San Joaquin Delta, Suisun Bay, San Pablo Bay, river channels and sloughs in Delta	NP - outside known range	NA
Longfin smelt *Spirinchus thaleichthys*	FC/-	CT	Throughout the nearshore coastal waters and open waters of San Francisco Bay-Delta including the river channels and sloughs of the Delta	C	Year-round
Pacific harbor seal *Phoca vitulina*	-/FP	-	Coastal waters, and throughout Bay-Delta	C	Year-round
California sea lion *Zalophus californianus*	-/FP	-	Coastal waters, and throughout Bay-Delta	C	Year-round

TABLE 5.14-2 (Continued)
SPECIAL-STATUS FISH AND MARINE MAMMAL SPECIES THAT MAY OCCUR WITHIN THE BAY WATERS OF THE PROJECT AREA

Common Name *Scientific Name*	**Listing Status**		**General Habitat**	**Potential for Species Occurrence Within Project Area**	**Time Period Present in Project Area Waters**
Harbor porpoise *Phocoena phocoena*	-/FP	-	An inshore species inhabiting shallow, coastal waters and occasional large rivers, including San Francisco Bay-Delta	C	Year-round
Bottlenose Dolphin *Tursiops truncatus*	-/FP	–	Found along the California coastline, bottlenose dolphins segregate into coastal or oceanic ecotypes with the coastal ecotype inhabiting waters within 1-kilometer of shore normally between Baja, California and Point Conception. During El Niño events and in recent years, bottlenose dolphins have been observed as far as San Francisco Bay with individuals making occasional forays to the Golden Gate.	P	Potentially Year-round
Southern Sea Otter *Enhydra lutris*	-/FP	–	Nearshore environments between Santa Barbara and Half Moon Bay. Although historic inhabitants of San Francisco Bay prior to being hunted to near extinction, occasional sightings of otters within the Bay occur.	P	Potentially Year-round
Gray whale *Eschrichtus robustus*	FDL/FP	-	Predominantly coastal waters, although occasional individuals enter the Bay-Delta and have been observed swimming up the Sacramento River and into the South Bay.	P	December to April, during migration from Alaska to Baja California, occasionally enter Bay-Delta, transient
Humpback whale *Megoptera noveangliae*	FE/FD	-	Predominantly coastal waters, although occasional individuals enter the Bay-Delta	P	April to December, during migration, occasionally enter the Bay-Delta, transient

SOURCE CODES

FESA = Federal Endangered Species Act
MMPA = Marine Mammal Protection Act

Federal (U.S. Fish and Wildlife Service [USFWS]):
FDL = Delisted
FE = Listed as Endangered (in danger of extinction) by the federal government
FT = Listed as Threatened (likely to become Endangered within the foreseeable future) by the federal government
FP = Proposed for Listing as Endangered or Threatened
FC = Candidate to become a proposed species
FSC = Former Federal Species of Concern. The USFWS no longer lists Species of Concern but recommends that species considered to be at potential risk by a number of organizations and agencies be addressed during project environmental review. *NMFS still lists Species of Concern.

Federal (National Oceanographic and Atmospheric Administration [NOAA] MMPA):
FD = Depleted Population
FP = Federally Protected

CESA = California Endangered Species Act

State (California Department of Fish and Game [CDFG]):
CE = Listed as Endangered by the State of California
CT = Listed as Threatened by the State of California
CR = Listed as Rare by the State of California (plants only)
CSC = California Species of Special Concern

Potential for Species Occurrence within Project Area:
C = Confirmed
P = Potentially may occur
NP = Not present
NA = Not applicable

SOURCE: National Marine Fisheries Service (now known as NOAA Fisheries) Southwest Region (NMFS SWR). 2001. Fisheries Management Plan Species Distributions in San Francisco, San Pablo and Suisun Bays. Accessed April 10, 2011. http://swr.nmfs.noaa.gov/hcd/loclist.htm

Central Valley Spring-Run Chinook Salmon (*O. tshawytscha)*

A federally listed threatened evolutionarily significant unit (ESU),[86] 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 area 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.[87] Many of the Port improvements identified in the project description, including the Piers 27-29 cruise ship terminal development and the AC-34 race area, would occur within the designated critical habitat for this taxa.

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.[88] 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 the impacts from high hatchery production and harvest levels and from the loss of 40 to 50 percent of spawning and rearing habitat.[89] There is no critical habitat designated for this species. Central Valley fall-run/late-run Chinook salmon can be expected to transit through the project area when project-related Port improvements would occur and during AC34 events in the Central Bay region of the San Francisco Bay-Delta during the 2012 and 2013 race activities. Studies conducted by NMFS[90] and CDFG[91] indicate that the primary migration corridor to the ocean is through the northern reaches of Central San Francisco Bay (Raccoon Strait and north of Yerba Buena Island). Additionally, a recent study evaluating 30-years of IEP monthly mid-water fish trawl data and three-years of acoustic tag data of hatchery-raised salmonids suggests that the presence of out-migrating juvenile salmonids (steelhead and salmon) along the Port of San Francisco waterfront appeared to be more the result of capture by tidal flow rather than active foraging or intentional swimming to those areas of the Bay.[92] This study also concluded that the

[86] An "evolutionarily significant unit" is a population of organisms that is considered distinct for purposes of conservation.

[87] National Marine Fisheries Service (now known as NOAA Fisheries or NMFS), Northwest Region (NMFS NWR), Chinook Salmon Central Valley Spring-Run ESU Critical Habitat, 2005, http://www.nwr.noaa.gov/ESA-Salmon-Listings/Salmon-Populations/Chinook/CKCVS.cfm, accessed March 30, 2011.

[88] USFWS, "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.

[89] National Marine Fisheries Service (now known as NOAA Fisheries or NMFS), Fact Sheet West Coast Chinook Salmon, 1999, http://www.nwr.noa.gov/1salmon/salmesa/pubs/99chinfs.htm, accessed October 2, 2001.

[90] NMFS (National Marine Fisheries Service). 2001. Biological Opinion for the San Francisco-Oakland Bay Bridge East Span Seismic Safety Project.

[91] Baxter, R., Hieb, K., DeLeon, S., Fleming, K., and J. Orsi. 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. California Department of Fish and Game, Stockton, California.

[92] Jahn, A. 2011. Young Salmonid Out-migration Through San Francisco By with Special Focus on their Presence at the San Francisco Waterfront. Draft Report. Prepared for the Port of San Francisco. January 2011.

amount of time juvenile salmonids were present in the waters adjacent to the Port was very short and not representative of any foraging behavior.

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 and San Pablo Bays. Upstream migration occurs in the winter, with peak spawning occurring December through April.[93] 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, and therefore in the vicinity of the AC34 race area and proposed Port improvement. However, if present, they are expected to be present in very low numbers and only occasionally.[94,95]

The primary threats to Central Valley steelhead are degradation and loss of critical spawning and rearing grounds due to dam development and water diversions.[96] Critical habitat for Central Valley steelhead includes the waters of San Francisco Bay north of the Bay Bridge.[97]

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, and therefore in the Bay waters to be used by the project, in low numbers.

Critical habitat for Central California Coast Coho salmon includes all river reaches, including estuarine areas and tributaries, accessible to listed Coho salmon, between Punta Gorda in Northern California south to the San Lorenzo River in Central California. The critical habitat area for Central California Coast Coho salmon within the San Francisco Bay-Delta includes all waters of the Central Bay north of the Bay Bridge.[98]

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93 McEwan, D., and T.A. Jackson, *Steelhead Restoration and Management Plan for California*, California Department of Fish and Game, Inland Fisheries Division, Sacramento, California, 1996.

94 Interagency Ecological Program for the San Francisco Bay Estuary (IEP), *San Francisco Bay Study, 2005-2009*, unpublished raw midwater trawl data, 2005-2009.

95 Interagency Ecological Program for the San Francisco Bay Estuary (IEP), *San Francisco Bay Study, 2005-2009*, unpublished raw bottom trawl data, 2005-2009.

96 McEwan, D., and T.A. Jackson, *Steelhead Restoration and Management Plan for California*, California Department of Fish and Game, Inland Fisheries Division, Sacramento, California, 1996.

97 NOAA, "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.

98 Ibid.

Central California Coast Steelhead Trout (*O. mykiss*)

The Central California Coast steelhead trout is federally listed as threatened. Steelhead are rare in most streams that are tributary to San Francisco Bay.

Central California Coast steelhead migrate from the Pacific coast through San Francisco Bay in the winter to spawn in freshwater in the upper Sacramento River.[99] They are also known to migrate to the South Bay, where they spawn in the Guadalupe River, Coyote Creek, and San Francisquito Creek. 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 the Central Bay, including the project area, in moderate numbers. The Central California Coast steelhead may be present in the region of influence at any time of the year.

Critical habitat includes all river reaches and estuarine areas accessible to listed 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.[100] The critical habitat for this species includes the waters between Treasure Island and the Port of San Francisco facilities, those adjacent to Port facilities, and the waters of Central Bay that would be used by the AC34 race activities in 2012 and 2013.

Green Sturgeon (*Acipenser medirostris*)

This anadromous[101] 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.[102] Adults in the San Joaquin Delta are reported to feed on benthic invertebrates including shrimp, amphipods, and occasionally small fish,[103] 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.[104] The upper Sacramento River has been identified as the only known spawning habitat for green sturgeon in the southern distinct population segment. Critical habitat for the green sturgeon includes the Sacramento-

99 McEwan, D., and T.A. Jackson, *Steelhead Restoration and Management Plan for California*, California Department of Fish and Game, Inland Fisheries Division, Sacramento, California, 1996.
100 USFWS, *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.
101 Anadromous fish are those migrating from the sea to fresh water to spawn.
102 Moyle, P. B., R. M. Yoshiyama, J. E. Williams, and E. D. Wikramanayake, *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.
103 Ibid.
104 Ibid.

San Joaquin Delta, and Suisun, San Pablo and San Francisco Bays.[105] This includes the waters adjacent to Port of San Francisco facilities and the areas of the Central Bay to be used in the project for AC34 race activities in 2012 and 2013.

Longfin Smelt (*Spirinchus thaleichthys*)

This fish is a state-listed endangered species and is currently under reconsideration as a special-status species by the USFWS.[106] The longfin smelt is a pelagic (living in 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 and adjacent to the Port of San Francisco, along the west shoreline of Treasure Island, and in the Central Bay where AC34 race activities are proposed to occur.[107,108] 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.

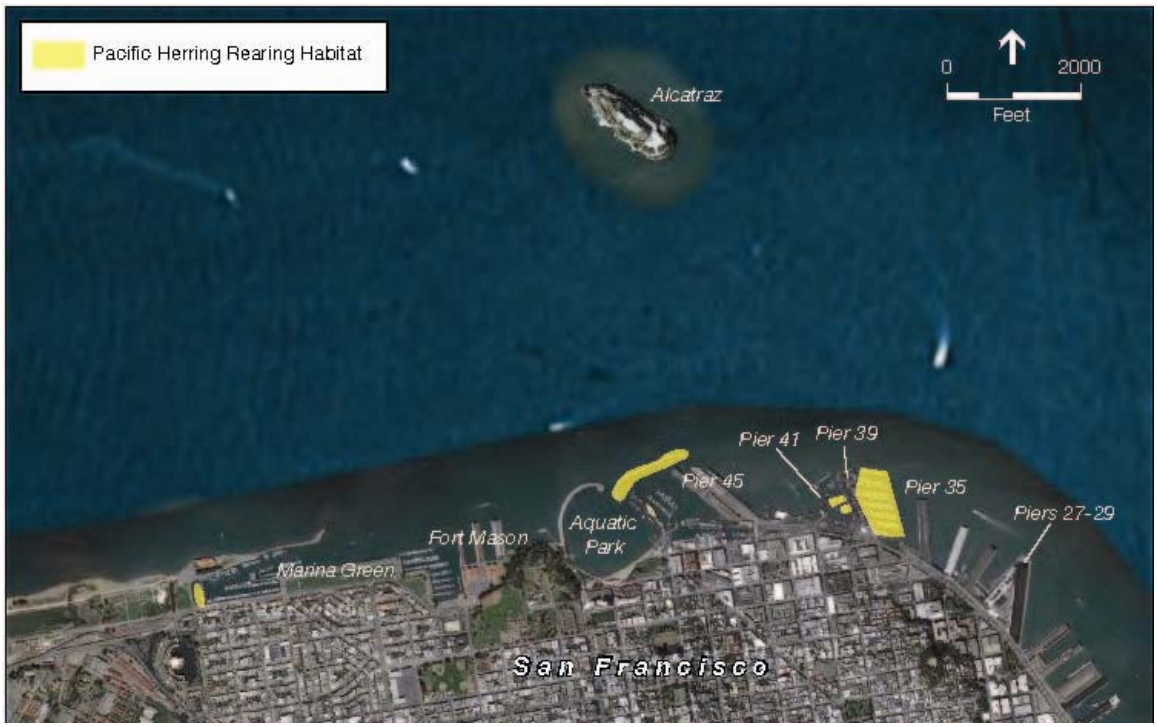
Pacific Herring (*Clupea pallasii*)

Pacific herring (Clupea pallasi) is neither a protected species under the FESA or CESA nor a managed fish species under the Magnuson-Stevens Act. Pacific herring does, however, represent a species of special concern for San Francisco Bay since it is an important member of the San Francisco Bay marine ecosystem; 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. Known spawning areas in California include San Diego Bay, San Luis River, Morro Bay, Elkhorn Slough, San Francisco Bay, Tomales Bay, Bodega Bay, Russian River, Noyo River, Shelter Cove, Humboldt Bay, and Crescent City Harbor.[109] 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.[110] After hatching, herring fry and juveniles use nearby

[105] NOAA, "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.
[106] USFWS, "Endangered and Threatened Wildlife and Plants; Initiation of Status Review for Longfin Smelt," Federal Register, Volume 76, Number 47, March 10, 2011.
[107] Interagency Ecological Program for the San Francisco Bay Estuary (IEP), *San Francisco Bay Study, 2005-2009,* unpublished raw midwater trawl data, 2005-2009.
[108] Interagency Ecological Program for the San Francisco Bay Estuary (IEP), *San Francisco Bay Study, 2005-2009,* unpublished raw bottom trawl data, 2005-2009.
[109] Bartling, R., *Pacific Herring – Status of the Fisheries Report*, prepared for the California Department of Fish and Game, 2006, http://www.dfg.ca.gov/marine/status/report2006/herring.pdf, accessed March 22, 2011.
[110] Ibid.

protected inshore waters for rearing habitat.[111] Areas of identified Pacific herring rearing habitat within Central San Francisco Bay and along the northern San Francisco waterfront are illustrated in **Figure 5.14-4** and past known Central Bay spawning grounds are illustrated in **Figure 5.14-5**.[112]



SOURCE: NOAA 2011[113]

Figure 5.14-4
Pacific Herring Rearing Habitat along the San Francisco Northern Waterfront (shown as shaded area adjacent to Pier 39 and offshore Hyde Street Pier and Fisherman's Wharf)

Harbor Seal (*Phoca vitulina richardsi*)

The harbor seal is a permanent resident in San Francisco Bay and is routinely seen in waters off the islands. Harbor seals are protected under the Marine Mammal Protection Act (described below in Section 5.14.5, Regulatory Framework). They have been observed as far upstream in the Delta and Sacramento River as the City of Sacramento, though their use of the habitat north of Suisun Bay is irregular.[114]

111 Lassuy, D.R., *Species profiles: life histories and environmental requirements of coastal fishes and invertebrates (Pacific Northwest)--Pacific herring*, USFWS Biol. Rep. 82(11.126), U.S. Army Corps of Engineers, TR-EL-82-4.18 pp., 1989.

112 NOAA, San Francisco Bay Project Evaluation System Dredging Project interactive mapping database. http://mapping2.orr.noaa.gov/website/pies_piledriving/viewer.htm, accessed March 18, 2011; National Oceanic and Atmospheric Administration (NOAA), San Francisco Bay Project Evaluation System Dredging Project interactive mapping database, http://mapping2.orr.noaa.gov/website/pies_piledriving/viewer.htm, 2009.

113 NOAA, 2009 *op cit*.

114 Goals Project, *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, 2000.

SOURCE: NOAA 2011[115]

Figure 5.14-5
Pacific Herring Spawning Areas in Central San Francisco Bay

Seals haul out year-round on Yerba Buena Island. The haul-out area is within the region of influence but not within the boundaries of the proposed project. As noted above, the Yerba Buena Island haul-out site is on the southeast side of the island, on USCG property. Individual seals may occasionally haul out farther to the west and southwest of the main haul-out site, depending on space availability and conditions at the main haul-out area. Harbor seals feed in the deepest waters of the Bay, with the region from the Golden Gate to Treasure Island and south to the San Mateo Bridge being the principal feeding site.[116] Harbor seals feed on a variety of fish, such as perch, gobies, herring, and sculpin.

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, 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

115 NOAA, San Francisco Bay Project Evaluation System Dredging Project interactive mapping database. http://mapping2.orr.noaa.gov/website/pies_piledriving/viewer.htm, accessed March 18, 2011; National Oceanic and Atmospheric Administration (NOAA), San Francisco Bay Project Evaluation System Dredging Project interactive mapping database, http://mapping2.orr.noaa.gov/website/pies_piledriving/viewer.htm, 2009.

116 Kopec, D. and J. Harvey, *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.

lions feed on a wide variety of seafood, mainly squid and fish and sometimes even clams. Commonly eaten fish and squid species include salmon, hake, Pacific whiting, anchovies, herring, schooling fish, rockfish, lamprey, dog fish, and market squid.[117] California sea lions may forage in the waters of and adjacent to the project area.

Harbor Porpoise (*Phocoena phocoena*)

Harbor porpoises inhabit northern temperate and subarctic coastal and offshore waters. In the North Pacific, they are found from Japan (34°N) 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. Harbor porpoises are nonsocial animals usually seen in groups of 2 to 5 individuals. When surfacing for air, they do not splash; they roll from beak to fluke and arch their backs. Little information is known about their social behavior. The primary food for harbor porpoises is fish and squid.

California Gray Whale (*Eschrichtus robustus*)

California gray whales are frequent transients along the California coast as they migrate from the waters of the Western Bering Sea where they feed during the summer months to Baja California, where they breed during the winter. They are typically observed migrating southward along the Central California coast between December and February and then again heading northward between February and July. The population of California gray whales may have recently reached a level thought to be near carrying capacity (approximately 26,000 animals), which may account, in part, for why more gray whales, presumably juveniles and post-weaning females, have been observed foraging along the nearshore coastline of California, Oregon, Washington, and British Columbia. These individuals appear to be taking up temporary residence at these locations during the summer months rather than migrating northward to Alaska, as do the bulk of the population.[118] Gray whales primarily feed on benthic prey, such as amphipods.

During the migration, gray whales will occasionally enter rivers and bays along the coast, including San Francisco Bay, either because they are disoriented or to forage. Gray whales have been observed irregularly in the Bay over recent years.

Humpback Whale (*Megoptera noveangliae)*

Humpback whales are found in all the major oceans, from the equator to sub-polar latitudes, and are frequent inhabitants of coastal waters and bays. Humpback whales are well known for their long "pectoral" fins, which can be up to 15 feet (4.6 meters) in length. Their scientific name, *Megaptera novaeangliae*, means "big-winged New Englander" as the New England population was the one best known to Europeans. These long fins give them increased maneuverability; they can be used to slow down or even go backwards.

[117] Southwest Fisheries Science Center, "Sea Lion Diet", 2011, http://swfsc.noaa.gov/textblock.aspx?Division=PRD&ParentMenuId=148&id=1252, accessed March 18, 2011.
[118] Sumich, J.L., "Gray Whales Along the Oregon Coast in Summer, 1977-1980," Murrelet, 65:33-40, 1985.

In the North Pacific, there are at least three separate populations, of which one inhabits the waters of California, Oregon, and Washington. This population winters in coastal Central America and Mexico and migrates to areas ranging from California to southern British Columbia in summer and fall. When migrating, humpbacks stay near the surface of the ocean. Humpbacks filter feed on tiny crustaceans (mostly krill), plankton, and small fish and can consume up to 3,000 pounds (1,360 kilograms) of food per day.

Humpback whales are occasional visitors to the San Francisco Bay-Delta with sightings as recent as 2007, when a pair swam up the Sacramento River as far as Sacramento before returning south to the Bay and the Pacific Ocean.[119]

Managed U.S. Fisheries Species

Under the Magnuson-Stevens Act (see Section 5.14.5.1 for description), as amended by the Sustainable Fisheries Act of 1996 (Public Law 104-297), the National Marine Fisheries Service (NMFS), Fishery Management Councils, and federal agencies are required to cooperatively protect essential fish habitat 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, essential fish habitat 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 **Table 5.14-3**.

5.14.4.5 Sensitive Natural Communities

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.[120] Additionally, certain waters of the U.S. are considered "special aquatic sites" because they are generally recognized as having unique ecological value. Such sites include sanctuaries and refuges, mudflats, wetlands, vegetated shallows, eelgrass beds, and coral reefs. Special aquatic sites are defined by the United States Environmental Protection Agency (U.S. EPA) and may be afforded additional consideration in the permit process for a project requiring federal agency approvals or covered under federal regulations. Within Central San Francisco Bay, two sensitive natural communities that are routinely afforded special attention are submerged aquatic vegetation beds, such as eelgrass beds, and native oyster beds.

[119] Associated Press International (API), "Two Humpback Whales Head Up California River," Associated Press, May 17, 2007, http://www.foxnews.com/story/0,2933,272692,00.html, accessed March 18, 2011.

[120] San Francisco Bay Subtidal Habitat Goals Project, *San Francisco Bay Subtidal Habitat Goals Report – Conservation Planning for the Submerged Areas of the Bay; 50-Year Conservation Plan,* available at http://www.sfbaysubtidal.org/report.html, 2010.

TABLE 5.14-3
MANAGED FISH SPECIES IN CENTRAL SAN FRANCISCO BAY UNDER THE MAGNUSON-STEVENS ACT

Fisheries Management Plan	Species, Common Name	Species, Scientific Name	Life Stage	Abundance
Coastal Pelagic	Northern anchovy	*Engraulis mordax*	J, A	Abundant
	Jack mackerel	*Trachurus symmetricus*	E,L	Present
	Pacific sardine	*Sardinops sagax*	J, A	Present
Pacific Groundfish	English sole	*Parophrys vetulus*	J, A	Abundant
	Sand sole	*Psettichthys melanostictus*	L, J, A	Present
	Curlfin sole	*Pleuronichthys decurrens*	J	Rare
	Pacific sanddab	*Citharichthys sordidus*	E, L, J, A	Present
	Starry flounder	*Platichthys stellatus*	J, A	Present
	Lingcod	*Ophiodon elongatus*	J, A	Present
	Brown rockfish	*Sebastes auriculatus*	J	Present
	Pacific whiting (hake)	*Merluccius productus*	E,L	Present
	Kelp greenling	*Hexagrammos decagrammus*	J, A	Present
	Leopard shark	*Triakis semifasciata*	J, A	Present
	Spiny dogfish	*Squalus acanthias*	J, A	Present
	Skates	*Raja* ssp.	J, A	Present
	Soupfin shark	*Galeorhinus galeus*	J, A	Rare
	Bocaccio	*Sebastes paucispinis*	J	Rare
	Cabezon	*Scorpaenichthys marmoratus*	J	Present
Pacific Coast Salmon	Chinook salmon	*Oncorhynchus tshawytscha*	J, A	Seasonally Present
	Coho salmon	*Oncorhynchus kisutch*	J, A	Historically Present, Current Occurrence unknown

NOTES: A = Adult J = Juvenile L = Larvae E = Egg

SOURCE: National Marine Fisheries Service (now known as NOAA Fisheries) Southwest Region (NMFS SWR). 2001. Fisheries Management Plan Species Distributions in San Francisco, San Pablo and Suisun Bays. Accessed April 10, 2011. http://swr.nmfs.noaa.gov/hcd/loclist.htm and Interagency Ecological Program for the San Francisco Bay Estuary (IEP), *San Francisco Bay Study, 2005-2009,* unpublished raw midwater trawl data, 2005-2009; Interagency Ecological Program for the San Francisco Bay Estuary (IEP), *San Francisco Bay Study, 2005-2009,* unpublished raw bottom trawl data, 2005-2009

Eelgrass (Zostera marina)

Eelgrass (*Zostera marina*) is a native marine vascular plant indigenous to the soft-bottom bays and estuaries of the Northern Hemisphere. It has been afforded special management considerations by CDFG, USFWS, National Marine Fisheries Service (NMFS), U.S. EPA, the Bay Conservation and Development Commission (BCDC), and the Golden Gate Audubon Society. NOAA NMFS considers eelgrass beds to be a habitat area of particular concern (HAPC). The species is found from middle Baja California and the Sea of Cortez to northern Alaska along the west coast of North America and is common in healthy, shallow bays and estuaries. The depth to which this species can grow is a function of light penetration. At greater depths, light is reduced to a level below which photosynthesis is unable to meet the metabolic demands of the plant to sustain net growth.

Eelgrass beds perform multiple functions within an estuarine ecosystem. They are considered a "habitat-forming" species that creates unique biological environments for spawning Pacific herring[121] and serve as nursery grounds for many important Bay fish including pacific herring, halibut, and English sole. They provide substrate for epibenthic algae, invertebrates, and crustaceans and important rearing habitat for invertebrate species such as shrimp (*Palaemonetus paludosus*) and Dungeness crabs (*Cancer magister*). Eelgrass beds also provide important foraging areas for waterfowl such as black brandt (*Branta bernicla nigricans*)[122] and American wigeon (*Anas americana*).

In addition to providing refugia for young fish, eelgrass beds stabilize shorelines by dampening wave energy, collecting sediments transported to the shore, and preventing shore erosion. They also improve water quality by collecting and filtering organic matter and sediments. This filtering also acts as a nutrient pump, transferring waterborne nutrients to the sediments and invertebrates.

Eelgrass is easily affected by changes in water quality and turbidity. Eelgrass beds are extremely dynamic, expanding and contracting by as much as several hectares per season depending on the quality of the site. The largest eelgrass beds in the estuary are in shallow subtidal regions of San Pablo and Richardson Bays, with smaller beds scattered in shallow areas between the Carquinez Strait and Hayward. Within the Central Bay, eelgrass beds are located in Richardson Bay, off the north and east shorelines of Treasure Island and within Clipper Cove between Treasure Island and Year Buena Island, along the Tiburon peninsula, and along the east shore of Angel Island.[123] Comprehensive eelgrass surveys of the San Francisco Bay-Delta have been conducted in 1987, 2003, and 2009. The 1987 survey reported a total of 316 acres of eelgrass beds in the San Francisco Bay-Delta.[124] The 2003 and 2009 surveys, which employed both high-resolution acoustic mapping and helicopter aerial imagery, reported 2,622 and 3,707 acres of eelgrass beds, respectively, present in the San Francisco Bay-Delta. Between 2003 and 2009, eelgrass beds Baywide have increased 28.7 percent and between the 1987 and 2009 surveys, almost 1,100 percent.[125] This increase in bed densities and aerial extent as well as establishment in new areas of the Bay-Delta are in part the result of improved water clarity over the past decade and regulatory actions to protect and enhance eelgrass beds as an important natural resource of the San Francisco Bay-Delta marine ecosystem.[126]

Primary physical threats to submerged aquatic vegetation and eelgrass beds in San Francisco Bay include activities associated with shipping and boating, which can disrupt seagrass beds directly through destruction of plants by boat propellers, anchors and anchor chains, dredging, and construction of facilities (e.g., docks, harbors, breakwaters, ports). Indirect effects arise through

121 NOAA, *Report on the Subtidal Habitats and Associated Biological Taxa in San Francisco Bay*, prepared by NOAA National Marine Fisheries Service. Santa Rosa, CA, June 2007.
122 Merkel & Associates, *Eelgrass Community Pilot Study for San Francisco Bay: Techniques for examining invertebrates and fish assemblages within multiple eelgrass beds,* Document EA-012041, San Francisco-Oakland Bay Bridge East Span Seismic Safety Project, prepared for the California Department of Transportation in cooperation with NOAA Fisheries, October 2005.
123 Merkel & Associates, "San Francisco Bay Eelgrass Inventory; October-November 2009," prepared for the California Department of Transportation and NOAA National Marine Fisheries Service., November 2010.
124 Ibid.
125 Ibid.
126 Ibid.

increased suspended sediments due to dredging and boat wakes, or shading from structures such as docks. Hardening of the shoreline can reflect waves, increasing wave action and limiting or destroying beds. Most of these threats apply to eelgrass in the San Francisco Bay estuary but are focused in localized areas. Impacts from dredging seem to have a limited spatial and temporal effect; damage from boat anchors, shoreline development, and ship wakes is also likely to be localized. Oil spills can inundate and smother eelgrass beds, particularly those in the intertidal or shallow subtidal zones. Eelgrass beds may respond to rising sea level by establishing closer to the present-day shoreline and dying out at greater depths. The dwindling sediment supply to the estuary may decrease turbidity, allowing eelgrass to grow at greater depths but possibly also promoting competing blooms of phytoplankton.[127]

Native Olympia Oysters (Ostrea lurida)

The Olympia oyster (*Ostrea lurida*), also known as the "native oyster," is native to most of western North America and, prior to overharvesting and increased siltation from hydraulic mining in the mid-19th century, was a component of the San Francisco Bay marine ecosystem.[128] Olympia oysters inhabit brackish water conditions but prefer salinities above 22 parts per thousand. In their natural state, Olympia oysters form sparse to dense beds in coastal bays and estuaries and in drought conditions will move up into channels and sloughs, dying off when wetter conditions return. Olympia oysters are not reef builders like their East and Gulf Coast cousin, *Crassostrea virginica*. Olympia oysters are known to provide high biodiversity habitat because they provide physical habitat structure sought by juvenile fish and crustaceans, worms, and foraging fish and birds.[129] They also stabilize sediment, reduce suspended sediment, and improve light penetrations, thereby improving the physical conditions that encourage the establishment of submerged aquatic vegetations, such as eelgrass beds (*Zostera marina*). Additionally, a robust population of filter feeders can help modulate plankton blooms.[130]

Naturally occurring populations of native oysters can be found throughout San Francisco Bay on natural and artificial hard substrate from Carquinez Strait to the South Bay. Intertidally they occur between Point Pinole to south of the Dumbarton Bridge, with the highest reported abundances of 80 per square meter in the Central Bay.[131] Oysters have appeared to do well subtidally in many man-made habitats such as on marina floats and in tidally restricted ponds, lagoons, and saline lakes. Native oysters have been reported inhabiting the intertidal and subtidal rocks composing the riprap shoreline of Treasure Island,[132] on wharf pilings of the Port

[127] San Francisco Bay Subtidal Habitat Goals Report, Appendix 8.1: Eelgrass Conservation and Restoration in San Francisco Bay: Opportunities and Constraints, available at http://www.sfbaysubtidal.org/PDFS/Ap8-1%20Eelgrass.pdf, 2010.

[128] NOAA. Habitat Connections, Restoring the Olympia Oyster (*Ostrea conchaphila = lurida*), Volume 5, Number 2, 2004, available at http://www.oyster-restoration.org/reports/OlympiaOysterHabitatConnections.pdf, 2008, accessed March 22, 2011.

[129] Ibid.

[130] Ibid.

[131] San Francisco Bay Subtidal Habitat Goals Report, Appendix 7-1: Shellfish Conservation and Restoration in San Francisco Bay: Opportunities and Constraints, September 17, 2010, available at http://www.sfbaysubtidal.org/PDFS/Ap7-1%20Shellfish.pdf.

[132] Applied Marine Sciences, Inc. (AMS). *Survey of Intertidal Habitat and Marine Biota at Treasure Island and Along the Western Shoreline of Yerba Buena Island*. April 2009 (prepared in support of Treasure Island/Yerba Buena Island Redevelopment Project Draft EIR. 2010 Case No. 2007.0903E Final Draft dated March 16, 2011).

of San Francisco,[133] and in Richardson Bay and along the Richmond shoreline.[134] Although thought to be extinct from the Bay since the mid-19th century, native oysters have been observed in various locations in San Francisco Bay since 2000.[135] Their presence in other rocky intertidal, rocky subtidal, and man-made habitats in Central San Francisco Bay, including Alcatraz and Angel Islands, is expected.

Threats to Olympia oysters include predation from indigenous and non-native marine snails (*Acanthina spirata* and *Urosalpinx cinerea,* respectively), birds, bat rays, and crabs. Limited suitable hard substrate and physical water quality conditions are also important parameters.[136] Olympia oysters do not appear to prosper in areas of high siltation.

5.14.4.6 Invasive and Non-Native Species

New species of estuarine and marine animals are inadvertently or intentionally introduced into California waters regularly. Often referred to as introduced, non-indigenous, alien, non-native, or exotic species, most pose little or no threat to native ecosystems or biological communities. However, a few have the potential to severely disrupt local ecosystems, fisheries, and human infrastructure.[137]

San Francisco Bay and Delta have more than 230 identified introduced taxa inhabiting its estuarine and marine waters. San Francisco Bay-Delta has been described as the most invaded estuary in North America.[138] It is currently estimated that a new aquatic species is introduced into the San Francisco Bay-Delta every 14 weeks, whereas prior to 1960 the rate was once every 55 weeks.[139] (See Appendix BI for a list of known invasive marine and estuarine species that inhabit San Francisco Bay-Delta waters.) Introduced species now dominate all benthic communities within the Bay-Delta and make up more than 95 percent of the biomass and total abundance of organisms.[140] Estuaries and sheltered coastal areas appear to be among the most invaded habitats as a result of being naturally disturbed, low-diversity systems with historic centers of anthropogenic disturbance from shipping, industrial development, and urbanization.[141]

Invasive organisms are introduced by a variety of methods, the most prevalent being shipping, of which the largest single source is in ballast water. Other methods of introduction include fouling organisms that have attached themselves to ship hulls, navigation buoys, anchors, and anchor chains, such as the Asian kelp, *Undaria pinnatifida*; recovered flotsam; "live" rock and plants from

133 Applied Marine Sciences, Inc. (AMS). *Technical Memo: Reconnaissance Survey of the Intertidal Marine Community Inhabiting Pier Pilings at the Port of San Francisco.* March 22, 2011 (prepared for ESA and the Port of San Francisco in support of the AC34 CEQA analysis).
134 San Francisco Bay Subtidal Habitat Goals Report, Appendix 7-1: Shellfish Conservation and Restoration in San Francisco Bay: Opportunities and Constraints, September 17, 2010, available at http://www.sfbaysubtidal.org/PDFS/Ap7-1%20Shellfish.pdf.
135 Ibid.
136 Ibid.
137 Ray, G., *Invasive Marine and Estuarine Animals of California*, ERDC/TC ANSRP-05-2, August 2005.
138 Ibid.
139 Roman, J., Aquatic Invasive Species, The Encyclopedia of Earth, http://www.eoearth.org/article/Aquatic_invasive_species, 2010, accessed March 22, 2011.
140 Ibid.
141 Ray, G., *Invasive Marine and Estuarine Animals of California*, ERDC/TC ANSRP-05-2, August 2005.

the aquarium trade; the accidental release of animals from packing materials by restaurants serving live seafood; and the live bait industry.[142] In addition, many invasive species, such as striped bass, channel and white catfish, and giant pacific oysters (*Crassostrea gigas*), have been deliberately introduced into California waters. A few of the most damaging in the San Francisco Bay-Delta include the Chinese mitten crab (*Eriocheir sinesis*), the European green crab (*Carcinus maenas*), the Asian clam (*Corbula amurensis*), and the isopod *Sphaeroma quoyanun*. The Chinese mitten crab is found throughout the Bay-Delta and is displacing native intertidal crabs. The Asian clam Corbula has completely changed the subtidal benthic infaunal community in the western Delta and because of its voracious feeding on bacterioplankton, phytoplankton, and copepod larvae, it has significantly reduced the phytoplankton community in the North Bay and western Delta, resulting in reduced zooplankton and fish abundances and distributions.[143,144,145] It is one of the attributing factors to population declines in the delta and longfin smelt populations in the Bay-Delta.[146]

5.14.5 Regulatory Framework – Marine Resources

This section augments the discussion above in Section 5.14.2 on regulatory framework, with an emphasis on regulations relevant to marine resources.

5.14.5.1 Federal Regulations

Federal Endangered Species Act

Under the Federal Endangered Species Act (FESA), the Secretary of the Interior and the Secretary of Commerce jointly have the authority to list a species as threatened or endangered (16 United States Code [USC] 1533(c)). A detailed discussion of the FESA can be found in Section 5.14.2.1. Multiple species of fish and marine mammals are listed by the USFWS under FESA, as discussed in Section 5.14.4.4.

Federal Regulation of Wetlands and Other Waters

The United States Army Corps of Engineers (Corps) and the United States Environmental Protection Agency (U.S. EPA) regulate the discharge of dredged or fill material into waters of the United States, including wetlands, under Sections 404 and 401 of the Clean Water Act. Projects that would result in the placement of dredged or fill material into waters of the United States require a Section 404 permit from the Corps. Some classes of fill activities may be authorized under General or Nationwide Permits if specific conditions are met. Nationwide permits do not authorize activities that are likely to jeopardize the existence of a threatened or endangered species listed or proposed for listing under the Federal Endangered Species Act. In addition to conditions outlined under each Nationwide Permit, project-specific conditions can be required by

142 Ray, G., *Invasive Marine and Estuarine Animals of California*, ERDC/TC ANSRP-05-2, August 2005.
143 Ibid.
144 Kimmerer, W. J., "Response of Anchovies Dampens Effects of the Invasive Bivalve Corbula amurensis on the San Francisco Estuary food web," Mar Ecol Prog. Ser. 324:207-218. 23, October 2006.
145 Thompson, J.K. and F. Parchaso, *The immigration of an Asian bivalve Potamocorbula in San Francisco Bay and the subsequent environmental change*, 2003.
146 American Fisheries Society (AFS), Fisheries, Vol. 32, No. 6, June 2007.

the Corps as part of the Section 404 permitting process. When a project's activities do not meet the conditions for a Nationwide Permit, an Individual Permit may be issued.

Section 401 of the Clean Water Act requires that applicants obtain a Corps permit to obtain state certification that the activity associated with the permit will comply with applicable state effluent limitations and water quality standards. In California, water quality certification, or a waiver, must be obtained from the Regional Water Quality Control Board, for both Individual and Nationwide Permits.

The Corps also regulates activities in navigable waters under Section 10 of the Rivers and Harbors Act. The construction of structures, such as tidegates, bridges, or piers, or work that could interfere with navigation, including dredging or stream channelization, may require a Section 10 permit, in addition to a Section 404 permit if the activity involves the discharge of fill.

Finally, the federal government also supports a policy of minimizing "the destruction, loss, or degradation of wetlands." Executive Order 11990 (May 24, 1977) requires that each federal agency take action to minimize the destruction, loss, or degradation of wetlands and to preserve and enhance the natural and beneficial values of wetlands.

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.

The Magnuson-Stevens Act defines "essential fish habitat" as those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity. The Magnuson-Stevens Act, as amended through 2007, sets forth a number of new mandates for NOAA Fisheries, regional fishery management councils, and federal action agencies to identify essential fish habitat and to protect important marine and anadromous fish habitat. The Magnuson-Stevens Act provided NOAA Marine Fisheries with legislative authority to regulate fisheries in the U.S. in the area between 3 miles and 200 miles offshore and established eight regional fishery management councils that manage the harvest of the fish and shellfish resources in these waters. The councils, with assistance from NOAA Marine Fisheries, are required to develop and implement Fishery Management Plans, which include the delineation of essential fish habitat for all managed species. A Fishery Management Plan is a plan to achieve specified management goals for a fishery and is composed of data, analyses, and management measures for a fishery. Essential fish habitat that is identified in a Fishery Management Plan applies to all fish species managed by that Fishery Management Plan, regardless of whether the species is a protected species or not. Federal agency actions that fund, permit, or carry out activities that may adversely affect essential fish habitat are required under Section 305(b), in conjunction with required Section 7 consultation under FESA, to consult with NOAA Fisheries regarding potential adverse effects of their actions on essential fish habitat and to respond in writing to NOAA Fisheries' recommendations.

The Central Bay region of the San Francisco Bay-Delta, including the waters encompassing the Port of San Francisco and the AC34 2012 and 2013 events, is designated as essential fish habitat for fish managed under three Fishery Management Plans and as a Habitat Area of Particular Concern under two Fishery Management Plans. A total of 20 species of commercially important fish and sharks managed in the Pacific groundfish and coastal pelagics Fishery Management Plans use this region of the Bay-Delta as either essential fish habitat or habitat area of particular concern. In addition, the Pacific coast salmon Fishery Management Plan, which includes Chinook salmon (*Oncorhynchus tshawytscha*) and coho salmon (*Oncorhynchus kisutch*), identifies all of the San Francisco Bay-Delta as essential fish habitat.[147]

Rivers and Harbors Appropriations Act of 1899

Section 10 of the Federal Rivers and Harbors Appropriations Act of 1899 (RHA) (30 Stat. 1151, codified at 33 U.S.C. Sections 401, 403) prohibits the unauthorized obstruction or alteration of any navigable water (33 U.S.C. Section 403). Navigable waters under the RHA 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). 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.

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 Marine Mammal Protection Act 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 NOAA Marine Fisheries. The USFWS is responsible for ensuring the protection of sea otters and marine otters, walruses, polar bears, three species of manatees, and dugongs. NOAA 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 the Federal Endangered Species Act (FESA), as depleted under the Marine Mammal Protection Act, and not having an unmitigable adverse impact on subsistence harvests of these species.

[147] National Marine Fisheries Service (now known as NOAA Fisheries) Southwest Region (NMFS SWR). 2001. Fisheries Management Plan Species Distributions in San Francisco, San Pablo and Suisun Bays. Accessed April 10, 2011. http://swr.nmfs.noaa.gov/hcd/loclist.htm

National Invasive Species Act

Under the National Invasive Species Act of 1996, the United States Coast Guard (USCG) established national voluntary ballast water guidelines. The USCG published regulations on June 14, 2004, establishing a national ballast water management program with mandatory requirements for all vessels equipped with ballast water tanks that enter or operate in U.S. waters. The regulations carry mandatory reporting requirements to aid in the USCG's responsibility, under the National Invasive Species Act, to determine patterns of ballast water movement. The regulations also require ships to maintain and implement vessel-specific ballast water management plans.

Estuary Protection Act (16 USC 1221–1226)

The Estuary Protection Act highlights the value of estuaries and the need for conservation of their valuable natural resources. It authorizes the Secretary of the Interior, in cooperation with other federal agencies and the states, to study and inventory estuaries of the United States and to determine whether any areas should be acquired by the federal government for future protection.

Under this act, the Secretary of the Interior is required to review all project plans and reports for land and water resource development affecting estuaries and make an assessment of likely impacts and related recommendations for conservation, protection, and enhancement of estuaries.

Coastal Zone Management Act

The Coastal Zone Management Act (CZMA) enacted by Congress in 1972 is administered by the National Oceanic and Atmospheric Administration's Office of Ocean and Coastal Resource Management. The CZMA provides for management of the nation's coastal resources, including the Great Lakes, and balances economic development with environmental conservation. The CZMA outlines two national programs, the National Coastal Zone Management Program and the National Estuarine Research Reserve System. The 34 coastal programs aim to balance competing land and water issues in the coastal zone, while estuarine reserves serve as field laboratories to provide a greater understanding of estuaries and how humans impact them. The overall program objectives of CZMA remain balanced 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

As discussed in Chapter 4, the Long Term Management Strategy (LTMS) Management Plan 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. It represents a cooperative program among the U.S. EPA, Corps, Regional Water Quality Control Board (RWQCB), BCDC, and regional stakeholders, including NOAA NMFS, CDFG, 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 (NOAA, USFWS, and CDFG). Through formal consultation specific measures must be implemented to avoid or reduce potential impacts.

Table 5.14-4 presents LTMS established dredging work windows for the San Francisco Bay-Delta.

TABLE 5.14-4
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.

5.14.5.2 State Regulations

California Endangered Species Act

Under the California Endangered Species Act (CESA), as discussed in detail in Section 5.14.2.2, CDFG maintains lists of threatened and endangered species, "candidate species," and "Species of Special Concern." Marine taxa that have the potential to be affected by the proposed project are listed in Table 5.14-2, above.

Fish and Game Code Sections 3503, 3511, 4700, 5050, and 5515

Please see Section 5.14.2.2, above, for a more detailed description. CDFG Fully Protected Species may not be taken or possessed at any time without a permit from CDFG (Section 3511 Birds, Section 4700 Mammals, Section 5050 Reptiles and Amphibians, and Section 5515 Fish).

Marine Life Management Act

Within California, most of the legislative authority over fisheries management is enacted within the Marine Life Management Act. This law directs CDFG and the Fish and Game Commission to issue sport and commercial harvesting licenses, as well license aquaculture operations. CDFG, through the commission, is the state's lead biological resource agency and is responsible for enforcement of the state endangered species regulations and the protection and management of all state biological resources.

Marine Invasive Species Act

All shipping operations that involve major marine vessels are subject to the Marine Invasive Species Act of 2003 (Public Resources Code Sections 71200 through 71271), which revised and expanded the California Ballast Water Management for Control of Non-indigenous Species Act of 1999 (AB 703). This act is administered by the State Lands Commission. The act regulates the handling of ballast water from marine vessels arriving at California ports in order to prevent or minimize the introduction of invasive species from other regions.

San Francisco Bay Plan and San Francisco Waterfront Special Area Plan

In 1968, the San Francisco Bay Conservation and Development Commission (BCDC) completed and adopted *the San Francisco Bay Plan* (Bay Plan). The Bay Plan has been periodically amended over the past 40 years.[148] Several policies of the Bay Plan are aimed at protecting the Bay's water quality, ecology, and guiding the dredging activities of the Bay's sediment. A more detailed discussion of the Bay Plan and BCDC's responsibilities can be found in Chapter 4, Plans and Policies. Additional information on the Bay Plan can be found in Section 5.14.2.2 above.

[148] San Francisco Bay Conservation and Development Commission (BCDC), Bay Plan, www.bcdc.ca.gov/pdf/planning/plans/bayplan/bayplan.pdf, adopted in 1968, amended through 2008.

5.14.5.3 Local Regulations and Marine Resource Plans

San Francisco General Plan

In addition to the information presented in Section 5.14.2.3, the following objectives and policies related to marine biological resources protection in the Environmental Protection Element of the *San Francisco General Plan* are relevant to the proposed project:

Bay, Ocean and Shorelines

***Objective 3*:** Maintain and improve the quality of the bay, ocean, and shoreline areas.

Policy 3.1: Cooperate with and otherwise support regulatory programs of existing regional, State, and Federal agencies dealing with the Bay.

Ocean and Shorelines

Policy 3.2: Promote the use and development of shoreline areas consistent with the General Plan and the best interest of San Francisco.

San Francisco Bay Subtidal Habitat Goals Project

In 2010, BCDC, the California Ocean Protection Council/California State Coastal Conservancy, the National Oceanographic and Atmospheric Administration (NOAA), and the San Francisco Estuary Partnership, in collaboration with each other and the broader scientific community, managers, restoration practitioners, and stakeholders, published a set of restoration planning goals and guidelines for the subtidal areas and habitats of the San Francisco Bay-Delta.[149] Though currently neither a policy nor regulatory document, this report offers guidance on opportunities for 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.

Subtidal habitat consists of all the submerged area beneath the Bay water's surface and includes mud, shell, sand, rocks, artificial structures, shellfish beds, submerged aquatic vegetation, macroalgal beds, and the water column above the bay bottom. Submerged habitats are important for threatened species such as green sturgeon and Chinook salmon, commercial species like Dungeness crab and Pacific herring, and a host of other fish, shrimp, crabs, migratory waterfowl, and marine mammals.

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

[149] San Francisco Bay Subtidal Habitat Goals Project, *San Francisco Bay Subtidal Habitat Goals Report – Conservation Planning for the Submerged Areas of the Bay; 50-Year Conservation Plan*, http://www.sfbaysubtidal.org/report.html, 2010.

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.

The principal habitat conservation goals included in the Subtidal Habitat Goals Report that apply to the AC34 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

Shellfish Beds

- Protect San Francisco Bay native shellfish habitats (particularly native oyster Ostrea lurida) through no net loss to existing habitats

Submerged Aquatic Vegetation

- Protect existing eelgrass habitat in San Francisco Bay through no net loss to existing beds

Macroalgal Beds

- Protect San Francisco Bay Fucus beds through no net loss to existing beds
- Protect San Francisco Bay Gracilaria beds through no net loss to existing beds

5.14.6 Impacts and Mitigation Measures – Marine Resources

5.14.6.1 Significance Criteria

The City has not formally adopted significance standards for impacts related to biological resources, but generally considers that implementation of the project could have a potentially significant impact related to biological resources if it were to:

- 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 Game or U.S. Fish and Wildlife Service;

- Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations;

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

5.14.6.2 Approach to Analysis

The approach to analysis for marine biological resources is essentially the same as described for upland biological resources in Section 5.14.3.2, above.

Potential impacts from AC34 activities on marine birds and birds that use the marine environment are discussed in detail in Section 5.14.3.3 (Impact Analysis on Upland Resources), above. Potential impacts on other marine resources are discussed in the impact analysis in Section 5.14.6.3, below.

No impacts on marine resources would result from the proposed James R. Herman Cruise Terminal and Northeast Wharf Plaza, as presented in Chapter 3, Project Description. Section 3.5, since all activities related to implementation this project would be conducted onshore. The periodic dredging of the Pier 29 slip is conducted under the Port's existing permitted maintenance dredging program and is not part of the proposed project. With one exception, the Cruise Terminal project is not expected to result in significant impacts on marine resources. However, under both the AC34 and Cruise Terminal projects, the Port proposes to request amendments to the BCDC Special Area Plan, and as part of the proposed amendments, fill removal is included in the scope of issues to be reviewed by BCDC. The discussion of marine biological resource issues associated with possible fill removal sites are addressed in the impact analysis under the Cruise Terminal project in Section 5.14.6.3, below, but would also apply to the AC34 project.

5.14.6.3 AC34 Event and Cruise Terminal Impacts and Mitigation Measures—Marine Resources

America's Cup

Impact BI-11: The America's Cup facilities and events could have a substantial adverse effect, either directly or through habitat modifications, on marine or estuarine species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game, U.S. Fish and Wildlife Service, or National Marine Fisheries Service. (Less than Significant with Mitigation)

Marine species considered special-status and analyzed in this EIR that have a moderate or high potential to occur and to be exposed to project impacts are as follows:

***State- or Federally Listed Species*:** Chinook salmon (Sacramento River spring- and winter-run, Central Valley spring- and fall-run), Green sturgeon, Steelhead trout (Central Valley and Central California Coast), Longfin smelt.

***Marine Mammals*:** Pacific harbor seal, California sea lion, California gray whale, Humpback whale, Bottlenose dolphin, Southern sea otter, and Harbor porpoise.

***Magnuson-Stevens Act (MSA) - Managed Fish Species*:** northern anchovy, Pacific sardine, English sole, sand sole, curlfin sole, Pacific sanddab, starry flounder, lingcod, brown rockfish, pacific whiting, kelp greenling, leopard shark, spiny dogfish shark, soupfin shark, skates, bocaccio, and cabezon.

***Species of Interest*:** Pacific herring

Impact Overview

Both construction and operation of facilities for the AC34 events would require in-Bay activities that have the potential to directly and indirectly affect the protected and special-status marine species listed above. Proposed construction activities to support the AC34 races in 2012 and 2013 include limited dredging of approximately 165,000 cubic yards at the Brannan Street Wharf Open Water Basin, Pier 28 South berth and Rincon Point Open Water Basin, as well as the installation and removal of temporary moorings, floating docks, wave attenuators, and pile-supported barges, and the installation of temporary steel piles to anchor the temporary floating docks and wave attenuators. Additionally, at Piers 30-32, it is expected that seismic upgrading of the piers would be required for the AC34 events, necessitating the installation of additional 72-inch steel piles. For the AC34 2012 race activities, the temporary installation of floating docks, vessel moorings, and associated steel anchoring piles and mooring anchors would be conducted at Piers 30-32 for use as the team base, assuming seismic improvements and dredging can be completed in time; similar work would occur at Pier 80 for use as a back up team base. For the AC 2013 race activities, temporary floating docks and associated steel anchoring piles, a temporary wave attenuator, multiple mooring anchors, pile-supported barges, and as-needed wood piling replacement along pier bulkheads would be installed at multiple locations within the Port and along the San Francisco shoreline as detailed in Chapter 3. Operational impacts of these infrastructure improvement activities are expected to occur over a 2-year period, including impacts associated with the race events as well as with the temporary installation of in-water features. All temporary floating docks, wave attenuators, mooring anchors, or any other in-water features are planned to be in place between 6 and 20 months.

This impact addresses the potential for the AC34 construction and operational activities to affect sensitive marine species in their general use of Central Bay waters for foraging and resting. Because some of these species are at potential risk in their breeding (i.e., Pacific herring, harbor seals), and because project-related boat traffic of all kinds could have effects on many species that may alter their movement patterns throughout the Bay, discussion of and mitigation for these impacts are included under Impact BI-16, which covers *movement* of native wildlife and native wildlife nursery sites.

As indicated above, assessment of the potential impact on marine avifauna (birds) from the AC34 project is included in Section 5.14.3, above, and is excluded from the assessment of project impacts on other marine resources.

Effects on Open Water (Pelagic) and Unconsolidated Bottom Sediment (Demersal) Habitats of Central Bay

The open water (pelagic) and soft unconsolidated sediment (demersal) areas of the Central Bay are identified as critical habitat for winter- and spring-run Chinook salmon, Coho salmon, steelhead trout, and green sturgeon. These areas are also listed as essential fish habitat for the 20 identified Fishery Management Plan-managed fish taxa and contain spawning and foraging habitat for Pacific herring. Pacific harbor seals and harbor porpoises are year-round residents in the project area's Bay waters, and California sea lions are present through most of the year. California gray whales and humpback whales are infrequent transients into the Bay, with gray whales being potentially present December through April and humpback whales potentially present April through December.

AC34 in-water construction activities can be expected to result in the following ecological effects:

- Proposed dredging can be expected to result in the temporary loss of foraging habitat for some fish and marine mammal species, cause short-term and localized increased water turbidity and exposure to sediment-affiliated organic and inorganic contaminants from resuspended sediments, and fish entrainment.
- Installation and removal of temporary mooring anchors, boat anchors, and floating dock anchor pilings can be expected to result in the temporary loss of unconsolidated sediment foraging habitat while the anchors are in place as well as short-term and localized increased turbidity and exposure to contaminants from resuspended sediments during placement and removal.
- Resuspension of sediment from dredging, anchor placement and removal, and the removal of piles for floating docks can be expected to result in limited, short-term, localized shading of Bay waters. These resuspended sediments combined with the floating docks, wave attenuators, piling suspended barges, and wave attenuators will collectively cause some shading of Bay waters and possibly reduced plankton productivity.
- Installation of pre-cast steel pilings for seismic upgrading at Piers 30-32 could result in increased noise levels that can be fatal and/or harmful to fish and marine mammals.

AC34 in-water operational activities can be expected to result in the following ecological effects:

- Installed wave attenuators can be expected to temporarily alter sediment composition of the seafloor in the immediate vicinity of the attenuator by altering wave and current action and the depositional/erosional behavior of the moving water. This would result in altered ecological characteristics of seafloor habitat, altered biological communities, and potential foraging habitat adjacent to the wave attenuator.
- Installed dock lighting on floating docks would cause temporary increased nighttime illumination of Bay waters, which may alter normal fish behavior and increase bird, fish, and marine mammal predation on some fish species.

- Replacement of some wood pier pilings would result in the temporary loss of artificial hard substrate habitat and attached invertebrate communities that serve as fish forage habitat.

The following discussions address the potential effect of these project-related ecological changes on Bay marine habitats and their potential impact on identified sensitive species.

Disturbed Habitat. **Table 5.14-5** summarizes the estimated Bay acreage that would be affected by in-water construction. Dredging at Brannan Street Wharf (Piers 32-36) Open Water Basin, Piers 28-30 water area, and Rincon Point (Piers 14-22½) Open Water Basin would result in the short-term loss of fewer than 30 acres of unconsolidated fine sand-mud substrate essential fish habitat/critical habitat and associated benthic infaunal community. Additionally, the placement of assorted mooring anchors, floating docks, wave attenuators, and seismic retrofit at multiple offshore areas along the San Francisco waterfront between Marina Green and Pier 80, as described in Chapter 3, would result in the loss of approximately 0.36 acres of essential fish habitat/critical habitat, most of it temporarily. Total short-term habitat loss from AC34 in-water construction activities (including dredging, pilings, temporary mooring anchors and other in-water construction) is estimated at fewer than 32 acres, or less than 0.0003 percent of the estimated 168 square miles[150] of Central Bay subtidal habitat.

Altering benthic habitat and associated infaunal and epifaunal communities can result in the loss or reduction of habitat suitable for fish foraging, especially for sensitive species including salmon, steelhead, green sturgeon, and groundfish. The current benthic community inhabiting the Port area of Central Bay is identified as Marine Muddy[151] and is characterized by the polychaetes *Euchone liminicola* and *Mediomastus s*pp. and six species of amphipods, including *Corophium heteroceratum, C. acherusicum, C. insidiosum, C*. spp. *Photis* spp., *Ampelisca abdita.*[152,153]

This community and the fine sand-mud sediment it inhabits is one of the most common in the San Francisco Bay-Delta and the Central Bay in particular.[154] Following proposed dredging, the deposition of fine sand-mud sediments, comparable to pre-dredging conditions, would begin almost immediately, and the benthic community inhabiting those sediments would be expected to recover to pre-dredging composition and abundances within a few months to under two years, depending on when dredging occurs and other ecological factors affecting recolonization.[155,156]

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150 NOAA, *Report on the Subtidal Habitats and Associated Biological Taxa in San Francisco Bay*, prepared by NOAA National Marine Fisheries Service. Santa Rosa, CA, June 2007.

151 Thompson, B., R. Hoenicke, J. A. Davis, and A. Gunther. 2000. An overview of contaminant-related issues identified by monitoring in SF Bay. Environmental Monitoring and Assessment. 64:409-419.

152 Thompson *et a*l. 2000. *ibid*.

153 NOAA, *Report on the Subtidal Habitats and Associated Biological Taxa in San Francisco Bay*, prepared by NOAA National Marine Fisheries Service. Santa Rosa, CA, June 2007.

154 Thompson *et a*l. 2000. *ibid*.

155 Newell, R.C.; Seiderer, L.J., and Hitchcock, D.R., "The impact of dredging works in coastal waters: A review of the sensitivity to disturbance and subsequent recovery of biological resources on the seabed," Oceanography and Marine Biology, 36, 127-178, 1998.

156 Blake, N.J.; Doyle, L.J., and Culter, J.J., *Impacts and Direct Effects of Sand Dredging for Beach Renourishment on the Benthic Organisms and Geology of the West Florida Shelf*, U.S. Department of the Interior, Minerals Management Service, Office of International Activities and Marine Minerals, Herndon, VA, OCS Final Report MMS 95-0005, 109p., 1996.

TABLE 5.14-5
IN-WATER ACREAGE OF THE CENTRAL BAY AFFECTED BY THE AC34 PROJECT

In-water Construction Location	Activity	Acres			Cubic Yards
		Project Area	Bay Fill[a]	Shading	Dredged Sediments
Pier 80	Floating Docks & Moorings	0.60	0.014	0.43	--
Rincon Point Open Water Basin (Piers 14-22½)	Floating Docks & Moorings	10.3	0.060	0.41	--
	Dredging		--	--	29,000
Pier 26	Floating Docks	3.0	0.003	0.20	--
Pier 28	Floating Docks	2.75	0.004	0.20	--
Pier 28S	Dredging	3.0	--	--	6,000
Piers 30-32	Structural and Seismic Floating Docks & Mooring Anchors Wave Attenuators Pile driving	12.5 16.5 1.0 97	0.073 0.009 0.002 --	- 0.91 0.57 -	
Brannan Street Wharf Open Water Basin (Piers 32-36)	Dredging	15.3	--	--	130,000
Piers 27 -29	Floating Docks & Moorings	14.75	0.150	0.73	--
Pier 23	Floating Docks & Moorings	2.0	0.006	0.40	--
Pier 19	Large Vessel Access	2.0	--	--	--
Aquatic Park	Moorings and Telecom Barge	0.05	0.020	0.13	--
Fort Mason	Large Vessel Access	2.75	--	0.11	--
Marina Green (2012 only)	Floating Docks & Moorings	16.5	0.018	0.19	
	Totals	**200.0**	**0.36**	**4.3**	**165,000**

[a] Fill calculations include piles, pile repairs, and mooring anchors.

SOURCE: Applied Marine Science 2011b

Likewise, the temporary burial and loss of seafloor habitat under mooring anchors and steel pilings would also be temporary, lasting less than 6 months, and recovery is expected to be quick, since in the case of the mooring anchors, the habitat is not lost and recolonization from adjacent sediments has been shown to be very rapid.[157] Based on the very small area of the Central Bay affected (less than 0.00064 % of similar habitat), the temporary time period over which the habitat would be unavailable for use by sensitive species, and the overall temporary nature of the loss, the potential loss of seafloor habitat from AC34 project activities would be *less than significant*.

Exposure to Contaminated Sediments. The presence of organic or inorganic contaminants in Bay sediments at concentrations high enough to result in detectable increased loading of contaminants to Bay waters and therefore pose a threat to marine biota is not expected, either from dredging activities or placement/removal of pilings and mooring anchors. As discussed in Section 5.16, Hydrology and Water Quality, testing results from multiple locations within the Port that are adjacent to proposed dredging locations have not indicated any toxic hot spots and have been determined to pose a less than significant impact to Bay waters. In addition, as part of the permitting process for dredging these sediments, representative samples would be required to be collected for physical, chemical, toxicity, and bioaccumulation to assess the quality of sediment and determine the suitability for each disposal option permitted. Under the proposed project, dredged sediments would not be disposed in the Bay but either at an approved offshore disposal site or a beneficial reuse site depending on the suitability of the material. If analytical analysis shows that either organic or inorganic chemicals are exhibited in sediments at unacceptable concentrations for any aquatic or beneficial reuse site, adherence to the LTMS-required best management practices (BMPs) for dredging and disposal procedures (e.g., use of silt curtains, upland disposal) would ensure that any potential impact from the resuspension of organic or inorganic contaminants from dredging would result in *less-than-significant* impacts.

Resuspended Sediments. Resuspended sediments from**.** dredging approximately 165,000 cubic yards would be expected to be short-term, occurring during those days dredging is occurring. Duration for dredging based on an 8,000 cubic yard per day production rate would be between 21 and 25 days. Some resuspension of sediments would also occur during pile removal and placement and removal of mooring anchors. All in-water construction activities would comply with Corps, USEPA, RWQCB, and BCDC regulations and provisions in issued permits including best management practices for avoiding or reducing potential impacts related to resuspended sediments. The wind waves and tidal currents present along waterfront piers can be expected to quickly dissipate any turbidity plumes generated from dredging operations and to minimize any effect on marine habitats and biota. Potentially increased turbidity from AC34 construction activities is not expected to have a substantial effect on plankton productivity, since the shallow Bay waters adjacent the waterfront are naturally turbid with light penetrating less than a few feet from the surface. The use of clamshell dredging, with a clamshell bucket ≤ 10 cubic yards, for Port slips and open water areas is consistent with routine maintenance and new channel/harbor dredging methodologies currently employed throughout the Bay annually and evaluated in the development of the LTMS for dredging in San Francisco Bay. Strict adherence to best management practices for

[157] Ibid.

avoiding or reducing suspended sediments would ensure that the impact from contaminant exposure from resuspension of sediments would be *less than significant*.[158]

Marine Wildlife Entrainment

Dredging of Bay sediments by either hydraulic suction or clamshell dredging equipment has the potential to entrain (directly remove) fish, benthic infauna, and mobile epibenthic (on the sediment surface) invertebrates, such as Dungeness crab.[159] Of these three, clamshell dredging has the lowest occurrence of fish and mobile invertebrate entrainment, since these animals are generally capable of sensing the pressure wave that precedes the clamshell bucket traveling through the water column, can actively avoid the bucket, and generally avoid the active dredging site because of increased seafloor turbidity and noise.[160] The LTMS for the Placement of Dredged Materials in San Francisco Bay Region[161] evaluated the potential entrainment of special-status and sensitive fish and invertebrate species by in-Bay dredging activities. To prevent and minimize entrainment of fish and invertebrates, the LTMS BMPs for Bay-Delta dredging include environmental work windows, restricted in-Bay disposal, and limits on overflow dredging and lowering hydraulic dredge heads when priming.[162] All proposed dredging in support of the AC34 project would be conducted with a clamshell dredge, employ offshore disposal, and restrict overflow dredging, and would be conducted within the environmental work windows shown in Table 5.14-4 in accordance with the LTMS.

It should be noted that the LTMS environmental assessment and guidelines were established prior to green sturgeon being listed as a FESA-protected species on April 7, 2006 and longfin smelt as a CESA-protected species on June 25, 2009, and the recent decision by the USFWS to consider protection under FESA on March 10, 2011. Although all of San Francisco Bay is listed as Critical Habitat for green sturgeon, their actual distribution and use of habitats throughout the Bay is unknown. Based on recent Interagency Ecological Program bottom trawl data (see Appendix BI), green sturgeon are either present in low numbers in the Central Bay or are adept at avoiding capture by bottom trawls. There is limited evidence of sturgeon entrainment during dredging[163] and no known sturgeon entrainment incidents within San Francisco Bay. With the employment of mechanical clamshell dredging equipment, which has been documented to be less a threat to fish entrainment than hydraulic dredging,[164] for planned AC34 dredging activities, the potential risk to green sturgeon entrainment would be *less than significant*.

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158 LTMS agencies, *Long Term Management Strategy (LTMS) for the Placement of Dredged Material in the San Francisco Bay Region, Final Policy Environmental Impact Statement/Programmatic Environmental Impact Report*, Volume I, 1998.

159 Reine, K., and Clarke, D., "Entrainment by hydraulic dredges–A review of potential impacts," Technical Note DOER-E1. U.S. Army Engineer Research and Development Center, Vicksburg, MS, 1998.

160 Reine, K., and Clarke, D., 1998. *ibid*.

161 LTMS agencies, *Long Term Management Strategy (LTMS) for the Placement of Dredged Material in the San Francisco Bay Region, Final Policy Environmental Impact Statement/Programmatic Environmental Impact Report*, Volume I, 1998.

162 Ibid.

163 Hoover, J. J., Killgore, K. J., Clarke, D. G., Smith, H., Turnage, A., and Beard, J., "Paddlefish and sturgeon entrainment by dredges: Swimming performance as an indicator of risk," DOER Technical Notes Collection (ERDC TN-DOER-E22), U.S. Army Engineer Research and Development Center, Vicksburg, MS. http://el.erdc.usace.army.mil/dots/doer/doer.html, 2005.

164 Reine, K., and Clarke, D., "Entrainment by hydraulic dredges–A review of potential impacts," Technical Note DOER-E1. U.S. Army Engineer Research and Development Center, Vicksburg, MS, 1998.

Longfin smelt can be found throughout the San Francisco Bay-Delta, but are known to congregate in the deeper, cooler waters of the Central Bay during the summer and fall months of the year. As a pelagic species, they will inhabit the entire water column depending on the time of day, tidal cycle, food presence, etc. (See Appendix BI) but are reported to concentrate in the deeper and colder water depths.[165] Historic evidence of entrainment suggests they are more susceptible to suction dredging than mechanical dredging techniques, such as clamshell dredges. This has been attributed to avoidance due to increased turbidity and suspended sediments as a result of physical disturbances of bottom substrate and avoidance of low-frequency vibration caused by lowering the bucket into the water.[166] CDFG has determined that the greatest threat to longfin smelt recovery posed by dredging entrainment is to longfin smelt eggs during winter and spring months, which would occur in the northern regions of the Bay-Delta.[167] If a project is expected to result in the "take" (hunt, pursue, catch, capture, or kill) of longfin smelt, as defined by CESA, then during the required consultation with CDFG, a "take" permit issued by CDFG would be required. Based on the Central Bay location of proposed dredging, dredging during the late summer and fall months in accordance with LTMS-approved dredging environmental windows, the low risk of entrainment posed by clamshell dredging, and the absence of the most sensitive life history stage (smelt eggs) in the Central Bay during summer and fall months when dredging would occur, the potential threat to longfin smelt is expected to be *less than significant*. Additionally, no "take" of fish is expected and no mitigation required.

Construction Noise Impacts on Fish and Marine Mammals

Steel pilings for temporary race infrastructure (18-inch), such as floating docks and the wave attenuator, would be installed using vibratory pile drivers. The 24-inch steel piles installed as part of the Piers 30-32 substructure work and seismic upgrading would also be installed using a vibratory pile driver. The 72-inch steel piles installed for seismic upgrading would use a vibratory hammer for most of the drive, but the remainder of pile (approximately the last 6 feet) would require the use of an impact hammer to reach required depths. Concrete, wood, and steel piles that are driven within the water column can produce high-intensity noise and result in damage to soft tissues, such as gas bladders or eyes (barotraumas), and/or harassment of fish and marine mammals such that they alter swimming, sleeping, or foraging behavior or abandon temporarily forage habitat. Protected and managed fish species, including salmon, steelhead, Pacific herring, anchovies, mackerel, sardine, soles, sanddab, green sturgeon, and other bottom fish, as well as harbor seals and California sea lions use the waters adjacent to the Port for foraging and as a transit corridor between the open ocean (via the Golden Gate) and South Bay and would be potentially affected by the noise from pile driving.

The striking of a pile by a pile-driving hammer creates a pulse of sound that propagates through the pile, radiating out through the water column, seafloor, and air. Sound pressure pulses, as a function of time are referred to as a waveform. Peak waveform pressure underwater is typically

[165] LTMS Background Information for Dredgers' Assessments of Potential Impacts on the Longfin Smelt in San Francisco Bay, http://www.spn.usace.army.mil/conops/Longfin%20and%20Dredging%20Impacts_091409.pdf, dated September 14, 2009, accessed April 5, 2011.
[166] Ibid.
[167] Ibid.

expressed in decibels (dB) referenced to 1 microPascal (μPa). Sound levels are generally reported as peak levels (peak) and sound exposure levels (SEL). In addition to the pressure pulse of the waveform, the frequency of the sound, expressed in Hertz (Hz) is also important to evaluating the potential for sound impacts. Low frequency sounds are typically capable of traveling over greater distances with less reduction in the pressure waveform than high frequency sounds. Pile driving hammers driving concrete and steel piles in water typically generate sound waves ranging between 185-220 dB (peak) and 160-195 dB (SEL).[168]

Vibratory pile drivers work on a different principal than pile-driving hammers and produce a different sound profile. A vibratory driver works by inducting particle motion to the substrate immediately below and around the pile causing liquefaction of the immediately adjacent sediment, allowing the pile to sink downward or removed. Vibratory pile driving is only suitable where soft substrate is present. The noise produced by vibratory drivers driving concrete and steel piles in water range between 165-195 dB (Peak) and 150-180 dB (SEL),[169] as presented in **Table 5.14-6**. These sound levels are typically 10-20 dB lower in intensity relative to the higher, pulse-type noise produced by an impact hammer.[170]

Table 5.14-6 provides a summary of estimated underwater noise levels from pile driving for the Piers 30-32 seismic upgrading and for installation and removal of temporary steel pilings for AC34 floating docks, wave attenuators, and pile-suspended barges using both vibratory and impact hammers. Potential noise calculations prepared for the Pier 36/Brannan Street Wharf project estimated that vibratory pile driving activities for that project, which included 24- and 36-inch steel pilings, would generate peak underwater noise ranging between 170 and 180 dB.[171] These levels are below the established sound threshold of 183 dB for potential impact to fish less than 2 grams and 187 dB for fish greater than 2 grams. Ambient underwater noise for a major harbor like San Francisco is estimated at approximately 150 dB.[172] Calculating the distance that a 180 dB sound wave would need to travel to reach ambient conditions is estimated at less than 15 feet.[173]

Underwater sound level measurements for using an impact hammer to drive a 72-inch steel piling in sediments comparable to those in San Francisco Central Bay are currently unavailable. CalTrans reported sound levels of 220 dB at a distance of 33 feet (10 meters) being generated when using an impact hammer to drive 96-inch steel pilings and 203 dB at 98 feet (30 meters) when driving a 66-inch steel piling for the Oakland Bay Bridge and Richmond Bay Bridge Seismic upgrading projects.[174] Using in-water noise level data for impact hammer driven 66-inch

168 Caltrans. 2009. Technical Guidance for Assessment and Mitigation of the Hydroacoustic Effects of Pile Driving on Fish. Final Report. Prepared for California Department of Transportation by ICF Jones & Stokes and Illingworth and Rodkin, Inc. February 2009. http://www.dot.ca.gov/hq/env/bio/files/Guidance_Manual_2_09.pdf.
169 Caltrans 2009. *op. cit.*
170 Caltrans 2009. *op. cit.*
171 URS. 2011. Draft Environmental Impact Report for the Pier 36/Brannan Street Wharf Project. Case No. 2009.048E. State Clearinghouse No. 2009122058. Prepared for the San Francisco Planning Department. February 9, 2011.
172 Caltrans 2009. *op. cit.*
173 Caltrans 2009. *op. cit.*
174 Caltrans. 2009. Technical Guidance for Assessment and Mitigation of the Hydroacoustic Effects of Pile Driving on Fish. Final Report. Prepared for California Department of Transportation by ICF Jones & Stokes and Illingworth and Rodkin, Inc. February 2009. http://www.dot.ca.gov/hq/env/bio/files/Guidance_Manual_2_09.pdf.

TABLE 5.14-6
ESTIMATED NEAR-SOURCE UNDERWATER NOISE LEVELS FROM STEEL PILE DRIVING

Pile Size/Type	Relative Water Depth	Distance from Piling Measurement Taken	Average Sound Pressure		Attenuation Device
			Peak (dB)	SEL[b] (dB)	
Vibratory Hammer[a]					
12-inch Steel	16 ft (5 meters)	33 ft (10 meters)	165-171	150-155	None
24-inch Steel	50 ft (15 meters)	33 ft (10 meters)	175-182	160-165	None
72-inch Steel	16-98 ft (5-30 meters)	33 ft (10 meters)	183-195	160-180	None
Impact Hammer					
24-inch Steel[c]	-	33 ft (10 meters)	205	178	None
24-inch Steel[c]	-	33 ft (10 meters)	200	173	Bubble curtain
66-inch Steel[a]	<16 ft (<5 meters)	98 ft (30 meters)	203	173	None
96-inch Steel[a]		33 ft (10 meters)	220	194	None

[a] Source: Caltrans. 2009. Technical Guidance for Assessment and Mitigation of the Hydroacoustic Effects of Pile Driving on Fish. Final Report. Prepared for California Department of Transportation by ICF Jones & Stokes and Illingworth and Rodkin, Inc. February 2009. http://www.dot.ca.gov/hq/env/bio/files/Guidance_Manual_2_09.pdf.
[b] SEL- sound Exposure Level (SEL) for 1 second of continuous driving.
[c] URS. 2011. Draft Environmental Impact Report for the Pier 36/Brannan Street Wharf Project. Case No. 2009.048E. State Clearinghouse No. 2009122058. Prepared for the San Francisco Planning Department. February 9, 2011.

and 90-inch piles and applying installation requirements for the Piers 30-32 seismic upgrading (less than 50 hammer strikes), the distances required to reach established regulatory thresholds of 187 and 183 db, discussed above, can be estimated.[175] Results for these estimates are shown in **Table 5.14-7**. Although these estimates represent the pile driving of steel piles slightly larger and smaller in diameter than the 72-inch piles to be used for the Piers 30-32 seismic upgrading, it can be assumed that the sound levels and distance required to reach the 183 and 187 dB regulatory guidance levels would be slightly greater than those estimated for the 66-inch pile and less than those calculated for the 90-inch piles. The results indicated that using an impact hammer to drive a 72-inch steel piling would be expected to generate a peak sound level between 203-214 dB and 173-190 SEL, at a distance of 33 to 98 feet (10 to 30 meters) (see footnote 1 in Table 5.14-7).

Furthermore, the sounds generated from driving 72-inch pilings at Piers 30-32 would be expected to attenuate to 187 dB at distances of 154 to 1,410 feet (0.03 to 0.27 miles) and to 183 dB at distances of 289 to 2,608 feet (0.05 to 0.49 miles), respectively.

[175] Caltrans. 2009. *ibid*.

TABLE 5.14-7
ESTIMATED IMPACT HAMMER PILE DRIVING SOUND LEVELS AND DISTANCES TO CRITERIA LEVELS

Pile Type	Measured Sound Levels[a] (dB)			Distance to Sound Level Threshold[b] (feet)		
	Peak Sound Level	SEL	Root Mean Square (RMS) Sound Level	206 dB	187 dB	183 dB
66-inch	203	173	185	-	154	289
90-inch	214	190	203	223	1,410	2,608

[a] The distance at which sound levels were measured were 98 feet (30 meters) for the 66-inch piling and 33 feet (10 meters) for the 90-inch piling

[b] Calculated according to protocols outlined in: Caltrans. 2009. Technical Guidance for Assessment and Mitigation of the Hydroacoustic Effects of Pile Driving on Fish. Final Report. Prepared for California Department of Transportation by ICF Jones & Stokes and Illingworth and Rodkin, Inc. February 2009. http://www.dot.ca.gov/hq/env/bio/files/Guidance_Manual_2_09.pdf.

Noise Impacts to Fish. Scientific investigations on the potential effect of noise on fish indicate that sound levels below 187 dB do not appear to result in any acute physical damage or mortality to fish (barotraumas).[176] **Table 5.14-8** provides a summary of known acute and sub-lethal effects of noise on fish and marine mammals. Noise levels that result in startle responses in steelhead trout and salmon have been documented to occur at sound levels as low as 140 dB at a frequency of 100 Hz and between 180 and 186 dB in Pacific herring.[177] Any disturbance to FESA-listed fish species that results in altered swimming, foraging, movement along a migration corridor, or any other altered normal behavior is considered harassment.

The use of vibratory hammers to install the 18- and 24-inch piles is expected to generate 187 dB or lower sound levels for a short period of time within a zone extending out approximately 154 feet from the piling.[178,179] During pile driving activities, fish are not expected to be present within this zone, since the movement of the steel pipe through the shallow water or the pier slip and initial contact with the Bay floor will result in any fish that are present quickly leaving the immediate area. Any salmon, steelhead, green sturgeon, Pacific herring, or MSA-managed fish species swimming near pile driving activities are therefore not expected to experience any acute effects or barotraumas from vibratory pile driving. A similar case can be made for vibratory pile driving installation of the 72-inch steel pilings.

176 Dalen, J. and G.M. Knutsen. 1986. Scaring effects of fish and harmful effects on eggs, larvae and fry from offshore seismic explorations. ICA Associated Symposium on Underwater Acoustics, 16-18 July, Halifax, Canada.
177 San Luis and Delta Mendota Water Authority and C.H. Hanson. 1996. Georgina Slough acoustic barrier applied research project: results of 1994 Phase II field tests. Interagency Ecological Program for the San Francisco Bay/Delta estuary. Technical Report 44. May 1996
178 URS. 2011. *op. cit*.
179 NMFS. 2011 *op.cit*.

TABLE 5.14-8
POTENTIAL EFFECTS OF VARYING NOISE LEVELS TO FISH AND MARINE MAMMALS

Taxa	Sound Level (dB)	Effect	Reference
Fish			
All fish > 2 grams in size	206 peak 187 (SEL)	Acute Barotraumas	Fisheries Hydroacoustic Working Group, 2008
All fish < 2grams	186 (SEL)	Acute Barotraumas	Fisheries Hydroacoustic Working Group, 2008
Pacific Herring	180-186	Avoidance behavior	Dales and Knudsen, 1986
Salmon, steelhead	166	Avoidance behavior	Loeffelman et al. 1991
Salmon, Steelhead	140-160	Startle response	San Luis and Delta Mendota Water Authority and C.H. Hanson. 1996
Marine Mammals			
Marine Mammals	180-190	Level A[a] harassment out to 65 feet from sound source	NMFS, 2011
Harbor seals	180 at 12 kHz	Discomfort zone out to 4 miles	Kastelan *et al.* 2006
Harbor seals	166-195	Can be detected at distances up to 2.9 miles	Terhung *et a*l. 2002
Marine Mammals	160 from impact hammer	Level B[b] harassment out 328 feet from sound source	NMFS, 2011
Marine Mammals	120 from vibratory hammer	Level B[a] harassment out to 1.2 miles	NMFS, 2011
Harbor seals	>155	Avoidance behavior	Terhung *et a*l. 2002
Harbor seals	107 at 12 kHz	Discomfort zone out 20-meters from the sound source	Kastelan *et a*l. 2006
Harbor seals	>75	Threshold level of detection	Kastak and Schusterman, 1998

[a] Level A harassment is defined as any act of pursuit, torment, or annoyance with has the potential to injure a marine mammal or marine mammal stock in the wild.
[b] Level B harassment is defined as any act of pursuit, torment, or annoyance with has the potential to disturb a marine mammals or marine mammal stock in the wild.

However, during the use of the impact hammer, sound levels could exceed 187 dB and pose risk to small fish such as herring, sardines, and anchovies as well as cause salmon, steelhead and sturgeon to modify their foraging and/or normal swimming behaviors (Table 5.14-8). The use of BMPs such as bubble curtains and cushion blocks can be expected to reduce transmitted sounds levels and the distance over which potentially deleterious sounds levels will travel. Additionally, restricting the installation of all 72-inch steel piles to the months of June 1 through November 30th would minimize or lessen the time periods when these species would be present in the project area.

Corroborating this determination, the NMFS 2007 programmatic consultation for essential fish habitat pursuant to MSA-[180] and FESA-[181] listed species and marine mammals covered by the MMPA, established activity-specific criteria to avoid or minimize adverse effects to individuals and cumulative instances of specific routine permitted activities. These activities include bridge repair, bank stabilization, culvert replacement, navigational dredging, boat dock construction and maintenance, piling installation, pipeline repairs, and levee maintenance. As part of a project's consultation with NMFS, pursuant to FESA, MMPA, and MSA, if the proposed activity included one of the above routine permitted activities and conformed to normal and routine type operations, the activity would be allowed pursuant to specific requirements. Specific to piling installation, this programmatic consultation established that for any size of steel, wood, or concrete piling installation employing a vibratory hammer, that installation could occur year-round with no meaningful impact to fish.

Pile driving activities outside these general criteria would be subject to additional measures to ensure the reduction of pile driving noise and the potential for deleterious effects to fish (marine mammals are discussed separately below). In summary, the potential for noise effects to salmon, steelhead, green sturgeon, Pacific herring, and MSA- managed fish species from installation of 18- 24-, and 72-inch piles by vibratory hammers would be minimal and result in *less-than-significant* impacts to sensitive fish species.

Use of an impact hammer for the final 6 feet of installation of the 72-inch piles could result in acute barotraumas (sound levels greater than 187 dB) to sensitive fish if underwater sound levels are not reduced through implementation of BMPs. Additionally, normal foraging, swimming, or resting behaviors of both listed and MSA-managed fish species could occur if impact hammer noise levels are not reduced to levels less than 183 dB and ideally less than 160 dB. However, noise impacts to sensitive fish species would be reduced to *less than significant* by implementation of **Mitigation Measure M-BI-11a** (Impact Hammer Pile Driving Noise Reduction for Protection of Fish) by limiting impact hammer pile driving of 72-inch steel piles to time periods when most sensitive fish species are not present and by employing BMPs demonstrated to reduce noise levels to safe levels for fish.

Noise Effects to Marine Mammals. Similar noise studies on pinnipeds (seals and sea lions) indicate that harbor seals can detect sounds in water as low as 65 dB at frequencies of 75 Hz and higher, and that avoidance behaviors are regularly exhibited at sound levels of 80 dB above hearing thresholds, or approximately 160 to 165 dB[182] (see Table 15.14-8). Of particular significance are the investigations of Kastelan[183] in which he reported that 12 kHz sounds

[180] NMFS. 2007a. Programmatic Consultation Letter to Brigadier General John R. McMahon, U.S. Army Corps of Engineers, from NMFS concerning EFH for eight categories of activities regularly permitted by the ACOE. Dated December 21, 2007

[181] NMFS. 2007b. Programmatic Consultation Letter to Brigadier General John R. McMahon, U.S. Army Corps of Engineers, from Robert S. Hoffman, concerning Section 7(a)(2) consultation under ESA for eight categories of activities regularly permitted by the ACOE. Dated February 14, 2007.

[182] Kastak, D. and R.J. Schusterman. 1998. Low-frequency amphibious hearing in pinnipeds: Methods, measurements, noise and ecology. J. Acoust. Soc. of Am. 103 (4), April 1998. 2216-2226.

[183] Kastlelein, R.A, S. van der Heul, W. C. Verboom, R. J. V. Triesscheijn, and N.V. Jennings. 2006. Mar. Env. Res. 61 (2006). 19-39

produced a discomfort threshold for harbor seals at 107 dB and that 180 dB sounds at the same frequency maintained a discomfort zone extending out 4 miles. Sounds at 12 kHz are extremely low frequency sounds and as such can travel long distances with little decrease in sound intensity. Part of the programmatic consultation[184] between ACOE and NMFS for routine harbor and port maintenance activities discussed above further established that when marine mammals are potentially present, a species-specific work window would apply the project may be required to have on-site monitors, and Incidental Harassment Permits might be needed. The consultation further stated that the project would be required to:

- Maintain route mean square (RMS) underwater sound pressures below levels that can injure (180 dB re 1 micropascal) or affect the behavior (160 dB re 1 micropascal) of marine mammals
- Maintain a 1,600-foot (500-meter) safety zone around sound sources in the event the sound level is unknown or cannot be adequately predicted
- Maintain sound levels below 90 dBA in air when pinnipeds (seals and sea lions) are present
- Halt work activities when a marine mammal enters the 1,600-foot (500-meter) safety zone
- Bring loud mechanical equipment on-line slowly
- Vessel operations should reduce speed when marine mammals are in the project area.

In their recent issuance of an Incidental Harassment Authorization (IHA) for the pier improvements at the Exploratorium (Piers 15-17) in which 72-inch steel pilings will be installed using vibratory and impact hammers similar to the proposed AC34 project, NMFS determined that through the implementation of the measures outlined in the programmatic consultation, that Level A harassment (Acute barotraumas) could occur to marine mammals in San Francisco Bay within 65-feet of the sound source (see Table 5.14-8). They further determined that Level B harassment could occur from vibratory hammer installation of steel pilings out to 1.3 miles and from impact hammers out to 354 feet from the sound source. **Figure 5.14-6** illustrates the potential zones for impact to marine mammals from pile driving of 72-inch steel piles at Piers 30-32.

The Bay waters adjacent to the proposed pile driving activities at Piers 30-32 are frequently used by harbor seals and California sea lions for foraging and transit to and from colonies and/or for haul-out locations and foraging areas within the Bay and nearshore coastal waters. Thus, there would be a potential for noise disturbance from proposed pile driving activities to affect these marine mammals, a *potentially significant* impact. The implementation of noise reduction practices outlined in **Mitigation Measures M-BI-11a** (Impact Hammer Pile Driving Noise Reduction for Protection of Fish) and **M-BI-11b** (Pile Driving Noise Reduction for Protection of Marine Mammals), which are consistent with NMFS current programmatic review for pile driving activities in San Francisco Bay,[185] are expected to reduce the potential for noise effects on marine mammals to less than significant.

[184] NMFS. 2007. *op. cit.*
[185] NMFS. 2007. *op. cit*.

SOURCE: Google Maps; ESA

Case No. 2010.0493E: AC34 / Cruise Terminal and Northeast Wharf Plaza (210317)

Figure 5.14-6
Zones of Noise Impacts

Operational Impacts

Increased Water Shading. The temporary installation of floating docks, wave attenuators, and barges would temporarily shade approximately 4.3 acres of subtidal habitat (see Table 5.14-5). This shading would only occur while the temporary floating docks, anchoring piles, wave attenuator, and piling supported barges are in place, estimated to range from 6 to 20 months.

Overwater structures can alter the physical ecological conditions present under them, including increasing the deposition of sediments and thereby reducing water depth and the grain size composition of seafloor sediments and therein the composition of benthic infaunal communities, and reducing the penetration of ambient light into Bay waters.[186] Decreased light penetration into Bay waters can have an effect on phytoplankton production and the presence and growth of marine algae, including eelgrass. Shade cast from docks, piers, and pilings has been shown to reduce the amount of ambient light within the marine environment, affect invertebrate and vertebrate community composition, and create behavioral barriers that can deflect or delay fish migration, reduce fish prey forage, and alter predator-prey relationships over normal open-water conditions.[187]

The majority of waterfront locations where the temporary floating docks would be placed are alongside existing piers where the effects of shading already exist. As discussed above, the Bay waters are daily subject to high wave and tidal currents that maintain seafloor sediments and sediments in suspension, resulting in turbid water that are naturally limiting to ambient light penetration and phytoplankton production. Based on existing conditions at the pier-side locations where the floating docks would be installed, combined with the short-term and temporary nature of the floating docks, the potential effect of shading on sensitive species is expected to be *less than significant*.

Increased Nighttime Artificial Illumination of Water. 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.[188] 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 sensitive species from artificial night lighting on temporary floating docks installed and used during AC34 2012 and 2013 race activities would be *potentially significant*, but with the implementation of **Mitigation Measure M-BI-11c** (Floating Dock

186 TRAC (Washington State Transportation Commission), *Executive Summary Overwater Structures: Marine Issues*, Research Project 1803, Task 35, Overwater Whitepaper by Barbara Nightingale and Charles A. Simenstad. University of Washington, Seattle, Washington, prepared for the Washington State Transportation Commission, June 2001.

187 Ibid.

188 TRAC (Washington State Transportation Commission), *Executive Summary Overwater Structures: Marine Issues*, Research Project 1803, Task 35, Overwater Whitepaper by Barbara Nightingale and Charles A. Simenstad. University of Washington, Seattle, Washington, prepared for the Washington State Transportation Commission, June 2001.

Night Lighting), which would minimizes artificial lighting of Bay waters by using shielded, low-mounted, and low light-intensity fixtures and bulbs, impacts would be reduced to less than significant.

Impact Summary

The AC34 project would potentially affect sensitive marine species in their general use of Central Bay waters for foraging and resting. Sensitive fish species that could be affected include Chinook salmon, Green sturgeon, Steelhead trout, and Longfin smelt as well as numerous MSA-managed fish species and Pacific herring. Marine mammals that could be affected include Pacific harbor seal, California sea lion, Humpback whale, and Harbor porpoise. Noise from pile driving activities during construction, particularly at Piers 30-32, would result in noise levels that could cause *potentially significant* impacts to fish and marine mammals. Implementation of **Mitigation Measures M-BI-11a** (Impact Hammer Pile Driving Noise Reduction for Protection of Fish) and **M-BI-11b** (Pile Driving Noise Reduction for Protection of Marine Mammals) would reduce these construction impacts to less than significant.

Installed dock lighting would cause temporary increased nighttime illumination of Bay waters that may alter normal fish behavior and would be *potentially significant* impact. Implementation of **Mitigation Measure M-BI-11c** (Floating Dock Night Lighting) would reduce this impact to less than significant.

Mitigation Measure M-BI-11a: Impact Hammer Pile Driving Noise Reduction for Protection of Fish

Prior to the start of construction, the project sponsor shall develop a NMFS- approved sound attenuation monitoring plan. This plan shall provide detail on the sound attenuation system, detail methods used to monitor and verify sound levels during pile driving activities, and management practices to be taken to reduce impact hammer pile-driving sound in the marine environment to an intensity level of less than 183 dB. The sound monitoring results shall be made available to the NMFS. The plan shall incorporate but not be limited to the following best management practices (BMPs):

- All 18 and 24-inch diameter pilings shall be installed and removed with vibratory pile drivers only. Vibratory pile driving will be conducted following the USACE "Proposed Procedures for Permitting Projects that will Not Adversely Effect Selected Listed Species in California".[189]
- All 72-inch steel pilings shall be installed with a vibratory pile driver to the deepest depth practicable. An impact pile driver may be used only where necessary to complete installation of the 72-inch steel pilings in accordance with seismic safety or other engineering criteria.
- All piling installation using impact hammers shall be conducted between June 1 and November 30, when the likelihood of sensitive fish species being present in the work area is minimal.

[189] NMFS, 2007a.

- If pile installation using impact hammers must occur at times other than the approved work window, the AC34 project sponsors shall obtain incidental take authorization from NMFS, and CDFG to address potential impacts on steelhead trout, chinook salmon, and Pacific herring and implement all requested actions to avoid impacts.

- The project sponsor shall develop a NMFS-approved sound attenuation monitoring plan prior to the start of construction. This plan shall provide detail on the sound attenuation system and the methods used to monitor and verify sound levels during pile driving activities. The sound monitoring results will be made available to NMFS.

- If exceedance of noise thresholds established and approved by NMFS occur, a contingency plan using bubble curtains or air barrier will be implemented to attenuate sound levels to below thresholds.

- The hammer will be cushioned using a 12-inch thick wood cushion block during all impact hammer pile driving operations.

Mitigation Measure M-BI-11b: Pile Driving Noise Reduction for Protection of Marine Mammals

As part of the NMFS-approved sound attenuation monitoring plan required in **Mitigation Measure M-BI-11a** (Impact Hammer Pile Driving Noise Reduction for Protection of Fish), the project sponsor shall take actions in addition to those listed in Mitigation Measure M-BI-11a to reduce the effect of underwater noise transmission on marine mammals. These actions shall include at a minimum:

- Establishment of a 1,600-feet (500-meter) safety zone that shall be maintained around the sound source, for the protection of marine mammals in the event that sound levels are unknown or cannot be adequately predicted.

- Work activities shall be halted when a marine mammal enters the 1,600-feet (500-meter) safety zone and resume only after the animal has been gone from the area for a minimum of 15 minutes.

- A "soft start" technique shall be employed in all pile driving to marine mammals an opportunity to vacate the area.

- Maintain sound levels below 90 dBA in air when pinnipeds (seals and sea lions) are present.[190]

- A NMFS-approved biological monitor will conduct daily surveys before and during impact hammer pile driving to inspect the work zone and adjacent Bay waters for marine mammals. The monitor will be present as specified by NMFS during the impact pile-driving phases of construction.

Mitigation Measure M-BI-11c: Floating Dock Night Lighting

The project sponsor shall install dock lighting on all temporary floating docks that minimizes artificial lighting of Bay waters by using shielded, low-mounted, and low light-intensity fixtures and bulbs.

[190] NMFS (National Marine Fisheries Service). 2007. *op cit*.

Impact BI-12: The America's Cup facilities and events could have a substantial adverse effect on sensitive marine or estuarine natural communities identified in local or regional plans, policies, or regulations. (Less than Significant with Mitigation)

The sensitive natural marine communities associated with eelgrass (*Zostera marina*) and native Olympia oysters (*Ostrea lurida*) are marine communities considered sensitive in local or regional plans, policies, or regulations. These communities have a moderate or high potential to occur and to be exposed to project impacts, and are therefore analyzed in this EIR. There are no sensitive estuarine communities located in the Central Bay.

As discussed in detail in Section 5.14.4.5, the waters of the Central Bay support multiple submerged aquatic vegetation beds including extensive eelgrass (*Zostera spp*.) beds offshore Treasure, Alcatraz, and Angel Islands as well as green, red, and brown marine algae attached to Port pier pilings, intertidal and shallow subtidal natural and artificial hard substrates (rock and concrete), and mud shoals. These marine aquatic vegetation beds provide essential fish habitat for Pacific herring (*C. pallasii*) and other fish species and act as important habitat and nursery areas for invertebrates such as shrimp and crabs.[191]

In addition, located in the rocky intertidal and shallow subtidal zones of the Central Bay islands (Angel, Treasure, Alcatraz) and the San Francisco and Marin shorelines, as well as attached to Port pilings,[192] is the native Olympia oyster. This species is making a significant recovery in the San Francisco Bay-Delta after being considered extinct following over-harvesting in the 1800s, predation by the non-native oyster drill, and pollution.[193,194]

Proposed AC34 dredging and pile removal could potentially affect submerged aquatic vegetation attached to pier pilings along with native oysters. Visiting boats unfamiliar with San Francisco's sensitive habitats and their locations could also affect eelgrass beds when anchoring in known Bay anchorages in the Central Bay. The AC34 races themselves would be held in open water and away from habitat supportive of native oysters and submerged aquatic vegetation beds. Potential effects from dredging at Brannan Street Wharf Open Water Basin, Rincon Point Open Water Basin, and adjacent to Pier 28 as well as piling wrap repairs at Piers 30-32 could range from short-term to permanent, depending on the extent and degree of disturbance, and would be expected to result in possible loss, physical injury, or physiological stress resulting from reduction in

191 Merkel & Associates, *Eelgrass Community Pilot Study for San Francisco Bay: Techniques for examining invertebrates and fish assemblages within multiple eelgrass beds,* Document EA-012041, San Francisco-Oakland Bay Bridge East Span Seismic Safety Project, prepared for the California Department of Transportation in cooperation with NOAA Fisheries, October 2005.

192 Applied Marine Sciences, Inc. (AMS). *Technical Memo: Reconnaissance Survey of the Intertidal Marine Community Inhabiting Pier Pilings at the Port of San Francisco.* March 22, 2011 (prepared for ESA and the Port of San Francisco in support of the AC34 CEQA analysis).

193 Couch, D., and T.J. Hassler, *Species profiles: life histories and environmental requirements of coastal fishes and invertebrates (Pacific Northwest)--Olympia oyster*, U.S. Fish Wildlife Service Biol. Rep. 82(11.124). U.S. Army Corps of Engineers, TR EL-82-4. 8pp.

194 Applied Marine Sciences, Inc. (AMS), *Benthic Survey of Commercial Aggregate Sand Mining Leases in San Francisco Bay and Western Delta*, August 2008. San Francisco Bay and Delta Sand Mining Draft Environmental Impact Report (EIR), CSLC EIR NO. 742. State Clearinghouse No. 2007072036. Appendix F. Prepared by ESA for the California State Lands Commission. Dated July 2010. 2009.

habitat suitability, and physical disturbance/removal. Many established open water anchorages in the Central Bay are located within or adjacent to eelgrass beds. **Figure 5.14-7** illustrates the location of these open anchorages to mapped eelgrass beds in Central Bay. The increased number of visiting boaters to San Francisco Bay expected for the AC34 race events in 2012 and 2013 could result in damage to and loss of established eelgrass in some of these locations.

No known eelgrass or extensive submerged aquatic vegetation beds occur adjacent to the Rincon Point Open Water Basin, Brannan Street Wharf Open Water Basin, Pier 28 South open water area, and the Piers 23-29 open water areas where dredging is planned or may occur. The closest known eelgrass bed to these pier locations is located along the north shore of Treasure Island[195] and is sufficiently distant not to be affected by dredging activities. Potential removal of some wood apron or bulkhead pier pilings may remove some artificial habitat used to support submerged aquatic vegetation and native oysters, but their replacement by new pilings, which would be recolonized, would render the potential for impact to be less than significant.

The greatest potential threat to Central Bay submerged aquatic vegetation, especially the eelgrass beds in Richardson Bay and adjacent to all three Central Bay islands, would be from visiting boaters unfamiliar with San Francisco's sensitive habitats, their locations, and the importance of protecting these habitats. The potential for unintentional impacts to Bay-Delta ecosystems from visiting boaters extends beyond just protecting submerged aquatic vegetation beds, as discussed below in Impact BI-13. Therefore, the *potentially significant* impact on eelgrass beds by visiting vessels for the AC34 2012 and 2013 races would reduced to less than significant through the implementation of **Mitigation Measure M-BI-12** (Visiting Mariners Information).

Mitigation Measure M-BI-12: Visiting Mariners Information

The AC34 project sponsor shall prepare as part of their Water and Air Traffic Plan information for visiting mariners as well as procedures for the dissemination of this information to visiting boaters prior to or upon arrival to San Francisco Bay for the AC34 2012 and 2013 races. This information to be made available to visiting boaters shall include, but not be limited to, information educating boat owner/operators about sensitive habitats and species in the Bay and actions they are required to implement to avoid impacts to marine resources. The plan shall also include information on how to employ environmentally sound boating practices and where to find environmental services to ensure clean boating habits. The plan shall identify marinas that are available for use by visiting mariners (e.g., marinas in San Francisco and Marin County) and provide information about the locations of environmental services that boaters in these marinas are most likely to need. Educational materials shall clearly address, in multiple languages, common sources of pollution from boats and marinas and outline relevant regulations and clean boating policies.

The visiting mariners information in the Water and Air Traffic Plan shall include details on how this information will be disseminated to visiting boaters, including but not limited to brochures or pamphlets; AC34 websites; boating, cruising, and newspaper periodicals;

[195] Merkel & Associates, "San Francisco Bay Eelgrass Inventory; October-November 2009," prepared for the California Department of Transportation and NOAA National Marine Fisheries Service., November 2010.

SOURCE: Google Earth Maps; ESA; Habitat Goals Project

Case No. 2010.0493E: AC34 / Cruise Terminal and Northeast Wharf Plaza (210317)

Figure 5.14-7
Location of Eelgrass Beds in the Central Bay

social media; and area yacht clubs and marinas. The plan shall be prepared soliciting input from and in cooperation with the National Marine Fisheries Service (NMFS), United States Coast Guard (USCG), California State Lands Commission, National Park Service (NPS), California Department of Parks and Recreation (CDPR), Bay Conservation and Development Commission (BCDC), and local organizations active in protecting Bay marine resources.

Visiting Mariners Information contained within the Water and Air Traffic Plan shall include, but not be limited to the following items:

- Information on the location of eelgrass beds in the Central Bay, especially Richardson Bay and adjacent to Angel, Alcatraz, and Treasure Islands and the importance of protecting and avoiding these sensitive habitats (e.g., by not anchoring in or transiting through them)
- Marinas and safe anchoring locations in the Bay where boaters may dock or anchor their vessels
- Information on where boaters may safely dock dinghies and vessel tenders when coming on shore
- Information on proper and legal waste handling in the Bay and facilities for onshore disposal during the AC34 activities
- Information on invasive species and their impact on Bay marine ecosystems and preventative steps that boaters should take to prevent the introduction or spread of invasive species into the Bay
- Information on the Vessel Traffic Service for San Francisco Bay and changes that will be in place during AC34 races
- Federal and state regulations prohibiting the harassment of marine mammals
- Information on any buffer zones established around Central Bay islands and other Bay locations to protect sensitive bird nesting sites
- Information about onsite and nearby environmental services that support clean boating practices (such as the locations of sewage pumpouts, oil change facilities, used oil recycling centers, bilge pumpouts, absorbent pad distribution and spent pad collection, and boat-to-boat environmental services)
- Information regarding the importance of keeping plastic out of Bay waters
- Signage regarding locations of waste collection containers posted at and adjacent to temporary docks, berthing facilities, and areas used by moored spectator vessels (10 vessels or more) developed for the AC34 events

Due to the extent of berthing, mooring, and marina facilities within the Bay shoreline, the Event Authority shall coordinate with other jurisdictions with respect to waste management at secondary viewing areas, such as (but not limited to) Treasure Island, Angel Island, Sausalito, Belvedere, and Tiburon. Coordination and outreach efforts with those jurisdictions would further minimize the potential for discards and pollution to enter

Bay waters from private vessels. Additionally, the Event Authority could develop, as part of official AC34 event literature, maps of the marinas that show the locations of fuel docks, sewage pumpouts, portable toilets, dump stations, used oil collection services, bilge pumpouts, oil absorbent pad distribution and collection services, oil change services, solid waste recycling services, and other environmental services for boaters.

Impact BI-13: The America's Cup facilities and race events could have a substantial adverse effect on eelgrass beds, 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. (Less than Significant with Mitigation)

As discussed above, there are eelgrass beds (*Zostera* spp.) in the Central Bay,[196] including locations at Richardson Bay, at Angel Island, and along the Tiburon Peninsula, that could be affected by spectator's boats who have come to San Francisco Bay for the AC34 race events. These eelgrass beds, which are "Special Aquatic Sites" and regulated under Section 404 of the Clean Water Act, could be subject to *potentially significant* impacts by visiting boaters. The potential impacts on eelgrass beds would be reduced to less than significant by the implementation of **Mitigation Measure M-BI-12** (Visiting Mariners Information) discussed above, which would either avoid or limit disturbance to Central Bay eelgrass beds by visiting boaters.

Mitigation Measure M-BI-12: Visiting Mariners Information

Impact BI-14: The America's Cup facilities and events could interfere with the movement of native marine or estuarine wildlife species or with established native resident or migratory wildlife corridors or impede the use of native wildlife nursery sites. (Less than Significant with Mitigation)

The proposed AC34 facilities and events have the potential to interfere with the movement or migratory corridors of, or impede the use of nursery sites by, the following species: harbor seals (*P. vitulina*), California sea lions (*Z. californianus*), humpback whales (*Megaptera novaengliae*), harbor porpoise (*Phocoena phocoena)*, Chinook salmon (*O. tshawytscha*), Coho salmon (*O. kisutch*), Steelhead trout (*O. mykiss*), green sturgeon (*A. medirostris*), longfin smelt (*S. thaleichthys*), Dungeness crab (*Cancer magister*), and 20 Fishery Management Plan-managed fish species (see Table 5.14-3). Although bottlenose dolphins (*Tursiops turncatus*), the southern sea otter (*Enhydra lutris,* and gray whales (*Eschrichtius robustus)* have been reported to occasionally enter San Francisco Bay, their extremely infrequent presence in the Bay or lack of presence during planned AC34 race activities is expected to result in little risk to these species.

[196] Ibid.

The proposed AC34 facilities and Port improvements would primarily be located along one of two channels connecting the South Bay with the Central Bay. In addition, the AC34 2012 and 2013 race events would be sited in the western portion of the Central Bay adjacent to the Golden Gate. The Central Bay is the thoroughfare for all migrating fish and other marine species transiting through the Bay to and from spawning habitat, nursery areas, or other forage areas within the Bay-Delta and out through the Golden Gate and open ocean. Due to their location, the AC34 project activities would potentially expose special-status and sensitive fish and marine mammals transiting from the South Bay, Central Bay, or North Bay into the Central Bay and out through the Golden Gate to the following types of impacts:

- Increased noise from pile driving, low-flying helicopters, and increased Bay vessel traffic
- Increased resuspension of sediments from dredging, pile removal, temporary mooring anchor placement and removal, visiting boat and spectator boat anchoring
- Increased potential for collisions and harassment of transiting marine mammals by AC34 race boats, race support boats, and local and visitor spectator boats

Construction Noise and Other Harassment

Potential noise impacts from in-water construction, particularly from pile-driving operations on transiting fish, invertebrates, and marine mammals are *potentially significant*, but would be reduced to be less than significant for acute and chronic effects on fish and marine mammals by the implementation of **Mitigation Measures M-BI-11a** (Impact Hammer Pile Driving Noise Reduction for Protection of Fish) and **M-BI-11b** (Pile Driving Noise Reduction for Protection of Marine Mammals).

In addition, the AC34 project sponsors will enter into formal consultation with NMFS under the Marine Mammal Protection Act, the Magnuson-Stevens Act, and the federal Endangered Species Act regarding AC34 project effects on marine mammals, essential fish habitat and federally listed threatened and endangered species respectively, as well as with CDFG regarding state special-status species. These consultations, which would support the subsequent regulatory actions of various federal and state approvals required for the AC34 facilities and events, would identify measures to reduce *potentially significant* impacts on marine mammals and federal and state protected fish species. Therefore, with the implementation of **Mitigation Measures M-BI-11a** (Impact Hammer Pile Driving Noise Reduction Protection for Fish), **M-BI-11b** (Pile Driving Noise Reduction for Protection for Marine Mammals), and compliance with the requirements of the NMFS and CDFG consultations, the potential impacts of the AC34 facilities improvements and events on the movement or migration of marine mammals and special-status fish species would be less than significant.

Aircraft Noise

During the AC34 2012 and 2013 races, helicopters would be used to provide live video coverage of races to spectator sites and the media. Low flying aircraft noise could result in disturbance to any marine mammals present near the aircraft, especially humpback whales that might be attempting to enter or leave the Bay or any seals and sea lions located near the waterfront.

As described above in Section 5.14.4.3, California gray whales and humpback whales are infrequent transients into the Bay, with gray whales being potentially present December through April and humpback whales potentially present April through December. Thus, gray whales would not be present during August and September when AC34 race activities are scheduled. However, though unlikely, humpback whales could be present in the Bay during the AC34 race period. In the event that a humpback whale enters the Bay or was attempting to leave the Bay during race activities, a low flying helicopter could cause erratic swimming and avoidance behavior by the whale in a potentially congested region of Central San Francisco Bay where race and spectator boats would be present. A recent literature review of scientific studies using helicopters and planes to observe and track whales concluded that helicopter noise was detected by whales and elicited detectable avoidance behaviors at altitudes of less than 820 feet (250 meters).[197] Although the likelihood of a humpback whale entering San Francisco Bay during the few hours each day when race activities are scheduled to occur would be extremely remote, in part because of the amount of on-water activity that would be occurring bayside of the Golden Gate as well as the remoteness of humpback whales entering the Bay, the potential for impacts to seals, sea lions, and humpback whales if present in the project area during the AC34 2012 and 2013 racing events still exists and would be considered *potentially significant*. With the implementation of **Mitigation Measure M-BI-14** (Restrictions on Low-Flying Aircraft) the risk of this impact would be reduced to less than significant with mitigation for protected marine mammals in San Francisco Bay.

Boat Noise

As described in Chapter 3, up to 2,280 boats are anticipated to attend the 2013 AC34 races during peak race days, and fewer in 2012. Increased noise from AC34-related boating activity is not expected to be any greater than that which currently occurs on good weather days on the Bay or during important events like Fleet Week or when the "Tall Ships" visit the Bay. The San Francisco Bay-Delta is the largest estuary on the West Coast of the United States, contains the second busiest seaport in California, and has a very large and active recreational and commercial boating community. Although at any given location in the Central Bay, peak noise levels might be greater than in other locations where fewer vessels may be, the contribution to overall ambient noise levels can be considered negligible and comparable to the existing ecological condition, and therefore, less than significant.

Resuspended Sediments

The potential impact from increased turbidity resulting from dredging, pile removal, and vessel anchoring caused resuspended sediment plumes is estimated to be *less than significant*, as discussed above in Impact BI-11, since the plumes created by these activities would be localized and short in duration, and would occur in a high-energy environment that can be expected to rapidly disperse them. In addition, it is assumed that these activities would be conducted in compliance with the best management practices typically applied for in-water construction. See Section 5.16, Hydrology and Water Quality, for additional information on project impacts to water quality.

[197] Luksenburg, J. and Parsons, E.C.M. 2009. Effects of aircraft on cetaceans: implications for aerial whalewatching. Paper presented to the Scientific Committee at the 61st Meeting of the International Whaling Commission, 31 May - 12 June 2009, Madeira, Portugal. SC61/WW2.

Marine Mammal Collisions and Harassment by AC34 Race and Spectator Boats

During the AC34 2012 and 2013 races, the presence of race boats, race support boats, and as many as 2,280 spectator boats can be expected to pose some additional obstacles to identified San Francisco Bay-Delta protected and sensitive marine mammal species. Project-related increases in boating activity would result in the potential for collisions and/or harassment between marine mammals transiting Central Bay and AC34-related boats and vessels. During the months of late July, August, and early September when AC34 races are to occur in 2012 and 2013, Pacific harbor seals, harbor porpoises, California sea lions, and humpback whales all have the potential to be present in Central Bay waters. The potential risk to harbor porpoises, which tend to be shy and avoid boats and people, and to California sea lions, which are present in the Bay in their highest numbers during the winter months when herring, sardines, and anchovies are most abundant, can be assumed to be limited and low. The exposure risk to Pacific harbor seals, which are year-round residents and swim throughout Central Bay in search of food, is potentially higher. Finally, as discussed above, the potential for a humpback whale to be present in the Central Bay during race activities is extremely low.

The AC34 races in 2012 and 2013 would involve less than 24 race boats racing at any time and the races would be short in duration (lasting less than one hour). Thus, the presence of the race boats themselves would represent a minor increase in vessel traffic on the Bay relative to existing conditions. The races and regattas would be held during daylight hours and in weather conditions affording good visibility. The race boats, which are highly maneuverable and not intended to withstand serious collisions, would avoid collisions with marine mammals or any other objects that are visible on the water surface. As part of the Course Marshal's duties to establish the day's race course, the course would be inspected for the presence of any whales as well as floating debris. Additionally, race management personnel on personal watercraft is tasked with scanning the surface waters for debris or any obstructions, such as whales, that could possibly damage or impede fair play. Large mammals are a danger to the racing boats. In the event that a whale is observed within the race area, the Course Marshal would postpone the race or abandon the race depending on the direction the whale is moving or its presence within or near the race course. Obstructions and debris would also be managed or removed by race management personnel. Therefore, the potential impact on marine mammals due to collision with the AC34 2012 or 2013 race yachts would be less than significant.

Although the AC34 races and regattas would involve only a small number of racing boats, these events would attract large numbers of spectators on boats with approximately 2,280 boats anticipated during the average peak events in 2013. As a result of this increase in vessel traffic all concentrated in the western portion of Central Bay, the potential for marine mammal strikes or other harm or harassment to occur would be *potentially significant*. Implementation of **Mitigation Measure M-BI-12** (Visiting Mariners information) in conjunction with the Course Marshal and race course personnel informing spectator boats of the presence of a whale within the race course would reduce possible collisions with and harassment of marine mammals by spectator boats to less than significant.

Impact Summary

The proposed AC34 facilities and events have the potential to interfere with the movement or migratory corridors of marine wildlife species due to increased noise from pile driving, low-flying helicopters, and increased Bay vessel traffic; increased resuspension of sediments; and potential for collisions and harassment of transiting marine mammals by vessels. Implementation of **Mitigation Measures M-BI-11b** (Impact Hammer Pile Driving Noise Reduction for Protection of Fish) and **M-BI-11c** (Pile Driving Noise Reduction for Protection of Marine Mammals) would reduce noise impacts from pile driving to less than significant. With the implementation of **Mitigation Measure M-BI-14** (Restrictions on Low-Flying Aircraft) the risk of impact from helicopters on marine mammals would be reduced to less than significant with mitigation for protected marine mammals in San Francisco Bay. Implementation of **Mitigation Measure M-BI-12** (Visiting Mariners information) in conjunction with the Course Marshal and race course personnel informing spectator boats of the presence of a whale within the race course would reduce possible collisions with and harassment of marine mammals by spectator boats to less than significant.

Mitigation Measure M-BI-14: Restrictions on Low-Flying Aircraft

As part of the Water and Air Traffic Plan, the project sponsor shall include instructions to AC34 contracted and race-affiliated helicopters that they maintain a minimum altitude of 1,000 feet above the water's surface when humpback whales are present within the race course. Upon takeoff at the auxiliary landing pad located, all helicopters shall be required to climb immediately to altitude and not fly low over the water if any seal or sea lions are present within 1,000 feet of the helipad. When landing, the helicopters shall approach the landing pad from as high an altitude as possible and limit their time at low altitudes over the water if seals or sea lions are present within 1,000 feet of the helipad.

Mitigation Measure M-BI-11a: Impact Hammer Pile Driving Noise Reduction for Protection of Fish

Mitigation Measure M-BI-11b: Pile Driving Noise Reduction for Protection of Marine Mammals

Mitigation Measure M-BI-11c: Floating Dock Night Lighting

Mitigation Measure M-BI-12: Visiting Mariners Information

Impact BI-15: The America's Cup facilities and events could conflict with applicable local policies or ordinances protecting marine or estuarine biological resources. (Less than Significant with Mitigation)

As discussed above for Impacts BI-11 through BI-14, the AC34 Port facilities improvements and 2012 and 2013 races could result in *potentially significant* impacts on marine biological resources which would conflict with applicable local policies or ordinances protecting marine or estuarine biological resources. However, with implementation of **Mitigation Measures M-BI-11** (Floating Dock Night Lighting and Pile Driving Noise Reductions), **M-BI-12** (Visiting Mariners

Information), **M-BI-14** (Restrictions on Low-Flying Aircraft), the AC34 activities would be conducted 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 General Plan and the best interest of San Francisco;
- Cooperate with and otherwise support regulatory programs of existing regional, state, and federal agencies dealing with the Bay, including the California Department of Fish and Game and its animal protection programs; 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 mitigation measures described above and listed below, the potential for the project to conflict with applicable local policies or ordinances protecting marine or estuarine biological resources would represent a less-than-significant impact.

Mitigation Measure M-BI-11a: Floating Dock Night Lighting

Mitigation Measure M-BI-11b: Impact Hammer Pile Driving Noise Reduction for Protection of Fish

Mitigation Measure M-BI-11c: Pile Driving Noise Reduction for Protection of Marine Mammals

Mitigation Measure M-BI-12: Visiting Mariners Information

Mitigation Measure M-BI-14: Restrictions on Low-Flying Aircraft

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Impact BI-16: The America's Cup facilities and events could conflict with the provisions of an adopted habitat conservation plan, natural community conservation plan, or other approved local, regional, or state habitat conservation plan for marine or estuarine resources. (Less than Significant with Mitigation)

The San Francisco Bay Subtidal Habitat Goals Report, as discussed in Section 5.14.5.3 (Local Regulations), provides a scientific foundation and approach for the conservation and enhancement of submerged areas of San Francisco Bay and was prepared as a collaboration among BCDC, California Ocean Protection Council/California State Coastal Conservancy, NOAA, and the San Francisco Estuary Partnership.[198] As such, it contains many recommended conservation goals for Bay subtidal habitats potentially affected by AC34 project activities (including Port facility improvements and activities that would occur during the 2012 and 2013 races) that can be used by these agencies when evaluating proposed projects within their

[198] San Francisco Bay Subtidal Habitat Goals Project, *San Francisco Bay Subtidal Habitat Goals Report – Conservation Planning for the Submerged Areas of the Bay; 50-Year Conservation Plan,* available at http://www.sfbaysubtidal.org/report.html, 2010.

jurisdiction. The Subtidal Habitat Goals Report includes habitat conservation goals promoting no net loss or disturbance to soft bottom and rock habitats (subtidal and intertidal habitats), enhancing habitat function of artificial structures, minimizing placement of artificial structures detrimental to subtidal habitat function, protecting native shellfish habitat and existing eelgrass habitat, and protecting macroalgal bed (Fucus and Gracilaria spp.). Although the San Francisco Bay Subtidal Habitat Goals Project has no regulatory authority, any detrimental changes to Bay-Delta subtidal habitats would also have potential negative effects to special status species, critical habitat, managed fish species EFH, or important forage for marine mammals.

As discussed in impact assessments above for Impacts BI-11 through BI-15, with implementation of mitigation measures identified in Section 5.14.6, the proposed AC34 events and facilities would be conducted in a manner that reduces risk of ecological effects on the marine biological resources of San Francisco Bay. Although structural improvements to some Port infrastructure would be implemented in support of the AC34 project, all of the proposed in-water structures, such a floating docks, barges, wave attenuators, and anchor moorings, would be temporary and in place for a limited period of between 6 and 20 months. As such there would be no net loss of Bay subtidal and intertidal sand, soft bottom substrate, and natural and artificial hard substrate habitats. Although some disturbance of Bay subtidal soft substrate would occur during dredging, mooring anchor placement and removal, and piling placement and removal, these disturbances would be minimized, with implementation of mitigation measures identified above, and of short duration. Recovery to pre-disturbance conditions is expected to occur immediately for most locations and within a few months to 2 years for large area dredging such as at the Brannan Street Wharf Open Water Basin, the Rincon Point Open Water Basin, and at Pier 28 open water area.

None of the proposed Port infrastructure improvements for the AC34 project would result in the removal or loss of any habitat function or historical value of artificial structures, or result in the net loss of any eelgrass or macroalgal beds, or result in a net loss of oyster beds or habitat. As discussed in Section 5.14.4.3 (Aquatic Communities and Wildlife Habitats), native Olympia oysters (*O. lurida*) are using Port pier pilings as hard substrate habitat.[199] None of the concrete pier pilings at Port piers would be removed as part of the AC34 project and only a few creosote wood pilings would be removed and replaced with new pilings, which is a typical maintenance activity in any port. Regardless, no net loss of oyster bed habitat would result from AC34 project activities.

As presented in the discussion above for Impact BI-12, some potential impact on sensitive intertidal and subtidal habitats, such as eelgrass beds, and soft and hard subtidal substrate habitat occupied by red and brown macroalgae, oysters, and other sensitive or important species may occur from visiting boats. Implementation of **Mitigation Measure M-BI-12** (Visiting Mariners Information) would reduce the potential ecological risk to Bay subtidal habitats and their associated biological communities from visiting boaters to less than significant with respect

[199] Applied Marine Sciences, Inc. (AMS). *Technical Memo: Reconnaissance Survey of the Intertidal Marine Community Inhabiting Pier Pilings at the Port of San Francisco.* March 22, 2011 (prepared for ESA and the Port of San Francisco in support of the AC34 CEQA analysis).

to direct impact to these sensitive intertidal and subtidal habitats. However, as discussed below, there could be indirect impacts on these habitats associated with non-native and invasive species.

Non-Native and Invasive Species

One of the greatest threats to San Francisco Bay-Delta marine subtidal and intertidal habitats is from the introduction of non-native and invasive species. The introduction of non-native species into the Bay-Delta ecosystems can result in large-scale changes to the aquatic communities. It is estimated that a new species is introduced into San Francisco Bay every 14 weeks.[200] Many fail to survive their introduction or do not spread. Some do survive, however, and produce major ecological changes in resident biological communities, such as has occurred with the introduction of the Asian clams, *Corbula amurensis* and *Corbicula fluminea*, which has resulted in significant changes in native benthic infaunal communities in the western Delta and Sacramento and San Joaquin Rivers. Historically, the principal mechanism of introduction into the Bay has been fouling, boring, and release of ballast dwelling organisms. Introduced species include snails, shrimp, plankton, and crabs.

The Marine Invasive Species Act (formerly the California Ballast Water Management for Control of Non-Indigenous Species Act of 1999) and California Public Resources Code Sections 71203 to 71207 specify required ballast water management practices as well as the control of ship fouling. Large ships entering state waters are required to comply with state and federal regulations concerning ballast water. Assuming compliance with these regulations, ballast from visiting boats and ships coming to San Francisco for the AC34 races in 2012 and 2013 would not be expected to pose a high risk of introducing non-native species. **Mitigation Measure M-BI-12** (Visiting Mariners Information) is intended to address this risk, and implementation of this measure would reduce the impact to less than significant.

However, the potential introduction of non-native species from hull fouling, anchor chain lockers, anchors, anchor chain, anchor line, ship bilges, drains, through-hull connections, and other locations on visiting boats would remain and, while an existing condition, could be exacerbated or accelerated by the increase in boats arriving from distant ports due to the AC34 race events. Introduction of non-native species can occur from vessels entering the Bay from overseas or from other ports in California, Oregon, or Washington where invasive species have managed to become established. The introduction of the Asian kelp (*Undaria pinnatifida*) into San Francisco Bay from Monterey Bay or Southern California is a good example. The best control for introducing non-native species from hull fouling is to minimize hull fouling through regular vessel maintenance, use of antifouling paints, frequent hull inspections, and overall vessel maintenance. All of these topics and recommendations for preventing the transportation of non-native species would be included in the Visiting Mariners Information required under **Mitigation Measure M-BI-12** (Visiting Mariners Information) and is expected to reduce the risk of additional introduction of non-native and invasive species into the Bay from AC34 visiting boats to less than significant with mitigation.

[200] Roman, J., Aquatic Invasive Species, The Encyclopedia of Earth, http://www.eoearth.org/article/Aquatic_invasive_species, 2010, accessed March 22, 2011.

The potential for AC34 race boats to be the means of introducing invasive non-native marine species to San Francisco Bay is extremely minimal. AC34 race team boats would meet the current United States requirements and follow protocols for transportation of goods and equipment. All shipments would come via standard controlled and inspected international containers on container vessels. All shipments would meet standards of country exported from as well as all standards set by the Federal Maritime Commission (FMC), Customs and Border Protection, United States Coast Guard, and United States Fish and Wildlife.

Another concern with invasive marine organisms is the potential spread or the potential for accelerating the spreading of already introduced invasive species such as *Undaria* and *Sargossum*, which have been observed to be present in Port infrastructure. The attachment of these and other sessile invertebrate taxa to existing pier pilings scheduled to be removed and from any temporary race-associated floating docks, anchor piles, mooring anchors, mooring floats, mooring anchor lines, or other in-water features that have provided temporary habitat while in-water could result in the redistribution and spread of these taxa. To prevent this from occurring, all removed infrastructure (e.g., pilings, moorings, floating docks, wave attenuators) need to be carefully removed, properly disposed of, or cleaned prior to reuse or redeployment. With the implementation of **Mitigation Measure M-BI-16** (Invasive Marine Species Control at Port Facilities), the potential impact on Bay-Delta habitats and associated marine communities from the spread of introduced invasive species would be reduced to less than significant.

Mitigation Measure M-BI-16: Invasive Marine Species Control

The project sponsor shall develop and implement an Invasive Species Control Plan prior to commencement of any in-water work including piers, wharfs, bulkheads, pile driving, and installation of temporary structures. The plan shall be prepared in consultation with the United States Coast Guard (USCG), RWQCB, and other relevant state agencies. Provisions of the plan shall include but not be limited to the following:

- Environmental training of construction personnel involved in the removal of pier pilings, temporary floating docks, piling suspended barges, and wave attenuators, to inform them about invasive marine species in San Francisco Bay that might be attached to removed structures
- Actions to be taken to prevent the release and spread of marine invasive species, especially algal species such as Undaria and Sargasso
- Procedures for the safe removal and disposal of any invasive taxa observed on the removed structures prior to disposal or reuse of pilings, docks, wave attenuators, and other features
- The onsite presence of qualified marine biologists to assist the contractor in the identification and proper handling of any invasive species on removed Port equipment or materials
- A post-construction report identifying what, if any, invasive species were found attached to removed equipment and materials and the treatment/handling of identified invasive species.

James R. Herman Cruise Terminal and Northeast Wharf Plaza

Impact BI-17: The James R. Herman Cruise Terminal and Northeast Wharf Plaza would not have a substantial adverse effect, either directly or through habitat modifications, on marine or estuarine species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations. (Less than Significant)

As presented in detail in Section 3 (Project Description), the redevelopment of Piers 27-29 for the James R. Herman Terminal and Northeast Plaza involves only onshore Port improvements and no in-water work. The dredging of the Pier 29 bay will be conducted under an existing maintenance dredging authorization from ACOE and the CEQA analysis associated with that authorization.

As part of the proposed amendments to the BCDC Special Area Plan for the Cruise Terminal and Northeast Wharf Plaza, the Port has identified five possible fill removal sites that may be considered in BCDC's public process. These sites include dilapidated piers, wharfs, and remnant pilings that were constructed with creosote-treated wood and have no current maritime uses. The locations of these sites are shown in Chapter 3, Figure 3-39, and the structures and conditions at each of the fill removal sites are as follows:

- ***Pier 98 LASH Terminal.*** An approximately 1,250-foot-long by 14-foot-wide (17,500 square foot) terminal that runs parallel to and north of Herons Head Park on Pier 98 and south of Pier 96.

- ***Pier 84 and Pier 88 along Islais Creek.*** Pier 84 is an abandoned pier paralleling the north shore of Islais Creek, connects to the shore at the base of Indiana Street and extends approximately 625 feet to the west towards I-280. In all, this pier consists of a collection of remnant piles that encompass approximately 18,850 square feet. Islais Creek is identified as a toxic hot spot under the Bay Protection and Toxic Cleanup Program,[201] and the pollutants present in the sediments include PCBs, chlordane, dieldrin, endosulfan sulfate, PAHs, and anthropogenically enriched hydrogen sulfate and ammonia.

- ***Pier 70, Wharves 6, 7, and 8, and area adjacent to Pier 68.*** Pier 70 and the associated wharfs are part of the Pier 70 National Historic District and the collection of piers and wharves originally encompassed approximately 409,200 square feet. Currently, Wharves 6 and 7 are largely submerged.

- ***Pier 64 adjacent to the Mission Bay Bayfront Park.*** This pier consists of a collection of remnant piles adjacent to the Mission Bay Bayfront Park.

- ***The former site of Carmen's restaurant in China Basin Channel.*** The former Carmen's restaurant is situated on a dilapidated 30-foot-wide pier in China Basin that extends west from the Third Street Bridge for approximately 200 feet. In all, this pier encompasses approximately 600 square feet.

The Port would remove pilings and other structures in accordance with applicable regulatory permits and would cut or break the piles off at least one-foot below the mudline. The Port would

[201] San Francisco Regional Water Quality Control Board, *Sediment Quality and Biological Effects in San Francisco Bay, Bay Protection and Toxic Cleanup Program, Final Technical Report*, August, 1998/

minimize sediment disturbance during removal, and would use a floating boom around the work area to contain and capture debris and would have absorbent pads available in the event that petroleum sheen develops during removal of the structures. Currently a small eelgrass bed is present near the Pier 98 LASH terminal.[202] No eelgrass beds or other submerged aquatic vegetation habitat are known to occur at the remaining fill removal sites. However, if eelgrass beds or other submerged aquatic vegetation establish themselves or expand in size prior to commencement of any work at any of the fill removal sites, marine equipment would not be grounded over those eelgrass beds and no equipment would be allowed to set on the Bay seafloor in areas of eelgrass beds.

The remnant and more solid creosote wood piling associated with these structures provide artificial subtidal hard substrate which is colonized by sessile and mobile marine invertebrates such as mussels, barnacles, oysters, encrusting sponges, tunicates, crabs, sea stars, anemones, and other species. Pilings that have been treated with creosote have been shown to cause harm to hard bottom, sediment dwelling benthic invertebrates and fish in the bay through the release of polyaromatic hydrocarbons. [203] [204] [205] The San Francisco Bay Subtidal Habitat Goals Project identified some of the advantages of removal of derelict creosote pilings in the Bay-Delta to include:

- Reduced substrate for introduced species
- Reduced shading of the bottom and water column
- Reduced toxic effects of creosote and other contaminants
- Reduced restrictions to flow and sediment movement
- Restoration, re-creation, or realignment of intertidal mudflats, sand flats, rock, and shellfish, eelgrass, and macroalgal beds

They further identified potential disadvantages to be:

- Disruption during removal (physical damage, turbidity, and release of toxic compounds)
- Reduced habitat for fish and invertebrates including native oysters
- Reduced resting or nesting sites for birds

The removal of derelict creosote pilings in the Bay-Delta results in the loss of low quality and continually degrading artificial subtidal hard substrate that poses potential toxicity issues to marine invertebrates and fish, especially Pacific herring, a species of special concern, as well as the survivability of their eggs. The potential fish foraging habitat for protected or MSA-listed fish species is severely limited and the potential impact to marine benthic community inhabiting the sediments in close proximity to these creosote pilings from polyaromatic compounds poses potentially greater risk to the quality of the fish foraging habitat for protected and MSA-listed fish.

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202 Merkel & Asspc. 2010. *op cit*.

203 U.S. Environmental Protection Agency (EPA) 2008. Creosote-Preliminary Risk Assessment for the Re-registration Eligibility Decision Document (RED). PC Codes 02203,025003, and 02004.

204 Vines, C.A., T. Robbins, F.J. Griffin, and G.N. Cherr, 2000. The edffects of creosote derived compounds on the development in Pacific herring (*Clupea pallasii*). Aquatic Toxicology 51: 225-239.

205 Stratus Consulting. 2006. Creosote-Treated Wood in Aquatic Environments. Technical Review and Use Recommendations. Prepared for NOAA Fisheries, Southwest Division, Habitat Conservation Division. Santa Rosa, California December 31, 2006.

The potential impact to subtidal habitats and special status taxa by the removal of creosote pilings at these listed locations is *less than significant* if not beneficial to Bay-Delta marine communities.

Mitigation: Not required

5.14.6.4 Future Long-Term Development Impacts and Mitigation Measures

Impact LT-BIb: Long-term development could result in impacts on marine biological resources. (Less than Significant with Mitigation)

As discussed above in Section 5.14.4.3 (Cumulative Impacts on Terrestrial Biological Resources), potential future projects associated with the 34th America's Cup Host and Venue Agreement (Host Agreement) are unknown and will be subject to subsequent, project-level CEQA review. However, assuming the type and level of future development would be consistent with current land use policies and guidelines (see Chapter 3 for assumptions), the effects of future development on marine resources are considered here.

Only those portions of the future development that would involve in-water construction or improvements to Port piers and infrastructure located in the Bay would have the potential for impacts on marine resources. These activities are expected to be similar to those described above for the proposed project, including dredging, mooring anchor placement and removal, and pile driving. The range and type of impacts from in-water construction for pier infrastructure improvements that may be required in the future would be *potentially significant*, similar to those described above. With implementation of Mitigation Measure M-P-BIb, which provides similar mitigations described above for the AC34 project construction activities, future long-term development impacts on marine resources would be considered less than significant.

Operations of marinas at Brannan Street Wharf and/or Rincon Point Open Water Basins would have the potential for impacts on marine resources associated mainly with maintenance dredging, periodic in-water repairs, and proper management of boat-related fuels and wastes. In addition, permanent marinas would result in localized shading of Bay waters and any breakwaters would alter the existing hydrodynamics of current conditions. Any associated impacts on water quality and marine habitats would have the potential to affect special status species present in the project area. While subject to subsequent detailed review, future marinas at these locations would be assumed to comply with all water quality and other regulatory and permit requirements protecting biological resources. Nevertheless, due to the unknown project design and permit requirements, the potential operational impacts would be *potentially significant*, and **Mitigation Measure M-LT-BIb**, which includes similar mitigation measures as described above for in-water construction and operations, would reduce these impacts to less than significant.

Mitigation Measure M-LT-BIb: Long-Term Development Mitigation for Marine Biological Resources

Dock Night Lighting. Lighting on all temporary and permanent docks shall minimize artificial lighting of Bay waters by using shielded, low-mounted, and low light-intensity fixtures and bulbs.

Pile Driving Noise Reduction for Protection of Fish. If impact pile driving is required for construction, prior to the start of construction, the project sponsors shall develop a NMFS-approved sound attenuation monitoring plan. This plan shall provide detail on the sound attenuation system, detail methods used to monitor and verify sound levels during pile driving activities, and management practices to be taken to reduce impact hammer pile-driving sound in the marine environment to an intensity level of less than 183 dB. The sound monitoring results shall be made available to the NMFS. The plan shall incorporate but not be limited to the following best management practices (BMPs):

- Vibratory drivers shall be used for the installation of 72-inch steel pilings to the deepest depth practicable.
- All piling installation using impact hammers shall be conducted between approved work windows, when the likelihood of sensitive fish species being present in the work area is minimal.
- If pile installation using impact hammers must occur at times other than the approved work window, the AC34 project sponsors shall undertake formal consultation with the National Oceanic and Atmospheric Administration (NOAA), National Marine Fisheries Service (NMFS), and California Department of Fish and Game (CDFG) to address potential impacts on sensitive marine resources, especially marine mammals, and implement all requested actions to avoid impacts.
- If exceedance of noise thresholds established and approved by NMFS occur, a contingency plan using bubble curtains or air barrier will be implemented to attenuate sound levels to below thresholds.
- The hammer will be cushioned using a 12-inch thick wood cushion block during all impact hammer pile driving operations.
- A "soft start" technique shall be employed in all pile driving to give fish and marine mammals an opportunity to vacate the area. Vibratory hammers shall be used to the maximum extent practicable to reduce hydroacoustic effects.

Pile Driving Noise Reduction for Protection of Marine Mammals. As part of the NMFS-approved sound attenuation monitoring plan required in Mitigation Measure M-BI-11b, the project sponsor shall take actions in addition to those listed in Mitigation Measure M-BI-11b to reduce the effect of underwater noise transmission on marine mammals; these actions will include at a minimum:

- Establishment of a 1,600-feet (500-meter) safety zone that shall be maintained around the sound source, for the protection of marine mammals in the event that sound level are unknown or cannot be adequately predicted.

- Work activities shall be halted when a marine mammal enters the 1,600-feet (500-meter) safety zone and resume only after the animal has been gone from the area for a minimum of 15 minutes.

- Maintain sound levels below 90 dBA in air when pinnipeds (seals and sea lions) are present.[206]

- A NMFS-approved biological monitor will be available to conduct surveys before and during impact hammer pile driving to inspect the work zone and adjacent Bay waters for marine mammals. The monitor will be present as specified by NMFS during the impact pile-driving phases of construction.

Invasive Marine Species Control at Port Facilities. The project sponsors shall develop and implement an Invasive Species Control Plan prior to commencement of any in-water work including Port piers, wharfs, bulkheads, pile driving, and installation of temporary structures. The plan shall be prepared in consultation with the United States Coast Guard (USCG) and California State Lands Commission. Provisions of the plan shall include but not be limited to the following:

- Environmental training of construction personnel involved in the removal of pier pilings, temporary floating docks, piling suspended barges, and wave attenuators, to inform them about invasive marine species in San Francisco Bay that might be attached to removed structures

- Actions to be taken to prevent the release and spread of marine invasive species, especially algal species such as Undaria and Sargasso

- Procedures for the safe removal and disposal of any invasive taxa observed on the removed structures prior to disposal or reuse of pilings, docks, wave attenuators, and other features

- The onsite presence of qualified marine biologists to assist the contractor in the identification and proper handling of any invasive species on removed Port equipment or materials

- A post-construction report identifying what, if any, invasive species were found attached to removed equipment and materials and the treatment/handling of identified invasive species.

Maintenance Dredging and Turbidity Minimization Measures for the Operation of the Marinas. Maintenance dredging for the marinas could remove or generate sediment plumes that could impact special-status species, their habitats, and Essential Fish Habitat (EFH). To minimize this effect, the following measures shall be implemented by the Project Applicant:

Conduct a detailed survey for special-status species, including native oysters in all suitable substrates within the marina, which includes the area between the land and breakwaters, after construction of the new breakwaters. This survey shall be conducted by a qualified biologist during the appropriate seasonal and tidal

[206] NMFS (National Marine Fisheries Service). 2007. *op cit*.

conditions. This survey shall occur before any construction within the proposed marina location takes place to establish a baseline condition.

If determined necessary, a detailed sediment plume modeling study of the proposed marina operation shall be conducted to determine if the operations and maintenance of the marina would generate a substantial plume of sediment. This model shall include the local bathymetry and sediment information, tidal data, and detailed marina information (number and types of boats, etc). The model shall be prepared by a qualified harbor engineer (as approved by the City/Agency) with direct experience in this type of work within San Francisco Bay, prior to issuance of any permits for the construction of features directly associated with the marina.

BMPs to Reduce Impacts of Dredging To Water Quality. BMPs established in the Long-Term Management Strategy (LTMS) for management of disposal of dredge material in San Francisco Bay are designed specifically to minimize spread of contaminants outside of dredge areas. All of these elements of the LTMS shall be applied to any proposed dredging or construction activities associated with the proposed project unless otherwise modified by the United States Army Corps of Engineers, BCDC, or San Francisco Bay Regional Water Quality Control Board in permit conditions associated with the proposed dredging activities.

Work Windows to Reduce Maintenance Dredging Impacts to Fish during Operation of the Marina. Maintenance dredging for the marinas shall be conducted during designated work windows in accordance with the Long-Term Management Strategy (LTMS) to protect sensitive fish species, such as steelhead and Pacific herring.

5.14.6.5 Cumulative Impacts

Impact C-BIb: The project, in combination with other past, present, and reasonably foreseeable future projects, could result in significant adverse cumulative impacts on marine and estuarine biological resources. (Less than Significant with Mitigation)

The geographic scope of potential cumulative impacts on marine and estuarine biological resources encompasses all of the waters of Central San Francisco Bay, the subtidal and intertidal habitats contained therein, and all associated marine and estuarine biological communities. The EIR evaluates the impacts of the project on biological resources and presents mitigation measures that would support a conclusion of less than significant, with mitigation, for all marine biological resources.

The purpose of this section is to assess whether the project's impacts, in combination with impacts from other past, present, and reasonably foreseeable future projects, would result in a significant adverse cumulative impact.

Foreseeable projects that could result in cumulative impacts on biological resources in combination with the proposed project include the Brannan Street Wharf Public Open Space, proposed

redevelopment of Treasure Island, the completion of the new eastern span of the Bay Bridge and associated highway projects on Yerba Buena Island, the construction and operation of a 400-berth marina in Clipper Cove, a variety of Port of San Francisco waterfront and Port infrastructure improvement projects including the Southern Waterfront area, the downtown ferry terminal, the Piers 15 and 17 Exploratorium relocation, the Piers 31-33 Alcatraz landing improvements, Port of San Francisco and Port of Oakland maintenance dredging, the Transbay Tube and ferry terminal seismic improvements (Tube Vibro), the San Francisco marina renovation, and continued aggregate sand mining on subtidal leases of the State of California in the Central Bay.

These projects will include many of the same activities proposed by the AC34 project (e.g., dredging, pile driving, wharf and pier improvements) and can be assumed to have similar effects on marine biological resources. However, these projects would be required to comply with the same regulatory framework as the proposed project. For this reason, and given the temporary nature of the AC34 2012 and 2013 race activities component of the project, implementation of the **Mitigation Measures M-BI-11a** (Impact Hammer Pile Driving Noise Reduction for Protection of Fish)**, M-BI-11b** (Pile Driving Noise Reduction for Protection of Marine Mammals)**, M-BI-11c** (Floating Dock Night Lighting), **M-BI-12** (Visiting Mariners Information), **M-BI-14** (Restrictions on Low-Flying Aircraft)**,** and **M-BI-16** (Invasive Marine Species Control) described in Section 5.14.6.3, above, would generally reduce the project's contribution to any cumulative impact to less than significant.

With respect to potential impacts on marine mammals, it is not expected that more than one project involving pile driving would be occurring at the identical time and location. At any given moment, marine mammals have the ability to move away from the disturbance source, and although various projects with in-water construction may be scheduled for the same year, it is unlikely that the site-specific construction timing and locations would coincide. Thus, there is a low likelihood of a cumulative impact on marine mammals, and any contribution of the proposed project is considered less than significant.

With respect to invasive and non-native species impacts, it is likely that, similar to the proposed project, the other proposed marine activities described above would have the potential to introduce new species or result in the redistribution of existing non-native and invasive species in the Bay, resulting in a potential cumulative adverse impact. However, with implementation of **Mitigation Measure M-BI-16** (Invasive Marine Species Control), the project's contribution to this cumulative impact would be reduced to less than significant.

Beyond the project area, there could be cumulative impacts on sensitive biological resources located throughout the Bay when the impacts of the proposed project are considered in combination with the impacts of other projects in the vicinity, such as shoreline developments in Brisbane and Redwood City currently under review. As discussed above in Section 5.14.4.3 (Cumulative Impacts on Terrestrial Biological Resources), many of these are habitat improvement projects that are intended to provide a net benefit to biological resources and would not contribute to long-term, adverse cumulative impacts on sensitive species and habitats.

Mitigation Measure M-BI-11a: Impact Hammer Pile Driving Noise Reduction for Protection of Fish

Mitigation Measure M-BI-11b: Pile Driving Noise Reduction for Protection of Marine Mammals

Mitigation Measure M-BI-11c: Floating Dock Night Lighting

Mitigation Measure M-BI-12: Visiting Mariners Information

Mitigation Measure M-BI-14: Restrictions on Low-Flying Aircraft

Mitigation Measure M-BI-16: Invasive Marine Species Control

5.15 Geology and Soils

This section addresses the geologic and soils impacts that could result from construction and operation of the proposed 34th America's Cup (AC34) and the James R. Herman Cruise Terminal and Northeast Wharf Plaza projects. It includes an evaluation of seismic impacts related to fault rupture, seismically induced groundshaking, seismically induced ground failure (e.g., liquefaction), and seismically induced landslides; soil erosion and loss of topsoil; and construction on unstable soil or geologic units. The discussion of erosion issues presented in this section relates also to the information presented in Section 5.16, Hydrology and Water Quality.

5.15.1 Setting

5.15.1.1 Regional Physiography

San Francisco is located in the northern portion of the San Francisco Peninsula, which is part of the geologically complex California Coast Ranges geomorphic province.[1] The Coast Ranges province is characterized by a series of northwest-trending ridges and valleys that run roughly parallel to the San Andreas fault zone, and can be further divided into the northern and southern ranges that are separated by San Francisco Bay. San Francisco Bay lies within a broad depression created from an east-west expansion between the San Andreas and the Hayward fault systems. The tectonic forces that dominate the region developed from the margin between the Pacific Plate and the North American Plate where the Pacific Plate slowly creeps northward past the North American Plate on the San Andreas, Hayward, and associated subsidiary faults. The Bay and northern portion of the San Francisco Peninsula are within a structural down-dropped block between the Northern Santa Cruz Mountains to the west and Diablo Mountain Range to the east. Much of the Coast Range province is composed of marine sedimentary deposits and volcanic rocks. The relatively thick marine sediments dip east beneath the alluvium of the Great Valley. West of the San Andreas fault lies the Salinian Block, a granitic core that extends from the southern end of the province to north of the Farallon Islands.

5.15.1.2 Project Area Geology

The Northern Coast Ranges, where the project activities would occur, are comprised largely of the Franciscan Complex or Assemblage, which is composed of an amalgamation of semicoherent blocks, called terranes. Within the project area, San Francisco and the Marin Headlands contain two of these terranes, from oldest to youngest, the Alcatraz and Marin Headlands terranes. Prominent Franciscan rock outcrops are exposed in areas such as Yerba Buena Island, Alcatraz Island, Angel Island, and the Marin Headlands (including the Fort Baker Pier).

The Franciscan Complex consists primarily of graywacke, shale, greenstone (altered volcanic rocks), basalt, chert (ancient silica-rich ocean deposits), sandstone, shale, and serpentinite. Most of these rock units originated as ancient sea floor sediments and were displaced and deformed through long

[1] Norris, Robert M. and Robert W. Webb. *Geology of California*, second edition, 1990.

periods of tectonic forces. In addition, the younger Colma Formation locally forms a thin veneer over rocks of the Franciscan Complex on the northern San Francisco Peninsula.[2] The formation extends to Angel Island and to the southern peninsula, where it overlies the Merced Formation from Fort Funston south. The Colma Formation is mostly composed of sandy deposits laid down from 80 to 125 thousand years ago during an interglacial period when sea level was slightly higher than today and the northern San Francisco Peninsula was an island separated from the southern peninsula by the narrow "Colma Strait." More recently deposited dune sand mantles the Colma Formation and the Franciscan Complex over large areas of San Francisco. The sand dunes of San Francisco once formed one of the most extensive coastal dune systems on the West Coast, underlying about one-third of San Francisco.

For more than a century, and especially following the 1906 earthquake, tens of millions of cubic meters of fills have been placed along bay margins, including infilling of the Marina District, creation of Treasure Island and Alameda Naval Air Station, and expansion of the San Francisco and Oakland airports.[3] Much of the fill used along the San Francisco waterfront consists of clay to cobble-sized materials, including former dune sand that was excavated during the building of San Francisco, hauled to the waterfront, and dumped on top of the Bay Mud or other surface material. Typical fill also consists of rubble (concrete, bricks, and wood) from building demolition, notably after the 1906 earthquake and fire, as well as assorted organic and non-organic debris, refuse, some hazardous substances, and other materials. Much of the artificial fill materials were emplaced prior to regulations beginning in the mid-1960s and would not qualify as engineered fill. Because they were not emplaced using modern engineering compaction techniques to increase their liquefaction resistance, these largely unconsolidated to semi-consolidated sediments are vulnerable to liquefaction and amplification of strong ground motions. Some areas with the artificial fills have yet to be shaken strongly during a major earthquake.[4] There is considerable variation in the type, depth, age and nature of fill, depending on the source of the fill and original configuration of the Bay shoreline.

In some bay margin areas, these artificial fills are underlain by soft compressible estuarine deposits known as Bay Mud. The Bay Mud can be further divided into younger Bay Mud and older Bay Mud, which can vary in engineering properties depending on thicknesses and degrees of consolidation. Bay Mud is generally found along the shorelines within the project area, and generally consists of uniform gray, soft, saturated clay and silt with organic material and some sand. Lenses of sand, silt, and organic material (peat) are present within the mud. Younger Bay Mud is commonly divided into an upper "soft" member and an underlying semi-consolidated member. It is present near the ground surface (under the fill cover), and forms the Bay bottom. It is saturated, soft, and compressible. When loads (such as buildings) are placed on it, the soft mud can compress and settle. Placement of the loads could also result in plastic deformation and lateral movement, sometimes accompanied by upthrusting in adjacent areas (creation of so-called "mud waves") or underwater landsliding. Younger Bay Mud has low shear strength (resistance to

2 Elder, William, United States Geological Survey (USGS), *Geology of the Golden Gate Headlands,* 2001.
3 Hicock, Christopher, Givler, Robert, De Pascale, Greg, and Ranon Dulberg, William Lettis & Associates, Inc., *Detailed Mapping of Artificial Fills, San Francisco Bay Area,* September 2008.
4 Ibid.

downslope movement of rock and soil). For these reasons, Younger Bay Mud is not considered suitable material for bearing foundations of anything but very light structures and is usually not relied upon to support vertical loads.

5.15.1.3 Geologic Hazards

Slope Failure

Slope failures, commonly referred to as landslides, include many phenomena that involve the downslope displacement and movement of material, triggered either by static (i.e., gravity) or dynamic (i.e., earthquake) forces. Exposed rock slopes undergo rockfalls, rockslides, or rock avalanches, while soil slopes experience soil slumps, rapid debris flows, or deep-seated rotational slides. Slope stability can depend on a number of complex variables, including the geology, structure, and amount of groundwater, as well as external processes such as climate, topography, slope geometry, and human activity. The factors that contribute to slope movements include those that decrease the resistance in the slope materials and those that increase the stresses on the slope. Landslides can occur on slopes of 15 percent or less, but the probability is greater on steeper slopes that exhibit old landslide features such as scarps, slanted vegetation, and transverse ridges.

The best available predictor of where slides and earth flows might occur is the distribution of past movements.[5] In 1997, the United States Geological Survey (USGS) released a preliminary map and geographic information system (GIS) database that provides a summary of the distribution of landslides evident in the landscape of the San Francisco Bay region.[6] The map is a digitized nine-county compilation of existing landslides that has been used to divide the area into four landslide zones, including "mostly landslides," "many landslides," "few landslides," and "flatland." All of the project sites along the San Francisco waterfront where construction would occur are within areas identified as "flatlands," defined as areas of gentle slope at low elevation that have little or no potential for the formation of slumps, translational slides, or earthflows except along stream banks and terrace margins. The Fort Baker Pier is located in an area identified as "few landslides," defined as areas that contain few, if any, large mapped landslides, but may locally contain scattered small landslides and questionably identified larger landslides.

Soil Hazards

In urbanized areas, native soils are commonly no longer present or have been reworked and combined with imported fill materials over a long history of earthwork activities associated with development. Within the project area, the San Francisco waterfront areas where project construction would occur have been subject to many changes over the years, including the placement of fill and debris. Soils mapped by the federal Natural Resources Conservation Service (NRCS) along the waterfront fall under three classifications: Urban Land; Urban land-Orthents -

[5] Nilsen, T.H. and B.L. Turner, *Influence of Rainfall and Ancient Landslide Deposits on Recent Landslides (1950-71) in Urban Areas of Contra Costa County, California,* U.S. Geological Survey Bulletin 1388, 1975.

[6] U.S. Geologic Survey (USGS), *Summary Distribution of Slides and Earth Flows in the San Francisco Bay Region, California,* GIS database for Open File Report 97-745 Part C, by C.M. Wentworth, S.E. Graham, R.J. Pike, G.S. Beukelman, D.W. Ramsey, and A.D. Barron, 1997.

cut and fill complex (5 to 75 percent slopes); and Urban land-Orthents - reclaimed complex (0 to 2 percent slopes).[7] These classifications indicate that the soils present in the project area are highly disturbed. Other locations within the project area, including the Fort Baker Pier and Alcatraz, are more likely to contain native soils; however, these locations are also associated with bedrock at near surface depths and would have limited soil resources.

Problematic soils, such as those that are expansive, can damage structures and buried utilities and increase maintenance requirements. Expansive soils are characterized by their ability to undergo significant volume change (i.e., to shrink and swell) due to variations in moisture content. Changes in soil moisture can result from rainfall, landscape irrigation, utility leakage, roof drainage, and/or perched groundwater.[8] Expansive soils are typically very fine grained and have a high to very high percentage of clay. Expansion and contraction of expansive soils in response to changes in moisture content can lead to differential and cyclical movements that can cause damage and/or distress to structures and equipment.

5.15.1.4 Regional Faulting and Seismic Hazards

The San Francisco Bay Area is situated near the boundary between two major tectonic plates, the Pacific Plate to the southwest and the North American Plate to the northeast. Since the Miocene epoch (approximately 23 million years ago), about 200 miles of right-lateral movement[9] has occurred along the San Andreas Fault Zone to accommodate the relative movement between these two plates. The movement between the Pacific Plate and the North American Plate generally occurs across a 50-mile-wide zone extending from the San Gregorio fault in the southwest to the Great Valley Thrust Belt to the northeast. In addition to the right-lateral slip movement between the two tectonic plates, portions of the North American Plate have moved toward each other during the last 3.5 million years, resulting in compressional forces at the latitude of San Francisco Bay.[10]

Active and Potentially Active Faults

Figure 5.15-1 shows the locations of active[11] and potentially active[12] faults in the San Francisco Bay region. The San Andreas, San Gregorio, Hayward, Healdsburg-Rodgers Creek, Calaveras, Concord-Green Valley, and Marsh Creek-Greenville strike-slip faults[13] are active faults of the San Andreas system that predominantly accommodate lateral movement between the North American and

7 United States Department of Agriculture, Natural Resources Conservation Service (NRCS), Web Soil Survey, available online at http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx, accessed April 8, 2011.

8 Perched groundwater is a local saturated zone above the water table that typically exists above an impervious layer (such as clay) of limited extent.

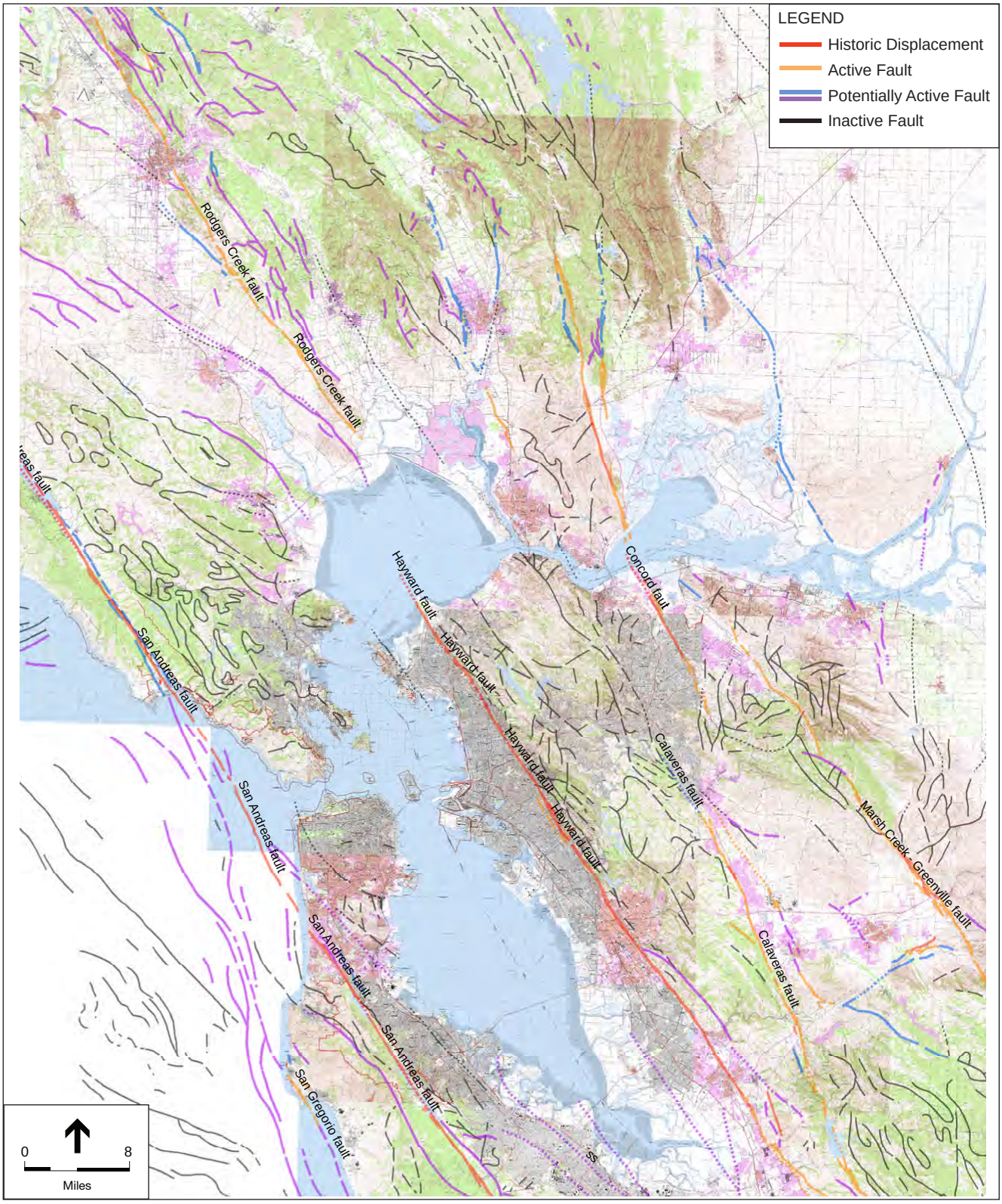
9 The Pacific Plate and the North American Plate are moving past each other along the San Andreas Fault Zone; "right-lateral movement" means that they are moving to the right relative to each other.

10 Fenton, C.H. and C.S. Hitchcock, *Recent geomorphic and paleoseismic investigations of thrust faults in Santa Clara Valley, California*, in H. Ferriz and R. Anderson (eds.), Engineering Geology Practice in Northern California: California Division of Mines and Geology Bulletin 210, 2001.

11 An active fault is one that shows geologic evidence of movement within Holocene time (approximately the last 11,000 years).

12 A potentially active fault is one that shows geologic evidence of movement during the Quaternary (approximately the last 1.6 million years).

13 Strike-slip faults involve the two blocks moving parallel to each other without a vertical component of movement.



Case No. 2010.0493E: AC34 / Cruise Terminal and Northeast Wharf Plaza (210317)

SOURCE: Jennings, 1994

NOTE: Fault lines indicated by solid lines where well located, dashed where approximate, and dotted where concealed.

Figure 5.15-1
Regional Fault Map

Pacific tectonic plates. Active blind- and reverse-thrust faults[14] in the San Francisco Bay region that accommodate compressional movement include the Monte Vista–Shannon and Mount Diablo faults. The closest faults to the project area are the San Andreas, Hayward, San Gregorio, and Calaveras faults. **Table 5.15-1** summarizes the distance from the project area, direction to the fault, and the estimated maximum earthquake moment magnitude (M_w)[15] for each fault located within approximately 30 miles (50 kilometers) of the project area.

TABLE 5.15-1
MAJOR ACTIVE SAN FRANCISCO BAY AREA FAULTS
IN THE NEAR VICINITY OF THE PROJECT AREAS

Fault Name	Age[a]	MHE[b]	Mw[c]	Approximate Distance from Project Area[d]
San Andreas	Historic	7.8 (1906)	7.9	7 miles
Hayward	Historic	6.8 (1868)	7.1	10 miles
Calaveras	Historic	6.5 (1861)	6.8	25 miles
Healdsburg-Rodgers Creek	Historic	6.3 (1898)	7.0	25 miles
Concord-Green Valley	Historic	5.4 (1955)	6.9	27 miles
San Gregorio (Seal Cove)	Holocene	3-6.4 (1270-1400 AD)	7.3	20 miles
Mount Diablo Thrust	Quaternary (possibly active)	n/a[e]	6.7	26 miles

NOTES:

[a] Holocene faults are those that have shown geologic evidence of movement within Holocene time (approximately the last 11,000 years). Historic faults are Holocene faults that have also demonstrated fault movement within the last 200 years. Quaternary faults have demonstrated displacement within last 1.6 million years. The Mount Diablo fault is a blind fault, meaning there is no surface expression of the fault, making dating its pre-historic activity difficult.

[b] MHE = Maximum Historic Earthquake. The magnitude is provided as the Richter Magnitude, based on measurements or inferred from geologic and observed evidence of earthquake effects. Source: United States Geological Survey (USGS), Historic United States Earthquakes, http://earthquake.usgs.gov/earthquakes/states/historical_state.php, accessed May 6, 2011.

[c] Mw = Maximum Moment Magnitude Earthquake (Mw). Moment magnitude is related to the physical size of a fault rupture and movement across a fault, and provides a physically meaningful measure of the size of a faulting event. Source: California Geological Survey (CGS), *Probabilistic Seismic Hazard Assessment For The State Of California, Appendix A: Fault Source Parameters*, revised in 2002, from CDMG Open File-Report 96-08, available online at http://www.consrv.ca.gov/CGS/rghm/psha/ofr9608/, 2002.

[d] Distance obtained from Jennings, C.W. and Bryant, W.A., compilers, California Geological Survey (CGS), *2010 Fault Activity Map of California*, CGS Geologic Data Map No. 6, also available online at http://www.quake.ca.gov/gmaps/FAM/faultactivitymap.html, 2010.

[e] n/a = not applicable.

[14] A reverse fault is one with predominantly vertical movement in which the upper block moves upward in relation to the lower block; a thrust fault is a low-angle reverse fault. Blind-thrust faults are low-angled subterranean faults that have no surface expression.

[15] An earthquake is classified by the amount of energy released, expressed as the magnitude of the earthquake. Traditionally, magnitudes have been quantified using the Richter scale. However, seismologists now use a moment magnitude (Mw) scale because it provides a more accurate measurement of the size of major and great earthquakes. Moment magnitude is directly related to the average slip and fault rupture area.

Since 1800, four major earthquakes have been recorded on the San Andreas fault. In 1836, an earthquake with an estimated M_w of 6.4 occurred east of Monterey Bay (San Juan Bautista) on the San Andreas fault.[16] Shortly thereafter, in 1838, an earthquake with an M_w of about 7.5 occurred on the San Andreas fault. The San Francisco earthquake of 1906 caused the most significant damage in the history of the Bay Area in terms of loss of lives and property damage. This earthquake created a surface rupture along the San Andreas fault from Shelter Cove to San Juan Bautista, approximately 290 miles in length. It had an M_w of about 7.9 and was felt 350 miles away in Oregon, Nevada, and Los Angeles. The most recent large earthquake to affect the Bay Area was the Loma Prieta earthquake on October 17, 1989. The epicenter of this earthquake was approximately 60 miles from the project area in the Santa Cruz Mountains. The earthquake had an M_w of 6.9.

On the Hayward fault, an earthquake with an estimated M_w of 6.8 occurred in 1868 on the southern segment (between San Leandro and Fremont). In 1861, an earthquake of unknown magnitude (probably an M_w of about 6.5) was reported on the Calaveras fault. The most recent significant earthquake on this fault was the 1984 Morgan Hill earthquake with an M_w of 6.2.

The United States Geological Survey (USGS) estimates that there is a 63-percent probability of a strong earthquake (M_w 6.7 or higher) occurring on one of the regional faults in the 30-year period between 2007 and 2036.[17]

Fault Rupture

Fault rupture almost always follows pre-existing faults, which are zones of weakness. Surface rupture occurs when movement on a fault deep within the earth breaks through to the surface. Surface ruptures associated with the 1906 San Francisco earthquake extended for more than 260 miles, with displacements of up to 21 feet. There is a very low potential for fault rupture within the project area because no active faults cross the project areas.

Groundshaking

The intensity of the seismic shaking, or strong ground motion, in the project area during an earthquake is dependent on the distance between the project area and the epicenter of the earthquake, the magnitude of the earthquake, and the geologic conditions underlying and surrounding the project area. Earthquakes occurring on faults closest to the project area would most likely generate the largest ground motions.

The intensity of earthquake-induced ground motions and the potential forces affecting structures within the project area can be described in terms of "peak ground acceleration," which is represented as a fraction of the acceleration of gravity (g).[18] The California Geological Survey

[16] California Geological Survey, Earthquake Mapping Center, Significant California Earthquakes, http://www.conservation.ca.gov/CGS/rghm/quakes/Pages/eq_chron.aspx, accessed March 21, 2011.
[17] United States Geologic Survey (USGS), The Uniform California Earthquake Rupture Forecast, Version 2 (UCERF 2), by the Working Group on California Earthquake Probabilities, Open File Report 2007-1437, 2008.
[18] Acceleration of gravity (g) = 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.

estimates that the peak ground accelerations that have a 10-percent probability of exceedance in 50 years (or a 1 in 475 chance of occurring in any given year) range from 0.47 g to 0.53 g for the project area along the San Francisco Waterfront, and the estimated peak ground acceleration at Pier 27 is 0.47 g.[19] However, these estimates of peak ground accelerations are used primarily for formulating building codes and for designing buildings, and are not intended for site-specific hazard analysis. Therefore, prior to design, it would be necessary to conduct a site-specific evaluation to estimate peak ground accelerations at a level suitable for project design.

Based on shaking hazard mapping done by the Association of Bay Area Governments (ABAG), it is expected that the San Francisco shoreline within the project area would experience violent groundshaking due to an earthquake along the peninsula segment of the San Andreas fault, and very strong to violent groundshaking due to an earthquake along the combined northern and southern segments of the Hayward fault. These are the faults closest to the project area.[20] Additionally, the Community Safety Element of the *General Plan* contains shaking hazard maps for San Francisco. The maps cited above refer to updated versions of the same source maps.

Liquefaction

Liquefaction is a phenomenon in which saturated granular sediments temporarily lose their shear strength during periods of earthquake-induced, strong groundshaking. The susceptibility of a site to liquefaction is a function of the depth, density, and water content of the granular sediments and the magnitude of earthquakes likely to affect the site. Saturated, unconsolidated silts, sands, silty sands, and gravels within 50 feet of the ground surface are most susceptible to liquefaction. Liquefaction-related phenomena include vertical settlement from densification, lateral spreading, ground oscillation, flow failures, loss of bearing strength, subsidence, and buoyancy effects.

As shown in **Figure 5.15-2**, much of the landside portion of the San Francisco shoreline, including the project sites where construction would occur, is within a potential liquefaction hazard zone identified by the California Geological Survey, although the mapping does not extend into the Bay.[21] As noted above, areas of artificial fill, especially for any fill placed before the 1960s, can be susceptible to liquefaction. The liquefaction map of the Community Safety Element of the *General Plan,* based on an older version of the map cited above, also indicates that much of landside portion of the San Francisco is within a potential liquefaction hazard zone.

[19] California Geologic Survey, Seismic Shaking Hazards in California, based on the USGS/CGS Probabilistic Seismic Hazards Assessment (PSHA) Model, 2002 (revised April 2003), available at http://redirect.conservation.ca.gov/cgs/rghm/pshamap/pshamap.asp, accessed March 21, 2011.

[20] Association of Bay Area Governments, Hazard Maps, Shaking Maps, 2003, www.abag.ca.gov, accessed March 21, 2011.

[21] California Division of Mines and Geology, Seismic Hazard Zones, San Francisco Quadrangle, California Division of Mines and Geology, Official Map, effective November 17, 2000.

SOURCE: California Geological

Case No. 2010.0493E: AC34 / Cruise Terminal and Northeast Wharf Plaza (210317)

Figure 5.15-2

California Geological Survey Seismic Hazard Zones

Lateral Spreading

Of the liquefaction hazards, lateral spreading generally causes the most damage. This is a phenomenon in which large blocks of intact, non-liquefied soil move downslope on a liquefied substrate of large aerial extent.[22] When lateral displacement occurs, the mass moves toward an unconfined area, such as a descending slope or stream-cut bluff. Slopes ranging between 0.3 and 3 percent can displace the surface by several meters to tens of meters. Areas of observed lateral spreading in San Francisco are mainly limited to areas where fill has been placed over marsh and Bay Mud deposits.[23] The project sites are located in areas of the waterfront where fill has been placed over marsh or Bay Mud; therefore, these sites are all subject to lateral spreading potential. After the 1906 earthquake on the San Andreas fault, lateral movements of approximately 2 feet were observed at the waterfront, near the foot of Market Street, and some lateral movement apparently occurred in this area as a result of the 1868 earthquake on the Hayward fault.

Earthquake-Induced Settlement

Settlement of the ground surface can be accelerated and accentuated by earthquakes. During an earthquake, settlement can occur as a result of the relatively rapid rearrangement, compaction, and settling of subsurface materials (particularly loose, noncompacted, and variable sandy sediments). Settlement can occur both uniformly and differentially (i.e., where adjoining areas settle at different rates). Areas are susceptible to differential settlement if underlain by compressible sediments, such as poorly engineered artificial fill or bay mud. Therefore, much of the project area within San Francisco would be susceptible to earthquake-induced settlement. Near the foot of Market Street, settlements of as much 4 feet occurred during the 1906 earthquake on the San Andreas fault and some settlement was also reported during the 1868 earthquake on the Hayward fault.[24]

Earthquake-Induced Landslides

Earthquake motions can also induce substantial stresses in slopes, causing earthquake-induced landslides or ground cracking when the slope fails. Earthquake-induced landslides can occur in areas with steep slopes that are susceptible to strong ground motion during an earthquake. The 1989 Loma Prieta earthquake triggered thousands of landslides over an area of 770 square miles. Within the project area, the San Francisco waterfront where construction would occur is relatively flat and not likely to be affected by earthquake-induced landslides, and there are no mapped zones of potential earthquake-induced landslides.[25] The landslide susceptibility map of the Community Safety Element of the *General Plan* also indicates that none of the project area is located within a potential landslide hazard area. There are some relatively steep slopes in the vicinity of the Fort Baker Pier; however, this area has not been mapped under the Seismic Hazard Mapping Program.

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[22] Youd, T.L. and D.M. Perkins, "Mapping Liquefaction Induced Ground Failure Potential," Proceedings of the American Society of Civil Engineers, Journal of the Geotechnical Engineering Division, 1978.

[23] Youd, T.L., and S.N. Hoose, "Historic Ground Failures in Northern California Triggered by Earthquakes," Geological Survey Professional Paper 993, 1978.

[24] Youd, T.L., and S.N. Hoose, "Historic Ground Failures in Northern California Triggered by Earthquakes," Geological Survey Professional Paper 993, 1978.

[25] California Division of Mines and Geology, Seismic Hazard Zones, San Francisco Quadrangle, California Division of Mines and Geology, Official Map, effective November 17, 2000.

According to data compiled by the USGS, this area contains slopes considered to have "few landslides" (see discussion above).[26]

5.15.2 Regulatory Framework

5.15.2.1 Federal Regulations

Golden Gate National Recreation Area (GGNRA)

The Golden Gate Nation Recreation Area (GGNRA) is part of the National Park Service and the regulations that govern all national parks including Golden Gate National Recreation Area (including Alcatraz Island) are encompassed in Title 36 CFR (Code of Federal Regulations). Each national park has specific local regulations established under the Superintendent's discretionary authority under Title 36 CFR. For GGNRA, Title 36 CFR Section 1.6 address activities such as spectator attractions are required to obtain a permit through a process called Project Review. The permit contains a complete list of specific conditions, but applicants are also responsible for following all the laws and rules of the Park (as well as all the laws and rules of California.)

Other requirements of federal regulations that apply to the project are incorporated into the state and local regulations described below.

5.15.2.2 State Regulations

Alquist-Priolo Earthquake Fault Zoning Act

The Alquist-Priolo Earthquake Fault Zoning Act was passed in 1972 to mitigate the hazard of surface faulting in structures for human occupancy. In accordance with this act, the state geologist established regulatory zones, called "earthquake fault zones," around the surface traces of active faults and has published maps showing these zones. Within these zones, buildings for human occupancy cannot be constructed across the surface trace of active faults. Each earthquake fault zone extends approximately 200 to 500 feet on either side of the mapped fault trace because many active faults are complex and consist of more than one branch that may experience ground surface rupture. This act does not apply to the proposed project because no active faults cross the project area, or anywhere else in San Francisco. [27]

Seismic Hazards Mapping Act

The Seismic Hazards Mapping Act was passed in 1990 following the Loma Prieta earthquake to reduce threats to public health and safety and to minimize property damage caused by earthquakes. The act directs the California Geological Survey to identify and map areas prone to the earthquake hazards of liquefaction and earthquake-induced landslides. For structures intended for

[26] Nilsen, T.H. and B.L. Turner, Influence of Rainfall and Ancient Landslide Deposits on Recent Landslides (1950-71) in Urban Areas of Contra Costa County, California, U.S. Geological Survey Bulletin 1388, 1975.

[27] California Geological Survey, Table 4, Cities and Counties Affected by Alquist-Priolo Earthquake Fault Zones as of May 1, 1999, from http://www.conservation.ca.gov/cgs/rghm/ap/affected.htm, accessed April 11, 2011.

human occupancy (inhabited for 2,000 hours per year or more),[28] the act requires that project sponsors perform site-specific geotechnical investigations to identify potential seismic hazards and formulate mitigation measures prior to permitting of most developments within the zones of required investigation. Structures proposed by the project would be subject to this act if they are located within a zone of required investigation and are intended for human occupancy. There are no earthquake-induced landslide zones requiring investigation mapped within the project area where construction would occur. However, as described above, there are locations within the project area that are mapped within a liquefaction zone of required investigation.[29]

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 CBC is based on the International Building Code (IBC), previously known as the Uniform Building Code. The 2010 CBC is based on the 2009 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 Standard 7-05 provides requirements for general structural design and includes means for determining earthquake loads as well as other loads (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. 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.

[28] Title 14 of the California Code of Regulations, Section 3601(e), defines buildings intended for human occupancy as those that would be inhabited for more than 2,000 hours per year.

[29] California Geological Survey, State of California Seismic Hazard Zones, City and County of San Francisco, Official Map, November 17, 2000.

5.15.2.3 Local Regulations

San Francisco Building Code

The San Francisco Building Code is an amendment to the CBC. It includes seismic safety performance standards that apply to all new construction in the City, including temporary building or structures.[30] In accordance with this code, the San Francisco Department of Building Inspection (DBI) could, in its review of building permit applications, require the project sponsor to prepare a geotechnical report pursuant to the state Seismic Hazards Mapping Act. The report would assess the nature and severity of the groundshaking hazard(s) on the site and recommend project design and construction features that would reduce the hazard(s). All new construction within the project area that is within San Francisco and outside of the jurisdiction of the Port of San Francisco would be subject to the permitting requirements of DBI to ensure compliance with applicable laws and regulations.

As part of this permitting process, the final building plans would be reviewed by the DBI. In reviewing building plans, the DBI refers to a variety of information sources to determine existing hazards and assess requirements for reducing or avoiding those hazards. Sources reviewed include maps of Special Geologic Study areas and known landslide areas in San Francisco, as well as the building inspectors' working knowledge of areas of special geologic concern. While temporary structures would need to be permitted, review by the civil engineer for consistency with the building code is discretionary, to be determined by DBI.

Port of San Francisco Building Code

The 2010 Port of San Francisco Building Code also amended the CBC and applies to projects constructed on Port property, including temporary building or structures,[31] except for small areas that are subject to the San Francisco Building Code (none of which are included in the project area). The Port of San Francisco Building Code is administered by the Port Commission, through the Chief Harbor Engineer, and establishes minimum building requirements to safeguard the public health, safety, and general welfare. While temporary structures would need to be permitted, review by the civil engineer for consistency with the building code is discretionary, to be determined by the Chief Harbor Engineer.

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[30] Applicable portions of the San Francisco Building Code are as follows: Section 106A.1.7 Permits and Fees for Temporary Buildings or Structures. A permit is required for the construction and erection of temporary reviewing stands, bleachers, grandstands and other miscellaneous structures. The Building Official may require that any temporary building or structure be inspected by a registered civil engineer and found to be in compliance with all provisions of this code before it is permitted to be used by the public.

[31] Applicable text from the Port Building Code is as follows: Section 106A.1.7 Permits and fees for temporary buildings or structures**.** A permit is required for the construction and erection of temporary reviewing stands, bleachers, grandstands and other miscellaneous structures. The Chief Harbor Engineer may require that any temporary building or structure be inspected by a registered civil engineer and found to be in compliance with all provisions of this code before it is permitted to be used by the public.

San Francisco General Plan

The Community Safety Element of the *San Francisco General Plan* states the following overall goal: "to the extent feasible, to avoid the loss of life and property as a result of natural and technological disasters, to reduce the social, cultural and economic dislocations of disasters, and to assist and encourage the rapid recovery from disasters." The Community Safety Element contains the following relevant policies:

> *Policy 2.1*: Assure that new construction meets current structural and life safety standards.
>
> *Policy 2.3*: Consider site soils conditions when reviewing projects in areas subject to liquefaction or slope instability.
>
> *Policy 2.5*: Assess the risks presented by other types of potentially hazardous structures and reduce the risks to the extent possible.
>
> *Policy 2.9*: Consider information about geologic hazards whenever City decisions that will influence land use, building density, building configurations or infrastructure are made.

The Community Safety Element includes maps of potential hazard areas, including liquefaction and potential liquefaction areas.

In addition, the Environmental Protection Element of the *San Francisco General Plan* contains three policies that relate to geology and soils:

> *Policy 7.3*: Require that filling of land adhere to the highest standards of soils engineering consistent with the proposed use.
>
> *Policy 7.4*: Assure correction of landslide and shore erosion conditions where it is in the public interest to do so.
>
> *Policy 7.5*: Prohibit construction, as a general rule, on land subject to slide or erosion.

5.15.3 Impacts and Mitigation Measures

5.15.3.1 Significance Criteria

The City has not formally adopted significance standards for impacts related to geology and soils, but generally consider that implementation of the project could have a potentially significant impact related to geology and soils if it were to:

- Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:
  - 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);
  - Strong seismic ground shaking;

  - Seismic-related ground failure, including liquefaction; or
  - Landslides;

- Result in substantial soil erosion or the loss of topsoil;

- Be located on geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse;

- Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code, creating substantial risks to life or property;

- Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater; or

- Change substantially the topography or any unique geologic or physical features of the site.

Due to the nature of the proposed project (AC34 and the cruise terminal), there would be no impact related to the following criteria for the reasons described below:

- ***Soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems.*** Wastewater produced under the project would be conveyed to the City's combined sewer system or other wastewater handling facilities in the Golden Gate National Recreation Area (GGNRA) portions of the project area that are located outside of San Francisco. Where wastewater facilities are not available at temporary AC34 venues, portable toilets would be provided as needed during the AC34 events. Therefore, new construction of wastewater disposal systems would not be required, and impacts related to having soils capable of supporting the use of septic tanks or alternative wastewater disposal systems are not discussed further.

- ***Substantial change in the topography or any unique geologic or physical features.*** The project would involve limited, if any, grading or excavation. Furthermore, the project areas located along the San Francisco Bay waterfront are generally flat where any permanent construction is proposed, and have no unique topographic, geologic, or physical features. Proposed temporary AC34 structures would be removed following the AC34 events and the areas would be restored to its original condition. Therefore, no impacts related to alteration of topography and changes to unique geologic or physical features would occur, and this impact is not discussed further.

- ***Substantial risks to life or property as a result of expansive soil.*** The temporary AC34 facilities, including the temporary bleacher-style structures and large tents, would be installed on the ground surface, and therefore, would not be substantially affected by expansive soil, if present at any of the spectator venue locations. The team bases on Piers 30-32 and 80, and the building core and shell for the America's Cup Village and subsequent Cruise Terminal project on Piers 27-29, would all be constructed on piers supported on concrete piles in the Bay sediments that are continually saturated materials and would not be subject to the effects of expansion. Therefore, there would be no impact related to substantial risks to life and property as a result of expansive soils.

5.15.3.2 Approach to Analysis

This analysis evaluates the proposed project's potential effects related to geology and soils. Potential seismic impacts are assessed with respect to exposure of people or structures to geologic hazards, including fault rupture, groundshaking, liquefaction and other earthquake-related ground failures, and earthquake-induced landslides. In addition, the impact analysis assesses potential impacts related to unstable geologic units as well as soil erosion and loss of topsoil. Overall, compliance with the Port of San Francisco Building Code and San Francisco Building Code as well as implementation of permitting requirements of the GGNRA and project-specific plans prepared for the AC34 events would ensure that most impacts related to geology and soils would be less than significant, as discussed below.

5.15.3.3 AC34 Events and Cruise Terminal Impacts and Mitigation Measures

America's Cup

Impact GE-1: Construction and operation of the AC34 facilities and events would not expose people or structures to substantial adverse effects related to fault rupture. (Less than Significant)

As discussed in Section 5.15.1.4, Regional Faulting and Seismic Hazards, and Section 5.15.2.2, State Regulations, the project area is not located within an Alquist-Priolo Earthquake Fault Zone, and no active or potentially active faults exist within or in the immediate vicinity of the project sites. The nearest active fault to any of the project components is the San Andreas fault, located approximately 7 miles to the west. Therefore, the potential for surface fault rupture to affect any of the proposed project components is considered very low, and this impact would be considered *less than significant*.

Mitigation: Not required

Impact GE-2: Construction and operation of the AC34 facilities and events could expose people or structures to substantial adverse effects related to groundshaking. (Less than Significant with Mitigation)

Like the rest of the San Francisco Bay Area, the project area could be subject to very strong to violent groundshaking in the event of a major earthquake, with estimated peak ground accelerations in the project area ranging from 0.47 g to 0.53 g. However, the project would not expose people or structures to substantial adverse effects related to groundshaking as discussed below.

Facilities Subject to Groundshaking

The potential effects on temporary structures erected at the spectator sites would be restricted to race day events, if an earthquake occurred on one of those days. While the Working Group on

California Earthquake Probabilities has estimated that there is a 63-percent chance that an M_w 6.7 or greater earthquake would occur in the greater Bay Area region by 2036,[32] there is a low probability of a seismic event occurring during a time when these temporary structures are being used. In accordance with Section 106A.1.7 of the San Francisco Building Code and the Port of San Francisco Building Code, construction of the temporary structures at the spectator venues in San Francisco would be subject to a permit from the DBI or Port, and could be required to comply with applicable portions of the building codes before the temporary facilities could be used by the public as determined by the DBI or Chief Harbor Engineer. Review by the Port of San Francisco's Chief Harbor Engineer and consultation with the project sponsor would determine necessary engineering and design features for the temporary structures to reduce potential damage from groundshaking and ensure compliance with appropriate Port of San Francisco Building Code provisions regarding structural safety prior to issuance of a permit. The construction of temporary structures at the spectator venues on GGNRA lands would similarly be subject to GGNRA permitting requirements.

The only permanent structure constructed for the AC34 events would be the cruise terminal core and shell building located at Piers 27-29, constructed for the America's Cup Village and located within the jurisdiction of the Port of San Francisco. As discussed in Chapter 3, Project Description, Pier 27 has been upgraded to current seismic design standards. Piers 27 and 29 were originally constructed as separate piers. In 1967, the Port undertook major construction at Pier 27 to build a pile-supported platform and 220,000-square-foot cargo shed along a remodeled axis that created the piers' current triangular shape, replacing the former Pier 27 deck and cargo shed. This Pier 27 construction terminated at the eastern end by connecting with historic Pier 29, built in 1915. In 1994, following the Loma Prieta earthquake, the Pier 27 structure was seismically retrofitted and repaired, and the work included construction of a batter-pile connection repair/retrofit.[33] A shear plate connecting Piers 27 and 29 that enables these two structures to respond as a single unit was installed, thereby eliminating the need for seismic retrofit of Pier 29 substructure.[34] In 2000, Pier 27 was found to be in excellent condition.

If a major earthquake were to occur on one of the region's faults during the AC34 2013 events, the America's Cup Village (cruise terminal core and shell building) could be subjected to substantial groundshaking. However, Piers 27-29 were seismically upgrade in 1994. When inspected in 2007, Pier 27 was found to be in excellent condition. Further, the America's Cup Village would be constructed in accordance with the most current Port of San Francisco Building Code, which incorporates the California Building Code seismic design requirements. The Port of San Francisco Building Code specifies definitions of seismic sources and the procedure used to calculate potential seismic forces on structures during groundshaking. Therefore, impacts related to groundshaking are *less than significant* for construction of the America's Cup Village at Pier 27.

[32] United States Geologic Survey (USGS), The Uniform California Earthquake Rupture Forecast, Version 2 (UCERF 2), by the Working Group on California Earthquake Probabilities, Open File Report 2007-1437, 2008.
[33] Port of San Francisco, McNamara/Salvia, Incorporated, Consulting Engineers, *San Francisco Piers, Piers 27, 29 and 21 Structural Review,* February 28, 2005.
[34] Port of San Francisco, Pier 27-29 Earthquake Damage Repair Drawings, 1994.

Temporary AC34 facilities that could be subjected to strong groundshaking include the team bases at Piers 30-32 and Pier 80. Piers 30-32 is in poor structural condition, and has load restrictions that preclude large truck access to this facility. As described in Chapter 3, Project Description, the project sponsor would construct seismic improvements to Piers 30-32, including repairs to and strengthening of the marginal wharf; installing a seismic joint; strengthening the existing pier deck; installing piles and caps to increase the lateral capacity of the pier; and replacing portions of the deck, reinforcing steel, soffit, and piles. However, impacts related to ground shaking at Piers 30-32 would be *significant* because a site-specific geotechnical investigation has not been conducted to inform the engineering requirements necessary to comply with the Port of San Francisco Building Code. This impact would reduced to a *less-than-significant level* with implementation of **Mitigation Measure M-GE-2** (Site-Specific Geotechnical Investigation) requiring a site specific geotechnical investigation to inform the engineering requirements to comply with the Port of San Francisco Building Code and reduce the potential for damage from groundshaking. Review by the Port of San Francisco's Chief Harbor Engineer would ensure compliance with all Port of San Francisco Building Code provisions regarding structural safety prior to issuance of a building permit. With implementation of this mitigation measure, the improvements would meet the requirements of the Port of San Francisco Building Code and ensure that these piers would not be substantially damaged in the event of strong groundshaking, allowing for use of the piers for public access.

An inspection of Pier 80 in November of 2005 concluded that in general the concrete seawall, structural concrete slab, concrete beams and concrete piles are in good condition and the pier is suitable for unrestricted use.[35] Furthermore, construction of the team bases at Pier 80 would be subject to the permitting requirements of the Port of San Francisco and would need to comply with the applicable portions of the Port of San Francisco Building Code as described above for temporary facilities. Therefore, impacts related to groundshaking are *less than significant* for construction of team bases on Pier 80.

In summary, impacts related to groundshaking are less than significant for the temporary AC34 facilities because of the low probability of seismic occurring during the AC34 events and because the temporary structures would be installed with required engineering and safety features in compliance with permits from DBI, the Port, or GGNRA. Impacts related to groundshaking would be considered *significant* for the improvements at Piers 30-32, but would be reduced to a *less-than-significant* level with implementation of Mitigation Measure M-GE-2, Site-Specific Geotechnical Investigation, requiring a site specific geotechnical investigation to inform the engineering requirements to comply with the Port of San Francisco Building Code and reduce the potential for damage from groundshaking. Piers 27-29 have been inspected and found to be in excellent condition, and construction of the America's Cup Village would comply with the Port of San Francisco Building Code which would reduce the potential for damage from groundshaking. Pier 80 is in good condition, and considered suitable for unrestricted use.

[35] Port of San Francisco, Memorandum to Port Deputy Directors, Rapid Assessment – Pier 80 Substructure, November 4, 2005.

Mitigation Measure M-GE-2, Site-Specific Geotechnical Investigation

The project sponsor shall conduct a site-specific geotechnical investigation for piers requiring upgrading under the direction of a geotechnical engineer prior to permitting any new construction or reuse that would increase the load of the structure. The investigation shall be performed to evaluate subsurface conditions and existing structural conditions at the site, and shall evaluate the potential for geological and seismic hazards including settlement, ground shaking, ground rupture, liquefaction, subsidence, slope stability, and lateral spreading. Recommendations shall be made regarding the pile and foundation requirements, seawall stability, seismic design, and mitigation of geologic hazards, and these recommendations shall be included in the project design.

Impact GE-3: Construction and operation of the AC34 facilities and events could expose people or structures to substantial adverse effects related to liquefaction, lateral displacement, or earthquake-induced settlement. (Less than Significant with Mitigation)

Strong groundshaking during an earthquake can result in ground failure associated with soil liquefaction, lateral spreading, and seismically induced densification. As discussed in Section 5.15.1, Setting, above, and shown in Figure 5.15-2, most of the landside portion of the project sites along the San Francisco waterfront are located within areas susceptible to liquefaction potential as identified by the California Geological Survey under the Seismic Hazards Mapping Act of 1990. In addition, a 1991 seismic study concluded that, in the event of a magnitude 7.9 earthquake (the magnitude of the 1906 earthquake), the Fair's Seawall, located at Marina Green, would move 4 to 8 feet toward the Bay, and Marina Green could experience settlement of up to 1 foot.[36] The study concluded that, based on the construction of the seawall, the wall could move laterally up to 7 feet without being breached.

Facilities Subject to Liquefaction, Lateral Spreading, or Earthquake-Induced Settlement

As discussed in Impact GE-2, the potential effect on temporary structures erected at the spectator venues would be restricted to race day events, if an earthquake occurred on one of those days. There is a low probability of a seismic event occurring during a time when these temporary structures are being used. Further, in accordance with permit requirements, temporary structures at the spectator venues could be required by the DBI or Port to comply with the requirements of the San Francisco Building Code or Port of San Francisco Building Code before they could be used by the public. The construction of temporary structures at the spectator venues on GGNRA lands would similarly be subject to GGNRA permitting requirements.

The only permanent structure constructed for the AC34 events would be the cruise terminal core and shell building located at Piers 27-29, which would be used for the America's Cup Village in 2013 and is located within the jurisdiction of the Port of San Francisco. However, Piers 27-29 were

[36] Harding Lawson, Dames & Moore, Kennedy/Jenks/Chilton, and EQE Engineering, "Final Report, Liquefaction Study, Marina District and Sullivan Marsh Area, San Francisco, California," August 1991, taken from *San Francisco Marina Renovation Project Final Environmental Impact Report*, January 11, 2007

seismically upgrade in 1994, and when inspected in 2007 Pier 27 was found to be in excellent condition. Further, the America's Cup Village would be constructed in accordance with the most current Port of San Francisco Building Code, which incorporates the California Building Code seismic design requirements. Therefore, impacts related to liquefaction, earthquake-induced settlement, and lateral displacement are *less than significant* for construction of the America's Cup Village on Pier 27.

Temporary facilities that could be subjected to liquefaction include the team bases at Piers 30-32 and Pier 80. The project sponsor would construct seismic improvements to Piers 30-32, including repairs to and strengthening of the marginal wharf; installing a seismic joint; strengthening the existing pier deck; installing piles and caps to increase the lateral capacity of the pier; and replacing portions of the deck, reinforcing steel, soffit, and piles as described in Chapter 3, Project Description. These improvements at Piers 30-32 would meet the requirements of the Port of San Francisco Building Code and ensure that these piers would not be substantially damaged due to liquefaction, earthquake-induced settlement, or lateral displacement. However, impacts related to liquefaction, earthquake-induced settlement, and lateral displacement at Piers 30-32 would be *significant* because a site-specific geotechnical investigation has not been conducted to inform the engineering requirements necessary to comply with the Port of San Francisco Building Code. This impact would reduced to a *less-than-significant* level with implementation of **Mitigation Measure M-GE-2** (Site-Specific Geotechnical Investigation) (above) requiring a site specific geotechnical investigation to inform the engineering requirements to comply with the Port of San Francisco Building Code and reduce the potential for damage from liquefaction, earthquake-induced settlement, and lateral displacement. Review by the Port of San Francisco's Chief Harbor Engineer would ensure compliance with all Port of San Francisco Building Code provisions regarding structural safety prior to issuance of a building permit. With implementation of this mitigation measure, the improvements would meet the requirements of the Port of San Francisco Building Code and ensure that these piers would not be substantially damaged in the event of liquefaction, earthquake-induced settlement, or lateral displacement, allowing for use of the piers for public access.

An inspection of Pier 80 in November of 2005 concluded that in general the concrete seawall, structural concrete slab, concrete beams and concrete piles are in good condition and the pier is suitable for unrestricted use.[37] Therefore, impacts related to liquefaction, earthquake-induced settlement, and lateral displacement are *less than significant* for construction of team bases on Pier 80.

Impact Summary

In summary, impacts related to liquefaction, earthquake-induced settlement, and lateral displacement are less than significant for the temporary AC34 facilities because of the low potential for a seismic event to occur during the AC34 events and because the temporary structures would be installed with required engineering and safety features in compliance with permits from DBI, the Port, or GGNRA. Impacts related to liquefaction, earthquake-induced settlement, and lateral displacement are considered *significant* for the improvements at Piers 30-32, but would be reduced

[37] Port of San Francisco, *op. cit.*, 2005.

to a less-than-significant level with implementation of **Mitigation Measure M-GE-2** (Site-Specific Geotechnical Investigation), requiring a site specific geotechnical investigation to inform the engineering requirements to comply with the Port of San Francisco Building Code and reduce the potential for damage from liquefaction, earthquake-induced settlement, and lateral displacement. Piers 27-29 have been inspected and found to be in excellent condition, and construction of the America's Cup Village would comply with the Port of San Francisco Building Code which would reduce the potential for damage from liquefaction, earthquake-induced settlement, and lateral displacement. Pier 80 is in good condition, and considered suitable for unrestricted use.

Mitigation Measure M-GE-2: Site-Specific Geotechnical Investigation (see above)

Impact GE-4: Construction and operation of the AC34 facilities would not result in substantial slope instability or expose people or structures to substantial adverse effects related to earthquake-induced landslides. (Less than Significant)

The portions of the project area where construction would occur are located along the San Francisco waterfront where the topography is characterized by relatively gentle slopes. As described in Section 5.15.1.3, Geologic Hazards, this area is mapped as "flatland" by the USGS, and there are no zones of potential earthquake-induced landslides mapped along the waterfront under California's Seismic Hazards Mapping Act of 1990. Further, none of the project-related construction would require substantial excavation that could induce slope instability. Therefore, impacts related to slope failures and earthquake-induced landslides would be *less than significant*.

Mitigation: Not required

Impact GE-5: Construction and operation of the AC34 facilities would not result in substantial erosion or loss of topsoil. (Less than Significant)

In general, construction activities and pedestrian travel can disturb vegetation and ground cover that serves to stabilize surface soils, making the soils more susceptible to erosion. Without proper soil stabilization controls, construction activities such as excavation, backfilling, and grading can also increase the potential for exposed soils to be eroded by wind or stormwater runoff, resulting in long-term soil loss. Project construction activities could also result in the loss of topsoil—a fertile soil horizon that typically contains a seed base—if there is a well-developed topsoil horizon and it is mixed with other soil horizons or otherwise lost during excavation and backfilling. However, construction associated with AC34 (construction of temporary facilities such as bleacher-style seating and large tents, and construction of facilities on piers) would require very minimal grading, if any at all, and therefore would not induce soil erosion or result in the loss of topsoil. While the use of trucks for initial transport and final disassembly of temporary facilities at the spectator venues would be required, and these vehicles could travel upon vegetated areas when no other access roads are available, the amount of disturbance would not be substantial and any resultant

effects on erosion or topsoil would be minimal. As discussed in Section 5.11, Recreation, increased usage could also damage grassy areas at the spectator venues including Marina Green and Crissy Field. While this could temporarily increase the potential for erosion, the project sponsor would restore all project sites to their existing conditions following completion of the AC34 events.

The AC34 events are expected to attract large crowds that may seek vantage points other than the spectator venues that are being provided by the project sponsor, known as secondary viewing areas as described in Section 5.1. In particular, these potential secondary viewing locations include other GGNRA lands (e.g., within the Presidio or Marin Headlands), the Sausalito waterfront, Angel Island (managed by the California State Parks), and Treasure Island/ Yerba Buena Island. As discussed in Section 5.11, Recreation, these areas may experience an increase in pedestrian traffic. This increased use could cause erosion and disturbance to existing vegetation if the increase in visitors is sufficient to result in overuse and damage to trails and vegetation or would result in the creation of casual trails between public streets and parking areas. However, these secondary viewing areas are generally open space/park areas accessible to the public and designed for extensive public uses; with the possible exception of very high visitation levels anticipated on the final peak weekend race days (see Chapter 3, Section 3.4.3, AC34 Visitation Estimates), the level of visitors at the secondary viewing areas for most of the AC34 events would be expected to be within the range of existing use levels. Nevertheless, as described in Chapter 3, Project Description, the project sponsors would implement the Parks Event Operations Plan, requiring coordination with the Golden Gate National Recreational Area and California State Parks on crowd control, fencing, and signage to reduce damage to vegetation and erosion at the secondary viewing areas. Furthermore, the City and Event Authority as the AC34 project sponsors are actively coordinating with neighboring jurisdictions in Marin County, including Sausalito and Belvedere, to address planning and preparation for the AC34 events to avoid or minimize effects on resources. (See also Section 5.11, Recreation, for discussion of potential impacts on recreational resources, and Section 5.14, Biological Resources, for discussion of potential impacts on vegetation resources.) In addition, these events are temporary and would not induce erosion over the long term.

Due to the minimal disturbance to site soils for construction of the project venues (temporary placement of a majority of the facilities, and the location of some facilities on the piers), as well as implementation of the Parks Event Operations Plan and coordination with neighboring jurisdictions for the secondary viewing areas, impacts related to soil erosion and loss of topsoil would be *less than significant.*

Mitigation: Not required

Impact GE-6: The AC34 activities could occur on structures that are unstable, or that could become unstable as a result of the project. (Less than Significant with Mitigation)

Geologic or soil units can become unstable or result in settlement for a variety of reasons and can occur from immediate settlement or consolidation. Immediate 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 the pore spaces under the continued application of the load. Consolidation settlement is one of the characteristic hazards of Bay Mud deposits, as well as poorly engineered fill materials. 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 of the soils.

Although piers are not geologic units, the use of wharfs, piers, or other structures that are not structurally sound by spectators during the AC34 events could cause failure of the piers due to the increased loads. This discussion assesses the potential impacts of such hazards.

The majority of the facilities associated with AC34 would be used temporarily and relatively unsubstantial in terms of loading. The bleacher-style seating structures proposed at several spectator venues, when full of spectators, could represent a substantial load; however, as described in Impact GE-2, the project would be required to obtain a permit for these temporary structures in accordance with Section 106A.1.7 of the San Francisco Building Code and the Port of San Francisco Building Code, and could be required to comply with applicable portions of the building codes to ensure safety before the bleachers would be used by the public. Implementation of the provisions in these permit requirements would ensure that adverse impacts related to settlement do not occur.

The proposed America's Cup Village (cruise terminal core and shell building) would be located on the deck of Pier 27, which is supported on piles. The proposed structure would replace existing structures that would be demolished to accommodate the new structure, and any new loads due to increased crowds at the pier would be temporary (restricted to the duration of the 2013 AC34 events). Further, Piers 27-29 have been inspected and found to be in excellent condition. Therefore, impacts related to consolidation settlement would be *less than significant*.

During the AC34 events, a few locations along the San Francisco waterfront with structural concerns, such as Torpedo Wharf at Crissy Field, the pier at Fort Mason west of the Municipal Pier, and the Municipal Pier at Aquatic Park, could receive a higher volume of spectators than is normally experienced. Some of these facilities are in varying states of structural integrity and without controlled access could potentially become unstable under substantially higher loadings associated with large numbers of spectators; this would be a *potentially significant* impact. As indicated in Chapter 3, however, the Municipal Pier at Aquatic Park would be closed during race events. In addition, implementation of **Mitigation Measure M-GE-6** (Signage and Restricted Access at Structurally Unsound Viewing Locations) would reduce this impact to a less-than-significant level.

Mitigation Measure M-GE-6: Signage and Restricted Access at Structurally Unsound Viewing Locations

The project sponsor shall ensure that adequate signage at, and shall control or restrict public access to, structurally unsound piers and wharfs including Torpedo Wharf at Crissy Field,

the pier at Fort Mason west of the Municipal Pier, Municipal Pier at Aquatic Park, and other piers determined to be structurally unsound after site investigations during the AC34 events. Signage type and placement shall be coordinated with and approved by the appropriate land authority –NPS or San Francisco Recreation and Park Department. To inform the public, a sign shall be posted at each location informing the public of potential risks associated with use of the structures and prohibiting public access during the AC34 events. Gates or other methods of prohibiting access to structurally unsound viewing locations could be installed if existing facilities are not sufficient to block public access to structurally unsound viewing locations. See also Mitigation Measures M-BI-2 and M-BI-3 regarding signage for biological resources.

Impacts Associated with Implementation of Mitigation Measure M-GE-6. CEQA Section 15126.4 states that "if a mitigation measure would cause one or more significant effects in addition to those that would be caused by the project as proposed, the effects of the mitigation measure shall be discussed but in less detail than the significant effects of the project as proposed." Implementation of **Mitigation Measure M-GE-6** (Signage and Restricted Access at Structurally Unsound Viewing Locations) would include closure of Torpedo Wharf at Crissy Field, the pier at Fort Mason west of the Municipal Pier, Municipal Pier at Aquatic Park, and other piers determined to be structurally unsound. It is likely that on closure days, some recreationists who currently use these areas may instead use other similar regional recreational facilities and shoreline areas, including those described in Section 5.11, Recreation, such as the Presidio, other Crissy Field or Fort Mason areas, as well as other nearby recreation areas such as Golden Gate Park, Baker Beach, and Ocean Beach, resulting in occasional increases in use of other recreational facilities in San Francisco during the AC34 events. However, given the availability of recreational facilities in the region, increased use of regional recreational facilities would not result in substantial physical deterioration of recreational resources, or otherwise result in physical degradation of existing recreational resources, and the impact of this mitigation measure would be less than significant and would not change the conclusions of the recreation impact analysis presented in Section 5.11, Recreation.

James R. Herman Cruise Terminal and Northeast Wharf Plaza

Impact GE-7: Construction and operation of the James R. Herman Cruise Terminal and Northeast Wharf Plaza would not expose people or structures to substantial adverse effects related to fault rupture. (Less than Significant)

As discussed in Section 5.15.1.4, Regional and Faulting Hazards and Section 5.15.2.2, State Regulations, the project area is not located within an Alquist-Priolo Earthquake Fault Zone, and no active or potentially active faults exist within or in the immediate vicinity of the project area. The nearest active fault to the Cruise Terminal project site is the San Andreas fault at approximately 7 miles to the west. Therefore, the potential for surface fault rupture is low, and this impact would be considered *less than significant.*

Mitigation: Not required

Impact GE-8: Construction and operation of the James R. Herman Cruise Terminal and Northeast Wharf Plaza could expose people or structures to substantial adverse effects related to groundshaking. (Less than Significant with Mitigation)

As discussed above for the AC34 facilities, the project area could be subject to considerable groundshaking in the event of a major earthquake, and the estimated peak ground acceleration at the Cruise Terminal project site is 0.47 g. The Working Group on California Earthquake Probabilities has estimated that there is a 63-percent chance that an M_w 6.7 or greater earthquake would occur in the greater Bay Area region by 2036.[38] However, the proposed Cruise Terminal project would not expose people or structures to substantial adverse effects related to groundshaking, as discussed below.

Cruise Terminal Phase 1 Construction

Phase 1 of the cruise terminal construction would be coordinated with the development of the proposed America's Cup Village at Piers 27-29. As described in Impact GE-2, the Pier 27 structure was seismically retrofitted and repaired in 1994 following the Loma Prieta earthquake and found to be in excellent condition in 2000.[39] In addition, the cruise terminal core and shell building constructed as part of the America's Cup Village would be constructed in accordance with the most current Port of San Francisco Building Code, which incorporates the California Building Code seismic design requirements. The Port of San Francisco Building Code specifies definitions of seismic sources and the procedure used to calculate potential seismic forces on structures during groundshaking. With compliance with the Port of San Francisco Building Code, impacts related to groundshaking would be *less than significant* for Phase 1 construction of the cruise terminal.

Cruise Terminal Phase 2 and Northeast Wharf Plaza Construction

As described in Chapter 3, Project Description, the proposed project would include structural and seismic upgrades to the Pier 29 superstructure and repairs to the Pier 29 marginal wharf and Piers 27-29 substructure, if needed. Although these improvements would be constructed in accordance with the most current Port of San Francisco Building Code, impacts related to groundshaking would be *significant* because a site-specific geotechnical investigation has not been conducted to inform the engineering design of the project. The project sponsor would implement a site-specific geotechnical investigation in accordance with Mitigation **Measure M-GE-2** (Site-Specific Geotechnical Investigation), to inform the engineering design of the proposed improvements. Further, the Chief Harbor Engineer, in its review of the building permit application for this structure, would review the building plans and geotechnical reports prepared for the project to confirm that the necessary engineering and design features are included in the project to reduce potential damage to ground shaking and to ensure compliance with all Port of San Francisco Building Code provisions regarding structural safety.

[38] United States Geologic Survey (USGS), The Uniform California Earthquake Rupture Forecast, Version 2 (UCERF 2), by the Working Group on California Earthquake Probabilities, Open File Report 2007-1437, 2008.

[39] McNamara/Salvia, Incorporated, Consulting Engineers, *San Francisco Piers, Piers 27, 29, and 31 Structural Review,* February 28, 2005.

During the remainder of Phase 2, the Port would complete the interior spaces of the cruise terminal (e.g., Customs and Border Protection offices) and install interior building equipment (e.g., screening facilities). Exterior maritime equipment (e.g., mobile gangway, bollards, and fendering) required for cruise terminal operations would also be installed. The Northeast Wharf Plaza would provide an approximately 2½-acre open space at the south end of Pier 27, fronting along The Embarcadero promenade. Hardscaping at the plaza would include pavers, concrete seating/steps, and planters. While these improvements could also be subject to strong groundshaking, they would also be constructed in accordance with the Port of San Francisco Building Code.

With implementation of **Mitigation Measure M-GE-2**, impacts related to groundshaking would be reduced to a *less-than-significant* level for the Phase 2 construction of the cruise terminal.

Mitigation Measure M-GE-2: Site-Specific Geotechnical Investigation (see above)

Impact GE-9: Construction and operation of the James R. Herman Cruise Terminal and Northeast Wharf Plaza could expose people or structures to substantial adverse effects related to liquefaction, lateral spreading, or earthquake-induced settlement. (Less than Significant with Mitigation)

Cruise Terminal Phase 1 Construction

Phase 1 of the cruise terminal construction would be coordinated with the development of the proposed America's Cup Village at Piers 27-29. As described in Impact GE-3, the Pier 27 structure was seismically retrofitted and repaired in 1994 following the Loma Prieta earthquake and found to be in excellent condition in 2000. In addition, the cruise terminal core and shell building constructed as part of the America's Cup Village would be constructed in accordance with the most current Port of San Francisco Building Code, which incorporates the California Building Code seismic design requirements. With compliance with the Port of San Francisco Building Code, impacts related to liquefaction, lateral spreading, or earthquake-induced settlement would be *less than significant* for Phase 1 construction of the cruise terminal.

Cruise Terminal Phase 2 and Northeast Wharf Plaza Construction

As described in Chapter 3, Project Description, the proposed project would include structural and seismic upgrades to the Pier 29 superstructure and repairs to the Pier 29 marginal wharf and Piers 27-29 substructure, if needed. Although these improvements would be constructed in accordance with the most current Port of San Francisco Building Code, impacts related to liquefaction, lateral spreading, and earthquake-induced settlement would be *significant* because a site-specific geotechnical investigation has not been conducted to inform the engineering design of the project. The project sponsor would implement a site-specific geotechnical investigation in accordance with **Mitigation Measure M-GE-2** (Site-Specific Geotechnical Investigation), to inform the engineering design of the proposed improvements. Further, the Chief Harbor Engineer, in its review of the building permit application for this structure, would review the building plans and geotechnical reports prepared for the project to confirm that the necessary engineering and design

features are included in the project to reduce potential damage to structures from liquefaction, earthquake-induced settlement, and lateral displacement, and to ensure compliance with all Port of San Francisco Building Code provisions regarding structural safety.

The remainder of Phase 2 construction of the cruise terminal would be limited to completion of the interior spaces of the cruise terminal with installation of limited exterior maritime equipment, and construction of the Northeast Wharf Plaza would not include any structures intended for human occupancy.

With implementation of **Mitigation Measure M-GE-2** impacts related to liquefaction, lateral spreading, or earthquake-induced settlement would be reduced to a *less-than-significant* level for Phase 2 construction of the cruise terminal.

Mitigation Measure M-GE-2: Site-Specific Geotechnical Investigation (see above)

Impact GE-10: Construction and operation of the James R. Herman Cruise Terminal and Northeast Wharf Plaza would not result in substantial slope instability or expose people or structures to substantial adverse effects related to earthquake-induced landslides. (Less than Significant)

As discussed in Impact GE-4, Piers 27-29 are located along the San Francisco waterfront where the topography is characterized by relatively gentle slopes. As described in Section 5.15.13, Geologic Hazards, this area is mapped as "flatland" by the USGS, and there are no zones of potential earthquake-induced landslides mapped along the waterfront under California's Seismic Hazards Mapping Act of 1990. Further, none of the project-related construction for the cruise terminal or Northeast Wharf Plaza would require substantial excavation that could induce slope instability. Therefore, impacts related to slope failures and earthquake-induced landslides would be *less than significant*.

Mitigation: Not required

Impact GE-11: Construction and operation of the James R. Herman Cruise Terminal and Northeast Wharf Plaza would not result in substantial erosion or loss of topsoil. (No Impact)

Piers 27-29 are located over water and founded on piles. Similar to the AC34 construction discussed in Impact GE-5 the proposed construction for the James R. Herman Cruise Terminal and Northeast Wharf Plaza would require limited, if any, disturbance of surface soils, and therefore would not induce soil erosion or result in the loss of topsoil. Therefore, there would be *no impact* related to soil erosion and loss of topsoil as a result of construction or operation of the proposed cruise terminal and Northeast Wharf Plaza.

Mitigation: Not required

Impact GE-12: The James R. Herman Cruise Terminal and Northeast Wharf Plaza could be located on a geologic unit or soil that is unstable, or that could become unstable as a result of the project. (Less than Significant with Mitigation)

As discussed in Impact GE-6, cruise terminal core and shell building would be constructed as the America's Cup Village. The proposed improvements would be located on the deck of Piers 27-29, which is supported on piles. The proposed structure would replace existing structures that would be demolished to accommodate the new structure and therefore may not represent significant new loading. In addition, as discussed in Impact GE-2, Pier 27 was seismically retrofitted after the Loma Prieta earthquake in 1994, and when inspected in 2000 it was found to be in excellent condition.[40] Construction of the proposed cruise terminal and seismic upgrades to the Pier 29 superstructure, if needed, would be subject to the Port of San Francisco Building Code. In accordance with this code, the static and dynamic loading of the proposed shell would be determined, and the design parameters for the shell, supporting substructures, and piles would be based on a site-specific design-level geotechnical data and submitted to the Port of San Francisco prior to issuance of a building permit. However, impacts related to consolidation settlement would be *significant* because a site-specific geotechnical investigation has not been conducted to inform the engineering design of the project. The project sponsor would implement a site-specific geotechnical investigation in accordance with **Mitigation Measure M-GE-2** (Site-Specific Geotechnical Investigation), to inform the engineering design of the proposed improvements. Further, the Chief Harbor Engineer, in its review of the building permit application for this structure, would review the building plans and geotechnical reports prepared for the project to confirm that the necessary engineering and design features are included in the project to reduce potential damage to structures from consolidation settlement, and to ensure compliance with all Port of San Francisco Building Code provisions regarding structural safety. With implementation of **Mitigation Measure M-GE-2**, impacts related to location on a geologic unit or soil that is unstable, or could become unstable as a result of the project, would be reduced to a *less-than-significant* level.

Mitigation Measure M-GE-2: Site-Specific Geotechnical Investigation (see above)

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[40] McNamara/Salvia, Incorporated, Consulting Engineers, *San Francisco Piers, Piers 27, 29, and 31 Structural Review,* February 28, 2005.

5.15.3.4 Future Long-Term Development Impacts and Mitigation Measures

Impact LT-GE: Future long-term development under the Host Agreement could result in adverse geology and soils impacts. (Less than Significant with Mitigation)

As described in Chapter 3, the 34th America's Cup Host and Venue Agreement (Host Agreement) provides the Event Authority with certain long-term development rights under specified conditions. Although no site-specific development projects or programs have been developed, this EIR analyzes at a conceptual level an assumed type and level of development based on current land use policies and guidelines. Any development projects proposed in the future pursuant to the Host Agreement would be subject to its own separate CEQA review and permitting processes, as applicable. As indicated in Section 5.15.2.3, Local Regulations, above, development of the piers and seawall lots within the Port of San Francisco's jurisdiction, including those subject to long-term development under the Host Agreement, would be subject to the seismic and structural safety requirements of the Port of San Francisco Building Code.

Depending on the specific development proposal, the potential seismic impacts related to groundshaking and liquefaction and impacts related to unstable geologic units would be similar to those described above (Impacts GE-2, GE-3, and GE-6) and are considered *less than significant with mitigation*. Construction in accordance with engineering and design requirements in the Port of San Francisco Building Code and implementation of mitigation measures similar to M-GE-2, Site-Specific Geotechnical Investigation, requiring implementation of a site-specific geotechnical investigation to inform the design of the project would ensure that these impacts are reduced to a *less-than-significant* level. Similar to the discussion of AC34 impacts in Impacts GE-1 and GE-4, the long-term development projects would not be constructed in the vicinity of an active fault, or in an area where landsliding would occur, and impacts related to these topics would be *less than significant.* As for Impact GE-5, the long-term development projects would not likely involve substantial amounts of soil excavation, and impacts related to soil erosion and loss of topsoil would be *less than significant*.

Although specific development plans have not been identified for Sea Wall Lot 330, landside excavation, dewatering, and pile driving at this sea wall lot could induce settlement and subsidence on adjacent properties, a *potentially significant* impact. However, the geotechnical report prepared for this project in accordance with a mitigation measure similar to **Mitigation Measure M-GE-2** (Site-Specific Geotechnical Investigation) would include an evaluation of the potential for these effects to occur and a determination as to whether a lateral movement and settlement survey should be done to monitor any movement or settlement of surrounding buildings and adjacent streets. If a monitoring survey were recommended, the Chief Harbor Engineer could require that a Special Inspector be retained by the project sponsor to perform this monitoring. Groundwater observation wells could be required to monitor potential settlement and subsidence. If, in the judgment of the Special Inspector, unacceptable movement were to occur during construction, groundwater recharge or other corrective actions would be used to halt this settlement. Costs for the survey and any necessary repairs to service lines under the street would be borne by the project sponsor. With implementation of the recommendations of the detailed geotechnical investigation

required by a measure similar to **Mitigation Measure M-GE-2**, subject to review and approval by the Chief Harbor Engineer, and monitoring by a Special Inspector (if required), impacts related to the potential for settlement and subsidence due to construction on soil that is unstable, or could become unstable as a result of the project, would be reduced to a *less-than-significant* level.

Mitigation Measure M-LT-GE: Site Specific Geotechnical Investigation from Long-Term Development on Port Properties

The project sponsor shall conduct a site-specific geotechnical investigation for proposed developments under the direction of a geotechnical engineer prior to any new construction or reuse that would increase the load or otherwise induce settlement on long-term development sites. The investigations shall be performed to evaluate subsurface conditions and existing structural conditions at the site, and shall evaluate the potential for geological and seismic hazards including settlement, ground shaking, ground rupture, liquefaction, subsidence, slope stability, and lateral spreading. Recommendations shall be made regarding the pile and foundation requirements, seawall stability, upgrading existing foundations, seismic design, and mitigation of geologic hazards, and these recommendations shall be included in the project design.

5.15.3.5 Cumulative Impacts

Impact C-GE: The project, in combination with other past, present, and reasonably foreseeable future projects, would not result in significant adverse cumulative impacts related to geology and soils. (Less than Significant)

Although the entire Bay Area is located within a seismically active region with a high risk of seismic hazards and a wide variety of geologic conditions, the geographic scope of potential geology and soils impacts is restricted to the project area and immediate vicinity because related risks are relatively localized or even site-specific.

America's Cup Facilities and Operations

The proposed AC34 project could result in adverse effects related to groundshaking; liquefaction, earthquake-induced settlement, and lateral spreading; and consolidation settlement. Although other projects listed in Table 5.1-1 could also experience these effects, these impacts would be project-specific and no cumulative impact would occur.

While the project could result in increased erosion at secondary viewing locations (see Impact GE-5) and would result in significant impacts related to the use of structurally unsound piers and wharfs (see Impact GE-6), none of the projects listed in Table 5.1-1 would increase the number of visitors using the vantage points or increase the potential use of these structures. Therefore, there would be no cumulative impact related to this topic.

The proposed project would include seismic upgrades to Piers 30-32. These upgrades would improve the seismic safety of the Port of San Francisco facilities, and several of the projects listed in Table 5.1-1 would also include seismic upgrades, thus contributing to this beneficial effect. Because of the project's beneficial effect on long term seismic safety, the AC34 project would not contribute to a cumulative adverse impact.

James R. Herman Cruise Terminal and Northeast Wharf Plaza

The proposed cruise terminal and Northeast Wharf Plaza could result in adverse effects related to groundshaking; liquefaction, earthquake-induced settlement, and lateral spreading; and consolidation settlement. Although other projects listed in Table 5.1-1 could also experience these effects, these impacts would be project-specific and no cumulative impact would occur.

As discussed in Impacts GE-7 through GE-12, construction and operation of the proposed new cruise terminal and Northeast Wharf Plaza would not result in any other adverse effects related to seismicity, geology, or soils. Therefore, the project would not have a cumulatively considerable contribution to any effects related to seismicity, geology, or soils.

Mitigation: Not required

5.16 Hydrology and Water Quality

This section describes the existing hydrology and water quality in the project area, with a focus on San Francisco Bay and the San Francisco waterfront area. Surface water features are discussed, including existing stormwater collection systems and stormwater runoff, water quality, and beneficial uses of surface water features within the project area. Potential areas of flooding and tsunami inundation are also identified. The Setting section is followed by a discussion of the federal, state, and local regulatory framework applicable to construction and implementation of the proposed project. Potential impacts that could result from construction and implementation of the project are then discussed, along with feasible mitigation measures to reduce any potentially significant or significant impacts to a less-than-significant level.

The impact assessment includes an evaluation of water quality issues related to construction activities within or over the Bay and on land, including construction and demolition activities as well as dredging; pile/pier removal, rehabilitation and installation; installation of anchoring systems; installation of floating docks and wave attenuators; and increased usage by private boaters and on land spectators. Impacts of increased flows to the city's combined sewer system are addressed as well as potential impacts related to flooding and tsunami inundation. For the cruise terminal, potential impacts related to increased cruise ship traffic are also addressed. Existing conditions and potential impacts associated with water supply and waste water treatment are addressed in Section 5.12, Utilities and Service Systems. Existing conditions and potential impacts associated with water quality impacts on fisheries and other aquatic species are addressed in Section 5.14, Biological Resources.

5.16.1 Setting

5.16.1.1 Surface Water Hydrology and Stormwater Management

Climate

The Bay Area has a Mediterranean climate, with cool, dry summers and mild, wet winters. The precipitation, wind, and air temperature influence the San Francisco Bay salinity, currents, suspended sediments, waves, and freshwater inflow. Based on meteorological data collected between 1914 and 2010, the mean annual precipitation in San Francisco is approximately 21.1 inches per year with 84 percent occurring between November and March.[1] The mean annual temperature is 63.6 degrees Fahrenheit, with minimum mean monthly temperature occurring in January (45.6 degrees Fahrenheit) and maximum mean monthly temperature occurring during September (69.8 degrees Fahrenheit). Based on National Data Buoy Center data collected between 1982 and 2008, the average water temperature offshore of San Francisco is 54.5 degrees Fahrenheit.[2]

[1] Western Regional Climate Center (WRCC), San Francisco, Mission Dolores, California NCDC 1914-2010 Monthly Climate Summary, www.wrcc.dri.edu/cgi-bin/cliMAIN.pl?ca7772, accessed March 9, 2011.

[2] National Oceanographic and Atmospheric Administration(NOAA) National Data Buoy Center (NDBC), Station 46026 (LLNR 357) – San Francisco - 18NM West of San Francisco, CA, www.ndbc.noaa.gov/station_history.php?station=46026, accessed March 10, 2011.

San Francisco Bay

San Francisco Bay is a large, complex, and highly dynamic estuarine environment that receives saltwater inputs from the Pacific Ocean through the Golden Gate. As the only drainage outlet for waters from the Central Valley, the Bay also receives freshwater inputs from the Sacramento-San Joaquin Delta to the northeast, as well as various other tributary rivers and creeks located around the Bay. Circulation within the Bay is dependent on tides, river flow, winds, runoff, and water depth (bathymetry).

San Francisco Bay is relatively shallow with an average depth of approximately 20 feet and a median depth of approximately seven feet at mean lower low water.[3] Narrow channels, approximately 33 to 66 feet deep, are located in broad expanses on the Bay floor. There are also deeper channel sections near the Golden Gate that are approximately 361 feet deep. Due to the extent of shallow areas, seasonal wind-generated waves resuspend sediments and result in dispersing sediments throughout the Bay.

Because San Francisco Bay is directly connected to the Pacific Ocean (via the Golden Gate), the Bay exhibits a twice-daily tidal cycle. These tidal cycles correspond with two high and two low water levels each day. High and low water levels vary depending on the intensity of the tide, winds, and barometric conditions. The mean tidal range is 4.1 feet. The largest tidal range is generally observed in the spring, and the spring tidal range is 5.8 feet.[4] The mean tide level is about 3.2 feet NAVD88.[5]

Waves along the Bay margins originate locally within San Francisco Bay as well as from the Pacific Ocean. The Pacific Ocean waves are substantially dampened due to transformation processes within San Francisco Bay. Currents in San Francisco Bay result primarily from tidal flows through the Golden Gate and into the southern and northern portions of the Bay and the Sacramento-San Joaquin Delta. The tidal currents primarily result from the changing tides which create a flushing action resulting in an exchange of Bay water with ocean water through the Golden Gate. During rising tidal conditions, currents flow generally east along the northern flank of Treasure Island, and southeast along the eastern and western sides of Treasure and Yerba Buena Islands. Other factors, including freshwater flows from the Delta and Bay watersheds, as well as wind effects, may also contribute to changes in currents. But, even under heavy runoff and wind events, the Bay currents overwhelmingly reflect the tidal cycle.[6]

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[3] San Francisco Bay Regional Water Quality Control Board (RWQCB), *Total Maximum Daily Load for PCBs in San Francisco Bay, Final Staff Report for Proposed Basin Plan Amendment*, www.swrcb.ca.gov/sanfranciscobay/water_issues/programs/TMDLs/sfbaypcbs/Staff_Report.pdf, February 13, 2008.

[4] NOAA, San Francisco Station ID: 9414290 tidal datum, available at: http://tidesandcurrents.noaa.gov/data_menu.shtml?stn=9414290%20San%20Francisco,%20CA&type=Datums,

[5] NAVD88: North American Vertical Datum of 1988. This is a vertical reference point used for land surveying and other purposes. NOAA, National Geodetic Survey, http://www.ngs.noaa.gov/faq.shtml#WhyNAD

[6] SFPORTS, USGS Research Site for SFPORTS, 2009. Available at: http://sfports.wr.usgs.gov/ accessed on October 22, 2009.

San Francisco Bay is subdivided into seven segments: Central Bay, Lower Bay, South Bay, San Pablo Bay, Sacramento- San Joaquin Delta, Suisun Bay, and Carquinez Strait (see **Figure 5-16.1**). Central San Francisco Bay (Central Bay) is the segment that is most influenced by water exchange with the ocean. The 34th America's Cup (AC34) event race course and facilities and the James R. Herman Cruise Terminal and Northeast Wharf Plaza would be located within the western region of the Central Bay.

Project Area along the San Francisco Waterfront

Northern San Francisco and the Bay-side waterfront have been highly modified by urban development, especially along The Embarcadero. This development includes commercial and high-density residential development and high-use roadways. The hydrology of the area is highly modified as a result, and, with the exception of Lobos Creek on the west side of the Presidio, no natural streams occur within these areas.

Stormwater runoff from northern San Francisco and the Bay-side waterfront generally flows into the Port of San Francisco (Port) stormwater collection system, the San Francisco Public Utilities Commission (SFPUC) combined stormwater and sewage system, one of two small separate storm sewer systems administered by the SFPUC, or directly to the Bay. These stormwater collection systems and locations where project activities would occur are described below. **Figure 5.16-2** shows areas in San Francisco served by separate sanitary/storm sewer systems.

Port Stormwater Collection System

The Port of San Francisco manages approximately 7-1/2 miles of San Francisco's waterfront, from Hyde Street Pier on the north to India Basin on the south.[7] The vast majority of the Port is served by separate sanitary and storm drain systems (see Section 5.12, Utilities). The Port operates the storm drain system, a municipal separate storm sewer system (or MS4), in compliance with State Water Resources Control Board (SWRCB) Water Quality Order No. 2003-0005-DWQ, National Pollutant Discharge Elimination System (NPDES) General Permit No. CAS000004, Wastewater Discharge Requirements (WDRs) for Stormwater Discharges from Small Municipal Separate Storm Sewer Systems (Phase II General Permit, discussed in Section 5.16.2.2, State Regulations, below).

SFPUC Combined Sewer System

Freshwater flow to the Bay from San Francisco has been almost entirely diverted to the City's combined sanitary sewer and stormwater system, a system that collects and transports both sanitary sewage and stormwater runoff in the same set of pipes. San Francisco is roughly divided into two major drainages: the eastern and the western basins (see **Figure 5.16-3**). The eastern basin (divided into seven sub-drainage areas) includes the Bayside waterfront of the city, and combined stormwater and wastewater flows from this basin are transported to the Southeast Water Pollution Control Plant (SEWPCP) located on Phelps Street between Jerrold and

[7] Port of San Francisco, *Storm Water Management Plan 2003-2004*, December 2003.

SOURCE: Regional Water Quality Control Board

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Figure 5.16-1
San Francisco Bay Embayments

SOURCE: City of San Francisco

Case No. 2010.0493E: AC34 / Cruise Terminal and Northeast Wharf Plaza (210317)

Figure 5.16-2
Areas in San Francisco Served by
Separate Sanitary/Storm Sewer Systems

SOURCE: City of San Francisco, 2011

Case No. 2010.0493E: AC34 / Cruise Terminal and Northeast Wharf Plaza (210317)

Figure 5.16-3
San Francisco Drainage Basins

Evans Avenues. This plant treats up to 150 million gallons per day (mgd) of wastewater to a secondary level.[8] During dry weather, wastewater flows consist mainly of municipal and industrial sanitary sewage and wastewater and the annual average wastewater flow during dry weather is 63 mgd. The average dry weather design flow capacity of the SEWPCP is 84.5 mgd; therefore all dry weather wastewater flow is treated to a secondary level at the SEWPCP. The treated wastewater is then discharged to the Bay through the deep water outfall at Pier 80, located immediately to the north of the Islais Creek Channel.

During wet weather, the combined sewer and stormwater system collects large volumes of stormwater runoff in addition municipal and industrial sanitary sewage and wastewater, and the combined wastewater and stormwater flow is conveyed to treatment facilities before eventual discharge to the Bay. Depending on the amount of rainfall, wet weather flows are treated to varying levels before discharge to the Bay. Up to 150 mgd of wet weather flows receive secondary treatment at the SEWPCP. The SEWPCP can also treat up to an additional 100 mgd to a primary treatment standard plus disinfection. Treated wet weather discharges of up to 250 mgd from the SEWPCP occur through the Pier 80 outfall directly to the Bay or through the Quint Street outfall to Islais Creek Channel on the south bank of Islais Creek. Only wastewater treated to a secondary level is discharged at the Quint Street outfall.

Up to an additional 150 mgd of wet weather flows receive primary treatment plus disinfection at the North Point Wet Weather Facility, located on the north side of the City at 111 Bay Street, which operates only during wet weather. Treated effluent from this facility is discharged through four deep water outfalls, approximately 800 feet from the Bay shore and 18 feet below mean lower low water. Two of the deep water outfalls terminate at the end of Pier 33 and two terminate at the end of Pier 35 on the northeastern Bay shore.

The combined sewer system includes storage and transport boxes that, during wet weather, retain the combined stormwater and sewage flows that exceed the capacities of the SEWPCP and the North Point Wet Weather Facility for later treatment. When rainfall intensity results in combined flows that exceed the total capacity of the SEWPCP, the North Point Facility, and the storage and transport structures, the excess flows are discharged through 29 combined sewer overflow (CSO) structures located along the City's Bayside waterfront from the Marina Green to Candlestick Point (shown in Figure 5.16-3). Discharges from the CSO structures receive "flow-through treatment," which is similar to primary treatment, to remove settleable solids and floatable materials. Wet weather flows are intermittent throughout the rainy season, and combined sewer overflow events vary in nature and duration depending largely on the intensity of individual rainstorms.

[8] Secondary treatment is the treatment of wastewater or sewage involving removal of organic matter using biological and chemical processes. This is a higher level of treatment than primary treatment, which is removal of floating and settleable solids using physical operations such as screening and sedimentation. Secondary treatment is less intensive than tertiary treatment, in which additional chemical and biological treatment processes are used to remove additional compounds that may be required for discharge or reuse purposes.

The eastern basin is divided into the seven sub-basins indicated in Figure 5.16-3, and the AC34 waterfront venues are all located within the North Shore, Channel, or Islais Creek sub-basins as discussed below. Six CSO structures located along the northern Bay shore discharge overflows from the North Shore subbasin (see **Figure 5.16-4**). These structures are located at Baker, Pierce, Laguna, Beach, Sansome, and Jackson Streets and the North Shore sub-basin is designed for a long-term average of 4 overflow events per year. Nine CSO structures on the east Bay shore discharge overflows from the Channel sub-basin. Two of these structures are located at Howard and Brannan Streets, and seven discharge to Mission Creek. Five CSO structures located along Islais Creek discharge overflows from the Islais Creek subbasin. The Channel and Islais Creek sub-basins are designed for a long-term average of 10 overflow events per year. All discharges from the combined sewer system to the Bay, through either the outfalls or the CSO structures, are operated in compliance with the federal Clean Water Act and the state Porter-Cologne Water Quality Control Act through permits issued by the California Regional Water Quality Control Board, San Francisco Bay Region (RWQCB).

The SFPUC Wastewater Enterprise manages the City's wastewater collection, treatment, and discharge system, and has developed the Sewer System Improvement Plan that identifies capital improvement projects for the City's treatment and collection system that are planned for construction prior to 2040. Prepared over seven years with extensive input from the public, the Sewer System Improvement Plan focuses on providing reliable, efficient, sustainable and environmentally-acceptable operation and management of the sewer system through addressing both critical near-term needs and long-term issues. The plan incorporates adaptations for climate change.

SFPUC Separate Stormwater Collection Systems

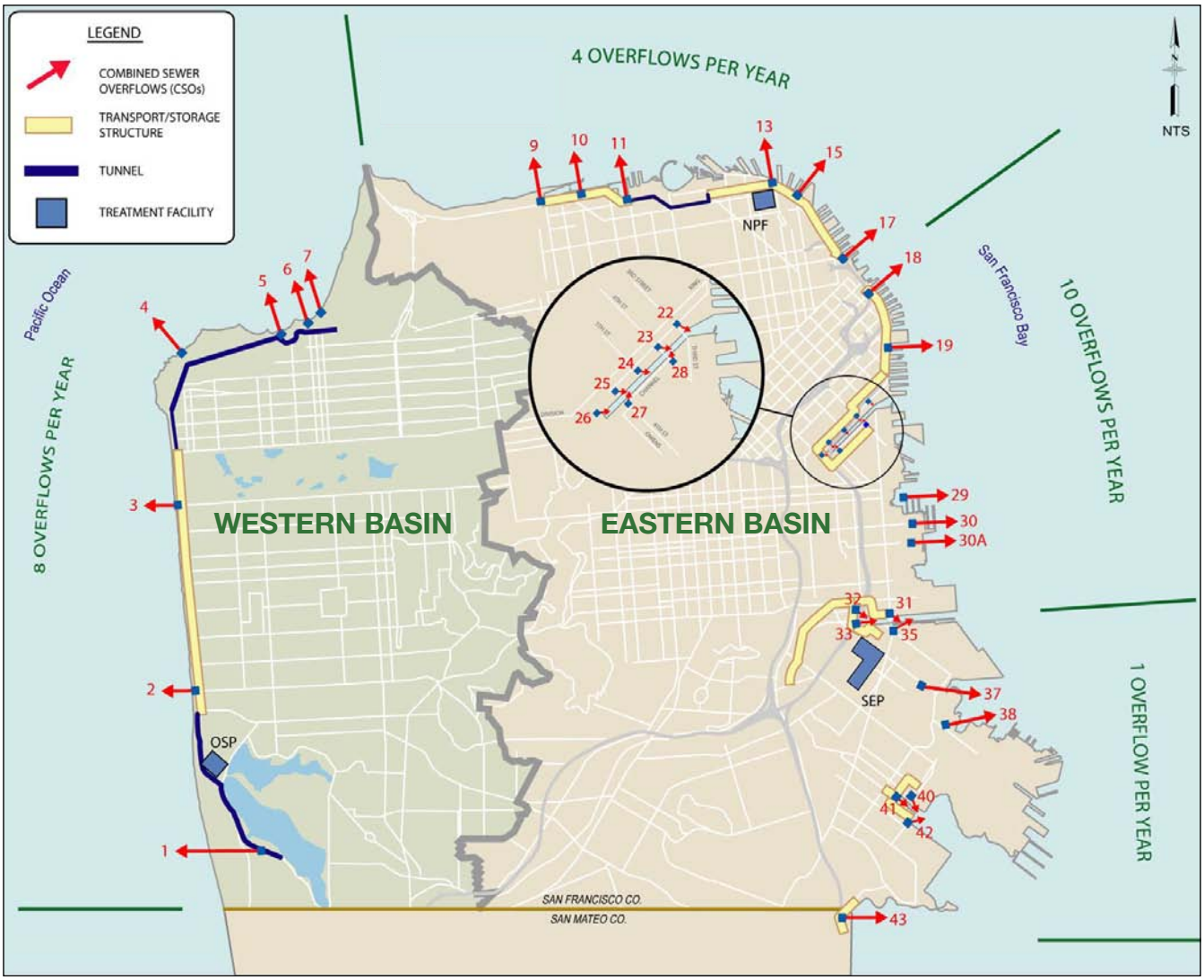
The SFPUC manages several small municipal separate storm sewer system (MS4) facilities within San Francisco, two of which are within the project area. The Small Craft Marina system is located at the San Francisco Marina and the South Beach Harbor system is located at the South Beach Harbor, immediately north of China Basin. These systems consist of catch basins or drop inlets discharging directly to the Bay.[9] The SFPUC operates these systems in compliance with the Phase II General Permit (described in Section 5.16.2.2, State Regulations).

Waterfront Piers and Water Areas (Port Jurisdiction)

Pier 80, located immediately north of Islais Creek Channel, has four separate drainage areas.[10] Area 12 is a paved storage yard that drains via sheet flow to Islais Creek. Area 13 is a commercially developed area with parking lots and roads and is served by a storm drain system that runs along Third Street that drains to Islais Creek. Area 14 includes a parking lot, buildings, and container storage and has a storm drain system that drains to Warm Water Cove. Area 15 is a paved shipping pier that includes warehouses and container storage areas and is served by a

[9] SFPUC, "Stormwater Management Plan Annual Report 2009," 2009

[10] Treadwell and Rollo and Watershed Resources Collaboration Group, "Revised Draft Storm Water Management Study for Port of San Francisco Southern Waterfront, Pier 70 to Pier 96," September 2002.



SOURCE: City of San Francisco, 2011

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Figure 5.16-4

Existing Combined Sewer Outflows in San Francisco

storm drain system that discharges directly to the Bay. In addition, the area west of the entrance to the container terminal at the foot of Cesar Chavez Street drains to the SFPUC's combined sewer system in the Islais Creek sub-basin.[11]

The remaining piers where project-related activities would occur drain directly to the Bay, including Piers 30-32, Piers 26 and 28, Piers 19 and 19 ½, Pier 23, Piers 27-29, and Pier 29 ½. The Brannan Street CSO structure that is part of the SFPUC combined sewer system discharges to the Brannan Street Wharf (Piers 32-36) Open Water Basin and fronts the planned Brannan Street Wharf public open space. Seawall Lot 330, currently operated as a parking lot, is served by the SFPUC combined sewer system, and is located in the Channel subbasin.

In addition to the above locations, project sites include several water areas along the waterfront, including the Brannan Street Wharf (Piers 32-36) Open Water Basin, Piers 28-30 water area, Rincon Point (Piers 14-22 ½) Open Water Basin, Pier 19-23 and Northeast Wharf (Piers 23-27) Open Water Basin, Piers 29-31 water area, and Fort Mason. All of these basins open directly to San Francisco Bay. The Howard Street CSO structure discharges to Bay in the Rincon Point (Piers 14-22 ½) Open Water Basin, the Jackson Street CSO structure discharges to the Bay at Pier 9, and the Sansome Street CSO structure discharges to the Piers 29-31 water area.

Aquatic Park

Aquatic Park, located at the west end of Fisherman's Wharf, extends west of Hyde Street to Fort Mason slightly west of Van Ness Avenue. The Hyde Street Pier is located north of Aquatic Park. Aquatic Park includes green space with benches, trees, and walkways, beach, and terminus of the Powell-Hyde cable car line. This area is situated in the North Shore sub-basin of the SFPUC's combined sewer system, and natural drainage from Aquatic Park flows directly into San Francisco Bay.

San Francisco Marina and Marina Green

Marina Green divides the San Francisco Marina into West Harbor and East Harbor areas. The East Harbor is located immediately west of Fort Mason. Marina Green is a public park that would be used as the Americas Cup Village in 2012 and for hospitality services and spectator viewing in 2013. Temporary berthing facilities would be constructed for the AC34 2012 events. It is located in San Francisco's Marina District, north of Marina Boulevard between Fort Mason on the east and the San Francisco Marina and St. Francis Yacht Club on the west. Marina Green includes approximately 5.6 acres of open grass fields surrounded by wide, paved sidewalks and parking areas to the north, south, and west. There are no surface water features on Marina Green. The San Francisco Marina and Marina Green are located in the North Shore sub-basin of the SFPUC combined sewer system. The Laguna Street CSO outfall structure is located within the East Harbor of the San Francisco Marina and the Pierce Street CSO outfall structure is located within the West Harbor. The Baker Street CSO outfall structure is located immediately west of the West Harbor. The SFPUC also operates the Small Craft Marina separate storm sewer system at the San Francisco Marina and Marina Green.

[11] Port of San Francisco, *Storm Water Management Plan, 2003-2004,* December 2003.

Crissy Field

Crissy Field is located within the Golden Gate National Recreational Area (GGNRA) and immediately west of the San Francisco Marina West Harbor. In 1999, tidal action was introduced into a restored 22-acre tidal marsh at Crissy Field located roughly 2,000 feet west of the entrance to the West Harbor. In May 2001, sand deposition at the inlet channel closed the marsh, and the Crissy Field marsh has continued to close and reopen intermittently since that time.[12] Monitoring studies have estimated that the existing average sand transport rate at Crissy Field is 25,000 cubic yards of sand per year, toward the east.[13] Crissy Field also includes more than 1,000 paved and unpaved parking spaces. Precipitation runoff from Crissy Field flows directly into the tidal marsh or San Francisco Bay.

Project Area Outside of San Francisco

Fort Baker Pier

Fort Baker Pier, adjacent to Horseshoe Bay, is located within the boundary of Fort Baker which is part of the GGNRA. Fort Baker lies within a rectangular watershed covering approximately 0.5 square mile. A stream originally flowed through this watershed and was fed by a series of small tributaries from the adjacent valleys. This streambed was filled during historic development and the drainage was diverted to an underground pipe system that remains today.[14] Over time, a trunk line drainage system was developed to serve the entire developed Fort Baker area. This trunk line system consists of catch basins, pipes, and concrete-lined swales that drain to four major storm drain outfalls along the seawall at Horseshoe Bay. The system does not involve any pumps and is drained entirely by gravity flow.[15]

Additional surface runoff not captured by the stormwater system ultimately discharges to Horseshoe Bay by means of surface runoff or through shallow groundwater in the alluvial fill at the base of the hills. There are no permanent streams or ponds at Fort Baker within the project area.[16] Compacted, unpaved roads and parking areas within the project area function much like impervious surfaces, allowing surface water runoff to behave essentially the same as runoff on paved or roofed surfaces, and the fairly high clay content of the soil in the area further contributes to this condition.

Alcatraz Island

Alcatraz Island is characterized by impervious areas (rock outcrop or historic land use) with steep slopes and low-lying areas that flow directly into the Bay. No significant surface water features exist on the island. In general, Alcatraz Island consists of grassland, historic gardens,

[12] Philip Williams & Associates, Ltd (PWA), Crissy Field Marsh Expansion Study Final Report, www.presidio.gov/TrustManagement/TrustDocuments/EnvironmentalPlans/, March 16, 2004
[13] Moffatt & Nichol Engineering, *San Francisco Marina Renovation Project Breakwater Improvement Study*, 2004.
[14] NPS, *Marin Headlands and Fort Baker Transportation Infrastructure and Management Plan. Final Environmental Impact Statement*, United States Department of the Interior, March 2009, accessed online March 22, 2011 at http://www.projectheadlands.gov/MH_FB%20TIMP%20Final%20EIS_Main%20Document.pdf
[15] Ibid.
[16] Ibid.

cliffs and other barren areas, historic buildings, and paved areas.[17] The hydrologic regime on the majority of Alcatraz Island has been altered by historic land use.

Secondary Viewing Areas

As described in Section 5.1, secondary viewing areas may be used by spectator and visitors to view AC34 events in both 2012 and 2013, but would not be formal AC34 venue locations. These areas have been identified as other GGNRA lands (e.g., within the Presidio or Marin Headlands), the Sausalito waterfront, Angel Island (managed by California State Parks), and Treasure Island/ Yerba Buena Island.

Southeastern Marin County, where the Marin Headlands and Sausalito are located, includes areas with steep slopes and low-lying areas. The drainage from southeastern Marin County primarily flows into Central San Francisco Bay. The Marin Headlands include approximately 3.6 square miles of the Rodeo Valley watershed. One tributary, Gerbode Creek, and a number of intermittent drainages flow into Rodeo Creek and Rodeo Lagoon, ultimately discharging into the Pacific Ocean external to San Francisco Bay. Changes to topography, vegetation, and watercourses, as well as the construction of roads, parking lots, buildings, trails, and other built features (such as coastal artillery batteries, the rifle range, and the parade grounds) have reduced the rates and volumes of surface water drainage within this watershed. The fairly high clay content in the soil further restricts surface water drainage.[18] Ongoing soil erosion from increased surface runoff and the many areas of bare soil roads, parking, and trails is a problem in nearly all developed areas of the watershed.[19]

Angel Island is located within the Central Bay and is characterized by impervious areas (rock outcrop or historic land use) with steep slopes and low-lying areas that flow directly into the Bay. One intermittent stream and two potential wetlands are present within the vicinity of the Immigration Station. However, these areas are not delineated by state or federal agencies as jurisdictional wetlands.

Treasure Island and Yerba Buena Island are also located in the Central Bay and include areas with steep slopes and low-lying areas that flow directly into the Bay. There are no streams or other major surface water features located on the islands.

The topography within the Presidio, located immediately west of Crissy Field, is variable, ranging from the relatively flat coastal plain near sea level along the western and northern shorelines to approximately 400 feet in the south-central hilly uplands. There are three main watersheds within the Presidio: (1) the Lobos Creek watershed, (2) the western coastal watershed, and (3) the San Francisco Bay watershed. The Lobos Creek watershed and the western

[17] National Park Service, *Alcatraz Island Historic Preservation and Safety Construction Program. Final Environmental Impact Statement*, United States Department of the Interior, Golden Gate National Recreation Area, California, 2001, accessed online on March 22, 2011, at: http://www.nps.gov/goga/parkmgmt/proj-alca.htm

[18] Moffatt & Nichol Engineering, *San Francisco Marina Renovation Project Breakwater Improvement Study*, 2004.

[19] NPS, *Marin Headlands and Fort Baker Transportation Infrastructure and Management Plan. Final Environmental Impact Statement*, United States Department of the Interior, March 2009, accessed online March 22, 2011 at http://www.projectheadlands.gov/MH_FB%20TIMP%20Final%20EIS_Main%20Document.pdf

coastal watershed drain to the Pacific Ocean. The San Francisco Bay watershed drains to San Francisco Bay and is comprised of various types of land uses, including open space, residential, commercial, industrial, institutional, and special use (cemeteries and roads). The Tennessee Hollow subwatershed within the San Francisco Bay watershed contains three creek tributaries that drain to the restored wetland at Crissy Field.[20] Open space in the Presidio is generally drained by overland flow and open channels. Natural drainage features within the more developed urban-type areas have been largely eliminated and/or altered by past grading, filling, and construction activities. Most of the drainage from the urban areas now occurs through the Presidio storm drain system in underground pipes and open channels along roads. Much of the system is damaged or of insufficient capacity to accommodate design flows. Unlike most of the City and County of San Francisco, the Presidio operates separate storm water and sanitary sewer systems.[21]

5.16.1.2 Bay Area Marina and Boatyard Facilities

Marina and boatyard facilities[22] typically include some degree of boat maintenance (general mechanical repairs and hull treatments) and fueling activities, as well as sewage and bilge water pumpout facilities and used oil collection facilities that can affect water quality. There are currently many marinas and boatyards along the San Francisco Bay margin in San Francisco, Marin, Alameda, Contra Costa, and San Mateo Counties that could be used during the AC34 2012 and 2013 events, and the location of each of these facilities is shown on Figure HY-1 in Appendix HY.[23] **Figures 5.16-5** and **5.16-6** show the location of San Francisco and Sausalito vicinity marina and boatyard facilities, respectively.

5.16.1.3 Beneficial Uses

The *Water Quality Control Plan for the San Francisco Bay Basin* (Basin Plan) identifies existing beneficial uses, limited beneficial uses, and potential beneficial uses for Bay Area water bodies. The Basin Plan identifies the following existing beneficial uses for the San Francisco Bay, Central Bay: ocean, commercial, and sport fishing; estuarine habitat; industrial service supply; industrial process supply; fish migration; fish spawning; navigation; preservation of rare and endangered species; water contact recreation; non-contact water recreation; shellfish harvesting; and wildlife habitat.[24] No "potential" beneficial uses or "limited" beneficial uses are identified for the Central Bay.

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[20] Baseline, 2004, "Doyle Drive Final hydrology and water resources technical report," prepared by Baseline Environmental Consulting, October 2004.

[21] Ibid.

[22] The term "boatyard", as used here, describes maintenance facilities common to marinas within San Francisco Bay used by small private craft for minor repairs, standard maintenance, and hull treatments. This term does not include reference to large commercial ship building or vessel manufacturing / assembly operations.

[23] The map summarizing marina and boatyard facilities in Figure HY-1 (Appendix HY) characterizes the extent and location of identified marinas and boatyards. While this represents the majority of the available marina facilities, not all marinas are depicted due to lack of information.

[24] San Francisco Bay Regional Water Quality Control Board (RWQCB), 2007. *Water Quality Control Plan for the San Francisco Bay Basin*, (Basin Plan), 2007, www.swrcb.ca.gov/rwqcb2/water_issues/programs/planningtmdls/basinplan/web/docs/BP_all_chapters.pdf, December 31, 2010.

Note: Some marinas excluded due to lack of information or request for anonymity.

SOURCE: California Coastal Commission, 2011

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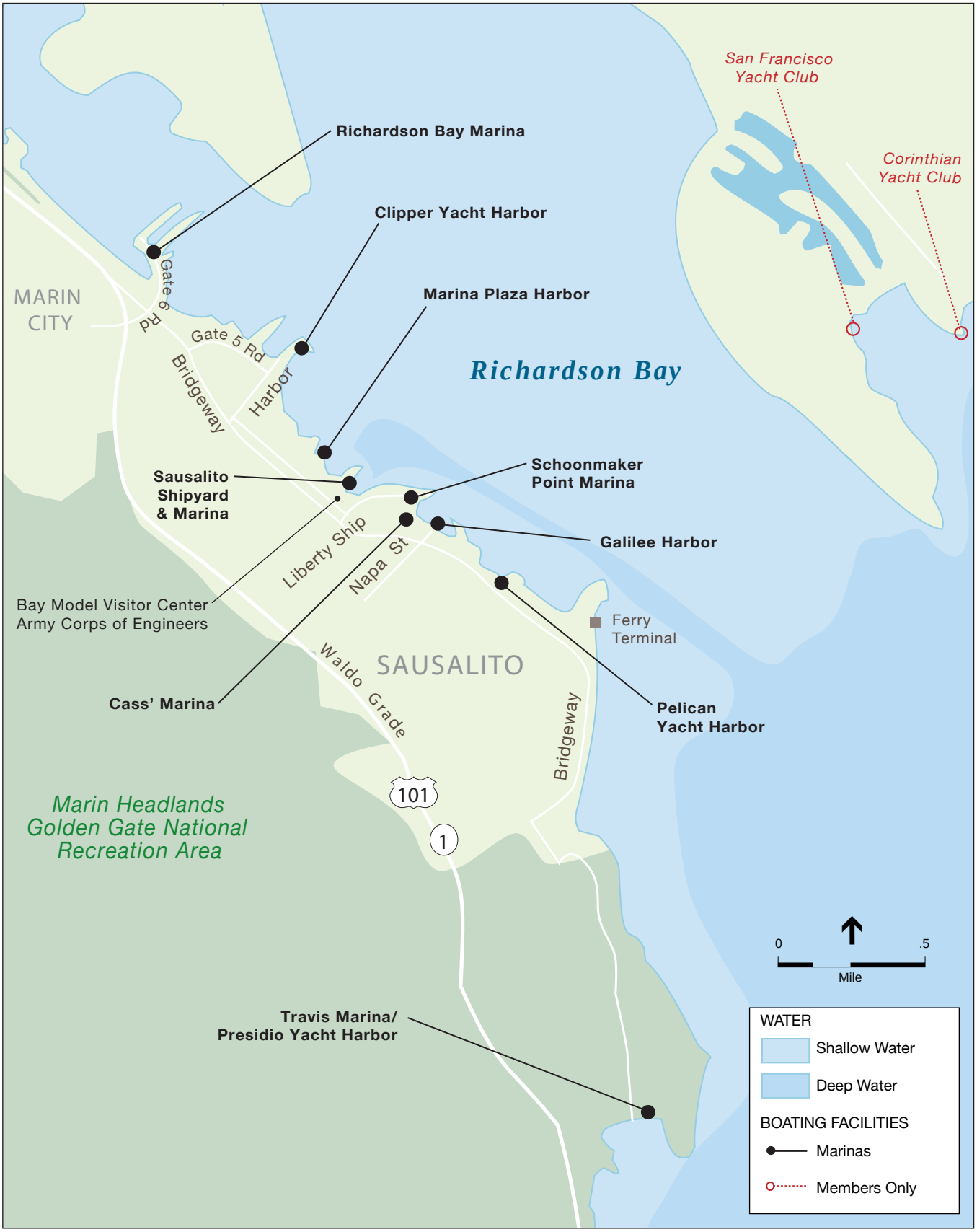
Figure 5.16-5
San Francisco Marinas



Note: Some marinas excluded due to lack of information or request for anonymity.

SOURCE: California Coastal Commission, 2011

Case No. 2010.0493E: AC34 / Cruise Terminal and Northeast Wharf Plaza (210317)

Figure 5.16-6
Sausalito and Vicinity Marinas

5.16.1.4 Water Quality

Central San Francisco Bay

Water quality in the Central Bay is saline and predominated by ocean influences. During periods of significant runoff, however, substantial freshwater migrates through San Pablo Bay and into San Francisco Bay from the Sacraments-San Joaquin River system. This inundation of freshwater can temporarily reduce the salinity of waters in the project vicinity to substantially less than ocean water.[25] Additionally, tidal currents influence circulation, flushing action, and water exchange within the Bay, thereby affecting sedimentation and water quality characteristics. Various contaminants are transported into San Francisco Bay by an assortment of sources including urban uses, industrial outfalls, municipal wastewater outfalls, municipal stormwater, upstream farming, upstream historic and current mining discharges, legacy pollutants,[26] and various other pollutant sources.

Suspended sediments and turbidity are a key component of the estuarine system, and these terms are often used interchangeably. Turbidity refers to a number of different suspended particulates including plankton and sediments. Suspended sediments refer to the actual sediment component in the water column. Most near shore environments, and estuaries in particular, tend to have higher levels of turbidity or suspended sediment loads due to discharges from rivers, drainages and the relative shallow nature of the environment.

Several groups, including the San Francisco Estuary Institute (SFEI) and the U.S. Geological Survey (USGS), have monitored suspended sediment loads throughout the San Francisco Bay for many years and found that suspended sediment concentrations in San Francisco Bay tend to be extremely variable and strongly correlated to season and water depth.[27,28,29] Suspended sediment concentrations can range from well over 1,000 milligrams per liter (mg/L) near the bottom, to as little as 10 mg/L in near surface measurements.[30] Water depths along the San Francisco waterfront and piers are relatively shallow water and suspended sediment loads are strongly influenced by nearshore discharges and wind- and wave-generated sediment disruption; they will likely be similar to the higher sediment concentrations typically found near the bottom of the Bay or in other shallow environments.

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25 Bay Institute, The Bay Institute Ecological Scorecard, San Francisco Bay Water Quality Index, October 17, 2003, available at http://www.bay.org/assets/Water_Quality.pdf. accessed on March 25,2011.

26 Legacy pollutants are water quality constituents that are considered harmful to human health or the environment, that were historically emitted by industry or other human activities, and that are in general banned or significantly restricted from current usage. Examples include mercury, lead, PCBs, and DDT.

27 Buchanan and Ganju, Summary of Suspended-Sediment Concentration Data, San Francisco Bay, California Water Year 2004: U.S. Geological Survey Data Series 226, 49p,. 2006.

28 Buchanan and Ganju, Summary of Suspended-Sediment Concentration Data, San Francisco Bay, California Water Year 2003: U.S. Geological Survey Data Series 113, 46p., 2005.

29 McKee, Ganju, Schoelhamer, Estimates of suspended sediment entering San Francisco Bay from the Sacramento and San Joaquin Delta, San Francisco Bay California. Journal of Hydrology 323, pages 325-352, 2006.

30 Buchanan and Ganju, Summary of Suspended-Sediment Concentration Data, San Francisco Bay, California Water Year 2004: U.S. Geological Survey Data Series 226, 49p., 2006.

Pollutants are introduced into Central San Francisco Bay primarily through runoff, combined sewer overflows, stormwater discharges, spills and leaks, and remobilization of contaminants from sediment into the overlying water column. The RWQCB listed the Central Bay, which includes the project area, as an impaired water body. Under Section 303(d) of the Clean Water Act (discussed in Section 5.16.2, Regulatory Framework, below), impaired waters are defined as those that do not meet water quality standards, even after point sources of pollution have implemented pollution control technology. The pollutants listed for the Central Bay include chlordane, dichlorodiphenyltrichloroethane (DDT), dieldrin, dioxin compounds, exotic species, furan compounds, mercury, polychlorinated biphenyls (PCBs), and selenium.[31] Pollutant levels vary seasonally and annually, dependent upon their specific source and degradation characteristics. Contaminants, such as ammonia, copper, and legacy pesticides, have decreased over recent years due to cleanup efforts and natural attenuation.[32,33] Exotic species, also referred to as introduced, non-indigenous, alien, non-native, or invasive species, in the Central Bay are discussed in Section 5.14.4, Marine Biological Resources, and a list of known invasive marine and estuarine species is included in Appendix BI, Table BI-3.

The Regional Monitoring Program (RMP) for Water Quality in the San Francisco Estuary has collected water quality data for San Francisco Bay and provided reports annually. The annual monitoring in 2009 included the analysis of conventional water quality parameters (ammonia, conductivity, dissolved oxygen, organic carbon, silicates, hardness, nitrate, nitrite, pH, phosphate, salinity, temperature, suspended solids, phaeophytin, and chlorophyll); trace elements (arsenic, cadmium, cobalt, copper, iron, lead, manganese, mercury, methylmercury, nickel, selenium, silver, and zinc); trace organics (including polychlorinated biphenyls; polybrominated diphenyl ethers;[34] pesticides; dioxins and furans; and perflourinated compounds[35]); and toxicity.[36]

Waters in San Francisco Bay are generally well oxygenated with typical concentrations of dissolved oxygen ranging from 9 to 10 mg/L during high periods of river flow, 7 to 9 mg/L during moderate river flow, and 6 to 9 mg/L during the late summer months when flows are lowest.[37] San Francisco Bay waters are typically high in dissolved oxygen and well oxygenated. In areas with anoxic sediments, disruption of the sediments can decrease dissolve oxygen levels.

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31 San Francisco Bay Regional Water Quality Control Board, 2006 *CWA 303(d) List of Water Quality Segments Requiring TMDLs,* approved by the United States Environmental Protection Agency on June 28, 2007.

32 San Francisco Estuary Institute (SFEI), Regional Monitoring Program for Water Quality in the San Francisco Estuary. The Pulse of the Estuary, Monitoring and Managing Water Quality in the San Francisco Bay, September 2010, available at http://www.sfei.org/sites/default/files/RMP_No618_2010_PulseOfTheEstuary_final4web.pdf, accessed on March 28, 2011.

33 Bay Institute, The Bay Institute Ecological Scorecard, San Francisco Bay Water Quality Index, October 17, 2003, available at http://www.bay.org/assets/Water_Quality.pdf, accessed on March 25, 2011.

34 Polybrominated diphenylethers are a class of chemicals used as a flame retardant.

35 Perfluorinated compounds are a family of fluorine-containing chemicals with unique properties to make materials stain- and stick-resistant.

36 San Francisco Estuary Institute, 2009 RMP Annual Monitoring Results: The Regional Monitoring Program for Water Quality in the San Francisco Estuary (RMP), 2011

37 San Francisco Estuary Institute (SFEI), "Effects of Short-term Water Quality Impacts Due to Dredging and Disposal on Sensitive Fish Species in San Francisco Bay," SFEI Contribution 560, San Francisco Estuary Institute, Oakland, California, 2008.

Approximately 800 million gallons of wastewater carrying 60 tons of nitrogen enters the San Francisco Bay annually.[38] Until the 1980s, nutrient enrichment was a major problem to the San Francisco Bay estuary. Prior to the 1980s, concentrations of ammonia and nitrogen in Bay waters were in excess of 15 mg/L. This level of enrichment led to algal blooms and anoxic conditions in portions of the Bay with poor water circulation, including large portions of the South Bay. Improvements in wastewater treatment caused a large decrease in nutrient loads entering the estuary. Concentrations today are less than 3 mg/L and no anoxic conditions are being recorded.[39]

Other Impaired Water Bodies in the Project Area

Other water bodies within the project area that are identified as impaired water bodies under Section 303(d) of the Clean Water Act include Crissy Field Beach, Islais Creek, and Mission Creek (at China Basin). Crissy Field Beach is listed for bacteria; Islais Creek is listed for ammonia and hydrogen sulfide; Mission Creek is listed for ammonia, hydrogen sulfide, and polycyclic aromatic hydrocarbons.

5.16.1.5 Sediment Quality

Sediment accretes or accumulates as a result of natural sediment inflows from rivers, creeks, surface runoff, and, especially, from re-settlement of sediment suspended in Bay waters by natural processes (i.e., tidal action and wind). San Francisco waterfront sediments generally consist of Younger Bay Mud[40] and unconsolidated (loose) sediment. The sediments within the jurisdiction of the Port of San Francisco have been regularly dredged under the Port's maintenance dredging program since the mid-1980s to provide the necessary depth for commercial vessel docking and maneuvering. As part of its maintenance dredging program, the Port has performed sediment sampling and testing at various locations along the San Francisco waterfront to characterize the sediments for disposal purposes. The results of the sampling that has occurred at project sites where dredging would occur are discussed below. The data are presented to provide a summary of historic sediment quality; however, these data may not be representative of existing sediment quality and additional sampling would be required to establish existing sediment quality prior to any dredging activities.

Piers 30-32, Brannan Street Wharf (Piers 32-36) Open Water Basin and Piers 28-30 Water Area

Piers 30-32 as well as the Pier 28-30 water area and Brannan Street Wharf (Piers 32-36) Open Water Basin are proposed for use as the AC34 team base and as berthing facilities for both support boats and private vessels, requiring dredging of the Brannan Street Wharf (Piers 32-36) Open Water Basin to increase depths in the Open Water Basin and pile installation work as well

[38] United States Geological Survey (USGS), San Francisco Bay Program: Lessons learned for Managing Coastal Water Resources, 2011, available online at http://water.usgs.gov/wid/html/sfb.html, accessed on March 25, 2011.
[39] Ibid.
[40] San Francisco Planning Department, San Francisco Cruise Terminal Mixed-Use Project and Brannan Street Wharf Project. Draft Supplemental Environmental Impact Report. State Clearinghouse No.:1994123007, 2001.

as wave attenuators. Sediments at these locations consist of Younger Bay Mud, characterized as mostly soft, fine-textured, dark-colored sediments with a high silt and clay content.[41]

The sediments at Piers 30-32 have been dredged periodically since the 1970s. In 1998, sediments were sampled at 12 locations along the northern berth of Piers 30-32. The 12 samples were combined into four composite samples comprised of three point samples, and each composite sample was subjected to chemical tests and a bioassay test to determine toxicity potential. Results indicated that metal concentrations in the Piers 30-32 sediments were comparable to those in reference sediments, which are indicative of "background" conditions. Organic compounds, including polynuclear aromatic hydrocarbons were elevated in the Piers 30-32 sediments compared to reference sediments. Solid-phase bioassay tests indicated no toxicity.[42] The detected chemical concentrations were similar to concentrations previously approved for dredged material disposal at the Alcatraz disposal site, within the Bay.

The Piers 28-30 water area, immediately north of and adjacent to Piers 30-32, and Brannan Street Wharf (Piers 32-36) Open Water Basin immediately to the south of and adjacent to Piers 30-32 would require dredging to increase depths in the water basins. The Port has not conducted maintenance dredging for these basins, but sediment quality is likely similar to that in the vicinity of Piers 30-32.

Northeast Wharf (Piers 23-27) Open Water Basin

Geotechnical analysis of sediments in the water basin between Piers 29 and 31 indicates that the bottom material consists of 60 to 70 feet of Young Bay Mud near the Northeast Wharf (Piers 23-27) Open Water Basin. Pier 27 has been periodically dredged as part of the Port's maintenance dredging program since the mid-1980s to provide the necessary depth for commercial vessel docking and maneuvering. Based on this dredging activity, sediments in the vicinity of Pier 27 consist of clays and silts.[43] Sediment testing by the Port in support of the 1998 dredging activity included sampling at eight locations adjacent to Pier 27. Two composite samples comprised of four point samples were subjected to chemical and bioassay tests to determine toxicity potential. Results indicated that some metal concentrations in the Pier 27 sediments, including tributyltin,[44] were detected at slightly elevated levels relative to those in reference sediments from near Alcatraz Island. Organic compounds, including polychlorinated biphenyls, pesticides, total recoverable petroleum hydrocarbons, and phthalates[45] were not detected. Polynuclear aromatic hydrocarbons were detected at a maximum total concentration of 3,776 microgram per kilogram (μg/kg). Total sulfide concentrations were elevated compared to reference sediments. Bioassay

41 Ibid.
42 Ibid.
43 Advanced Biological Testing (ABT), *Results of Chemical, Physical and Bioassay Testing of Sediments for Potential Dredging at Piers 30 and 32*, San Francisco, California, prepared for the Port of San Francisco, August 10, 1998.
44 Tributyltin is an organometallic compound that was historically used as an antifouling agent in marine paints and is considered moderately toxic by the U.S. Environmental Protection Agency. These paints are now regulated under the Organotin Antifouling Paint Control Act of 1988, which sets guidelines on the amount and rate of tributyltin compounds leaching from marine paints into the aquatic environment.
45 Phthalates are a family of chemical compounds manufactured primarily to make plastics flexible. Low concentrations of phthalates detected in the sediment samples were attributed to laboratory contamination.

tests indicated a low to moderate potential for toxicity from the disposal of this material at the Alcatraz disposal site, although the material met the criteria for disposal at this site.

Additionally, the Port performed sediment sampling and testing at three locations in the basin between Piers 29 and 31 (in the vicinity of Piers 27-29) in 1991 as part of its maintenance dredging program.[46] One composite sample was collected and subjected to chemical analysis and bioassay tests to determine toxicity potential. Results indicated that some metal concentrations, as well as total sulfide, total organic carbon, and oil and grease concentration in the basin sediments were detected at slightly elevated levels relative to those in reference sediments from a location near Alcatraz Island.[47] Polychlorinated biphenyls and phenols were not detected. Polynuclear aromatic hydrocarbons were detected at concentration of 5,334 μg/kg. The pesticide DDT was detected at 0.01 milligram per kilogram (mg/kg). Bioassay tests conducted on the composite sample indicated that the basin sediments had a lower toxicity than the reference sample and met the criteria for disposal at the Alcatraz disposal site.

Chemical and biological results have been similar for four sampling events conducted in 2006, 2008, 2009, and 2010. For these events, the sediments at Pier 27 were found to be suitable for unconfined aquatic disposal at either the Alcatraz disposal site or the San Francisco Deep Ocean disposal site.[48]

5.16.1.6 Flooding, Seiche, and Tsunami

Flooding

The Federal Emergency Management Agency (FEMA) is preparing Flood Insurance Rate Maps (FIRMs) for the City and County of San Francisco (CCSF) for the first time.[49] FIRMs identify areas that are subject to inundation during a flood having a 1-percent chance of occurrence in a given year (also known as a "base flood," "100-year flood," or "1 percent annual chance flood"). FEMA refers to the flood plain as an area that is at risk from a flood of this magnitude as a special flood hazard area.

As proposed, the FIRM would designate portions of waterfront piers, Mission Bay, Bayview Hunters Point, Hunters Point Shipyard, Candlestick Point, and Treasure Island as Zone A (special hazard flood areas with no wave hazard or waves less than three feet in height) or Zone V (special hazard flood areas subject to the additional hazards associated with storm-

46 ToxScan, Inc., *Chemical Analyses and Toxicity Evaluation of Dredge Sediment from San Francisco Bay*, August 1991.
47 Alcatraz is the approved disposal site under the existing U.S. Army Corps of Engineers maintenance dredging permit.
48 Science Applications International Corporation, *Final Sampling and Analysis Plan, Characterization of Sediments at Berth 27, Dredging Episode No. 19*, February 2011.
49 In September 2007, FEMA issued a preliminary FIRM of San Francisco for review and comment by the City. The City submitted comments that year, and FEMA anticipates publishing a revised preliminary FIRM by 2012, after completing a more detailed analysis of flood hazards associated with San Francisco Bay as requested by Port and City staff. FEMA will finalize the FIRM and publish it for flood insurance and floodplain management purposes after reviewing comments and appeals related to the revised preliminary FIRM.

induced waves).[50] The CCSF has requested changes to the preliminary FIRM, including removal of the special flood hazard area from Pier 41 to Pier 50, including the Port piers, wharf structures, and landside improvements protected by these structures.[51] The basis for this request is that the deck heights of most of these structures are above the elevation of FEMA-determined wave heights, the structures are structurally sufficient to withstand the effects of wave action, and the landside improvements are protected from flooding by the existing seawall and breakwaters. Subsequently, FEMA agreed to delay publication of a final FIRM until after a more detailed analysis of flood hazards is completed, provided that the City agreed to join the National Flood Insurance Program in the meantime.[52]

FEMA approved San Francisco's application for participation in the National Flood Insurance Program in April 2010, meaning that homeowners, renters, and business owners in the city are now eligible to purchase federally subsidized flood insurance to protect their property. The City Administrator's Office and the San Francisco Department of Emergency Management are also working to identify potential hazard mitigation projects for that may be eligible for grants from FEMA.

Pending completion of the federal FIRM for San Francisco, the City has created an Interim Floodplain Map that identifies areas of flooding within the city limits, and does not include Piers 41 to 50 in a special hazard flood area. Special flood hazard zones identified on the San Francisco Interim Floodplain Map are shown in **Figure 5.16-7**, along with special flood hazard zones mapped by FEMA in southern Marin County. As shown in Figure 5.16-7, most of the San Francisco waterfront from the Golden Gate Bridge to the Aquatic Park could be subject to flooding, including most of Crissy Field. Waterfront flooding could also occur along the southern waterfront from approximately Pier 50 to Islais Creek at the southern end of the project area, as well as points farther south. The Fort Baker Pier is also located near a special flood hazard zone identified by FEMA.

Seiche and Tsunami

Tsunamis (seismic sea waves) are long period waves that are typically caused by underwater seismic disturbances, volcanic eruptions, or submerged landslides. Tsunamis, which travel at speeds up to 700 miles per hour, are typically only 1 to 3 feet high in open ocean water but may increase in height to up to 90 feet as they reach coastal areas, causing potentially large amounts of damage when they reach land.[53] Low-lying coastal areas such as tidal flats, marshlands, and former Bay margins that have been artificially filled but are still at or near sea level are generally the most susceptible to tsunami inundation.

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50 City and County of San Francisco, Office of the City Administrator, San Francisco Floodplain Management Program Fact Sheet, January 25, 2011, sfgsa.org/Modules/ShowDocument.aspx?documentid=7520, accessed March 16, 2011.

51 City and County of San Francisco, Office of the City Administrator, letter to Mr. Eric Simmons, CFM, National Flood Insurance Program, September 21, 2007 Preliminary Flood Insurance Rate Map, Comments from the City and County of San Francisco. December 21, 2007

52 Port of San Francisco, Memo from Monique Moyer, Executive Director, to Members of the Port Commission, *Informational Presentation Regarding the National Flood Insurance Program*, June 4, 2008.

53 URS Corporation, *City and County of San Francisco Hazard Mitigation Plan*, www.sfdem.org/ftp/uploadedfiles/DEM/PlansReports/HazardMitigationPlan.pdf, December, 2008.

A seiche is caused by oscillation of the surface of an enclosed body of water such as the San Francisco Bay due to an earthquake or large wind event. Seiches can result in long-period waves that cause run-up or overtopping of adjacent landmasses, similar to tsunami runup.

Since 1850, more than 50 tsunamis have been recorded or observed in San Francisco Bay. Nine of these tsunamis originated in Alaska and were caused by an earthquake, earthquake and landslide, or volcano and earthquake. Only one tsunami has been recorded as originating along the Central California coast: a 4-inch runup that was recorded at the Presidio gauge station shortly after the 1906 earthquake. In March 2011, a tsunami originating in Japan caused a swell of approximately two feet in San Francisco Bay.[54]

In 2009, the California Geological Survey, California Emergency Management Agency, and the Tsunami Research Center at the University of California completed the State's official tsunami inundation maps. Based on this mapping, the majority of the project area is located in an area identified for potential inundation in the event of a tsunami or seiche (see **Figure 5.16-8**). The potential tsunami and seiche runup varies from approximately six feet near Pier 80 to approximately 14 feet near Crissy Field.[55] In the Pier 27 area, the potential runup is approximately 10 feet and at Marina Green, the potential runup is approximately 12 feet. The earthquake that hit Japan in March 2011 initiated a tsunami that traveled for 10 hours before reaching the California coast.[56] When the tsunami warning was issued, coastal county offices of emergency services were able to use the state's official tsunami inundation maps to focus their response.

The National Oceanic and Atmospheric Administration (NOAA) operates the Tsunami Warning System with centers located in Hawaii and Alaska. The state National Warning System provides warnings to the West Coast (including California) and Alaska. These warning centers are linked to the Advanced National Seismic System that monitors earthquakes in the United States, to the international seismic monitoring systems, and to a system of tide gauges and buoys. The California Integrated Seismic Network also provides information regarding the magnitude and location of California earthquakes and a quick link to the NOAA/West Coast and Alaska Tsunami Warning Center. Based on the level of threat, a Tsunami Advisory, Watch, or Warning would be issued. In San Francisco, occupants would be notified of the advisory, watch, or warning via the Outdoor Public Warning System, notification of the local media, public address systems, and the Alert SF public notification system. The notification would include instructions for walking to higher ground or evacuating and for obtaining basic services such as shelter, food, water, and medical services. Once the area is deemed safe for reentry, an all-clear public safety message would be broadcast.

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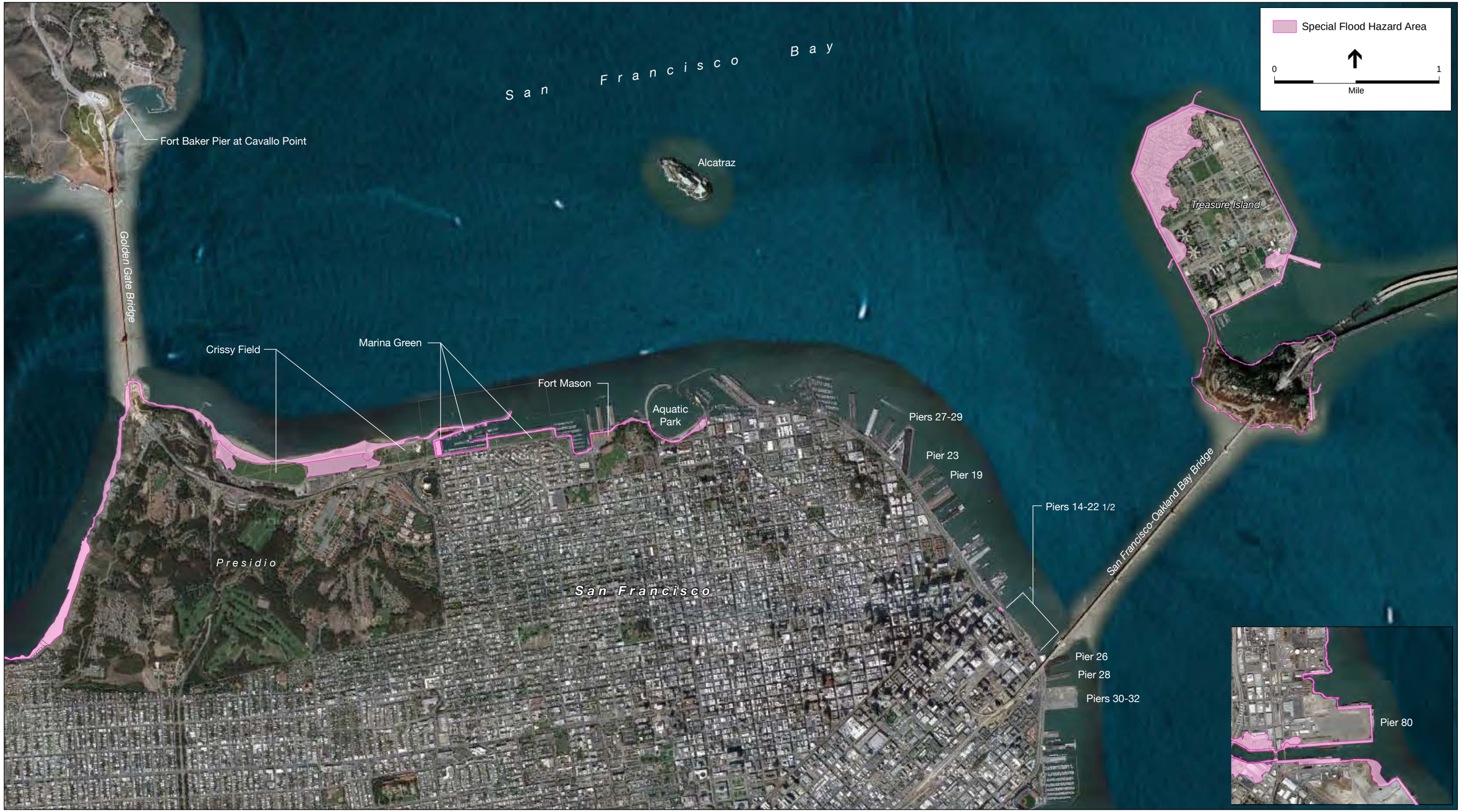
54 NOAA/West Coast and Alaska Tsunami Warning Center (TWC), NOAA/West Coast and Alaska TWC Tsunami Observations and Forecasts for the U.S. West Coast, British Columbia, and Alaska, 11 March 2011, Japan Tsunami, http://wcatwc.arh.noaa.gov/obs/obs.php, March 13, 2011.

55 City and County of San Francisco (CCSF), *Emergency Response Plan, Tsunami Response Annex*, www.sfdem.org/Modules/ShowDocument.aspx?documentid=1115, March 2011.

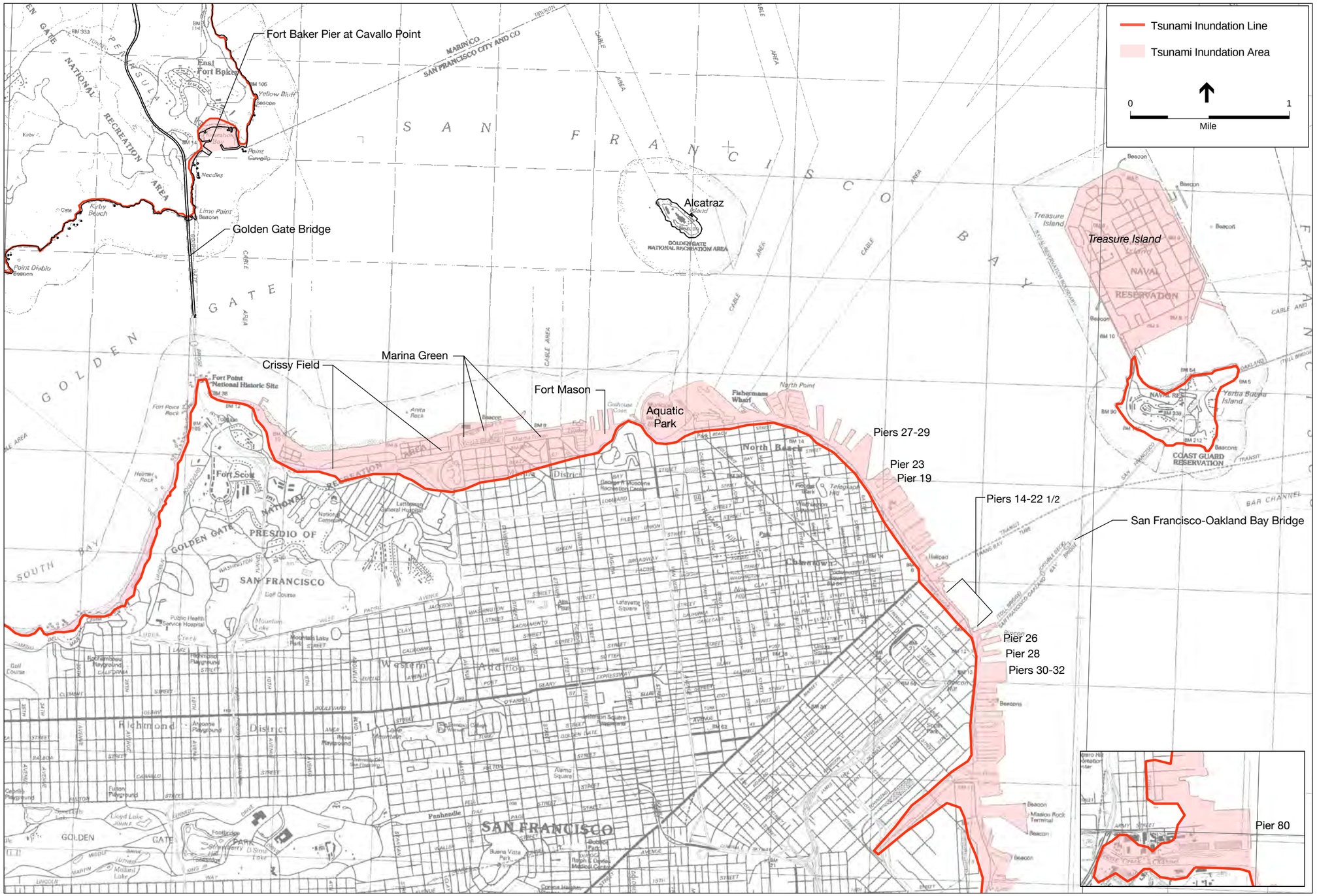
56 California Geological Survey (CGS), CGS Tsunami website, www.conservation.ca.gov/cgs/geologic_hazards/Tsunami/Inundation_Maps/Pages/Index.aspx accessed March 24, 2011.



SOURCE: Google Maps; U.S. FEMA; City of San Francisco, 2008

Case No. 2010.0493E: AC34 / Cruise Terminal and Northeast Wharf Plaza (210317)

Figure 5.16-7
Floodplain Map



SOURCE: California Emergency Management Agency, California Geological Survey, University of Southern California, City of San Francisco, 2009

Case No. 2010.0493E: AC34 / Cruise Terminal and Northeast Wharf Plaza (210317)

Figure 5.16-8
Tsunami Inundation Map

The Tsunami Warning System takes an average of 7 to 10 minutes to identify a tsunami threat and communicate it to the media and state warning systems. The initial notification is based on seismic data. However, distant source events may provide up to 3 hours or more of warning, while local-source events have less than 60 minutes lead time. During this time, the initial notification is normally updated once additional information is available, at least every 30 minutes. The status of an advisory, watch, or warning can be upgraded, downgraded, or the impact area expanded based on the new information.

Future Flooding Risks

Globally, sea level has been rising for the past 10,000 years since the end of the last glacial epoch,[57] and the global rate of sea level over the past 5,000 years has averaged roughly 0.0039 feet per year.[58] However, there is evidence that the rate of sea level rise is accelerating on both a global and local scale due to ocean warming (thermal expansion), continental ice melt, increases in temperature, and land elevation changes.[59] The most common explanation for the increased rate of sea level rise is an increase in global temperatures associated with emission of greenhouse gases.[60] From 1961 to 2003, the global rate of sea level rise was about 0.0059 feet per year.[61] Based on the San Francisco NOAA tide gage monthly mean sea level data from 1887 to 2006, the current average rate of sea level rise in the Bay Area is 0.0066 feet per year at the San Francisco tide station.[62]

The rising sea level increases the potential for future coastal flooding and is an important issue in the planning of development in coastal areas. California Executive Order S-13-08, signed on November 14, 2008, addresses statewide consistency in planning for sea level rise. This Executive Order is implemented by the California Resources Agency and calls for the completion of a Sea Level Rise Assessment Report, the consideration of sea level rise scenarios for the years 2050 and 2100 by state agencies, and development of a Climate Adaptation Strategy. Pursuant to this executive order, the DWR along with four other California state agencies, the states of Oregon and Washington, and three federal agencies have engaged with the National Research Council to prepare the Sea Level Rise Assessment Report, and completion of this report is expected by 2012.[63] The report will advise how California should plan future sea level rise, and will provide estimated values or a range of values for sea level rise along the West Coast for the years 2030, 2050, and 2100.

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57 Gornitz, V., Sea Level Rise, After the Ice Melted and Today. Goddard Institute for Space Studies Science Briefs, www.giss.nasa.gov/research/briefs/gornitz_09/, January 2007.

58 Association of Bay Area Governments (ABAG), *Status and Trends Report on Land Use and Population. The Geomorphology, Climate, Land Use and Population Patterns in the San Francisco Bay, Delta and Central Valley Drainage Basins*, February 1991.

59 Intergovernmental Panel on Climate Change (IPCC), *Fourth Assessment Report, Climate Change 2007: Synthesis Report*, available online at www.ipcc.ch/pdf/assessment-report/ar4/syr/ar4_syr.pdf, 2007.

60 Stanford SOLAR Center, *Global Warming*, solar-center.stanford.edu/sun-on-earth/glob-warm.html, accessed March 25, 2011.

61 Intergovernmental Panel on Climate Change (IPCC), Fourth Assessment Report, Climate Change 2007: Synthesis Report, available online at: www.ipcc.ch/pdf/assessment-report/ar4/syr/ar4_syr.pdf, 2007

62 National Oceanic and Atmospheric Administration (NOAA), NOAA Tides and Currents. *Mean Sea Level Trend 9414290 San Francisco, California*, tidesandcurrents.noaa.gov/sltrends/sltrends_station.shtml?stnid=9414290, accessed March 25, 2011.

63 Department of Water Resources, California (DWR), Climate Change Characterization and Analysis in California Water Resources Planning Studies, www.water.ca.gov/climatechange/docs/DWR_CCCStudy_FinalReport_Dec23.pdf, December 2010.

Pursuant to Executive Order S-13-08, the Sea-Level Rise Task Force of the Coastal and Ocean Working Group of the California Climate Action Team[64] published an interim guidance document to inform and assist state agencies as they develop approaches for incorporating sea level rise into their planning processes prior to publication of the Sea Level Rise Assessment Report.[65] The guidance document, titled *State of California Sea-Level Rise Interim Guidance Document*, provides information and recommendations that will enhance consistency across agencies in the development of approaches to sea level rise. In this guidance, the Sea-Level Rise Task Force has agreed to use the ranges of sea level rise presented in the December 2009 Proceedings of the National Academy of Sciences as a starting place, using the year 2000 as a baseline. Until 2050 there is generally good agreement in the amount of projected sea level rise among the various climate models assessed, but after 2050, projections of sea level rise become less certain because modeling results diverge and there are differences in estimations of the degree that the international community will decrease greenhouse gas emissions. Further, the guidelines recommend that analysis of sea level rise should consider the future mean sea level combined with the effects of tides and storm surge.

Consistent with the December 2009 Proceedings of the National Academy of Sciences, the State Coastal Conservancy and State Lands Commission have adopted, and the Governor of California's Delta Vision Blue Ribbon Task Force Independent Science Board has recommended a projected sea level rise of 55 inches (4.6 feet) by 2100 for planning purposes. The State Coastal Conservancy and the State Lands Commission have also adopted a policy of using 16 inches (1.3 feet) of sea level rise by 2050. The interim guidance document notes that the rate of sea level rise is projected to accelerate over time, with approximately 28-inches (2.3 feet) of rise between the years of 2070 and 2100.

Working through the Climate Action Team, the California Natural Resources Agency published the *2009 California Climate Adaptation Strategy* in 2009.[66] The report summarizes the best known science on climate change impacts in the state to assess vulnerability and proposes a comprehensive set of recommendations designed to inform and guide California decision makers as they begin to develop policies that will protect the state, its residents and its resources from a range of climate change impacts. On March 11, 2011, the California Ocean Protection Council adopted the *Resolution of the California Protection Council on Sea Level Rise*, resolving that state agencies, as well as non-state entities implementing projects funded by the state or on state-owned property, follow the interim guidance document and guiding principals of the adaptation strategy, as well as new guidance developed by the Climate Action Team. The resolution also

[64] The Climate Action Team (CAT) was formed pursuant to Executive Order S-3-05 and is made up of representatives from the California Environmental Protection Agency; Business, Transportation and Housing Agency; Department of Food and Agriculture; California Resources Agency; Air Resources Board; California Energy Commission; and Public Utilities Commission as well as numerous other Boards and Departments. The CAT members work to coordinate statewide efforts to implement global warming emission reduction programs and the state's Climate Adaptation Strategy. The CAT is also responsible for reporting on the progress made toward meeting the statewide greenhouse gas (GHG) targets that were established in the executive order and further defined under the Global Warming Solutions Act of 2006 (Assembly Bill 32).

[65] Sea-Level Rise Task Force of the Coastal and Ocean Working Group of the California Climate Action Team, *State of California Sea-Level Rise Interim Guidance Document*, October, 2010.

[66] California Natural Resources Agency, *2009 California Climate Adaptation Strategy, A Report to the Governor of the State of California in Response to Executive Order S-13-2008*, 2009

resolves that the analysis of sea level rise should consider the highest sea level values presented latest guidance of the Climate Action Team, and that these entities should coordinate with one another when selecting the value of sea level rise to use. A project or program should use a consistent value for sea level rise.

The State Lands Commission published a staff report in 2009 addressing the impacts of sea level rise on lands under jurisdiction of the commission.[67] This report, titled *A Report on Sea Level Rise Preparedness, Staff Report to the California State Lands Commission*, confirmed that major grantees and lessees of land under the jurisdiction of the State Lands Commission are just beginning to address the issue of sea level rise and included numerous recommendations for addressing sea level rise. These recommendations include:

- giving careful consideration of the effects of sea level rise;
- inventorying existing leases to identify improvements/infrastructure vulnerable to projected sea level rises of 16 inches and 55 inches;
- revising the lease application form to require applicants to indicate how they plan to address sea level rise and what adaptation strategies are planned during the projected life of the project;
- amending the lease application package to require that all coastal development projects consider the implications of and include adaptation strategies for projected sea level rises of 16 inches and 55 inches, depending on the projected life expectancy of the project;
- recommending project modifications that would eliminate or reduce potentially adverse impacts from sea level rise, including adverse impacts on public access;
- adopting engineering design standards, where authorized, requiring major facilities to withstand a defined storm event such as a 100-year flood event, taking into account sea level rise over the life of the project;
- including a provision in future leases requiring lessees to comply with any provisions or standards that may be adopted by any regulatory agency that addresses sea level rise.
- evaluating structures (such as wharves, docks, levees, breakwaters, piers, seawalls, and flood control structures) subject to the ocean environment for structural integrity and potential hazards as sea levels rise; sending proposed changes to the Commission's Application Package addressing sea level rise to all grantees for their consideration and use.

State Lands Commission staff will make recommendations regarding the appropriate sea level rise estimates that should be accommodated by new developments on lands under the jurisdiction of the commission based on the Sea Level Rise Assessment Report being prepared in accordance with Executive Order S-13-08.

[67] California State Lands Commission, *A Report on Sea Level Rise Preparedness, Staff Report to the California State Lands Commission*, December 2009.

Subsequent to the State Lands Commission 2009 staff report, the Port conducted a detailed study of potential flooding of Port properties north of Pier 64 in 2011. The report used a base year of 2010, and evaluated potential flooding with a sea level rise of 15-inches by the year 2050 and 55-inches by the year 2100.[68] Areas that would be inundated by flooding associated with a 15-inch sea level rise and a 55-inch sea level rise are shown in **Figure 5.16-9**. While portions of the waterfront could be inundated by flooding under a 15-inch sea level rise, all of the project area along the San Francisco Bay waterfront would be inundated with a 55-inch sea level rise. When wave runup is added, total water levels would be approximately 1.0 to 1.6 feet higher with a 15-inch rise in sea level and approximately 4.4 to 5.0 feet higher with a 55-inch sea level rise, even with the effects of breakwaters considered.

5.16.2 Regulatory Framework

5.16.2.1 Federal Regulations

Clean Water Act – Water Quality

In 1972, the Clean Water Act (CWA) established the basic structure for regulating discharges of pollutants into the waters of the U.S. and gave the U.S. Environmental Protection Agency (U.S. EPA) the authority to implement pollution control programs such as setting wastewater standards for industries. The CWA sets water quality standards for contaminants in surface waters. The statute employs a variety of regulatory and non-regulatory tools to reduce direct pollutant discharges into waterways, to finance municipal wastewater treatment facilities, and to manage polluted runoff. The U.S. EPA has delegated responsibility for implementation of portions of the CWA, including water quality control planning and programs, in California to the State Water Resources Control Board and the nine RWQCBs. Water quality standards applicable to the project are listed in the *Water Quality Control Plan for the San Francisco Bay Basin* (Basin Plan), discussed further below under State Regulations.

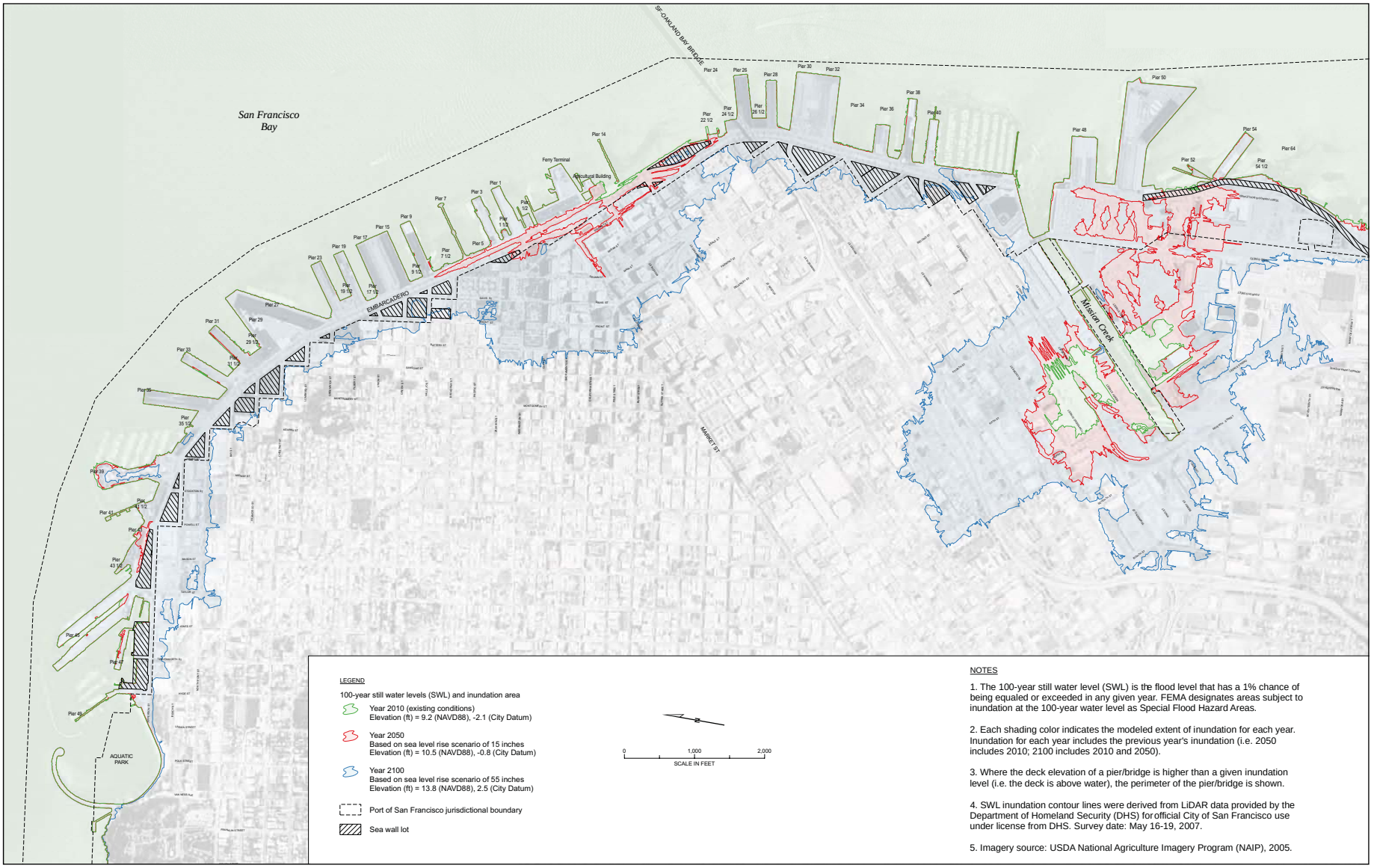
Section 303(d) and Total Maximum Daily Loads

In accordance with Section 303(d) of the Clean Water Act, states must present the U.S. EPA with a list of "impaired water bodies," defined as those water bodies that do not meet water quality standards. The CWA requires the development of total maximum daily loads (TMDLs), to improve water quality of impaired water bodies. Implementation of this program in the project area is conducted by the San Francisco Bay RWQCB and is discussed in Section 5.16.2.2, State Regulations, below.

Section 401

Section 401 of the CWA requires compliance with state water quality standards for actions within state waters. Compliance with the water quality standards required under Section 401 is a condition for issuance of a Section 404 permit (see below). Under Section 401 of the CWA, every

[68] URS Corporation, *Sea Level Rise and Adaptation Study Coastal Inundation Report,* prepared for Port of San Francisco, May 11, 2011.



SOURCE: URS Coastal Inundation Report

Case No. 2010.0493E: AC34 / Cruise Terminal and Northeast Wharf Plaza (210317)

Figure 5.16-9
Sea Level Rise

applicant for a federal permit or license for any activity that may result in a discharge to a water body must obtain a State Water Quality Certification that the proposed activity will comply with state water quality standards.

Section 402

Section 402 of the CWA authorizes the U.S.EPA to establish a nationwide surface water discharge permit program for municipal and industrial point sources known as the NPDES program. Under Section 402, the San Francisco Bay RWQCB has set standard conditions for each permittee in the Bay Area, including effluent limitation and monitoring programs. The proposed project would be subject to NPDES permits listed in Section 5.16.2.2, State Regulations, below.

Section 404

Under Section 404 of the Clean Water Act, a Department of the Army permit must be obtained from the United States Army Corps of Engineers (Corps) for the discharge of dredged or fill material into waters of the United States, including wetlands. The Corps reviews applications for permits in accordance with Section 404 guidelines, which have been established by the Corps and U.S. EPA. The guidelines require that "no discharge of dredged or fill materials shall be permitted if there is a practicable alternative to the proposed discharge which would have less adverse impact on the aquatic ecosystem, so long as the alternative doesn't have other significant adverse environmental consequences". The Corps must also determine that the project is not contrary to the public interest (33 CFR 323.6).

An alternatives analysis must be prepared and submitted to U.S. EPA and the Corps in partial compliance with U.S. EPA's Section 404(b)(1) guidelines (40 CFR 230.10[a], [b],and [d]). To issue a permit under Section 404, the Corps must ensure that any discharge will not violate the state's water quality standards. Therefore, in California, the proponent of any activity that may result in a discharge to a surface water of the United States must obtain water quality certification or a waiver of certification from SWRCB (pursuant to Section 401 of the Clean Water Act).

The dredging activities under the proposed project would be subject to CWA Section 404 permit conditions. See below in Section 5.16.2.2, State Regulations, under Dredging Activities, for further discussion.

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 Corps. Examples of activities requiring a permit from the Corps 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. The City would be required to obtain a permit under Section 10 of the Rivers and Harbors Act from the Corps to conduct any work within its jurisdiction.

Federal Combined Sewer Overflow Control Policy

In 1994, the U.S. EPA adopted the Combined Sewer Overflow Control Policy (CSO Control Policy), which became part of the CWA in December 2000. This policy establishes a consistent national approach for controlling discharges from combined sewers to the nation's waters. Using the NPDES permit program, the permittee is required to implement the following nine minimum controls that constitute the technology-based requirements of the CWA and can reduce the frequency of CSOs and their effects on receiving water quality:

1. Conduct proper operation and regular maintenance programs for the combined sewer system and CSO outfalls;
2. Maximize the use of the collection system for storage;
3. Review and modify pretreatment programs to ensure that CSO impacts are minimized;
4. Maximize flow to the treatment plant for treatment;
5. Prohibit CSOs during dry weather;
6. Control solids and floatable materials in CSOs;
7. Develop and implement pollution prevention programs that focus on contaminant reduction activities;
8. Notify the public; and
9. Monitor to effectively characterize CSO impacts and the efficacy of CSO controls.

The City is currently implementing these controls as required by the CSO Control Policy. This includes development of a Water Pollution Prevention Program that focuses on minimizing pollutants entering the City's combined sewer system and addresses pollutants from residential, commercial, industrial, and nonpoint pollutant sources.

During the second phase, the permittee is required to continue implementation of the nine minimum controls, properly operate and maintain the completed CSO controls in accordance with the operational plan, and implement the post-construction monitoring program. In conformance with the CSO Control Policy, the City has developed a long-term control plan to select CSO controls to comply with water quality criteria and to protect the beneficial uses of the receiving waters. The plan uses the presumptive approach for the protection of water quality. In accordance with the CSO Control Policy, this approach must meet one of these criteria:

- An average of four CSO events per year;
- Elimination or capture no less than 85 percent by volume of the combined sewage collected in the combined sewer system during precipitation events on a system-wide average basis; or
- Removal of the mass of any contaminant causing water quality impairment that would be otherwise removed by eliminating or capturing the flow as specified above.

The CSO Control Policy requires that any CSOs that occur after implementation of the nine minimum control measures should receive a minimum of primary clarification (removal of floatables and settleable solids), solids and floatable disposal, and disinfection (if necessary to meet water quality standards and protect the beneficial uses of the receiving water). The San Francisco Wastewater Control Program exceeds the specifications of the presumptive approach because 100 percent of the combined sewer flows are captured and treated rather than the required 85 percent. As defined in the CSO Control Policy, San Francisco has no remaining untreated overflow events because the overflows that occur in San Francisco currently receive the equivalent of primary treatment within the storage/transport boxes, consisting of removal of floatables and settleable solids.

The City is currently in full compliance with the CSO Control Policy. In 1997, the City completed construction of a 20-year, $1.6 billion Wastewater Master Plan that included extensive storage, transport and treatment upgrades to the combined sewer system that meet approved design criteria for overall protection of beneficial uses. Operation and implementation of these facilities satisfies the CSO Control Policy, including maximizing use of the system during wet weather.

Coastal Zone Management Act

The Coastal Zone Management Act (CZMA) of 1972, as amended, provides for management of the nation's coastal resources, including the Great Lakes, and balances economic development with environmental conservation. In 1990, Congress passed the Coastal Zone Act Reauthorization Amendments (CZARA) to address nonpoint source pollution problems in coastal waters. The California Coastal Commission has jurisdiction for CZMA implementation throughout the state except within the San Francisco Bay-Delta where BCDC has authority for implementation of the CZMA within its jurisdictional area.

Section 6217 of CZARA and Section 319 of the CWA require California and 28 other states to develop coastal nonpoint source pollution control programs that incorporate required management measures to reduce or prevent polluted runoff to coastal waters from specific sources. Management measures are defined in Section 6217 of the CZARA as economically achievable measures to control the addition of pollutants to coastal waters, which reflect the greatest degree of pollutant reduction achievable through the application of the best available nonpoint pollution control practices, technologies, processes, siting criteria, operating methods, or other alternatives.[69] These management measures are incorporated by states into their coastal nonpoint source pollution programs. Application of the prescribed management measures ensures the best possible siting for marinas, as well as the best available design and construction practices and appropriate operation and maintenance practices, for reduction of nonpoint source pollution from marinas and recreational boating.[70] Section 5.16.2.2, State Regulations, addresses application of this regulation at the state level.

[69] EPA, Management Measures for Marinas and Recreational Boating, 2011, accessed online on April 7, 2011, at http://www.epa.gov/owow/NPS/MMGI/Chapter5/ch5-1.html

[70] Ibid.

Executive Order 11988 and National Flood Insurance Program

Under Executive Order 11988, FEMA is responsible for management of floodplain areas defined as the lowland and relatively flat areas adjoining inland and coastal waters subject to a one percent or greater chance of flooding in any given year. Also, FEMA administers the National Flood Insurance Program, which requires that local governments covered by federal flood insurance pass and enforce a floodplain management ordinance that specifies minimum requirements for any construction within the one percent annual chance flood zone. FEMA prepares FIRMs that are used to identify areas prone to flooding.

Federal Boating Regulations

Under the proposed project, domestic and international vessels would visit the Bay, and these vessels are potential sources of pollutants such as plastic, trash, fuel, oil, and ballast water. Federal regulations that address these pollutants are described below. The U.S. Coast Guard has primary oversight responsibility for implementing domestic laws and international conventions applicable to vessels and generally conducts quarterly inspections of all ships operating in U.S. waters. The U.S. Coast Guard Marine Safety Office or local marine patrols also assist enforcing these laws as it is infeasible for the U.S. Coast Guard to catch every violation.[71] The Cruise Lines International Association (CLIA), which most cruise lines belong to, also adopted a set of "Cruise Industry Waste Management Practices and Procedures" in 2001 incorporating legal and voluntary practices for waste minimization, waste reuse and recycling, and waste stream management on the part of the cruise ship industry.[72] The standards were revised in 2006 and are designed to meet or exceed legal requirements and acceptance of these standards is mandatory for membership in the CLIA. To address waste handling, the CLIA member lines have agreed that hazardous wastes and waste streams onboard cruise vessels will be identified and segregated for individual handling and management in accordance with applicable laws and regulations. They have further agreed that hazards wastes will not be discharged to the environment, nor mingled or mixed with other waste streams. The CLIA members have also agreed to meet or exceed the international requirements for removing oil from bilge and wastewater prior to discharge, eliminate (to the maximum extent possible) plastics and other garbage into the environment, and implement water management strategies to minimize the use of fresh water.

International Convention for the Prevention of Pollution from Ships (MARPOL)

Title 33 of the Code of Federal Regulations, Chapter 33, addresses prevention of pollution from ships and implements certain provisions of the International Convention for the Prevention of Pollution from Ships (MARPOL). The MARPOL convention is the international treaty that regulates disposal of wastes generated by normal operation of vessels, with 88 participating countries. In the United States, this treaty is implemented by the Act to Prevent Pollution from

[71] California Department of Boating and Waterways and California Coastal Commission, "Environmental Boating Laws Every Recreational Boater Should Know," December 2010, accessed online March 31, 2011 at http://www.coastal.ca.gov/ccbn/EnvironmentalLawsBrochure.pdf.

[72] Cruise Lines International Association, CLIA Industry Standard, Cruise Industry Waste Management Practices and Procedures, November 12, 2006.

Ships. The treaty applies to all United States flagged ships anywhere in the world and to all foreign flagged vessels operating in the navigable waters of the United States or while at a United States port. The treaty addresses discharges of oil, noxious liquids, harmful substances, and garbage (including plastics). Annex IV of the MARPOL convention (Prevention of Pollution by Sewage from Ships) addresses discharge of sewage from ships. Annex V of MARPOL prohibits dumping plastic into the water anywhere and restricts dumping of other forms of garbage within specified distance from the shore. Annex V restrictions apply to all ocean-going-vessels, recreational and commercial. The Safety of Life at Sea Convention is an international convention concerning maritime safety with provisions applicable to passenger ships, and includes an environmental protection component to prevent marine pollution. The U.S. Coast Guard is the enforcement agency for the MARPOL convention within the Exclusive Economic Zone of the U.S., which extends 200 miles from shore.

Cruise Ship Discharges

The U.S. EPA prepared the Cruise Ship Discharge Assessment Report[73] in response to a petition received from the Bluewater Network. Following publication, the Assistant Administrator for the U.S. EPA Office of Water signed the *Federal Register* notice of availability of the *Assessment Report*, thereby concluding EPA's response to the Bluewater Network petition.[74] The Assessment Report assesses five primary cruise ship waste streams: sewage, graywater, oily bilge water, solid waste, and hazardous waste. For each waste stream, the Assessment Report discusses: (1) the nature and volume of the waste stream generated; (2) existing federal regulations applicable to the waste stream; (3) environmental management, including treatment, of the waste stream; (4) potential adverse environmental impacts of the waste stream; (5) actions by the federal government to address the waste stream; and (6) a wide range of options and alternatives that address the waste stream from cruise ships.

Federal Refuse Act

The Federal Refuse Act (1899 33 USC 407) prohibits the discharge or deposition of any refuse matter of any kind into United States waters. Refuse includes: garbage, trash, oil and other liquid pollutants.[75] The U.S. Coast Guard has enforcement authority over vessels within U.S. waters.

Federal Ocean Dumping Act

Under the Federal Ocean Dumping Act (33 USC 1401, et seq.) it is illegal to dump any material transported from a location outside the United States (1) into the territorial sea of the United States, or (2) into a zone contiguous to the territorial sea of the United States to the extent that it

[73] U.S. EPA, *Cruise Ship Discharge Assessment Report*, U.S. EPA Oceans and Coastal Protection Division, Office of Wetlands, Oceans, and Watersheds, December 29, 2008.
[74] Federal Register: January 6, 2009 (Volume 74, Number 3), *Cruise Ship Discharge Assessment Report*, accessed at http://www.epa.gov/fedrgstr/EPA-WATER/2009/January/Day-06/w31453.htm, April 20, 2011.
[75] California Department of Boating and Waterways and California Coastal Commission, "Environmental Boating Laws Every Recreational Boater Should Know," December 2010, accessed online at http://www.coastal.ca.gov/ccbn/EnvironmentalLawsBrochure.pdf, March 31, 2011.

may affect the territorial sea or the territory of the United States.[76] The U.S. Coast Guard has enforcement authority over vessels within U.S. waters.

Marine Plastic Pollution Research and Control Act

Under the Marine Plastic Pollution Research and Control Act (33 CFR 151.59), operators of vessels 26 feet or longer on federal waters must display a Garbage Disposal Placard in a prominent location, where the crew and the passengers can read it. The Garbage Disposal Placard is a durable sign at least 4 x 9 inches that notifies passengers and crew about discharge restrictions.[77,78]

Additionally, vessels 40 feet and longer that operate beyond 3 nautical miles from shore must not only display the aforementioned placard but must also prepare and carry a written Waste Management Plan describing the procedures for collecting, processing, storing and properly disposing of garbage in a way that will not violate the MARPOL convention requirements (described above). The plan must designate a person responsible for implementing it, and needs to contain a minimum of three elements: (1) name of the vessel; (2) the person in charge of implementing the plan, and (3) a short description on how the boater is planning to deal with the waste (33 CFR 151.57).

Clean Water Act – Boating

Sections 301 and 402. Sections 301 and 402 of the CWA establish permit requirements for discharge of pollutants from point sources such as vessels, although the U.S. EPA regulations specify that NPDES permits are not required for any discharge of sewage from vessels; effluent from properly functioning marine engines, laundry, shower, and galley sink wastes; or any other discharge incidental to the normal operation of a vessel.

Section 311. Under Section 311 of the CWA, the discharge of fuel, oil, oily wastes, and hazardous substances is prohibited into or upon the navigable waters of the United States or the waters of the contiguous zone if such discharge causes a film or sheen upon, or discoloration of the surface of the water, or causes a sludge or emulsion beneath the surface of the water. Violators are liable for the cost of the clean up and are also subject to substantial civil penalties and/or criminal sanctions, including fines and imprisonment for unlawful discharges. If a discharge occurs, the responsible party must control the source of the discharge, prevent further discharges, halt or slow the spread of the discharge, and remove as much of the substance as possible using mechanical means such as containment booms, vacuum trucks and absorbents. The responsible party is also required to pay for the costs incurred in connection with the discharge. Oil and chemicals spills need to be reported to both the National Response Center and the State (33 USC 1321 [b][5]).

76 Ibid.
77 Ibid.
78 BoatEd, Official California Boating Course, Chapter 4: The Legal Requirements of Boating Waste, Oil, and Trash Disposal in California and Federal Waters, 2011, accessed online at http://www.boat-ed.com/ca/course/p4-13_wastedischarge.htm, March 31, 2011.

Section 311 of the CWA also requires that all boats 26 feet or longer display an oily waste discharge placard in the engine compartment or near fuel pumping stations that notifies passengers and crew about discharge restrictions. The use of soaps or other dispersing agents to dissipate and/or mask oil on the water or in the bilge is prohibited. Soaps emulsify oil, therefore, dispersing hydrocarbons through the water column and can be harmful to marine animals and bottom sediments (33 CFR 153.305).[79]

Section 312. Section 312 of the CWA establishes effluent standards for marine sanitation devices (MSDs), i.e., on-board sewage treatment equipment, and also identifies procedures for establishing "no discharge" zones for vessel sewage. This section prohibits the discharge of untreated sewage anywhere within the 3-mile territorial limit (including lakes, rivers, reservoirs or coastal water within 3 miles of shore) or even treated sewage into any designated No Discharge Zone. This section of the CWA is implemented jointly by the U.S. Coast Guard and the U.S. EPA.

There are three types of MSDs that can be required under the CWA. Type III MSDs are typically installed on smaller recreational vessels. They consist of holding tanks or portable toilets that require only a small storage space to hold the waste until it can be discharged on shore into a local sewage treatment facility via pumpout facilities.[80] Type I and II MSDs are typically found on large vessels. In these devices, the waste is treated with chemicals to kill bacteria before the waste is discharged.[81]

For Type I MSDs the fecal coliform count in the effluent must be no greater than 1,000 per 100 milliliters of water and the effluent must have no visible floating solids. For a Type II MSD, the fecal coliform count must be no greater than 200 per 100 milliliters and suspended solids no greater than 150 milligrams per liter (33 CFR Part 159). Both types of systems must have a U.S. Coast Guard certification label.[82] A state or local peace officer who reasonably suspects that a vessel is discharging sewage in an area where the discharge is prohibited may board the vessel, if the owner or operator is aboard, for the purpose of inspecting the MSD for proper operation and placing a dye tablet in the holding tank.[83]

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79 California Department of Boating and Waterways and California Coastal Commission, "Environmental Boating Laws Every Recreational Boater Should Know," December 2010, accessed online at http://www.coastal.ca.gov/ccbn/EnvironmentalLawsBrochure.pdf, March 31, 2011.

80 BoatEd, Official California Boating Course, Chapter 4: The Legal Requirements of Boating Waste, Oil, and Trash Disposal in California and Federal Waters, 2011, accessed online at http://www.boat-ed.com/ca/course/p4-13_wastedischarge.htm, March 31, 2011.

81 Ibid.

82 California Department of Boating and Waterways and California Coastal Commission, "Environmental Boating Laws Every Recreational Boater Should Know," December 2010, accessed online at http://www.coastal.ca.gov/ccbn/EnvironmentalLawsBrochure.pdf, March 31, 2011.

83 Ibid.

Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) and the Organotin Antifouling Paint Control Act (OAPCA)

In accordance with the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA, United States Code, Title 7, Section 136 et seq.) pesticides[84] must be registered and licensed with the U.S. EPA before distribution, sale, and use. Before the U.S. EPA registers a pesticide under FIFRA, the applicant must show, among other things that using the pesticide according to specifications "will not generally cause unreasonable adverse effects on the environment." FIFRA defines the term "unreasonable adverse effects on the environment" to include any unreasonable risk to humans or the environment, taking into account the economic, social, and environmental costs and benefits of the use of any pesticide. All pesticides must be used in a manner consistent with the associated label information. Such usage guidelines are non-discretionary, and failure to use the herbicide products in a manner consistent with product labeling is a violation of federal law under FIFRA.

Tributyltin (TBT) is a biocide component of antifouling paint used to control marine organisms that can foul[85] the hulls of vessels. TBT from the antifouling paint can slowly leach into the water and accumulate in harbors and surface waters, causing adverse effects on water quality and aquatic organisms.[86] The sale of TBT is governed by two statutes: FIFRA and the Organotin Antifouling Paint Control Act (OAPCA). FIFRA requires registration of all pesticides sold or distributed in the United States. In order to register a product, the manufacturer of the product must show that the product can be used without causing "unreasonable adverse effects on the environment." The OAPCA bans the application of antifouling paint containing organotin[87] to vessels less than 25 meters in length, but does not prevent the application of paint containing organotin to the aluminum hull, outboard motor, or lower drive unit of a vessel less than 25 meters in length.[88] OAPCA also prohibits the sale or delivery of an antifouling paint containing organotin and the application of paint to a vessel, unless the paint is certified by the U.S. EPA as a "qualified antifouling paint containing organotin."[89]

The U.S. EPA released final ambient water quality criteria for TBT in January 2004, pursuant to Section 304(a) of the CWA.[90] The criteria apply to both fresh and saltwater, and were designed for use by states and Native American tribes in developing their own TBT water quality standards. Although the U.S. EPA's criteria are not legally binding, NPDES permits and related environmental programs can make the criteria enforceable. Please refer to Section 5.16.2.2, State Regulations, for additional discussion.

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84 The term "pesticides" applies to insecticides, herbicides, fungicides, and various other substances used to control pests.

85 Fouling is the process of sessile plants and invertebrates attaching themselves to submerged objects, such as boat hulls, which reduces the fuel efficiency and speed of affected ships, increasing operating costs.

86 Savarese, J., Preventing and managing hull fouling: international, federal, and state laws and policies. Proceedings of the 14th Biennial Coastal Zone Conference, New Orleans, Louisiana. July 17 to 21, 2005.

87 Organotin is defined as "any compound of tin used as a biocide in an antifouling paint."

88 Showalter, S. and J Savarese, "Restrictions on the use of marine antifouling paints containing tributyltin and copper," Sea Grant Law Center, October 2004 (updated August 2005).

89 Ibid.

90 Savarese, J., "Preventing and managing hull fouling: international, federal, and state laws and policies," Proceedings of the 14th Biennial Coastal Zone Conference, New Orleans, Louisiana, July 17 to 21, 2005.

5.16.2.2 State Regulations

California Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act (Division 7 of the California Water Code) provides for protection of the quality of all waters of the State of California for use and enjoyment by the people of California. The act also establishes provisions for a statewide program for the control of water quality, recognizing that waters of the state are increasingly influenced by interbasin water development projects and other statewide considerations, and that factors such as precipitation, topography, population, recreation, agriculture, industry, and economic development vary regionally within the state. The statewide program for water quality control is therefore administered most effectively on a local level with statewide oversight. Within this framework, the act authorizes the SWRCB and regional boards to oversee the coordination and control of water quality within California.

San Francisco Bay Water Quality Control Plan (Basin Plan)

San Francisco Bay waters are under the jurisdiction of the San Francisco Bay RWQCB which established regulatory standards and objectives for water quality in the Bay in the *Water Quality Control Plan for the San Francisco Bay Basin*, commonly referred to as the Basin Plan.[91] The Basin Plan identifies existing and potential beneficial uses for surface waters (described in Section 5.16.1.4, Beneficial Uses) and provides numerical and narrative water quality objectives designed to protect those uses. The preparation and adoption of water quality control plans is required by the California Water Code (Section 13240) and supported by the federal CWA. Because beneficial uses, together with their corresponding water quality objectives, can be defined per federal regulations as water quality standards, the Basin Plan is a regulatory reference for meeting the state and federal requirements for water quality control. Adoption or revision of surface water standards is subject to the approval of the U.S. EPA.

Total Maximum Daily Loads

As described above under Section 303(d) of the Clean Water Act (CWA), states must present the U.S. EPA with a list of "impaired water bodies," defined as those water bodies that do not meet water quality standards. As discussed in the Setting section above under Water Quality, the RWQCB has listed the Central Bay portion of the San Francisco Bay as well as Crissy Field Beach, Islais Creek and Mission Creek as impaired water bodies,[92] and as required by the CWA requires the development of TMDLs to improve water quality of impaired water bodies. The first step of the TMDL process is development of a TMDL report describing the water quality problem addressed, detailing the pollutant sources, and outlining the solutions. An implementation plan, included in the TMDL report, describes how and when pollution prevention, control, or restoration activities will be accomplished and who will be responsible for these actions. The final

[91] San Francisco Bay Regional Water Quality Control Board (RWQCB), *Water Quality Control Plan for the San Francisco Bay Basin* (Basin Plan), www.swrcb.ca.gov/rwqcb2/water_issues/programs/planningtmdls/basinplan/web/docs/BP_all_chapters.pdf, December 31, 2010.

[92] San Francisco Bay Regional Water Quality Control Board, 2006 *CWA 303(d) List of Water Quality Segments Requiring TMDLs*, approved by the United States Environmental Protection Agency on June 28, 2007.

step of the TMDL process is adopting and amending the Basin Plan to legally establish the TMDL and to specify regulatory requirements for compliance. As part of a Basin Plan amendment, waste load allocations are specified for entities that have permitted discharges.

TMDLs for polychlorinated biphenyls and mercury in San Francisco Bay have been approved by the U.S. EPA and officially incorporated into the Basin Plan. The RWQCB also adopted the San Francisco Bay Watershed Permit (Order No. R2-2007-0077) addressing mercury discharges from municipal and industrial wastewater dischargers.[93] In accordance with this permit, the mercury allocation for the SEWPCP is 2.1 kilograms per year by 2017 and 1.6 kilograms per year by 2027, reduced from an estimated annual load of 2.7 kilograms per year in 2003. The permit also establishes an allocation of 0.3 kilograms per year of polychlorinated biphenyls for the SEWPCP.

Water Quality Control Plan for Enclosed Bays and Estuaries

The SWRCB adopted Part 1 of the *Water Quality Control Plan for Enclosed Bays and Estuaries* in August 2009 to comply with the requirements of the California Water Code, Section 13393, to adopt State sediment quality objectives (SQOs). Part 1 integrates chemical and biological measures to accomplish two narrative SQOs: (1) to protect human health, and (2) to ensure that pollutants in sediments are present in quantities that, alone or in combination, are not toxic to benthic communities in enclosed bays and estuaries of California. Part 1 is not intended to address dissolved oxygen, pathogens, or nutrients (including ammonia).

The narrative SQOs are to be implemented through a multiple lines of evidence approach. This approach includes periodic assessment of three indicators (lines of evidence): sediment toxicity, benthic community condition, and sediment chemistry. Part 1 specifies testing and assessment procedures for these indicators as well as guidelines for interpretation. With respect to dredging, Part 1 states that the RWQCB shall not approve a dredging project that involves the dredging of sediment that exceeds the objectives in Part 1. Moreover, the SWRCB must apply SQOs as receiving water limits if the discharge of a toxic pollutant to Bay or estuarine waters has the reasonable potential to cause or contribute to an exceedance of the SQOs. Exceedance of the SQO could constitute violation of an NPDES permit, such as a municipal stormwater permit.

Bay Protection and Toxic Cleanup Program

In 1989, the California legislature established the Bay Protection and Toxic Cleanup Program, as specified in the California Water Code, Division 7, Chapter 5.6, with the four following goals:

1. Protect present and future beneficial uses of the Bay and estuarine waters of California
2. Identify and characterize toxic hot spots[94]
3. Plan for toxic hot-spot cleanup and other remedial actions

[93] Regional Water Quality Control Board, San Francisco Bay Region, *SF Mercury Watershed Permit, Municipal and Industrial Wastewater Dischargers, Order No. R2-2007-0077,* adopted November 1, 2007.

[94] A "hot spot" is a localized area where elevated concentrations of pollutants are found in association with adverse biological impacts.

4. Develop prevention and control strategies for toxic pollutants that will prevent creation of new toxic hot spots or the perpetuation of existing ones within the state's bays and estuaries

As part of this program, the entire San Francisco Bay has been identified a high-priority toxic hot spot based on a mercury and polychlorinated biphenyl health advisory.[95]

NPDES Waste Discharge Regulations

As discussed above in Section 5.16.2.2, Federal Regulations, Section 402 of the federal CWA established the NPDES program to protect water quality of receiving waters. The NPDES program requires all facilities that discharge pollutants into waters of the United States to obtain a permit. The permit provides two levels of control – technology-based limits and water-quality-based limits – to control discharge of pollutants for the protection of water quality. Technology-based limits are based on the ability of dischargers in the same category to treat wastewater, while water quality-based limits are required if technology-based limits are not sufficient to provide protection of the water body. Water quality-based effluent limitations required to meet water quality criteria in the receiving water are based on criteria specified in the National Toxics Rule, the California Toxics Rule, and the Basin Plan. NPDES permits must also incorporate TMDL wasteload allocations when they are developed.

The regulations initially focused on municipal and industrial wastewater discharges in 1972, followed by stormwater discharge regulations, which became effective in November 1990. NPDES permits for wastewater and industrial discharges specify discharge prohibitions and effluent limitations and also include other provisions (such as monitoring and reporting programs) deemed necessary to protect water quality. In California, the SWRCB and the RWQCBs implement and enforce the NPDES program.

Construction General Stormwater Permit (SWRCB Order No. 2009-09-DWQ)

For stormwater discharges associated with construction activity in the state of California, the SWRCB has adopted the General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities, Order No. 2009-0009-DWQ (Construction General Stormwater Permit) in order to avoid and minimize water quality impacts attributable to such activities. The Construction General Stormwater Permit became effective on July 1, 2010 and expires on September 2, 2014; it applies to all projects where construction activity disturbs one or more acres of soil. Construction activities subject to this permit includes clearing, grading, and disturbances to the ground, such as stockpiling or excavation. The Construction General Stormwater Permit requires the development and implementation of a Storm Water Pollution Prevention Plan (SWPPP), which includes and specifies best management practices (BMPs) designed to prevent pollutants from contacting stormwater and keep all products of erosion from moving offsite into receiving waters. Routine inspection of all BMPs is required under the provisions of the Construction General Stormwater Permit. In addition, the SWPPP must contain a visual monitoring program, a chemical

[95] SWRCB, Bay Protection and Toxic Cleanup Program - (BPTCP). 1999 consolidated toxic hot spots cleanup plan,1999. Accessed online April 12, 2011, at http://www.swrcb.ca.gov/water_issues/programs/bptcp/conplan.shtml, April 12, 2011.

monitoring program for non-visible pollutants, and a sediment monitoring plan if the site discharges directly to a water body listed on the 303(d) list for sediment.

The Construction General Stormwater Permit is implemented and enforced by the San Francisco Bay RWQCB, which administers the stormwater permitting program for the program area. Dischargers are required to submit a notice of intent (NOI) and permit registration documents (PRDs) in order to, at the discretion of the SWRCB, obtain coverage under this Construction General Stormwater Permit. Dischargers are responsible for notifying the relevant RWQCB of violations or incidents of non-compliance, as well as for submitting annual reports identifying deficiencies of the BMPs and how the deficiencies were corrected.

The permit requires a risk-based permitting approach, dependent upon the likely level of risk imparted by a project. The permit also contains several additional compliance items, including (1) additional mandatory BMPs to reduce erosion and sedimentation, which may include incorporation of vegetated swales, setbacks and buffers, rooftop and impervious surface disconnection, bioretention cells, rain gardens, rain cisterns, implementation of pollution/ sediment/spill control plans, training, and other structural and non-structural actions; (2) sampling and monitoring for non-visible pollutants; (3) effluent monitoring and annual compliance reports; (4) development and adherence to a Rain Event Action Plan; (5) requirements for the post-construction period; (6) numeric action levels and effluent limits for pH and turbidity; (7) monitoring of soil characteristics onsite; and (8) mandatory training under a specific curriculum.

Phase II General Stormwater Permit (SWRCB Order No. 2003-0005-DWQ)

In 2003 the SWRCB adopted the General Permit for the Discharge of Storm Water from Small Municipal Separate Storm Sewer System (MS4s), SWRCB Order No. 2003-0005-DWQ (Phase II General Stormwater Permit). The Phase II General Permit sets forth the following primary requirements: develop, implement and enforce a Storm Water Management Plan/Program (SWMP) designed to minimize the discharge of pollutants into receiving waters; identify appropriate stormwater treatment practices with measurable performance criteria; and ensure that the program includes provisions to address six minimum measures to promote pollutant load reduction. These measures are public education, public participation and involvement, illicit discharge detection and elimination, construction site runoff control, post-construction runoff control and pollution prevention and good housekeeping. Areas that drain to the Port of San Francisco stormwater collection system are subject to this permit.

Industrial General Stormwater Permit (SWRCB Order No. 97-03-DWQ)

Stormwater discharges associated with specific categories of commercial and industrial facilities are regulated by the SWRCB through the Industrial Storm Water General Permit, SWRCB Order No. 97-03-DWQ (Industrial General Stormwater Permit). This permit regulates discharges associated with ten broad categories of industrial activities and requires the implementation of management measures that will achieve the performance standard of best available technology economically achievable (BAT) and best conventional pollutant control technology (BCT). For

each covered facility, the General Industrial Permit also requires the development of a SWPPP and a monitoring plan. The SWPPP must identify sources of pollutants and the means to manage these sources to reduce stormwater pollution. Any project activities that are regulated under this permit, including water transportation (Standard Industry Code [SIC] 4493) and ship and boat building or repairing yards (SIC 3731), would have to obtain coverage under this permit if they remain in place through the rainy season.

Port of San Francisco Group Stormwater Monitoring Plan. To assist its industrial tenants in meeting the permit requirements, the Port has established a Group Stormwater Monitoring Plan which is voluntary and includes approximately 30 percent of the industrial tenants. For these participants, the Port has assumed responsibility for conducting stormwater sampling and analysis. The Port provides the results to the tenants who are responsible for annual reporting of the results.[96] The Port's stormwater management program[97] includes a comprehensive survey of all facility types and operations subject to stormwater discharge regulations within the Port's jurisdiction as well as recommended stormwater management measures. Regulated activities under the proposed project would be included in this program.

Bay Area Marinas. Marinas and other water transportation facilities (SIC 4493 and 4499, respectively)[98] are specifically regulated under the Industrial General Stormwater Permit if they have a point source discharge of stormwater. Regulated activities at these facilities include vehicle maintenance activities such as vehicle (boat) rehabilitation, mechanical repairs, painting, fueling, and equipment lubrication or cleaning operations. Facilities that do not engage in these activities or do not have a point source discharge of stormwater are not required to obtain coverage under the permit. Nonpoint sources of pollution at marinas and water transportation facilities are regulated under Non Point Source Pollution Control Program described below.

Industrial General Stormwater Permit Update. The SWRCB has prepared a proposed draft of the Industrial General Permit that includes numerous revisions to the 1997 permit.[99] In the proposed permit, the SWRCB identifies 14 significant changes from the previous permit. Specifically, the proposed permit: (1) requires a set of minimum BMPs that dischargers must incorporate into their SWPPPs; (2) requires a more comprehensive and defined set of procedures that dischargers must follow; (3) applies EPA Phase II Conditional Exclusion regulations; (4) requires additional sampling requirements; (5) contains electronic reporting requirements; (6) requires a qualified SWPP developer and practitioner; (7) contains corrective actions; (8) requires dischargers to consider receiving water impairments (303d listings); (9) establishes a 10-year, 24-hour Compliance Storm Event for total suspended solids (TSS); (10) defines a qualifying storm event; (11) changes the requirement that dischargers collect grab samples during the first hour of

96 San Francisco Planning Department, *San Francisco Cruise Terminal Mixed-Use Project and Brannan Street Wharf Project. Draft Supplemental Environmental Impact Report*. State Clearinghouse No.:1994123007, 2001.
97 Ibid.
98 State Water Resources Control Board (SWRCB), " List of regulated standard industrial classification codes" (sic), 2011, accessed online April 5, 2011, at: http://www.swrcb.ca.gov/water_issues/programs/stormwater/sicnum.shtml
99 State Water Resources Control Board (SWRCB), 2011 Draft NPDES Industrial General Permit, www.swrcb.ca.gov/water_issues/programs/stormwater/docs/industrial/p_igp_jan.pdf, 2011.

discharge; (12) increases sampling to quarterly; (13) requires group monitoring; and (14) requires no discharge conditional exclusion certification.

Southeast Plant, North Point, and Bayside Facilities NPDES Permit (RWQCB Order No.2008-0007)

The City currently holds an NPDES permit (RWQCB Order No.2008-0007) adopted by the RWQCB in January 2008, that covers the SEWPCP, the North Point Wet Weather Facility, and all of the Bayside wet-weather facilities, including discharges from the CSOs to the Bay.[100] The permit specifies discharge prohibitions, dry-weather effluent limitations, wet-weather effluent performance criteria, receiving water limitations, sludge management practices, and monitoring and reporting requirements. The permit prohibits overflows from the CSO structures during dry weather, and requires wet-weather overflows to comply with the nine minimum controls specified in the federal Combined Sewer Overflow Control Policy, described above. Areas that drain to the City's combined sewer system are subject to this permit.

Nonpoint Source Pollution Control Program

In accordance with Section 319 of the Clean Water Act and Section 6217 of the CZARA of 1990, the SWRCB and the California Coastal Commission jointly submitted the Plan for California's Nonpoint Source Pollution Control Program to the U.S. EPA and NOAA on February 4, 2000. The Nonpoint Source Pollution Control Program Plan provides a single unified, coordinated statewide approach to dealing with nonpoint source pollution and includes the following management measures to address marina and recreational boating sources of nonpoint source pollution:

> ***4.1.A. Water Quality Assessment*** — Consider impacts to water quality in siting and designing new and expanding marinas.
>
> ***4.1.B. Marina Flushing*** — Site and design marinas to provide for maximum flushing and circulation of surface waters, which can reduce the potential for water stagnation, maintain biological productivity, and reduce the potential for toxic accumulation in bottom sediment.
>
> ***4.1.E. Storm Water Runoff*** — Implement runoff control strategies to remove at least 80% of suspended solids from storm water runoff coming from boat maintenance areas (some boat yards may conform to this provision through NPDES permits).
>
> ***4.1.F. Fueling Station Design*** — Locate and design fueling stations to contain accidental fuel spills in a limited area; provide fuel containment equipment and spill contingency plans to ensure quick spill response.
>
> ***4.1.G. Sewage Facilities*** — Install pumpout, pump station, and restroom facilities at new and expanding marinas where needed to prevent sewage discharges directly to State waters.

[100] Regional Water Quality Control Board, San Francisco Bay Region, National Pollutant Discharge Elimination System (NPDES) Permit No. CA0037664, Order No.2008-0007, for City and County of San Francisco Southeast Water Pollution Control Plant, North Point Wet Weather Facility, and Bayside Wet Weather Facilities and Wastewater Collection System., adopted January 31, 2008.

4.1.H. Waste Management Facilities — Install facilities at new and expanding marinas where needed for the proper recycling or disposal of solid wastes (e.g., oil filters, lead acid batteries, used absorbent pads, spent zinc anodes, and fish waste as applicable) and liquid materials (e.g., fuel, oil, solvents, antifreeze, and paints).

4.2.A. Solid Waste Control — Properly dispose of solid wastes produced by the operation, cleaning, maintenance, and repair of boats to limit entry of these wastes to surface waters.

4.2.B. Fish Waste Control — Promote sound fish waste management, where fish waste is a nonpoint source problem, through a combination of fish cleaning restrictions, education, and proper disposal.

4.2.C. Liquid Material Control — Provide and maintain the appropriate storage, transfer, containment, and disposal facilities for liquid materials commonly used in boat maintenance, and encourage recycling of these materials.

4.2.D. Petroleum Control — Reduce the amount of fuel and oil that leaks from fuel tanks and tank air vents during the refueling and operation of boats.

4.2.E. Boat Cleaning and Maintenance — Minimize the use of potentially harmful hull cleaners and bottom paints, and prohibit discharges of these substances to State waters.

4.2.F. Maintenance of Sewage Facilities — Maintain pumpout facilities in operational condition, and encourage their use so as to prevent and control untreated sewage discharges to surface waters.

4.2.G. Boat Operation — Prevent turbidity and physical destruction of shallow-water habitat resulting from boat wakes and propwash.

4.3A Public Education — Institute public education, outreach, and training programs to prevent and control improper disposal of pollutants into State waters.

A total of 28 state agencies are working collaboratively through the Interagency Coordinating Committee to implement the Nonpoint Source Pollution Control Plan. The California Coastal Commission coordinates the Nonpoint Source Interagency Coordinating Committee Workgroup for Marinas and Recreational Boating, an interagency workgroup addressing water quality issues for marinas and recreational boating.[101] The U.S. EPA oversees these nonpoint source programs and provides funding to the State of California for program implementation.[102]

Regulation of Dredging Activities

The proposed project would involve dredging of sediment that would be subject to the regulatory standards and permitting requirements described below in addition to the applicable requirements cited above under Sections 404 and 401 of the Clean Water Act.

[101] California Coastal Commission (CCC), Water Quality Program Statewide Nonpoint Source (NPS) Program Information, 2011, accessed online at http://www.coastal.ca.gov/nps/npsndx.html, April 7, 2011.

[102] EPA, California Nonpoint Source Program, EPA Region 9 Water Program, Nonpoint Source Pollution, 2011, accessed online at http://www.epa.gov/region9/water/nonpoint/cal/, April 7, 2011.

Dredged Material Management Office Permit

The Dredged Material Management Office (DMMO) is an interagency group formed to increase efficiency and coordination among the member agencies and to foster a comprehensive and consolidated approach to handling sediment material management issues. Through the DMMO, applicants for dredging projects submit a joint application form that each member agency then reviews as per their respective authorities and jurisdictions. The federal and state agencies that comprise the DMMO and are responsible for regulating dredged material programs in the San Francisco Bay area include the U.S. EPA, Region 9; the Corps; the San Francisco Bay RWQCB; the Bay Conservation and Development Commission (BCDC); and the State Lands Commission (SLC) along with California Department of Fish and Game (CDFG), the National Marine Fisheries Service (NMFS), and the U.S. Fish and Wildlife Service (USFWS).

The DMMO provides a source of guidance and review for Bay-area dredging requests and projects. The purpose of the DMMO is to cooperatively review sediment quality sampling plans, review the results of sediment quality sampling, and make suitability determinations for material proposed for multiple disposal sites. The goal of this interagency group is to increase efficiency and coordination among the member agencies and to foster a comprehensive and consolidated approach to handling dredged material management issues.

The roles, responsibilities and jurisdictions of the DMMO agencies differ, depending primarily on the proposed dredged material disposal or reuse site. As a result, member agencies may play only an advisory role in certain aspects of the permitting process. Decisions made by the DMMO do not in any way supersede the primary roles of the permitting agencies, which remain free to accept or reject recommendations, including those of the DMMO staff. In practice, however, the discussions at the DMMO meetings help inform the permitting agencies of specific concerns and issues of the member agencies, often before finalization of project documents. This encourages and facilitates necessary project modifications at an early stage in project planning when such changes are more easily and economically accomplished. The DMMO facilitates the processing of dredging permit applications within existing laws, regulations, and policies. It was specifically designed to provide a mechanism for consistent review of permit applications and supporting environmental documentation through coordinated efforts by DMMO member agencies. It also provides a mechanism to allow the involvement and participation of permit applicants and interested parties during the application process. All applicable regulatory authority and processes of the member agencies remain in full force and effect.

Long-Term Management Strategy for the Placement of Dredged Material in the San Francisco Bay Region

The *Long Term Management Strategy for the Placement of Dredged Material in the San Francisco Bay Region, Management Plan* (LTMS Management Plan)[103] was promulgated by the Corps, the U.S. EPA, BCDC, and the San Francisco Bay RWQCB, to regulate dredged material in San Francisco Bay. The goals of the LTMS Management Plan are to maintain in an economically

[103] U.S. Army Corps of Engineers (USACE). *Long-term Management Strategy for the Placement of Dredged Material in the San Francisco Bay Region*. USACE, South Pacific Division, Final LTMS Management Plan, July 2001.

and environmentally sound manner those channels necessary for navigation in San Francisco Bay and Estuary and eliminate unnecessary dredging activities, conduct dredged material disposal in the most environmentally sound manner, maximize the use of dredged materials as a resource, and maintain the cooperative permitting framework for dredging and disposal applications.

Since its implementation, the LTMS Management Plan has significantly reduced the volume of dredged material disposed of in the Bay in comparison to historical levels. Some in-Bay disposal is still allowed under the LTMS Management Plan, although most dredged material is currently disposed of at the San Francisco Deep Ocean Disposal Site (SFDODS) or at other beneficial reuse sites currently permitted within the San Francisco Bay area.

As part of the environmental documentation required to approve sediments to be disposed at various permitted disposal sites, an applicant must follow standard testing procedures approved by the DMMO and LTMS. Standard testing includes characterization of sediment to determine chemical concentrations, toxicity, and bioavailability to determine the suitability for reuse or disposal. Following testing, and approval of a suitability determination, the project may proceed with final permitting requirements from each agency.

During the permitting process, specific dredging work windows may be imposed to protect biological resources (see Section 5.14.5, Regulatory Framework, Marine Biological Resources, for further description of dredging work windows). Finally, in order to authorize aquatic disposal of dredged materials, an analysis of potential alternatives must first be performed, showing that alternatives to aquatic disposal are either environmentally unacceptable or infeasible.

Regulation of Boating and Vessel Use

California legal requirements for boat operators within San Francisco Bay regarding water quality relate to ballast water discharges; cruise ship discharges; plastics, trash, and marine debris; releases of fuel and oil, sewage, and hazardous wastes; use of dispersants; and vessel operation. The applicable State regulations are described below.

Marine Invasive Species Act

The Marine Invasive Species Act of 2003 (Public Resources Code Sections 71200 through 71271) revised and expanded the California Ballast Water Management for Control of Non-indigenous Species Act of 1999 (Assembly Bill 703). Effective January 1, 2000, the Ballast Water Management for Control of Non-indigenous Species Act established a statewide program to prevent or reduce the introduction and spread of non-indigenous aquatic species into the state waters. The program is under the direction of the California State Lands Commission in consultation with other state and federal agencies. The program requires that all vessels carrying ballast water must either conduct a mid-ocean exchange of ballast water or retain all ballast water on board the vessel. The exchange or replacement of all water in tanks must occur with ocean waters located more than 200 nautical miles from land and at least 6,560 feet deep. Vessels must comply with "good housekeeping" practices, including the following: avoiding uptake or discharge in or near marine sanctuaries or reserves, minimizing or avoiding uptake in areas of known infestations or pathogens; minimizing

or avoiding uptake near sewage outfalls or near dredging operations, cleaning ballast tanks regularly to remove sediment, disposing of sediments properly, minimizing discharge amounts, and removing fouling organisms from hulls, pipes, and other areas. Vessel owners or operators must submit ballast water report forms to the California State Lands Commission and must maintain a Ballast Water Management Plan specific to each vessel.[104] It should be noted that cruise ships do not typically discharge ballast water due to the relatively light load that passengers and stores represent as a proportion of the total load on these vessels.

California Health and Safety Code

California law prohibits dumping any garbage into the navigable waters of the state including inland waters and up to 3 miles from shores; and loading garbage on a vessel with the intent to dump it into navigable waters of the state or in waters up to 20 miles from shore. California law also prohibits any person in charge of a vessel from permitting it to be loaded with garbage with the intent to dump it into navigable waters or in waters up to 20 miles from shore (California Health and Safety Code, Sections 117475 through 117500).[105]

Also, it is illegal for any person to place, deposit, or dump any human excreta in or upon the navigable waters of the state that are within a marina, yacht harbor, freshwater lake, or fresh water impoundment, or from any vessel tied to any dock, slip, or wharf that has toilet facilities available for the use of persons on the vessel (California Health and Safety Code, Division 104, Part 13, Section 117515).

California Fish and Game Code

California Fish and Game Code, Section 5650 prohibits the discharge of petroleum or any other substance harmful to fish, plants, and birds. It is also illegal to deposit in, permit to pass into, or place where it can pass into the waters of the state any substance or material deleterious to fish, plant life, mammals, or bird life, including any petroleum, acid, coal or oil tar, lampblack, aniline, asphalt, bitumen, or residuary product of petroleum, carbonaceous material or substance, sawdust, shavings, slabs, or edgings, or any *cocculus indicus*.[106,107]

California Fish and Game Code, Section 5655 requires that parties responsible for polluting, contaminating, or obstructing waters of the state, or depositing or discharging materials threatening to pollute, contaminate, or obstruct waters of this state, to the detriment of fish, plant, bird, or animal life in those waters undertake removal actions, pay for removal costs, and pay for environmental damages.[108]

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104 California State Lands Commission, Ballast Water Management and Control Program, available online at: http://www.slc.ca.gov, 2001.

105 California Department of Boating and Waterways and California Coastal Commission, "Environmental Boating Laws Every Recreational Boater Should Know," December 2010, accessed online March 31, 2011 at http://www.coastal.ca.gov/ccbn/EnvironmentalLawsBrochure.pdf

106 A natural plant toxin that stuns fish.

107 California Department of Boating and Waterways and California Coastal Commission, "Environmental Boating Laws Every Recreational Boater Should Know," December 2010, accessed online March 31, 2011 at http://www.coastal.ca.gov/ccbn/EnvironmentalLawsBrochure.pdf

108 Ibid.

California Fish and Game Code, Section 5652 prohibits placing any cans, bottles, garbage, motor vehicle or parts thereof, rubbish, or the viscera or carcass of any dead mammal, or the carcass of any dead bird where it can pass into the waters of the state or within 150 feet of the high-water mark of the waters of the state.[109]

Cruise Ship Discharges

California Public Resources Code, Section 72300 et seq. establishes a multi-agency Cruise Ship Environmental Task Force to evaluate environmental practices and waste streams of cruise ships. The task force has been convened by the SWRCB and consists of members from the SWRCB, California Air Resources Board, California Department of Fish and Game, Department of Toxic Substances Control, California Integrated Waste Management Board, California State Lands Commission, and the U.S. Coast Guard. The task force is required to gather reports of waste released and offloaded from cruise ships and the reports are distributed to state entities under state and federal law. In addition, the owners or operators of cruise ships are required to submit quarterly reports to the SWRCB regarding any release of gray water[110] or sewage that occurred during the previous calendar quarter in the State's marine waters.

California Food and Agricultural Code – Antifouling Paints or Coatings Containing Tributyltin (TBT)

California law[111] lists TBT as a restricted pesticide.[112] TBT includes any "organotin…or a tri-organotin compound formulated as an antifouling paint, coating or compound and labeled for the control of fouling organisms in an aquatic environment." California restricts the use of TBT to vessels over 84 feet in length, vessels with aluminum hulls, and outboard motors and lower drive units. This limited use rule bans the use of TBT on "docks, piers, nets and other fishing equipment." Purchasing TBT paints requires a copy of the vessel registration to verify the vessel to be painted meets the requirements of California law, or a sworn statement affirming compliance. TBT oxide pesticides, sold as additives for mixing with paints or coatings, cannot be applied in any way "to any surface that comes into contact with the aquatic or marine environment including, but not limited to, vessels, piers and fishing equipment." California also limits the average release rate from TBT antifouling paints or coatings to a maximum of four micrograms of TBT per square centimeter per day as determined by the U.S. EPA testing procedure.[113] The sale or possession of a pesticide product containing TBT, used to limit fouling in cooling water systems in many California counties (including Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Solano, and Sonoma), is prohibited.[114,115]

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109 Ibid.
110 Gray water is wastewater from washing and rinsing facilities such as showers, sinks, and galleys but not from toilets.
111 California Code of Regulations, Title 3, Section 6400(e)
112 California Code of Regulations (Title 3. Food and Agriculture), Division 6. Pesticides and Pest Control Operations, Chapter 4. Environmental Protection, Subchapter 3. Aquatic and Marine Environments, Article 1. Pesticide Contamination Protection, 6900. Antifouling Paints or Coatings Containing Tributyltin.
113 Food and Agriculture Code, Sections 11456, 12781, 14005, and 14102.
114 Showalter, S. and J Savarese, "Restrictions on the use of marine antifouling paints containing tributyltin and copper," Sea Grant Law Center, October 2004 (updated August 2005).
115 Savarese, J., "Preventing and managing hull fouling: international, federal, and state laws and policies," Proceedings of the 14th Biennial Coastal Zone Conference, New Orleans, Louisiana, July 17 to 21, 2005.

Additionally, the San Francisco Bay RWQCB has been ordered to "prohibit the direct discharge of tributyltin… from in-water stripping operations…Evaluate the impacts of in-water cleaning of vessels," and "require NPDES permits for boat and shipyards to regulate the discharge of tributyltin and copper."[116]

McAteer-Petris Act

The McAteer-Petris Act of 1965 established BCDC as a temporary state agency in charge of preparing the San Francisco Bay Plan (Bay Plan). In 1969, the act was amended to make BCDC a permanent state agency and to incorporate the policies of the Bay Plan into state law.

BCDC Permits

Under the McAteer-Petris Act, any agency or individual proposing to place fill, to extract materials, or to make any substantial change in use of any water, land, or structure in BCDC's jurisdiction is required to secure a permit from BCDC. The type of permit issued depends on the nature and scope of the proposed activities. The proposed project would require a Major Permit under the McAteer-Petris Act for any activities within 100 feet inland of the Bay shoreline that involve the extraction of material, fill, or a substantial change in the use of water, land, or structures in the Bay, including dredging activities. A Major Permit is a permit that is issued for work that is more extensive than a minor repair or improvement.

San Francisco Bay Plan and San Francisco Waterfront Special Area Plan

BCDC completed and adopted the Bay Plan in 1968. The Bay Plan has been periodically amended during the past 40 years. In 1975, BCDC, the City and County of San Francisco, and the Port also adopted the *San Francisco Waterfront Special Area Plan* (Special Area Plan). The Special Area Plan, together with the McAteer-Petris Act and the Bay Plan and subsequent amendments to all three documents, prescribes a set of rules for non-maritime shoreline development along the San Francisco waterfront.

Several policies of the Bay Plan are aimed at protecting the Bay's water quality, safety of fills, and guiding the dredging activities of the Bay's sediment. The Bay Plan policies that are most relevant to the proposed project with respect to water quality and hydrology are as follows:

- ***Water Quality***

  Policy 1: Bay water pollution should be prevented to the greatest extent feasible. The Bay's tidal marshes, tidal flats, and water surface area and volume should be conserved and, whenever possible, restored and increased to protect and improve water quality. Fresh water inflow into the Bay should be maintained at a level adequate to protect Bay resources and beneficial uses.

  Policy 2: Water quality in all parts of the Bay should be maintained at a level that will support and promote the beneficial uses of the Bay as identified in the San Francisco Bay Regional Water Quality Control Board's Basin Plan. The policies, recommendations,

[116] Ibid.

decisions, advice and authority of the State Water Resources Control Board and the San Francisco Bay Regional Water Quality Control Board should be the basis for carrying out BCDC's water quality responsibilities.

Policy 3: Shoreline projects should be designed and constructed in a manner that reduces soil erosion and protects the Bay from increased sedimentation through the use of appropriate erosion control practices.

Policy 4: Polluted runoff from projects should be controlled by the use of best management practices in order to protect the water quality and beneficial uses of the Bay, especially where water dispersion is poor and near shellfish beds and other significant biotic resources. Whenever possible, runoff discharge points should be located where the discharge will have the least impacts. Approval of projects involving shoreline areas polluted with hazardous substances should be conditioned so that they will not cause harm to the public or the beneficial uses of the Bay.

Policy 5: To prevent damage from flooding, structures on fill or near the shoreline should have adequate flood protection including consideration of future relative sea level rise as determined by competent engineers. As a general rule, structures on fill or near the shoreline should be above the wave runup level or sufficiently setback from the edge of the shore so that the structure is not subject to dynamic wave energy. In all cases, the bottom floor level of structures should be above the highest estimated tide elevation. Exceptions to the general height rule may be made for developments specifically designed to tolerate periodic flooding.

Policy 6: Local governments and special districts with responsibilities for flood protection should assure that their requirements and criteria reflect future relative sea level rise and should assure that new structures and uses attracting people are not approved in flood prone areas or in areas that will become flood prone in the future, and that structures and uses that are approvable will be built at stable elevations to assure long-term protection from flood hazards.

- ***Dredging***

  Policy 2: Disposal of dredged materials should be encouraged in non-tidal areas where the materials can be used beneficially, or in the ocean. Disposal in the tidal areas of the Bay should be authorized when the BCDC can find that a) the applicant has demonstrated that non-tidal and ocean disposal is infeasible because there are no alternate sites available or likely to be available for use in a reasonable period, or the cost of disposal at alternate sites is prohibitively expensive; b) disposal would be at a site designated by the Commission; c) the quality and volume of the material to be disposed is consistent with the advice of the San Francisco Bay Regional Water Quality Control Board; and d) the period of disposal is consistent with the advice of the Department of Fish and Game and the National Marine Fisheries Service.

California Food and Agricultural Code Section 2281

Under FIFRA (discussed in Section 5.16.2.1, above), the U.S. EPA vests the California Department of Pesticide Regulation (CDPR) with primary responsibility to enforce federal pesticide laws and regulations in California. Food and Agricultural Code Section 2281 gives the CDPR responsibility for overall statewide enforcement. The CDPR directs and oversees the County Agricultural

Commissioners (CACs), who carry out and enforce federal and state pesticide and environmental laws and regulations at the local level, including local administration of the Pesticide Use Enforcement Program. The Pesticide Use Enforcement Program authorizes CACs to: (1) monitor pesticide applications to ensure that they are performed in a safe and effective manner and that worker safety requirements are followed; (2) inspect application equipment, pesticide storage sites, employee training documents, and business pesticide use records; and (3) investigate complaints and pesticide-related illnesses. Additionally, all pesticide use must be reported to the CACs on a monthly basis. When necessary, California law allows the CDPR to place controls on pesticides deemed potentially harmful to human health or the environment if misused, to require permits for use of such pesticides (called "Restricted Materials"), and to restrict use to specially trained individuals.

5.16.2.3 Local Regulations

Stormwater and Wastewater Management

Port of San Francisco and San Francisco Public Utilities Commission Storm Water Management Plans

The Port of San Francisco and SFPUC have each obtained coverage under the Phase II General Permit for municipal separate storm sewer system (MS4s) for those portions of their jurisdictions that are served by separate stormwater and sanitary wastewater systems. In accordance with this permit, each agency has prepared and adopted a Storm Water Management Plan (SWMP) that describes its efforts to reduce the discharge of pollutants from its MS4 to the maximum extent practicable and to protect water quality.

The Port and SFPUC's SWMPs are each comprised of six program areas meant to address water quality: public education, public involvement/participation, illicit discharge detection and elimination, pollution prevention/good housekeeping for municipal operations, construction site stormwater runoff, and post-construction stormwater management in new developments and redevelopment areas. The SWMPs thereby require implementation of a variety of stormwater pollution reduction measures that mirror these six program areas, including the implementation of stormwater BMPs (such as construction period BMPs and long-term, post-construction BMPs). A substantial portion of the project area falls within the Port's jurisdiction and a portion of the project area falls within the SFPUC's jurisdiction. These areas are subject to all provisions and regulatory requirements set forth by the Port and SFPUC, including compliance with the applicable SWMP. Based on the activities that occur along the Port's waterfront and in areas under the jurisdiction of the SFPUC, the pollutants of concern targeted by the SWMPs include suspended solids (sediments), litter, heavy metals, and petroleum hydrocarbons. The policies that are most relevant to the project are as follows:

- ***Illicit Discharge***

  Section D.2.c.1: *Program* – The Permittee must develop, implement and enforce a program to detect and eliminate illicit discharges (as defined at 40 CFR § 122.26(b)(2)) into the regulated small MS4.

Section D.2.c.4: Plan – The Permittee must develop and implement a plan to detect and address non-stormwater discharges, including illegal dumping, to the system that are not authorized by a separate NPDES permit.

- ***Post-Construction Stormwater Management in New Development and Redevelopment***

  Section D.2.e.1: Program – The Permittee must develop, implement, and enforce a program to reduce pollutants in any stormwater runoff from new development and redevelopment projects that disturb greater than or equal to one acre, including projects less than one acre that are part of a larger common plan of development or sale, that discharge in the small MS4 by ensuring that controls are in place to prevent or minimize water quality impacts.

  Section D.2.e.2: The Permittee must develop and implement strategies, which include a combination of structural and/or non-structural Best Management Practices (BMPs) appropriate for the community.

  Section D.2.e.3: The Permittee must use an ordinance or other regulatory mechanism to address post-construction runoff from new development and redevelopment projects to the extent allowable under State or local law. The requirements must at least include the design standards in Attachment 4 of the General Permit.

  Section D.2.e.4: The Permittee must ensure adequate long-term operation and maintenance of BMPs.

Stormwater Design Guidelines

The Port of San Francisco and the SFPUC have partnered to create the San Francisco Stormwater Design Guidelines for San Francisco's developers, designers, engineers, and the general public. Compliance with the stormwater design guidelines is required by the San Francisco Stormwater Management Ordinance.[117] The stormwater design guidelines encourage innovative and practical solutions that effectively integrate stormwater management into redevelopment and development of new projects. According to the stormwater design guidelines, all projects over 5,000 square feet are required to submit a Stormwater Control Plan. The purpose of the Stormwater Control Plan is to specify how projects will comply with San Francisco's stormwater design performance measures. In accordance with the stormwater design guidelines, the stormwater performance measures for a project served by separate sewers require the capture and treatment of: (1) the flow of stormwater runoff resulting from a rain event equal to at least 0.2 inches per hour of intensity; or (2) 80 percent or more of the annual stormwater runoff volume, determined from design rainfall capture curves for San Francisco.

The complete Stormwater Control Plan must include information on the project owner/developer, project location and description, geotechnical reports, site analysis for locating and sizing BMPs, stormwater sizing calculations, and a post-construction Operations and Management Plan. Once completed, the Stormwater Control Plan must be reviewed and stamped by a licensed landscape architect, architect, or registered engineer. The Stormwater Control Plan requires erosion and

[117] San Francisco Board of Supervisors, "Ordinance No. 83-10: Requiring the Development and Maintenance of Stormwater Management Controls", 2010

sediment control and pollution prevention measures during construction. The project would require a Stormwater Control Plan.

Notice of Violation

The Port of San Francisco received a notice of violation from the RWQCB on February 18, 2010 for the discharge of chlorinated potable water from Pier 15 along the San Francisco Northeast Waterfront.[118] The notice of violation required that the Port submit a report to the RWQCB by June 30, 2011 providing the results of an evaluation of the Port infrastructure and a plan for implementation of the needed infrastructure improvements identified by the evaluation. Accordingly, a field reconnaissance was conducted on behalf of the Port to assess the condition of the under-pier water and sewer lines at 42 piers. As part of this inspection, each pier was assigned a condition rating of 1 through 5. The under-pier infrastructure at all of the piers where AC34 activities would occur received a score of 4 or 5 indicating that they showed signs of heavy to very heavy corrosion and /or damage, and had an estimated remaining service life of 0 to 10 years.

In July 2010, the RWQCB determined that the Port's methods for detection of leaks from the infrastructure did not meet the permit standard of maximum extent practicable, and the Port is engaged in ongoing efforts to improve the leak detection. As part of this effort, the Port is developing a schedule for annual inspections of under-pier infrastructure with a condition score of 4 or 5, and will also update the Illicit Discharge Detection and Elimination System to ensure that it is consistent with future provisions of the Phase II General Permit. In addition, automatic water meters will be installed to closely monitor water use. The ability to monitor consumption spikes as they occur will allow the Port to investigate potential water leaks, stop discharges, and make repairs in a matter of hours and days which would minimize chlorinated water discharges.

The findings of the infrastructure assessment are being incorporated into the Port's ongoing Capital Improvement Program, and are addressed in the ten-year capital improvement program for fiscal years 2012 to 2021. The anticipated improvements in support of AC34 are incorporated into the Capital Plan.

Port of San Francisco Policies Related to Cruise Ship Discharges

Cruise ships calling at the Port of San Francisco are prohibited from releasing into San Francisco Bay incidental or intentional discharges of ballast water, sewage, gray water, hazardous waste, solid waste, fuel or oil-related substances. Cruise ships are required to file a Cruise Ship Discharge Report (CSDR) for each vessel call. In 2010, all 41 cruise vessels calling at the Port submitted CSDRs, and there were no discharges into San Francisco Bay reported. Three vessels did report an open-ocean ballast exchange as authorized by the California State Lands Commission.

[118] Port of San Francisco, Letter to Mr. Bruce Wolfe, Executive Officer, San Francisco Bay Regional Water Quality Control Board. RE: Notice of Violation – Port of San Francisco Potable Water Discharges – Report of Waste Discharge Dated January 27, 2010, CIWQS File No. 705108. June 29, 2011.

San Francisco Building Code Requirements

The San Francisco Department of Building Inspection (DBI) and/or the Port's Building Department administer building codes that include provisions for managing drainage from new construction. The complete San Francisco Building Code incorporates the requirements of the 2010 California Building Code, 2010 California Residential Code, 2010 California Green Building Standards Code, and the 2010 San Francisco Amendments.[119]

Code provisions applicable to the proposed project include the following:

- *Plumbing Code, Section 306.2*: Roofs, inner courts, vent shafts, light wells, or similar areas having rainwater drains shall discharge directly into a building drain or sewer, or to an approved alternate location based on approved geotechnical and engineering designs.

- *Building Code, Section 1506.1*: All storm or casual water from roof areas which total more than 200 square feet shall drain or be conveyed directly to the building drain or storm drain or to an approved alternate location based on approved geotechnical and engineering design. Such drainage shall not be directed to flow onto adjacent property or over public sidewalks. Building projections not exceeding 12 inches in width are exempt from drainage requirements without area limitations.

- *Building Code, Green Building Requirements, Section 13C.4.106.2*: Storm water drainage and retention during construction.

- *Building Code, Green Building Requirements, Section 13C.4.106.3: Surface drainage*: The site shall be planned and developed to keep surface water from entering buildings. Construction plans shall indicate how the site grading or drainage system will manage surface water flows. Examples of methods to manage surface water include, but are not limited to, the following: (1) swales; (2) water collection and disposal systems; (3) french drains; (4) water retention gardens; and (5) other water measures which keep surface water away from building and aid in groundwater recharge.

City and County of San Francisco Floodplain Ordinance

The City and County of San Francisco Floodplain Management Ordinance (No. 56-10) governs new construction and major improvements to existing buildings in floodprone areas and designates the City Administrator's Office as the City's Floodplain Administrator. In general, the ordinance requires the first floor of structures in designated flood hazard zones to be constructed above the floodplain or to be flood proofed, by improvements that reduce or eliminate the potential for flood damage.[120] The ordinance includes provisions for flood hazard reduction including permit requirements and standards of construction. These provisions are consistent with National Flood Insurance Program requirements. The ordinance is applicable to the portions

[119] San Francisco Department of Building Inspection (DBI), San Francisco Building Code, 2010 edition, www.amlegal.com/nxt/gateway.dll/California/sfbuilding/cityandcountyofsanfranciscobuildingelect?f=templates$fn=default.htm$3.0$vid=amlegal:sf_building, 2011, accessed March 29, 2011.

[120] The National Flood Insurance Program defines a structure as a walled and roofed building, including a gas or liquid storage tank, that is principally above ground. It does not include infrastructure such as streets, pipelines, and seawalls.

of the project area that are located in a designated 100-year floodplain, and will be updated upon adoption of a final FIRM for San Francisco. In addition, the ordinance:

- Provides for variances for exceptional circumstances, including historic preservation, and extraordinary hardship and for the Port, functionally dependent maritime uses necessary for the loading and unloading of cargo and passengers.
- Incorporates the more stringent floodplain management requirements that FEMA requires be applied in areas where FIRMs show Base Flood Elevations.
- Incorporates more restrictive elements, such as the requirement to elevate new or substantially improved structures above Base Flood Elevations.
- Ties the construction standards required by the more restrictive elements to the San Francisco Building Code, which incorporates flood design standards published in American Society of Civil Engineers (ASCE) 24.

Additionally, the ordinance requires the Port of San Francisco and City Administrator to consult and coordinate with FEMA to create appropriate building standards for finger piers located in flood prone areas in Port jurisdiction before publication of the Final FIRM for San Francisco. Within the Port jurisdiction, the Port of San Francisco Chief Harbor Engineer is responsible for reviewing all development permit applications for buildings and structures to determine whether the permit requirements of this ordinance have been satisfied and whether the site is reasonably safe from flooding.

San Francisco Integrated Pest Management Ordinance

The CCSF's Integrated Pest Management (IPM) Ordinance (City and County of San Francisco Environment Code, Chapter 3), passed in 1996, requires anyone who manages weeds on properties owned by or leased from CCSF to emphasize prevention and non-chemical methods of weed control, and to use only the least hazardous chemical pesticides, as a last resort. When pesticides must be used on properties owned by or leased from CCSF, only pesticides listed on the City of San Francisco's Reduced-Risk Pesticide List (San Francisco Environment Code, Chapter 3) may be used. The Reduced-Risk Pesticide List, compiled by the San Francisco Department of the Environment (SFDE), is regularly updated as new pesticides are proposed for use. Each listed pesticide has been subject to a multi-step risk assessment process. Through this screening process, the San Francisco IPM Ordinance provides an additional level of environmental protection beyond the state and federal regulations by subjecting pesticide products used on lands owned by or leased from CCSF to further in-depth hazard assessment and hazard classification before allowing use.

San Francisco General Plan

The *San Francisco General Plan* Environmental Protection Element includes objectives and policies that are relevant to the proposed project. These include measures that are meant to improve water quality in San Francisco Bay and the Pacific Ocean, improve sewage treatment, reduce water pollution, and encourage water recycling.

The Environmental Protection Element includes the following key objectives and policies related to hydrology and water quality:

Objective 3: Maintain and improve the quality of the Bay, Ocean, and shoreline areas.

Policy 3: Implement plans to improve sewage treatment and halt pollution of the Bay and Ocean.

Objective 6: Conserve and protect the fresh water resource.

Policy 2: Encourage and promote research on the necessity and feasibility of water reclamation.

Marin Countywide Plan

The 2007 *Marin Countywide Plan* includes objectives and policies that may be relevant to the project component proposed to be located in Marin County. These include measures that are meant to improve water quality in surface waters of Marin County and San Francisco Bay. The Natural Systems and Agriculture Element, Section 2.5 Water Resources, includes the following key goals and policies related to hydrology and water quality:

Goal WR-1: Healthy Watersheds. Achieve and maintain proper ecological functioning of watersheds, including sediment transport, groundwater recharge and filtration, biological processes, and natural flood mitigation, while ensuring high-quality water.

Policy WR-1.1: Protect Watersheds and Aquifer Recharge. Give high priority to the protection of watersheds, aquifer-recharge areas, and natural drainage systems in any consideration of land use.

Implementing Policy WR-1.e: Require Restoration of Degraded Areas. Require replanting of vegetation and remediation of associated erosion in conjunction with requested land use approvals, especially those including roads and over-grazing on steep slopes.

Goal WR-2: Clean Water. Ensure that surface and groundwater supplies are sufficiently unpolluted to support local natural communities, the health of the human population, and the viability of agriculture and other commercial uses.

Policy WR-2.3: Avoid Erosion and Sedimentation. Minimize soil erosion and discharge of sediments into surface runoff, drainage systems, and water bodies. Continue to require grading plans that address avoidance of soil erosion and on-site sediment retention. Require developments to include on-site facilities for the retention of sediments, and, if necessary, require continued monitoring and maintenance of these facilities upon project completion.

*Implementing Policy WR-2.b: Integrate Bay Area Stormwater Management Agencies Association (BASMAA) Stormwater Quality Protection Guidelines into Permitting Requirements for All Development and Construction Activities***.** All projects should integrate stormwater pollution prevention design features for water quality protection to the extent feasible, such as those included in the BASMAA Start-at-the-Source manual and the Tools Handbook.

5.16.3 Impacts and Mitigation Measures

5.16.3.1 Significance Criteria

The City has not formally adopted significance standards for impacts related to hydrology and water quality, but generally considers that implementation of the project could have a potentially significant impact related to hydrology and water quality if it were to:

- Violate any water quality standards or waste discharge requirements;
- 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 that would not support existing land uses or planned land uses for which permits have been granted);
- Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner that would result in substantial erosion or siltation on or off the site;
- Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner that would result in flooding on or off the site;
- Create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff;
- Otherwise substantially degrade water quality;
- Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other authoritative flood hazard delineation map;
- Place within a 100-year flood hazard area structures that would impede or redirect flood flows;
- Expose people or structures to a significant risk of loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam; or
- Expose people or structures to a significant risk of loss, injury, or death involving inundation by seiche, tsunami, or mudflow.

Due to the nature of the proposed project, there would be no impact related to the following criteria for the reasons described below:

> *Substantially deplete groundwater supplies or interfere with groundwater recharge*. The project would not involve any excavation to depths that would affect aquifer systems or groundwater movement and would not involve the construction of substantial new impervious surfaces that would impede groundwater recharge. Therefore, no long-term impacts related to groundwater would occur, and this criterion is not discussed further.

Substantially alter the existing drainage pattern of the site or area. The project would involve minor, if any, grading or changes in drainage patterns of a site. None of the project components would affect natural drainage areas, and therefore would not result in erosion or siltation or affect flooding on or off the site. Therefore, the two criteria related to alteration of existing drainage patterns are not applicable to the project and are not discussed further.

Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map. Neither the 34th America's Cup Races nor the James R. Herman Cruise Ship Terminal and Northeast Wharf Plaza projects would include the construction of housing. Further, none of the long-term development sites are located within a 100-year flood zone. Therefore, the criterion related to the placement of housing within a 100-year flood hazard zone or obstruction of 100-year flood flows is not applicable to the project and is not discussed further.

Expose people or structures to a significant risk of loss, injury, or death involving mudflow, failure of a levee, or failure of a dam. The project is not located near a volcano or geologic conditions that would generate mudflow. The project is not located in an area where there are levees and dams. Additionally, the project is not located in a dam inundation zone. Therefore, these portions of the two criteria that address exposure to these risks are not applicable to the project and are not discussed further.

Expose people or structures to a significant risk of loss, injury, or death involving flooding, as a result of future flood risks (climate change induced sea level rise). The AC34 events are proposed to take place in the summer and fall of 2012 and 2013. Projections for future flooding risks regarding climate change-induced sea level rise and subsequent increases in potential flood inundation areas cover planning scenarios for approximately 2050 and 2100. Therefore, no impacts related to future flooding risks as a result of sea level rise would occur within the time frame of the AC34 events, and this impact is not discussed further for the AC34 events. However, this criterion is discussed for the Cruise Terminal and Northeast Wharf Plaza project as well as for the future long-term development rights.

5.16.3.2 Approach to Analysis

This analysis evaluates the proposed project's potential effects on hydrology and water quality during project construction and operation. Construction-related effects on hydrology and water quality include direct impacts that could occur during construction activities, including demolition activities above and near the Bay, dredging to accommodate AC34 and spectator boats, construction activities within the Bay, enclosure of water basins by temporary wave attenuators and floating docks, and contributions to combined sewer overflows as well as discharges, spills, and littering in the Bay from race-related and spectator boats and on-land littering by spectators. In addition, indirect impacts on water quality could occur as a result of increased usage of regional marina and boatyard facilities by race-related and spectator boats. Overall, compliance with regulatory requirements for these activities and implementation of project-specific plans prepared for the AC34 events would ensure that both direct and indirect water quality-related impacts are less than significant, as discussed below.

Operational impacts of the AC34 events are related to stormwater runoff at the two team bases and similarly, compliance with regulatory requirements would ensure that water quality effects

related to stormwater runoff are less than significant. Although portions of the project area could be subject to flooding or inundation by tsunami or seiche, impacts to structures would be less than significant with incorporation of specific design features as discussed below.

For the Cruise Terminal and Northeast Wharf Plaza project, seismic improvements would be made to the substructure at Piers 27 and 29, stormwater infrastructure improvements would be constructed at Pier 27, and limited construction would be required for completion of the interior spaces of the cruise terminal and construction of the plaza following completion of the AC34 events in 2013. Regulatory requirements are identified that would ensure that water quality impacts related to these construction activities would be less than significant. During operation of the cruise ship terminal, water quality effects could occur from cruise ship discharges. The impact analysis identifies regulatory requirements and Port-specific policies that would ensure that water quality impacts would not occur. Water quality effects could also occur as a result of stormwater runoff during operation, and similarly, implementation of water quality control measures for compliance with regulatory requirements would ensure that water quality effects related to stormwater runoff would be less than significant. Although the cruise terminal could be subject to inundation by tsunami or seiche or sea-level rise related to climate change, impacts to structures would be less than significant with incorporation of specific design features, and impacts to people would be less than significant with implementation of the San Francisco outdoor warning system, which would notify people of an impending tsunami or seiche.

5.16.3.3 AC34 Events and Cruise Terminal Impacts and Mitigation Measures

America's Cup

Impact HY-1: Construction and operation of the America's Cup (2012 and 2013) facilities and events could violate water quality standards or waste discharge requirements or otherwise substantially degrade water quality. (Less than Significant with Mitigation)

The AC34 2012 and 2013 events could result in violation of water quality standards or waste discharge requirements, or otherwise degrade water quality as a result: of construction and demolition activities above and near the Bay; dredging to accommodate berthing for AC34-related and spectator boats; in-water construction activities within Central San Francisco Bay; enclosure of water basins by temporary wave attenuators and floating docks; and contributions to combined sewer overflows. In addition, San Francisco Bay water quality could be adversely affected as a result of increased usage of regional marina and boatyard facilities by race-related and spectator boats as well as discharges, spills, and littering in the Bay from race-related and spectator boats and on-land littering by spectators. These impacts are discussed below.

Construction and Demolition Activities Above and Near the Bay

The majority of the construction activities for the AC34 2012 event would be conducted at Pier 80 (for the construction of the team base) and at Marina Green (for construction of the America's Cup Village), as well as construction at Piers 30-32 (for the installation of the team bases) if necessary approvals are received. For the AC 34 2013 event, construction would be conducted at

Piers 27-29 (for construction of the America's Cup Village) as well as at other piers to seismically strengthen the existing piers, construct race support facilities (such as a cafeteria or ancillary office and storage space), or accommodate berthing for AC 34 sponsor and spectator boats. At Piers 27-29, the entire Pier 27 shed, a portion of the Pier 29 shed, and the Pier 27 Annex office building would be demolished prior to construction of the America's Cup Village. For both the 2012 and 2031 events, limited construction would be conducted at the spectator sites, including Aquatic Park, Crissy Field, Fort Mason, Alcatraz, Fort Baker Pier at Cavallo Point, and the America's Cup Live Sites, including the installation of spectator seating at Crissy Field, Alcatraz, and the Live Sites. The team bases at Piers 30-32 could also be constructed for the AC34 2013 event if necessary approvals are not obtained in time for completion of these bases for the AC34 2012 event. Only limited soil disturbance would be required for construction of these improvements, and most of the construction activities would take place on piers that are directly over the Bay. Details of planned construction activities are provided in Chapter 3, Project Description.

Stormwater runoff from soil disturbance associated with construction activities is a common source of pollutants to receiving waters. In addition, Bay water quality could be affected by construction materials or debris entering the Bay as a result of renovation of the piers as well as demolition or construction of new structures on the piers that are directly over the Bay, particularly if construction activities occur on windy days. Hazardous building materials such as lead-based paint, asbestos, and PCB-containing materials could also be encountered during demolition of the Pier 27 and Pier 29 sheds. If improperly handled during demolition activities, these materials could degrade water quality. Fuels and other chemicals used during demolition or construction could also degrade Bay water quality if spilled.

Although construction of the proposed project would result in minor soil disturbance at the piers for decking improvements or other activities, the project likely will be subject to the Construction General Stormwater Permit because the construction would be conducted as part of a larger development that would exceed 1 acre. In accordance with the Construction General Stormwater Permit, the project sponsor would be required to prepare and implement a SWPPP to minimize construction water quality impacts. The SWPPP would identify pollutant sources within the construction area and recommend site-specific BMPs regarding control of sediments in runoff and storage and use of hazardous materials to prevent discharge of pollutants into stormwater.

The RWQCB would be responsible for determining whether the proposed project would be required to comply with the General Construction Permit. In addition, the project would need to obtain a water quality certification from the RWQCB for the construction activities, which would also require implementation of BMPs and specific measures for the protection of water quality during construction.

As described in Chapter 3, Project Description, the project sponsor would implement standard construction specifications incorporating the use of barges moored in a position to capture and contain the debris generated during demolition and construction work. In the event that debris does reach the Bay, personnel in workboats within the work area would be required to

immediately retrieve the debris for proper handling and disposal. These measures would be incorporated into the SWPPP as a BMP for the protection of water quality. Additionally, the project construction would be required to comply with any BMPs set forth in the Section 404 Corps permit as well as a BCDC Major Permit.

With implementation of the water quality control measures required under the Construction General Stormwater Permit, additional permitting requirements of the Corps, RWQCB, and BCDC; and standard construction specifications incorporated as part of the project, potential water quality impacts associated with construction and demolition activities above and near the Bay would be *less than significant*.

Dredging

Dredging would be required within the Brannan Street Wharf (Piers 32-36) Open Water Basin, in the Piers 28-30 water area, and at the Rincon Point (Piers 14-22 ½) Open Water Basin to accommodate sufficient depth for berthing AC34 boats (sponsor and/or spectator boats). Dredging may also be required to accommodate temporary berthing in other water basins along the waterfront. More details of the proposed dredging are provided in Chapter 3, Project Description.

Dredging activities would disturb mud and sediment, resulting in turbidity and resuspension of sediment, which could locally degrade the water quality of the Central Bay. Turbidity is a condition in which the concentration of particles suspended in the water is increased, making the water appear cloudy. The suspended solids can lower the levels of dissolved oxygen levels in water, increase the salinity of the water, and decrease light penetration into the water. In addition, nutrient loading can occur as a result of resuspension of sediments during dredging. Substantially depressed oxygen levels (i.e., below 5 milligrams per liter [mg/L]) can cause respiratory stress to aquatic life, and levels below 3 mg/L can cause mortality. This could, in turn, affect certain beneficial uses and habitat for benthic organisms (bottom dwellers) and, sessile organisms (organisms attached to the benthic environment), and result in other effects on other marine species. In particular, dredging could adversely affect Pacific herring spawning and salmomids, if dredging were conducted during the peak herring spawning period of December 1 through February.

However, the clamshell dredges that are proposed to be used for dredging remove bottom sediment through the direct application of mechanical force to dislodge and excavate the material at almost in situ densities. With this technique, the dredged material descends rapidly through the water column to the bottom, and only a small amount of material remains suspended, causing minimal turbidity impacts. Further, oxygen levels resulting from project construction activities are not expected to remain low for long periods, and dredging activities would not be conducted during the peak herring spawning period. Also, tidal flushing would improve depressed oxygen levels by introducing oxygenated water into the project area. Therefore, resuspension of sediments would be temporary and would not cause long-term effects.[121] Further, studies

[121] San Francisco Bay Conservation and Development Commission (BCDC), *Long-Term Management Strategy for Bay Area Dredged Material, Final Environmental Impact Statement/Environmental Impact Report,* August 1998.

conducted by the San Francisco Estuary Institute have also indicated that there is no risk to the ecosystem due to increased nutrient loading caused by dredging activities[122] and that sediment disruption caused by dredging activities do not pose an environmental risk related to decreased dissolved oxygen concentrations.[123]

Consistent with permit requirements and as described in Chapter 3, Project Description, the project sponsor would implement best management practices to minimize impacts on water quality during dredging. These practices would include turbidity monitoring, use of floating debris booms/silt curtains to contain turbidity and suspended sediments in shallow waters, and use of clamshell bucket types that minimize turbidity. As part of these practices, all floating debris would be removed and disposed of at an approved upland location.

As described in the Setting section (Section 5.16.1.5, Sediment Quality), sediments historically dredged from Piers 30-32 and Pier 27 under the Port's maintenance dredging program have been suitable for in-Bay disposal at the Alcatraz disposal site. Sediment analysis is being conducted to determine the suitability of the proposed sediments for unconfined aquatic disposal at the Alcatraz disposal site (SF-11). Disposal could also occur at either the SF-DODS or upland disposal sites. The SF-DODS is located approximately 50 miles offshore of San Francisco in depths of 8,200 to 9,840 feet (2,500 to 3,000 meters) and was established in 1994 to provide an environmentally superior alternative to disposal in San Francisco Bay.

The project sponsor would be required to obtain a new Section 404 permits from the Corps and a RWQCB water quality certification for the construction dredging. Disposal at the SF-DODS would be subject to the requirements of the Section 404 permit and RWQCB water quality certification, and upland disposal of sediments must be conducted in accordance with waste discharge requirements issued to the designated disposal site.

As part of the permitting process, the project sponsor would be required to:

- Prepare a sampling and analysis plan (or quality assurance project plan) describing any sampling that would be conducted and quality assurance procedures that would be implemented to ensure the collection of data of appropriate quality to support a decision regarding a suitable disposal method. The sampling and analysis plan and quality assurance project plan must be prepared in accordance with U.S. EPA guidance and approved by the DMMO. Additional components can be required for complex dredging projects or those that include dredging of contaminated sediments. Guidance for preparation of sampling and analysis plans and quality assurance project plans is provided in the DMMO document *Sampling and Analysis Plan (Quality Assurance Project Plan) Guidance for Dredging Projects Within the San Francisco District*.[124]

[122] San Francisco Estuary Institute (SFEI), "Effects of Short-term Water Quality Impacts Due to Dredging and Disposal on Sensitive Fish Species in San Francisco Bay," SFEI Contribution 560, San Francisco Estuary Institute, Oakland, California, 2008.
[123] Ibid.
[124] Dredged Material Management Office, *Sampling and Analysis Plan (Quality Assurance Project Plan) Guidance for Dredging Projects Within the San Francisco District,* July 1, 1999.

- Sample the sediments in accordance with the approved sampling and analysis plan or quality assurance project plan.

- Submit a report to the DMMO documenting the sampling event and providing adequate information to make a decision regarding suitability of the material tested. Based on this report, the DMMO would determine the suitable disposal method for the dredged sediments.

- Submit a Consolidated Dredging-Dredged Material Reuse/Disposal Application to the DMMO specifying the planned disposal method and the specific site planned for disposal. The application must be accompanied by the sampling and analysis plan, testing data, calculations, and the environmental document prepared to comply with CEQA (i.e., this EIR), as well as other supporting documentation.

The DMMO agencies would review the permit application and approve or deny the permit. The RWQCB water quality certification would specify methods for ensuring the protection of water quality during construction activities in the Bay. In place of this water quality certification, the RWQCB could, at its discretion, issue waste discharge requirements specifying equivalent measures for the protection of water quality during construction. Also, the project sponsor would be required to adhere to policies and requirements set forth by BCDC in order to obtain a BCDC Major Permit to conduct construction and dredge and fill operations within BCDC's jurisdiction, and would need to comply with Dredging Policy 2 (described in Section 5.16.2.3, Local Regulations). With implementation of water quality control measures specified in these permitting requirements, impacts on water quality as a result of dredging would be *less than significant*.

In-Water Construction Activities

In-water construction activities under the proposed project would include the installation or repair of piles and substructures, floating docks, wave attenuators, and anchoring systems. For the AC34 2012 events, the only in-water construction would consist of pile driving at Pier 80 and offshore of the Marina Green as well as pile driving and floating dock installation at Piers 30-32 where team bases would be constructed. For the AC34 2013 events, pile driving would be required for repairs and upgrades at many piers, and piles would also be installed to support floating docks and wave attenuators. Several of the existing piers would also be seismically strengthened, requiring repairs to piles and other substructures. Anchoring systems would be installed in many locations for berthing. More details regarding these in-water construction activities are provided in Chapter 3, Project Description.

These in-water construction activities would result in short-term disturbance of localized Bay sediments, which could result in adverse water quality effects because the sediments may contain chemicals from historic activities, and disturbance of the sediments could temporarily increase turbidity and resuspend these sediments in Bay waters. The related impacts would be similar to those described above for dredging activities.

As for dredging, construction activities within the Bay would be subject to the requirements of a Section 10 permit from the Corps that would receive water quality certification from the RWQCB. The permit would specify BMPs for the protection of water quality such as use of silt curtains to

reduce disturbance of bottom sediments. Therefore, due to the limited extent and temporary nature of construction activities in the Bay, and implementation of water quality control measures as part of compliance with permit requirements, water quality impacts related to construction activities in the Bay would be *less than significant*.

Historic pilings along the waterfront are typically constructed of wood that has been treated with creosote (a wood preservative that contains organic compounds) and encased in concrete. Creosote-treated wood is no longer permitted to be used for structures in the Bay because it is toxic to marine organisms. Under the proposed project, creosote-treated piles would be removed from the Rincon Point (Piers 14-22½) Open Water Basin, and could be required for completion of seismic upgrades or along the pier bulkheads where AC34 Port improvements would occur. Replacement of creosote-treated pilings with non-toxic materials would result in a long-term improvement in water quality, although temporary water quality effects could occur during removal due to re-suspension of sediments containing organic compounds from the sediments, and debris potentially produced during removal.

However, as discussed in Chapter 3, Project Description, consistent with practices recommended in the *San Francisco Bay Subtidal Habitats Goals Project Report*,[125] the project sponsor would conduct removal activities in accordance with applicable regulatory permits and would cut or break the piles off at least one-foot below the mudline. The project sponsor would minimize sediment disturbance during removal, and would use a floating boom around the work area to contain and capture debris and would have absorbent pads available in the event that a petroleum sheen develops during removal of the structures. With implementation of water quality protection measures consistent with permit requirements, and water quality BMPs as described in Chapter 3, Project Description, water quality impacts related to removal of creosote-treated piles would be *less than significant*.

Use of construction equipment for in-water construction activities such as the installation or repair of piles and substructures, floating docks, wave attenuators, and anchoring systems as well as pile removal would involve the use of diesel-fueled construction equipment, and potentially require the use of some hazardous materials such as oils and lubricants. In addition, some construction activities would require the installation of fresh cement. If released to the Bay, these materials would degrade water quality, a *potentially significant* impact. Implementation of **Mitigation Measure M-HY-1** (Water Quality Best Management Practices) would reduce this impact to a less-than-significant level by requiring the use of well maintained equipment and placing restrictions on maintenance of this equipment, placing restrictions on fueling activities and storage of hazardous materials, requiring specific measures for responding to spills, and restricting the discharge of fresh cement to the Bay.

[125] The San Francisco Bay Subtidal Habitat Goals Project, which issued its report in 2010, is collaboration among BCDC, the California Ocean Protection Council/California State Coastal Conservancy, NOAA Habitat Conservation, NOAA Restoration Center, and the San Francisco Estuary Partnership.

Enclosure of Water Basins and Temporary In-Water Structures

As described in more detail in Chapter 3, Project Description, floating wave attenuators would be installed at Piers 30-32 and the Brannan Street Wharf (Piers 32-36) Open Water Basin to provide protection from waves. The proposed wave attenuators would partially enclose the Brannan Street Wharf (Piers 32-36) Open Water Basin. In addition, floating docks would be constructed at many locations to increase berthing capacity and large spectator yachts would be moored in several locations. The partial enclosure of the Brannan Street Wharf (Piers 32-36) Open Water Basin and construction of these in-water improvements could result in changes to water circulation, and related changes in sediment transport, water quality, and salinity.

Numerical modeling of the circulation in San Francisco Bay was performed to evaluate the effects of the proposed improvements on circulation, and the subsequent effects on sediment transport, water quality, and salinity.[126] This modeling, included as Appendix HY, concluded that the floating wave attenuators and other improvements would induce a maximum current velocity change of 1.5 foot per second, and that the effects on current velocities would be restricted to the immediate vicinity of the structures and only during stronger currents. At times of low currents, changes are expected to be negligible. Along the San Francisco waterfront, sediment transport, salinity and water quality are driven almost entirely by tidal currents. Therefore, any potential changes in these factors caused by the installation of the AC34 temporary facilities is also expected to be confined the immediate vicinity of the temporary facilities. Further, wind and wind-waves, which cause mixing, would be expected to further reduce the potential effects of the proposed facilities on the Bay tidal currents, sediment transport, salinity and water quality. Therefore, water quality impacts related to the wave attenuators, floating docks, and mooring of large yachts would be *less than significant*.

Contributions to Combined Sewer Overflows

As described in Section 5.16.1.1, Surface Water Hydrology and Stormwater Management, San Francisco has a combined sewer system that collects both stormwater runoff and wastewater in the same pipes. During dry weather, the annual average wastewater flow in the system is approximately 63 mgd, well within the SEWPCP dry-weather permitted capacity of 84.5 mgd. During the rainy season, however, the combined stormwater and wastewater flows exceed the permitted capacity of the SEWPCP and North Point Wet Weather Facility, resulting in combined sewer overflow discharges through one or more the 29 CSO structures located along the City's Bayside waterfront in accordance with the City's NPDES permit.

As contemplated by the Waste Management Plan, the project sponsor may install temporary restroom facilities that connect to the combined sewer system, subject to applicable permitting requirements. An increase in either stormwater runoff or sanitary sewage from the AC34 events and venues could affect the available storage, pumping, and treatment capacity of the combined sewer system, potentially increasing the frequency, volume or duration of combined sewer discharges. However, the AC34 events would be conducted during the dry season, and any

[126] Coast & Harbor Engineering, *Draft Coastal Harbor Engineering Impact Analysis, 34th America's Cup, San Francisco Bay,* June 14, 2011.

increase in sanitary sewage from the increased out-of-town visitors and spectators to the America's Cup would take place during dry weather only, when there is sufficient treatment capacity at the SEWPCP for all flows. There would be no additional stormwater runoff directed to the combined sewer system during wet weather due to the AC34 events. Therefore, there would be *no impact* on combined sewer overflows.

Increased Vessel Usage of Marina and Boatyard Facilities

As described in more detail in Chapter 3, Project Description, the AC34 events are expected to attract an estimated 2,280 spectator boats to San Francisco Bay on an average peak day in 2013, including an estimated 2,200 recreational boats. In addition, there would be a number of AC34-related vessels for support, media, tender boats, etc. This project-induced increase in vessel traffic would likely increase the reliance on and use of various marina and boatyard facilities (see Figures 5.16-5 and 5.16-6), with potential effects on water quality within San Francisco Bay, especially within the Central Bay where the AC34 events are proposed.

Water quality effects at these marinas and boatyard facilities could occur as a result of increased fueling activities, sewage and bilge water pumpouts, and boat repairs related to the increased number of vessels. As described in Section 5.16.2.2, State Regulations, these facilities would be subject to the Industrial General NPDES Permit if they have a point source discharge of stormwater, and to the state Nonpoint Source Pollution Control Program if they do not. In addition, many of the marina and boatyard facilities undertake additional voluntary management practices to reduce pollutant contributions to Bay waters, such as distributing new or collecting used oil absorbent pads for small craft with inboard or outboard motors[127] and using treatment systems to minimize discharge of heavy metals and other contaminants into waterways via stormwater.[128,129,130]

However, despite permit requirements and voluntary measures implemented by marinas and boatyards, many of the non-resident mariners, including those on international visiting vessels, would potentially be unfamiliar with U.S. and California water quality and boating regulations. Because of this lack of familiarity, combined with the extra burden of enforcement, impacts on water quality from the increased use of marinas and boatyard facilities would be *potentially significant*.

Implementation of **Mitigation Measure M-BI-12** (Visiting Mariners Information), as described in Section 5.14, Biological Resources, would require the project sponsor to educate boaters about environmentally sound boating practices and access to environmental services to ensure

[127] City and County of San Francisco Department of the Environment (SFE) the California Department of Boating and Waterways (Cal Boating), and the California Coastal Commission (CCC) Boating Clean & Green Program, 2011-2012 San Francisco Bay Area Clean Boating Map, http://www.coastal.ca.gov/ccbn/SF_Bay_Clean_Boating_Map.pdf, 2011.

[128] California Stormwater Quality Association (CSQA), *Stormwater Best Management Practice Handbook: Industrial and Commercial*, 2003.

[129] Gordon, F. and V. Matuk, *California Clean Marina Toolkit. A resource for environmentally sound marina management and operation*, California Coastal Commission, Boating Clean and Green Campaign, 2004.

[130] Marina Recreation Association, Clean Marinas Program, 2011, accessed online at http://www.cleanmarinascalifornia.org/, April 7, 2011.

employment of clean boating habits. Implementation of an education and public outreach program would ensure maximum protection of Bay water quality during AC34 events. With implementation of **Mitigation Measure M-BI-12**, impacts on water quality as a result of increased use of marinas and boatyard facilities would be reduced to *less than significant*.

Increased Boating Discharges, Spills, and Littering in the Bay

As described above and in Chapter 3, Project Description, the AC34 events are expected to attract an estimated 2,280 spectator boats to San Francisco Bay on an average peak day in 2013. Increased vessel traffic, including both race-related and spectator vessel traffic, could adversely affect water quality within San Francisco Bay, especially within the Central Bay where the AC34 events are proposed, as a result of potential bilge water discharges, oily water discharges and hazardous materials spills, sewage discharges, and littering.

Legal requirements related to ballast water discharges, sewage discharges, spills of hazardous materials and waste management are contained in a number of state and federal regulations detailed in Section 5.16.2.1, Federal Regulations, and Section 5.16.2.2, State Regulations. The U.S. Coast Guard has primary oversight responsibility for implementing domestic laws and international conventions applicable to vessels.

As described in the Setting above, the Central Bay has been identified as an impaired water body under Section 303(d) of the Clean Water Act, and among the listed pollutants causing the impairment designation is "exotic species," also referred to as non-native or invasive species. Invasive species may be introduced to the Bay via a number of avenues including discharges of ballast water as well as from anchor chain lockers, anchors, anchor chains, anchor lines, ship bilges, drains, and through-hull connections; this impact is discussed in Section 5.14.4, Marine Biological Resources. To protect waters, such as the Bay, from invasive species from visiting vessel ballast, the Ballast Water Management Act requires that all vessels carrying ballast water either conduct a mid-ocean exchange of ballast water or retain all ballast water on board the vessel to prevent or reduce the introduction and spread of non-indigenous aquatic species into the state waters. As described in Section 5.14.4, Marine Biological Resources, **Mitigation Measure M-BI-12** (Visiting Mariners Information) would reduce the risk of from visiting ships of introducing non-native species to the Bay from ballast water, hull fouling, anchor chain lockers, anchors, anchor chain, anchor line, ship bilges, drains, through-hull connections, and other locations on visiting boats. Furthermore, the potential for spread or accelerating the spread of already introduced invasive species during proposed in-water construction activities would be reduced to *less than significant* with implementation of **Mitigation Measure M-BI-16** (Invasive Marine Species Control at Port Facilities). Please see Section, 5.14.4, Marine Biological Resources, for further description of this potential impact.

Discharge of fuel, oil, oily wastes, and hazardous substances is prohibited into or upon the navigable waters of the United States or the waters of the contiguous zone if such discharge causes a film or sheen upon or discoloration of the surface of the water, or causes a sludge or emulsion beneath the surface of the water. If a discharge occurs, the responsible party must control the source of the discharge, prevent further discharges, halt or slow the spread of the

discharge, and remove as much of the substance as possible using mechanical means such as containment booms, vacuum trucks, and absorbents. In addition, all boats 26 feet or longer must display an oily waste discharge placard in the engine compartment or near fuel pumping stations that notifies passengers and crew about discharge restrictions.

Regarding sewage discharges, recreational vessels with installed toilet facilities must have an operable MSD or holding tank on board and can only discharge the sewage on shore into a local sewage treatment facility. Larger vessels equipped with Type I and II MSDs are prohibited from discharging untreated sewage anywhere within the 3-mile territorial limit (including lakes, rivers, reservoirs or coastal water within 3 miles of shore) or even treated sewage into any designated No Discharge Zone.

Disposal of noxious liquids and garbage (including plastics) is also prohibited into or upon the navigable waters of the United States. For vessels 26 feet or longer within federal waters, boat operators must display a Garbage Disposal Placard notifying passengers and crew about discharge restrictions in a prominent location. Additionally, vessels 40 feet and over that operate beyond three nautical miles from shore must not only display the aforementioned placard but must also prepare and carry a written Waste Management Plan describing the procedures for collecting, processing, storing and properly disposing of garbage in a way that will not violate the MARPOL convention requirements. Additionally, as part of the proposed project, the project sponsor is preparing a Waste Management Plan that would include provisions to minimize the potential for the discard of wastes such as electronic devices, batteries, used oil, paints, caulk, adhesives, solvents, and wastes associated with food preparation into the Bay during boat operation, berthing, or mooring.

In addition to the above regulatory requirements, the project sponsor would be required to obtain coverage under the Industrial General Stormwater Permit described in Section 5.16.2.2, State Regulations, for temporary berthing locations constructed for AC34 events. In accordance with this permit, the project sponsor would be required to prepare and implement a SWPPP identifying sources of pollutants and the means to manage these sources.

Despite regulations regarding operations of vessels within U.S. waters, preparation of a Waste Management Plan as part of the AC34 events, and compliance with the requirements of the Industrial Stormwater Permit, impacts on water quality as a result of the increased potential for ballast water discharges, bilge water discharges, oily water discharges and hazardous materials spills, sewage discharges, and littering in the Bay would be *potentially significant* because some boaters, including international visiting vessels, may not be familiar with U.S. regulations and there would also be an increased burden of enforcement due to the increased number of boats during the AC34 events.

Implementation of **Mitigation Measure M-BI-12** (Visiting Mariners Information) would require the project sponsor to educate boaters and marinas about environmentally sound boating practices and access to environmental services to ensure employment of clean boating habits. With implementation of **Mitigation Measure M-BI-12**, impacts on water quality as a result of

invasive species introduced to the Bay from foreign vessels or from increased boating discharges, spills, and littering would be *less than significant*. Implementation of **Mitigation Measure M-BI-16** (Invasive Marine Species Control at Port Facilities) would reduce the potential impact on Bay-Delta habitats and associated marine communities from the spread of introduced invasive species associated with in-water construction activities to *less than significant*.

Littering

The increased public use of the Bay by boaters and the Bay shoreline by spectators and event staff during the AC34 2012 and 2013 events would increase the potential for littering, particularly at the America's Cup Village and spectator venues where crowds would be congregated and hospitality services (food, beverage, and merchandise sales) would be offered. Similarly, littering could also occur from boats and at the secondary viewing areas. Due to the proximity of these venues to the Bay, litter could be directly discarded to the Bay, carried to the Bay via wind or stormwater runoff, or even carried by sea gulls. Many kinds of materials likely to be included in refuse are harmful to aquatic life. For example, plastic "six pack" holders are known to seriously harm various aquatic organisms, including special status marine birds and mammals, when they become entangled in the plastic openings. Litter generated at the proposed project site has the potential to increase the risk of feeding and choking hazards for brown pelicans, double crested cormorants, and harbor seals. In the marine environment, salt and sun can also break down the trash, especially plastic bottles, into ever smaller, eventually microscopic components, increasing nutrient loading, reducing available dissolved oxygen, and potentially creating suffocating films on the water surface that can adversely affect quality. Additionally, many components and trash, especially degraded plastics, can be toxic to aquatic wildlife.

As described in Chapter 3, Project Description, a Waste Management Plan would be developed and implemented by the project sponsor, and implementation of the plan would ensure that there are adequate receptacles and service levels to meet demand for the expected crowds at all of the primary AC34 venues. Also, the structure and timeline of the overall AC34 events would enable event staff to use experience from 2012 to improve upon waste reduction and discards management in 2013, when substantially greater visitor numbers are expected. The City and project sponsors are currently coordinating the AC34 planning with neighboring jurisdictions and are addressing issues such as littering associated with AC34 spectators at secondary viewing locations. With implementation of the Waste Management Plan and coordination with neighboring jurisdictions, water quality impacts related to littering would be *less than significant*.

Impact Summary

With implementation of the water quality protective measures included in the project and regulatory requirements addressing the proposed construction activities, impacts related to the violation of water quality standards or waste discharge requirements or other degradation of water quality as a result of construction and demolition activities above and near the Bay, dredging, construction activities in the Bay, temporary enclosure of water basins, and contributions to combined sewer overflows would be *less than significant.*

Use of construction equipment for in-water construction activities such as the installation or repair of piles and substructures, floating docks, wave attenuators, and anchoring systems as well as pile removal would involve the use of diesel-fueled construction equipment, and potentially require the use of some hazardous materials such as oils and lubricants. In addition, some construction activities would require the installation of fresh cement. If released to the Bay, these materials would degrade water quality, a *potentially significant* impact. Implementation of **Mitigation Measure M-HY-1** (Water Quality Best Management Practices) would reduce this impact to a less-than-significant level. Although invasive species may be introduced to the Bay from anchor chain lockers, anchors, anchor chains, anchor lines, ship bilges, drains, and through-hull connections from foreign vessels, implementation of **Mitigation Measures M-BI-12** (Visiting Mariners Information) would reduce this impact to less than significant. Implementation of **Mitigation Measure M-BI-16** (Invasive Marine Species Control at Port Facilities) would reduce the potential impact on Bay-Delta habitats and associated marine communities from the spread of introduced invasive species associated with in-water construction activities to *less than significant with mitigation*.

Impacts on water quality as a result of increased usage of regional marina and boatyard facilities by AC34 sponsors and spectators; discharges, spills, and littering in the Bay from spectator boats; and on-land littering by spectators would be *potentially significant*. These impacts would be reduced to a *less-than-significant* level through implementation of **Mitigation Measures M-BI-12** (Visiting Mariners Information).

Mitigation Measure M-HY-1: Water Quality Best Management Practices

The project sponsor shall implement water quality best management practices (BMPs) to protect water quality as well as protected species and their habitat(s) from pollution due to fuels, oils, lubricants, and other harmful materials. BMPs for this proposed project shall follow those detailed in the San Francisco Department of Public Health Pollution Prevention Toolkit for Maritime Industries.[131] Vehicles and equipment that are used during the course of a proposed project shall be fueled and serviced in a manner that will not affect federally protected species in the project area or their habitats;

- A Spill Prevention Control and Countermeasure (SPCC) Plan shall be prepared to address the emergency cleanup of any hazardous material and will be available on site. The SPCC shall include:
    - Methods to address the emergency cleanup of any hazardous material and what materials will be available on site;
    - SPCC, hazardous waste, stormwater and other emergency planning requirements;
    - Measures to prevent spills into the Bay associated with in water fueling, if in water fueling is required on some of the construction barges. Such measures shall include:

[131] Virginia St. Dean, San Francisco Department of Public Health, *Pollution Prevention Toolkit for Maritime Industries*, prepared for: California Department of Toxic Substances Control Under Contract #08-T3625-A2, January 2011.

  - Secondary booms and/or pads, depending upon where fueling would take place on the vessel;
  - Secondary containment on the deck of the vessel to contain the petroleum product;
  - Specifying volume of petroleum products that will be on the vessel and evaluating the potential for spills. Absorbent and cleanup materials (such as oil sorbent boom, heavy oil pads, OilDry Absorbant Floor, etc.) of sufficient quantity to clean up potential spill volume shall be provided; and
  - The locations of properly permitted offsite locations where vessels will be fueled.

- In addition, fueling of equipment shall occur using proper fuel transfer procedures as per U.S. Coast Guard regulations (33 CFR 156.120 and 33 CFR 155.320) and spill containment and the fueling location shall be inspected after fueling to document that no spills have occurred. Any spills shall be cleaned up immediately using spill response equipment as identified in the SPCC Plan.

- 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;

- The project sponsor shall exercise every reasonable precaution to protect listed species, their habitats, and Essential Fish Habitat from construction by-products and pollutants such as demolition debris, construction chemicals, fresh cement, saw-water, or other deleterious materials. Construction will be conducted from both land and water, and care shall be used by equipment operators to control debris so that it does not enter the Bay.

- A Materials Management Disposal Plan (MMDP) shall be prepared to prevent any debris from falling into the Bay during construction to the maximum extent practicable. The measures identified in the MMDP shall be based on the Best Available Technology, and will include, but not be limited to, the following measures:

  - During construction, the 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;
  - Measures to ensure that fresh cement or concrete shall not be allowed to enter San Francisco Bay. Construction waste shall be collected and transported to an authorized upland disposal area, and per federal, state, and local laws and regulations;
  - All hazardous material shall be stored upland in storage trailers and/or shipping containers designed to provide adequate containment. Short-term

laydown of hazardous materials for immediate use shall be permitted with the same anti-spill precautions;

- 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;
- Construction material shall be covered every night and during any rainfall event (if there is one);
- Construction crews shall reduce the amount of disturbance within the project site to the minimum necessary to accomplish the project; and
- Measures to prevent saw water from entering the Bay.

The MMDP shall be submitted to the RWQCB for review and approval.

See also the following measures:

- **Mitigation Measure M-BI-12: Visiting Mariners Information**
- **Mitigation Measure M-BI-16: Invasive Marine Species Control at Port Facilities**

Impact HY-2: Operation of the America's Cup facilities would not exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff. (Less than Significant)

With the exception of floating docks that would be installed at various piers and water basins along the Bayside waterfront of San Francisco, none of the proposed project improvements would increase impervious surfaces within the project area, or otherwise result in an increase in stormwater runoff that could exceed the capacity of a stormwater drainage system. Although the floating docks would temporarily increase impervious surfaces, they would remain in place for one rainy season at most. If they did remain in place, they would drain directly into the Bay and stormwater discharges from the floating docks would not exceed the capacity of an existing stormwater drainage system.

With the exception of the proposed team bases, none of the activities planned at the AC34 venues would include the use of hazardous materials or other potential stormwater pollutants that could degrade water quality during either of the AC34 events. However, the team bases that would be constructed at Pier 80 and at Piers 30-32 would involve boat maintenance activities and the use of hazardous materials that could be sources of stormwater pollutants, as discussed below.

Pier 80 and Piers 30-32 would be used as a team base. As discussed in Section 5.16.1.1, Surface Water Hydrology and Stormwater Drainage, Pier 80 has a separate stormwater drainage system that is comprised of four separate drainage areas, and a small portion of this pier drains to the City's combined sewer system. Piers 30-32 currently drain directly to the Bay. Boat maintenance activities, the outside storage of heavy equipment, and the use of hazardous materials associated

with the team base activities could be potential sources of stormwater pollutants discharged to these storm sewer systems. However, the project sponsor would implement practices at the team bases at both locations and the fabrication and assembly facilities at Pier 80 to promote recycling of materials and use of environmentally friendly products and procedures, such as limiting the use of diesel powered equipment, using equipment powered with electricity or alternative fuels rather than diesel, and using environmentally friendly alternatives to industrial solvents and other maintenance chemicals.

As discussed in Section 5.17, Hazards and Hazardous Materials, the project sponsor would design the facilities at Pier 80 to establish a clean working environment in compliance with applicable hazardous materials and health and safety regulations including Articles 21, 21A, and 22 of the San Francisco Health Code (see Impact HZ-1). Specifically, the project sponsor would obtain a Certificate of Registration from the San Francisco Department of Public Health, and would implement a hazardous materials business plan that includes inventories, a program for reducing the use of hazardous materials and generation of hazardous wastes, site layouts, a program and implementation plan for training all new employees and annual training for all employees, and emergency response procedures and plans. Similarly, the project sponsor would be required to comply with the City's hazardous waste handling requirements specified in Health Code Article 22.

In addition, the AC34 events would be conducted during the dry season when no stormwater runoff would be generated. Further, in accordance with the Stormwater Design Guidelines discussed in Section 5.16.2.3, Local Regulations, the project sponsor would be required to prepare and implement a Stormwater Control Plan identifying how the stormwater discharges would be treated to comply with the San Francisco Stormwater Management Ordinance, and specifying BMPs for the treatment of stormwater discharges. Such BMPs may include features such as rain gardens in the streetscape, aboveground planters for biofiltration, or separators or media filters to remove stormwater pollutants.

The project sponsor would also be required to obtain coverage under the Industrial General Stormwater Permit described in Section 5.16.2.2, State Regulations, depending on the specific activities conducted at the team base. In accordance with this permit, the project sponsor would also be required to prepare and implement a SWPPP identifying sources of pollutants and the means to manage these sources to reduce stormwater pollution.

As described in Chapter 3, the Port of San Francisco would require a Team Base Operations Manual, that would set forth specifications and standards for boat building, maintenance, and cleaning practices. The manual would incorporate all applicable environmental and safety permits that would be applicable to the proposed industrial-related practices at the team bases, including but not limited to boat fabrication and assembly, equipment and materials use and storage, and maintenance and cleaning activities.

Incorporation of safe handling methods planned as part of the project, compliance with the San Francisco Health Code, and implementation of control measures required for compliance with

the San Francisco Stormwater Management Ordinance (as specified in the Stormwater Design Guidelines), and compliance with the Industrial General Stormwater Permit, impacts related to additional sources of stormwater pollutants would be *less than significant,* even if the team base were to remain in place between the AC34 2012 and 2013 events.

Mitigation: Not required

Impact HY-3: The America's Cup events and facilities would not place structures within a 100-year flood hazard area that would impede or redirect flood flows, and would not expose people to a significant risk involving flooding. (Less than Significant)

As described in Section 5.16.1.6, Flooding, Seiche, and Tsunami, most of the San Francisco Bayside waterfront from the Golden Gate Bridge to Aquatic Park, including most of Crissy Field, could be subject to flooding (see Figure 5.16-7). Waterfront flooding could also occur along the southern waterfront from approximately Pier 50 to Islais Creek at the southern end of the project area, as well as points farther south. The Fort Baker Pier at Cavallo Point is also located near a special flood hazard zone identified by FEMA.

Northern San Francisco Waterfront

Crissy Field would be used as a spectator venue for both the AC34 2012 and 2013 events, with spectator seating installed and hospitality services provided for both events. However, these improvements would only be in place for a short duration during the actual AC34 events during the dry season, when flooding would not be expected. If flooding were to occur, spectators would avoid this area if inundated. Along the remainder of the affected shoreline, flooding impacts would be limited to the immediate waterfront and would not likely adversely affect project improvements constructed for either event. Further, none of the proposed improvements would impede or redirect flood flows, and seismic upgrades and repairs or improvements to the existing piers would provide better protection from damage due to storm surge. Therefore, impacts related to placement structures within a 100-year flood hazard area that would impede or redirect flood flows or expose people to a significant risk involving flooding would be *less than significant*, and no mitigation is required.

Fort Baker Pier

The spectator venue at Cavallo Point could also be subject to flooding from tidal surge. However, as for Crissy Field, any improvements would only be in place for a short duration during the actual AC34 events during the dry season, when flooding would not be expected. If flooding were to occur, spectators could avoid this area if inundated. Further, any temporary improvements would be constructed on the pier and would not impede or redirect flood flows. Therefore, impacts related to placement of structures within a 100-year flood hazard area that would impede or redirect flood flows or expose people to a significant risk involving flooding would be *less than significant*.

Mitigation: Not required

Impact HY-4: The America's Cup events and facilities would not expose people or structures to a significant risk of loss, injury, or death involving inundation by seiche or tsunami. (Less than Significant)

As discussed in Section 5.16.1.6, Flooding, Seiche, and Tsunami, the majority of the project area is located in an area identified for potential inundation in the event of a tsunami or seiche. The potential run up varies from 6 feet near Pier 80 to approximately 14 feet near Crissy Field. Although extremely rare, a tsunami or seiche could expose project improvements to damage and could endanger spectators and event staff. Some damage to structures could occur. However, there is a well-established Tsunami Warning System that would be activated and would protect people from harm, as discussed below.

Structures

Temporary structures such as the AC34 team bases and spectator venues at Crissy Field and the areas in the vicinity could be inundated from a tsunami or seiche. However, the AC34 events would be short-term (up to 12 days in 2012 and 45 days in 2013) and the likelihood of a tsunami or seiche occurring during the events is very low. (Impacts related to tsunami or seiche inundation at Pier 27 where the new cruise terminal would be constructed are discussed in Impact HY-8, below.) Further, some modifications such as the seismic upgrades and improvements at the piers on the San Francisco waterfront would increase the resilience of these structures to tsunamis or seiches. Therefore, impacts related to damage to structures from inundation by seiche and tsunami are considered *less than significant*.

People

None of the facilities constructed for the AC34 events would include the introduction of new residents or workers that would be permanently exposed to tsunami or seiche hazards. Although there would be a large influx of spectators and event staff during the AC34 events, these events would be of short duration and the probability of a tsunami or seiche occurring during the events is extremely low. Nevertheless, in the event that an earthquake occurred that would be capable of producing a tsunami that could affect San Francisco, the National Warning System would provide warning to the City. The San Francisco outdoor warning system (sirens and loudspeakers, tested each Tuesday at 12:00 noon) would then be initiated which would sound an alarm alerting the public to tune into local TV, cable TV, or radio stations, which would carry instructions for appropriate actions to be taken as part of the Emergency Alert System. Police would also canvas the neighborhoods sounding sirens and bullhorns, as well as knocking on doors as needed, to provide emergency instructions. Evacuation centers would be set up if required. The advance warning system would allow for evacuation of people prior to a seiche and would provide a high level of protection to public safety.

Further, as described in Chapter 3, Project Description, the AC34 events would include implementation of a Public Safety Plan that would address all safety and security measures (including emergency and rescue services) to protect the AC34 sponsors, staff, participants, the media, guests, spectator vessels, and the public. The plan would include specific measures to ensure a high level of security within and around all elements of the AC34 venues and within and around sensitive locations. Inclusion of this plan in the AC34 events, implementation of its provisions, and use of the National Warning System and Emergency Alert System would ensure that impacts related to exposure of people to risk from inundation by seiche and tsunami are considered *less than significant*.

Mitigation: Not required

James R. Herman Cruise Terminal and Northeast Wharf Plaza

Impact HY-5: Construction and operation of the Cruise Terminal and Northeast Wharf Plaza would not violate water quality or waste discharge requirements or otherwise substantially degrade water quality. (Less than Significant with Mitigation)

Cruise Terminal Phase 1 Construction

Phase 1 of the cruise terminal construction would be coordinated with the development of the proposed America's Cup Village at Piers 27-29. As described in Impact HY-1 and Chapter 3, Project Description, the AC34 2013 venue program for Piers 27-29 would first demolish the Pier 27 shed, a portion of the Pier 29 shed, and the Pier 27 Annex office building, and the Teatro Zinanni tent facility and soccer field would also be removed. Under Phase 1, as part of the AC34 2013 venue program for Piers 27-29, the Port would then construct the cruise terminal core building and shell, which would accommodate proposed AC34 team hospitality suites and associated uses at the America's Cup Village during the AC34 2013 event. Impacts related to these construction activities are addressed in Impact HY-1, above.

Cruise Terminal Phase 2 and Northeast Wharf Plaza Construction

In-Water Construction Activities. As described in Chapter 3, Project Description, the proposed project would include strengthening and seismically upgrading the Pier 29 superstructure, if needed; repairing the Pier 29 apron and fendering; and repairing the Piers 27-29 substructure, if needed. In addition, stormwater management features, including storm drains, collection facilities, and conveyance facilities, consistent with the San Francisco Stormwater Management Guidelines would be installed. Impacts related to these construction activities are the same as those discussed in Impact HY-1, above. Specifically, these in-water construction activities would result in short-term disturbance of localized Bay sediments, which could result in adverse water quality effects because the sediments may contain chemicals from historic activities, and disturbance of the sediments could temporarily increase turbidity and resuspend these sediments in Bay waters. The related impacts would be similar to those described for dredging activities.

As for dredging, these in-water construction activities would be subject to the requirements of a Section 10 permit from the Corps that would receive water quality certification from the RWQCB. The permit would specify BMPs for the protection of water quality such as use of silt curtains to reduce disturbance of bottom sediments. Therefore, due to the limited extent and temporary nature of construction activities in the Bay, and implementation of water quality control measures as part of compliance with permit requirements, water quality impacts related to these in-water construction activities would be *less than significant*.

However, as described in Impact HY-1, use of construction equipment for in-water construction activities such as the installation or repair of piles and substructures and pile removal would involve the use of diesel-fueled construction equipment, and potentially require the use of some hazardous materials such as oils and lubricants. In addition, some construction activities would require the installation of fresh cement. If released to the Bay, these materials would degrade water quality, a *potentially significant* impact. Implementation of **Mitigation Measure M-HY-1** (Water Quality Best Management Practices) would reduce this impact to a less-than-significant level by requiring the use of well maintained equipment and placing restrictions on maintenance of this equipment, placing restrictions on fueling activities and storage of hazardous materials, requiring specific measures for responding to spills, and restricting the discharge of fresh cement to the Bay.

Over the Water and On-Land Construction Activities. During the remainder of Phase 2 construction, the Port would complete the interior spaces of the cruise terminal (e.g. Customs and Border Protection offices) and install interior building equipment (e.g., screening facilities). Exterior maritime equipment (e.g., mobile gangway, bollards, and fendering) required for cruise terminal operations would also be installed.

The Northeast Wharf Plaza would provide an approximately 2½-acre open space at the south end of Pier 27, fronting along The Embarcadero promenade. Hardscaping at the plaza would include pavers, concrete seating/steps, and planters. The multiuse recreational space is proposed to consist of a natural turf underlain by a soil bed and base drain mat. Land-based construction activities for construction of the Northeast Wharf Plaza could include demolition of existing urban waterfront hardscaping and subsequent soil-disturbing activities such as grading and excavation adjacent to Bay waters. These construction activities would occur entirely within the developed San Francisco waterfront.

During construction of the cruise terminal Phase 2 improvements and Northeast Wharf Plaza, the delivery, handling, and storage of construction materials and wastes, as well as the use of construction equipment, could introduce a risk of stormwater contamination that could affect water quality. Spills or leaks from heavy equipment and machinery can result in oil and grease contamination, and some hydrocarbon compound pollution associated with oil and grease can be toxic to aquatic organisms at low concentrations. Building sites can also be the source of pollution because of the use of paints, solvents, cleaning agents, and metals during construction, especially during construction of interior spaces, such as Phase 2 of the cruise terminal construction. Furthermore, construction of Phase 2 would require temporary onsite use and storage of vehicles,

fuels, and wastes that can be sources of water pollution and could also contribute to other pollutant sources such as trash, debris, and organic matter. If improperly handled, these pollutants could be transported in stormwater runoff to surface waters or directly deposited into the Central Bay, which could substantially affect water quality.

However, as described in detail under Impact HY-1, construction of the cruise terminal would be subject to the Construction General Stormwater Permit described in Section 5.16.2.2, State Regulations. In accordance with the Construction General Stormwater Permit, the project sponsor would be required to prepare and implement a SWPPP to minimize construction water quality impacts. The SWPPP would identify pollutant sources within the construction area and recommend site-specific BMPs to prevent discharge of pollutants into stormwater. Such BMPs would likely include requirements for minimizing, containing, and collecting debris from construction activities; maintaining construction equipment; managing construction-related water discharges; and locating fueling activities away from water bodies. The RWQCB would be responsible for determining whether the proposed project would be required to comply with the General Construction Permit. In addition, the RWQCB would also review the project during the Section 401 Water Quality Certification process for the construction activities. The 401 certification would also require implementation of BMPs and specific measures for the protection of water quality during construction. Consequently, with implementation of water quality control measures required pursuant to regulatory mandate, impacts related to violation of water quality or waste discharge requirements and degradation of water quality are considered *less than significant*.

Long-Term Operation of Cruise Terminal and Northeast Wharf Plaza

Water quality impacts related to operation of the cruise terminal and Northeast Wharf Plaza include discharges from cruise ships using the terminal and potential contributions to combined sewer overflows, as well as pesticide use for landscaping, as discussed below.

Cruise Ship Discharges. Under the proposed project, cruise ship calls would be expected to continue to fluctuate between 40 to 80 calls per year, similar to existing conditions. The average size of the cruise ships using the new terminal would also likely be larger, consistent with current trends. However the main cruise ship operations would be transferred from Pier 35 to the new cruise terminal at Pier 27. In addition, the Pier 27 facility would continue to be used for other maritime events such as Fleet Week, foreign naval diplomatic calls, "Tall Ships" festivals, and visits by oceanic research vessels. Pier 35 would serve as a secondary facility should two cruise ships require berthing at the same time.

The cruise ships that would use the new cruise terminal could result in pollutant discharges such as fuels, bilge or ballast water, boat cleaning and maintenance materials, chemicals and solvents used in onboard activities including dry cleaning and photo processing, sewage from toilets ("black water"), and gray water. Although the volume of discharges would not likely change as a result of the project because the number of cruise ship calls would be similar to existing conditions, the location of the potential discharges would be moved.

However, discharges from cruise ships are addressed under a variety of regulations. As described in the Section 5.16.2.2, State Regulations, discharges of ballast water from all vessels in California are regulated under the Ballast Water Management for Control of Non-Indigenous Species Act. Under this act, cruise ships would be required to comply with the specified management, reporting, and fee procedures. Cruise ships do not typically take on or discharge large quantities of ballast water, however, due to the relatively light load that passengers and stores represent on these vessels. Nevertheless, compliance with these regulations and Port requirements for cruise ships would minimize the potential for introducing non-indigenous aquatic species to San Francisco Bay as well as protect Bay waters from other pollutants and contaminants present in ballast water.

Hazardous waste may be associated with cleaning materials, paint, chemicals, and solvents used in onboard activities such as dry cleaning and photo processing. The discharge of hazardous substances to the waters of the United States from a point source, such as a cruise ship, is prohibited unless in compliance with an NPDES permit as discussed in the regulatory setting, above. Further, the CLIA "Cruise Industry Waste Management Practices and Procedures" include a provision that hazardous wastes will not be discharged to the environment, and no changes to this procedure would occur under the proposed project.

Sanitary sewage from the ships would be subject to the requirements of the MARPOL convention and Section 312 of the CWA described in Section 5.16.1.1, Federal Regulations. These regulations include requirements for on-board MSDs as well as for storage and discharge of sewage, treatment of sewage, and disinfection of sewage. The MARPOL convention also specifies restrictions on the discharge of sewage depending on the level of treatment it has received. Section 312 of the CWA prohibits the discharge untreated sewage anywhere within the 3-mile territorial limit (including lakes, rivers, reservoirs, or coastal water within 3 miles of shore) or even treated sewage into any designated No Discharge Zone. There would be no pumpout facilities included at the proposed cruise terminal, and berthed ships would be required to use pumpout facilities at other locations, if needed. Therefore, sewage from the ships and boats would not affect Bay water quality in the project vicinity.

As described in Section 5.16.2.3, Local Regulations, cruise ships calling at the Port of San Francisco are prohibited from releasing into San Francisco Bay incidental or intentional discharges of ballast water, sewage, gray water, hazardous waste, solid waste, fuel or oil-related substances. Cruise ships are required to file a Cruise Ship Discharge Report (CSDR) for each vessel call. Implementation of water quality protection measures in accordance with these requirements would ensure that water quality impacts related to cruise ship discharges would be *less than significant*.

Contributions to Combined Sewer Overflows. As described in Section 5.16.1.1, Surface Water Hydrology and Stormwater Management, San Francisco has a combined sewer system, meaning that both stormwater runoff and wastewater are carried in the same pipes. During dry weather, the annual average wastewater flows in the system are approximately 65 to 70 mgd, well within the SEWPCP permitted capacity of 150 mgd. During the rainy season, however, the combined

stormwater and wastewater flows exceed the permitted capacity of the SEWPCP and North Point Wet Weather Facility, resulting in combined sewer overflow discharges through one or more of the 29 CSO structures located along the City's Bayside waterfront in accordance with the City's NPDES permit.

As discussed in Impact HY-6, below, stormwater management features, including storm drains, collection facilities, and conveyance facilities would be constructed at Pier 27 consistent with the San Francisco Stormwater Design Guidelines and stormwater runoff from the cruise terminal would not discharge to the City's combined sewer system. Because the number of cruise ships in the future is expected to be essentially the same as under existing conditions, the incremental increase in passengers associated with the larger-sized cruise ships would occur as a result of current trends in the cruise ship industry, and would not result from implementation of the project. Regardless, the increase in passengers would not result in a substantial change in sanitary sewage contributions to the combined sewer system, and would not contribute appreciably to combined sewer overflows during the rainy season, and water quality impacts on combined sewer overflows would be *less than significant*.

Cruise Terminal and Northeast Wharf Plaza Pesticide Use. Long-term operation of cruise terminal and Northeast Wharf Plaza could include the use of pesticides for weed control in landscaped areas. Pesticides can move in surface water runoff as compounds dissolved in water or attach to soil particles. If pesticides used at the Northeast Wharf Plaza become mobilized in irrigation or precipitation runoff, the pesticide-laden water could potentially drain to San Francisco Bay, adversely affecting Bay water quality. However, the landscaped portion of cruise terminal and Northeast Wharf Plaza where pesticides could potentially be applied is minimal in area. Additionally, as discussed in Section 5.18, Mineral and Energy Resources, the project sponsor would be required to use climate-appropriate plants in accordance with the San Francisco Water Efficient Landscaping Ordinance and install weather- or soil moisture-based irrigation controllers that would automatically adjust irrigation in response to changes in plants' needs as weather conditions change, in accordance with the Port of San Francisco Building Code Chapter 13C (see Impact ME-2). Compliance with these requirements would minimize the potential for weeds and also minimize the use of water for irrigation, reducing the need for the use of pesticides and the potential for runoff from the landscaped areas.

Further, as discussed in Section 5.16.2, Regulatory Setting, pesticide use is well regulated by the U. S. EPA under the FIFRA; the California Department of Pesticide Regulation under the California Food and Agricultural Code; and the CCSF under the San Francisco IPM Ordinance. The IPM Ordinance provides an additional level of environmental protection beyond the state and federal regulations by subjecting pesticide products used on lands owned by or leased from CCSF to further in-depth hazard assessment and hazard classification before use. Based on the findings of the hazard assessment and classification, non-discretionary use restrictions can be applied to approved pesticides to ensure environmental impacts are minimized.

Due to the minimal area of potential pesticide use, the low risk of mobilization by runoff, and the federal, State, and local regulations governing safe use of pesticides in a manner that minimizes

environmental harm, water quality impacts relating to pesticide use at the cruise terminal and Northeast Wharf Plaza would be *less than significant*.

Mitigation Measure M-HY-1 (Water Quality Best Management Practices)

Impact HY-6: Operation of the Cruise Terminal and Northeast Wharf Plaza would not exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff. (Less than Significant)

There would be no impacts associated with changes in the volume of stormwater runoff from Pier 27 as a result of construction of the James R. Herman Cruise Terminal or the Northeast Wharf Plaza. Pier 27 is currently 100-percent paved and drains directly to the Bay either by sheet flow or via surface drains. The cruise terminal and associated facilities would also be fully paved. Therefore, there would not be a measurable change in the volume of stormwater runoff as a result of construction of the cruise terminal. Further, the Northeast Wharf Plaza would be constructed of natural turf underlain by a soil bed and base drain mat, which would slightly reduce the volume of stormwater runoff at the Northeast Wharf Plaza site.

These proposed improvements would only result in negligible contributions to pollutants in stormwater runoff, because no boat maintenance or other activities that involve the use of hazardous materials would be conducted at Pier 27. In addition, stormwater runoff from the proposed improvements would be discharged to the new stormwater management features (including storm drains, collection systems, and conveyance systems, described in Chapter 3, Project Description. In accordance with the Stormwater Design Guidelines discussed in Section 5.16.2.3, Local Regulations, the project sponsor would be required to prepare and implement a Stormwater Control Plan identifying how the stormwater discharges would be treated to comply with the San Francisco Stormwater Management Ordinance, and specifying BMPs for the treatment of stormwater discharges. With implementation of water quality control measures required for compliance with the San Francisco Stormwater Management Ordinance (as specified in the Stormwater Design Guidelines), impacts related to additional sources of stormwater pollutants would be *less than significant*.

Mitigation: Not required

Impact HY-7: The Cruise Terminal and Northeast Wharf Plaza would not expose people or structures to a significant risk of loss, injury, or death involving inundation by seiche or tsunami. (Less than Significant)

As discussed in Section 5.16.1.6, Flooding, Seiche, and Tsunami, the majority of the project area, including Pier 27, is located in an area identified for potential inundation in the event of a tsunami or seiche (see Figure 5.16-8). The potential runup at Pier 27 could be approximately

10 feet. Although extremely rare, a tsunami or seiche could expose project improvements to damage and could endanger occupants of the cruise terminal. Some damage to structures could occur. However, there is a well-established Tsunami Warning System that would be activated and would protect people from harm, as discussed below.

Structures

As described in Chapter 3, Project Description, improvements under the proposed project would include seismically upgrading the Pier 29 superstructure and repairing the Pier 29 marginal wharf and Piers 27-29 substructure, if needed. These improvements would seismically strengthen Piers 27-29. In addition, the cruise terminal would be constructed to current building standards. Although some damage to Pier 27 and the cruise terminal could occur, the improvements constructed under the proposed project would increase the resilience of the pier structures to tsunamis or seiches. Therefore, impacts related to damage to structures from inundation by seiche and tsunami are considered *less than significant*.

People

In the event that an earthquake occurred that would be capable of producing a tsunami that could affect San Francisco, the National Warning System would provide warning to the City. The San Francisco outdoor warning system (sirens and loudspeakers, tested each Tuesday at 12:00 noon) would then be initiated, which would sound an alarm alerting the public to tune into local TV, cable TV, or radio stations, which would carry instructions for appropriate actions to be taken as part of the Emergency Alert System. Police would also canvas the neighborhoods sounding sirens and bullhorns, as well as knocking on doors as needed, to provide emergency instructions. Evacuation centers would be set up if required. The advance warning system would allow for evacuation of people prior to a seiche and would provide a high level of protection to public safety. Therefore, impacts related to exposure of people to risk from inundation by seiche and tsunami are considered *less than significant*.

Mitigation: Not required

Impact HY-8: The Cruise Terminal and Northeast Wharf Plaza would not expose people or structures to a significant risk of loss, injury, or death involving inundation from flooding as a result of climate change-induced sea level rise. (Less than Significant)

As discussed in Section 5.16.1.6, Flooding, Seiche, and Tsunami, the Port has prepared maps showing the areas along the San Francisco waterfront that are within the Port jurisdiction and would be subject to inundation during a 100-year flood taking into account a sea level rise of 15 inches by 2050 and 55 inches by 2100. As shown in Figure 5.16-7, Pier 27 (with a deck elevation of 11.9 feet NAVD88) is above the projected 100-year flood elevation of 10.5 feet in 2050 but would be inundated at the 100-year flood elevation of 13.8 feet NAVD88 in 2100, exposing the area to flooding hazards. Further, when wave action is considered, total water levels would be as high as

17.7 feet NAVD88 by 2100, thereby exposing the area to additional wave hazards. Due to the nature of activities associated with cruise ships, which are floating on water, cruise ship operations could adapt as necessary to changes in sea level without exposing people to the hazards of inundation.

Although Pier 27 is located in an area that could be subject to a 100-year flood by 2100, based on accepted projections discussed in the Setting, approximately 2.3 feet of the sea level rise would occur after 2070, and therefore Pier 27 would not likely be subject to 100-year flooding within the planning horizon of the proposed project. Although flooding could occur during the life span of the cruise terminal, the degree of flooding that could occur is speculative given the unknowns in projecting sea level rise beyond the year 2050. Therefore, the Port would include adaptive strategies in the project design that would allow the Port to construct retroactive protective features such as a sea wall to prevent inundation due to future sea level rise if needed. Planning for these adaptive features in the initial design, and incorporation of these features at a later date when the degree of sea level rise is more certain would allow for better protection against sea level rise, without a large potential for over –design. Therefore, impacts related to exposure of people and structures to a significant risk of loss, injury, or death involving inundation as a result of climate change-induced sea level rise would be *less than significant*.

Mitigation: Not required

Impact HY-9: Proposed fill removal within Port properties associated with amendments to the BCDC Special Area Plan for the cruise terminal and Northeast Wharf Plaza would not violate water quality standards or waste discharge requirements or otherwise substantially degrade water quality. (Less than Significant)

As part of the proposed amendments to the BCDC Special Area Plan for the Cruise Terminal and Northeast Wharf Plaza, as well as potential fill removal required for the AC34 events, the Port has identified five possible fill removal sites that may be considered in BCDC's public process. These sites include dilapidated piers, wharfs, and remnant pilings that were constructed with creosote-treated wood and have no current maritime uses. The locations of these sites are shown in Chapter 3, Figure 3-39, and the structures and conditions at each of the fill removal sites are as follows:

- ***Pier 98 LASH terminal.*** An approximately 1,250-foot-long by 14-foot-wide (17,500 square foot) terminal that runs parallel to and north of Herons Head Park on Pier 98 and south of Pier 96.
- ***Pier 84 and Pier 88 along Islais Creek.*** Pier 84 is an abandoned pier paralleling the north shore of Islais Creek, connects to the shore at the base of Indiana Street and extends approximately 625 feet to the west towards I-280. In all, this pier consists of a collection of remnant piles that encompass approximately 18,850 square feet. Islais Creek is identified as a toxic hot spot under the Bay Protection and Toxic Cleanup Program,[132] and the pollutants

[132] San Francisco Regional Water Quality Control Board, *Sediment Quality and Biological Effects in San Francisco Bay, Bay Protection and Toxic Cleanup Program, Final Technical Report*, August, 1998.

present in the sediments include PCBs, chlordane, dieldrin, endosulfan sulfate, PAHs, and anthropogenically enriched hydrogen sulfate and ammonia.

- ***Pier 70, Wharves 6, 7, and 8, and area adjacent to Pier 68.*** Pier 70 and the associated wharfs are part of the Pier 70 National Historic District and the collection of piers and wharves originally encompassed approximately 409,200 square feet. Currently, Wharves 6 and 7 are largely submerged.

- ***Pier 64 adjacent to the Mission Bay Bayfront Park.*** This pier consists of a collection of remnant piles adjacent to the Mission Bay Bayfront Park.

- ***The former site of Carmens restaurant in China Basin Channel.*** The former Carmens restaurant is situated on a dilapidated 30-foot-wide pier in China Basin that extends west from the Third Street Bridge for approximately 200 feet. In all, this pier encompasses approximately 600 square feet.

Removal or replacement of creosote-treated pilings with non-toxic materials would result in a long-term improvement in water quality, although temporary water quality effects could occur during removal due to re-suspension of sediments containing organic compounds from the sediments, and debris potentially produced during removal. However, as discussed in Chapter 3, Project Description, and consistent with practices recommended in the *San Francisco Bay Subtidal Habitats Goals Project Report*, the project sponsor would conduct removal activities using best management practices in accordance with applicable regulatory permits and would cut or break the piles off at least one-foot below the mudline. The project sponsor would minimize sediment disturbance during removal, and would use a floating boom around the work area to contain and capture debris and would have absorbent pads available in the event that petroleum sheen develops during removal of the structures. With implementation of water quality protection measures consistent with permit requirements, and water quality BMPs as described in Chapter 3, Project Description, water quality impacts related to removal of creosote-treated piles and remnant wharf/piers would be *less than significant*.

Mitigation: Not required

5.16.3.4 Future Long-Term Impacts and Mitigation Measures

Impact LT-HY: Future long-term development under the Host Agreement could result in hydrology and water quality impacts. (Less than Significant with Mitigation)

As described in Chapter 3, the 34th America's Cup Host and Venue Agreement (Host Agreement) provides the Event Authority with certain long-term development rights under specified conditions. Although no site-specific development projects or programs have been developed, this EIR analyzes at a conceptual level an assumed type and level of development based on current land use policies and guidelines. Any development projects proposed for the San Francisco Waterfront in the future pursuant to the Host Agreement would be subject to its

own separate CEQA review and permitting processes, as applicable. As indicated in Section 5.16.1.1 above, the piers and seawall lots within the Port of San Francisco's jurisdiction, including those subject to long-term development under the Host Agreement, are located along San Francisco's Bay-side waterfront within Central San Francisco Bay, which is identified as an impaired water body on the basis of several parameters. Depending on the specific development proposal, the potential impacts on hydrology and water quality would be similar to those described above in Impacts HY-1 through HY-4 and Impact HY-10, for development on the piers, aprons, and structures.

In general, water quality impacts related to construction and demolition adjacent to and over the Bay, dredging, and construction activities within the Bay would be less than significant with implementation of water quality control measures mandated by regulatory requirements and implementation of **Mitigation Measure M-LT-HY**, which would require implementation of water quality best management practices that address potential use of concrete, fueling activities, and management of hazardous materials for in-water construction activities. Similar to the AC34 and cruise terminal projects, the long-term development projects would be subject to the San Francisco Stormwater Management Ordinance and would be required to manage stormwater runoff in accordance with a Stormwater Control Plan as specified in the Stormwater Design Guidelines, and this impact would be expected to be *less than significant with mitigation* and implementation of required control measures.

As discussed above, improvements constructed on the Port piers under the long-term development projects could be subject to storm surge. However, any repairs or improvements to the existing piers would provide better protection from damage due to storm surge and any new structures would be built according to current building standards. Therefore, flooding impacts would be expected to be less than significant. Similarly, there is the potential for some damage to structures due to inundation by tsunami or seiche; however, there is a well-established Tsunami Warning System that would be activated and would protect people from harm and this impact would be expected to be *less than significant.*

With respect to potential inundation as a result of climate change-induced sea level rise, it is assumed that design of all future development would conform with building codes and requirements applicable at the time of design, including any restrictions applicable to sea level rise; the specific nature and extent of any potential impact due to sea level rise would depend on the timing of the specific development.

Most of the sites are within the Port jurisdiction MS4, which allows stormwater to drain directly into the Bay and bypass the combined sewer system. Therefore, redevelopment of these sites would not increase stormwater flows into the combined system during wet weather. Moreover, the SFPUC is in the process of implementing a Sewer System Improvement Program that anticipates long-term development within San Francisco pursuant to existing land use controls, including some of the potential development under the long-term leases. Therefore, assuming that long-term development of the subject piers and seawall lots would be in compliance with these land use controls, the impacts on wastewater and stormwater systems would be *less than significant*.

While cruise ships could be temporarily berthed at Piers 30-32, cruise ships calling at the Port of San Francisco are prohibited from releasing incidental or intentional discharges of ballast water, sewage, gray water, hazardous waste, solid waste, fuel or oil-related substances into San Francisco Bay. Cruise ships are also required to file a Cruise Ship Discharge Report (CSDR) for each vessel call. Implementation of water quality protection measures in accordance with these requirements would ensure that water quality impacts related to cruise ship discharges would be *less than significant*.

Construction and operation of marinas in the Brannan Street Wharf (Piers 32-36) Open Water Basin and Rincon Point (Piers 14-22½) Open Water Basin would be subject to the Nonpoint Source Pollutant Control Program, discussed in Section 5.16.2.2, State Regulations, and implemented by the SWRCB and the California Coastal Commission. This program includes required water quality control measures for assessment, siting, and design of marinas to reduce water quality impacts from these activities. Through its permit process, the BCDC is vested with the authority to implement management measures applicable to marinas and could specify nonpoint source pollution control measures in its Major Permit for the project. As part of its regional responsibility for protecting water quality, the RWQCB may also review BCDC's Major Permit and conditions for the project. With implementation of the specified management measures, subject to review and approval by the BCDC, water quality impacts related to construction and operation of the marinas would be *less than significant.*

Mitigation Measure M-LT-HY: Mitigation for Water Quality Protection
(Same as **Mitigation Measure M-HY-1**)

5.16.3.5 Cumulative Impacts

Impact C-HY: The project, in combination with other past, present, and reasonably foreseeable future projects, could result in significant adverse cumulative hydrology or water quality impacts. (Less than Significant with Mitigation)

The geographic scope of potential water quality and hydrology cumulative impacts is Central San Francisco Bay, which is identified as an impaired water body on the basis of several parameters.

America's Cup Facilities and Operations

The proposed project could result in adverse water quality effects related to construction activities above and adjacent to the Bay, dredging, and in-water construction. Other projects listed in Table 5.1-1 that are located along the waterfront such as the Pier36/Brannan Street Wharf project and Pier 15 to 17 Exploratorium Relocation Project could also involve similar activities that could affect water quality in Central San Francisco Bay, a potentially significant impact. However, the project's contribution to this cumulative impact would not be cumulatively

considerable because water quality impacts related to these activities would be temporary and the project sponsor would implement water quality control measures required for compliance with existing regulations and with implementation of **Mitigation Measure M-HY-1** (Water Quality Best Management Practices) as discussed in Impact HY-1.

While the project would result in potentially significant impacts related to increased usage of marinas and boatyard facilities, increased discharges from private boats and littering in the Bay, and increased littering on land, none of the projects listed in Table 5.1-1 would increase private vessel usage in the Bay or result in the substantial generation of trash that could affect water quality in the Bay. Therefore, there would be no cumulative impact related to these topics.

The project would not result in adverse effects related to stormwater drainage, flooding, tsunami inundation, and would therefore not contribute to cumulative impacts related to these topics.

James R. Herman Cruise Terminal and Northeast Wharf Plaza

The proposed project could result in adverse water quality effects related to construction activities above and adjacent to the Bay. Other projects listed in Table 5.1-1 such as the Pier 36/Brannan Street Wharf project and Pier 15 to 17 Exploratorium Relocation Project could also involve similar activities that could affect water quality in San Francisco Bay, resulting in a potential cumulative impact. However, the project's contribution to this cumulative impact would not be cumulatively considerable with implementation of water quality measures required for compliance with existing regulations discussed in Impact HY-5.

The project would create a negligible increase to year-round sanitary sewage flows to the combined sewer system, and therefore would not make a cumulatively considerable contribution to combined sewer overflows.

The project would not result in adverse effects related to stormwater drainage, flooding, tsunami inundation, or inundation as a result of climate change-induced sea level rise, and would therefore not contribute to cumulative impacts related to these topics.

> **Mitigation:** See **Mitigation Measure M-HY-1** (Water Quality Best Management Practices).

5.17 Hazards and Hazardous Materials

This section provides an assessment of the potential for impacts related to hazardous materials during construction or operation of the proposed 34th America's Cup (AC34) and the James R. Herman Cruise Terminal and Northeast Wharf Plaza (Cruise Terminal) projects. The section describes the existing potential for hazardous materials to be present in the soil and building materials within the project area, and it evaluates the potential for a release of hazardous materials as well as the potential for exposure to hazardous materials in soil or in hazardous building materials in structures to be demolished. The potential for AC34 activities and cruise terminal operations to interfere with an adopted emergency response plan or emergency evacuation plan or result in fire hazards is also addressed.

5.17.1 Setting

5.17.1.1 Hazardous Materials in Soil

As described in Section 5.15, Geology and Soils, much of the San Francisco waterfront is underlain by fill materials consisting of debris (concrete, bricks, and wood) from building demolition, as well as assorted organic and non-organic debris, refuse, and other materials. Hazardous materials used in the industries that were destroyed during the 1906 fire and earthquake were commonly incorporated into the building debris, which was then incorporated into the earthquake fill and built upon during reconstruction. Because of this historical practice, the 1906 earthquake fill commonly contains polynuclear aromatic hydrocarbons,[1] heavy metals, oil and grease, and volatile organic compounds.[2] The existence of hazardous materials in the earthquake fill is one of the reasons for enactment of Article 22A of the San Francisco Health Code (previously referred to as the Maher Ordinance), which is described below in Section 5.17.2.3, Local Regulations. In addition, hazardous materials could be present in soil within and adjacent to the project area as a result of historical releases of hazardous materials.

5.17.1.2 Overview of Hazardous Building Materials

Hazardous building materials are included in this discussion because improvements to be implemented for the AC34 and Cruise Terminal projects would involve demolition or renovation of certain existing structures that may contain hazardous building materials, including asbestos-containing materials, lead-based paint, electrical equipment such as transformers and fluorescent

[1] Polynuclear aromatic hydrocarbons are group of chemicals that are formed during the incomplete burning of coal, oil, gas, wood, garbage, or other organic substances, such as tobacco and charbroiled meat. They usually occur naturally but can be manufactured. A few polynuclear aromatic hydrocarbons are used in medicines and to make dyes, plastics, and pesticides. Others are contained in asphalt used in road construction. They can also be found in substances such as crude oil, coal, coal tar pitch, creosote, and roofing tar. They are found throughout the environment in the air, water, and soil. They can occur in the air, either attached to dust particles or as solids in soil or sediment.

[2] Volatile organic compounds (VOCs) are emitted as gases from certain solids or liquids, such as paints and lacquers, paint strippers, cleaning supplies, pesticides, building materials and furnishings, and office equipment (i.e., copiers and printers, correction fluids and carbonless copy paper, graphics and craft materials including glues and adhesives, permanent markers, and photographic solutions).

light ballasts that contain polychlorinated biphenyls (PCBs) or di (2 ethylhexyl) phthalate (DEHP), and fluorescent lights containing mercury vapors. These materials could present a public health risk if disturbed during an accident or during demolition of an existing building. If removed during demolition, these materials would also require special disposal procedures.

Asbestos

Asbestos is a common name for a group of naturally occurring fibrous silicate minerals that are made up of thin but strong, durable fibers. Because of its physical properties, asbestos was commonly used until the 1970s as a building material, including use as insulation materials, shingles and siding, roofing felt, floor tiles, and acoustical ceiling material. Asbestos is a known carcinogen and presents a public health hazard if it is present in friable (easily crumbled) form. Long-term, chronic inhalation of high levels of asbestos can cause lung diseases such as asbestosis, mesothelioma, and/or lung cancer.[3] Friable, finely divided and powdered waste containing greater than 1 percent asbestos is classified in the California Code of Regulations (CCR) as a hazardous waste that requires disposal at a licensed landfill (22 CCR 66261.24). Wastes containing non-friable asbestos are not considered hazardous and are not subject to regulation under 22 CCR 66001, et seq.

Lead-Based Paint

Lead-based paint was commonly used prior to 1960 and is likely present in buildings constructed before 1960. Lead is toxic to humans, particularly young children, and can cause a range of human health effects, depending on the level of exposure. When adhered to the surface of the material on which it is painted, lead-based paint poses little health risk. Where the paint is delaminated or chipping, the paint can cause a potential threat to the health of young children or other building occupants who may ingest the paint. Lead dust could also present public health risks during demolition of a structure with lead-based paint, and lead-based paint that has separated from a structure could also contaminate nearby soil. Lead-based paint is defined by 17 CCR 35033 as paint containing lead at a concentration of 5,000 milligrams per kilogram (0.5 percent) or greater. Separated paint would be considered a hazardous waste if the lead concentration exceeds the total threshold limit concentration of 1,000 milligrams per kilogram, if the soluble lead concentration exceeds the soluble threshold limit concentration of 5 milligrams per liter, or the federal toxicity regulatory level of 5 milligrams per liter (22 CCR 66261.24).

PCBs and DEHP

PCBs are mixtures of synthetic organic chemicals with physical properties ranging from oily liquids to waxy solids. Because of their nonflammability, chemical stability, high boiling point, and electrical insulating properties, PCBs were used historically in hundreds of industrial and commercial applications, including in electrical, heat transfer, and hydraulic equipment; as plasticizers in paints, plastic, and rubber compounds; in pigments, dyes, and carbonless copy paper; and many other applications. PCBs are a known human carcinogen; they are highly toxic

[3] Agency for Toxic Substances and Disease Registry, "Asbestos," available online at www.atsdr.cdc.gov/asbestos/asbestos/health_effects/, April 22, 2011.

substances that remain persistent in the environment, accumulate in biological systems, interfere with the reproductive system, and act as immuno-suppressants. Under Section 6(e) of the Toxic Substance Control Act (15 USC 2601, et seq.), Congress began regulating the use and manufacturing of PCBs in 1976, legislating "cradle to grave" (i.e., from manufacture to disposal) management of PCBs in the United States. Under the Toxic Substance Control Act, the United States Environmental Protection Agency (U.S. EPA) began to impose bans on PCB manufacturing and sales and on most PCB uses in 1978. The Toxic Substance Control Act requires incineration or an alternative destruction method for oils containing PCB concentrations greater than 50 parts per million and requires that free liquids be drained from electrical equipment prior to disposal, and that the liquids are appropriately disposed of. In California, PCB wastes are regulated as hazardous waste if the PCB concentration exceeds 50 parts per million or the soluble concentration exceeds 5 parts per million as oily liquid (22 CCR 66261.24).

Most fluorescent light ballasts manufactured before 1978 contain PCBs in their capacitor and potting material. Ballasts manufactured after January 1, 1978, do not contain PCBs and should be labeled as such on the ballast. Approved disposal methods for PCB-containing ballasts depend on the condition of the ballast and the PCB content of the potting material and capacitor oil. If the PCB concentration of the potting material is less than 50 parts per million (ppm) and the ballast contains a small, intact, non-leaking capacitor, the ballast may be disposed of at a municipal landfill. In general, all leaking ballasts and ballasts containing potting material with PCB concentrations greater than or equal to 50 ppm must be incinerated or destroyed by alternative methods, disposed of in a hazardous waste landfill, or decontaminated using approved methods.

Between 1979 and the early 1990s, DEHP was used in place of PCB as a dielectric fluid in some fluorescent light ballasts and other electrical equipment.[4] DEHP is classified as a probable human carcinogen by the United States Department of Health and Human Services and as a hazardous substance by the U.S. EPA. Because of this, ballasts containing DEHP must be legally disposed of; ballast incineration or a combination of ballast recycling and incineration are recommended for complete destruction of DEHP.

Mercury

Spent fluorescent lamps and tubes commonly contain mercury vapors and are considered a hazardous waste in California (22 CCR 66261.50). In 2004, new regulations classified all fluorescent lamps and tubes in California as a hazardous waste because they contain mercury. When these lamps or tubes are placed in the trash and collected for disposal, they can be broken and release mercury to the environment. The mercury can be absorbed through the lungs into the bloodstream of people nearby and can be washed by rain into waterways. The mercury in urban stormwater sediment results in part from improperly discarded fluorescent lamps and tubes.[5]

[4] Green Lights Recycling, Inc., "Ballasts Facts," available at www.greenlightsrecycling.com/ballast%20Facts.htm, December 12, 2010.

[5] California Integrated Waste Management Board, *Waste Prevention Information Exchange: Fluorescent Lamps and Tubes*, available at http://www.calrecycle.ca.gov/ReduceWaste/FluoresLamps/, December 12, 2010.

Approximately 370 pounds of mercury were released in California in 2000 due to electric lamps and tubes breaking during storage and transportation. It is estimated that nearly 75 million waste fluorescent lamps and tubes are generated annually in California, and these lamps and tubes contain more than half a ton of mercury. Because they are considered a hazardous waste, all fluorescent lamps and tubes must be recycled or taken to a so-called "universal waste" handler.

Creosote-Treated Wood

Creosote was used for many years as a method for preserving marine structures from decay, and the remnants of old creosote-treated piers and dilapidated maritime facilities are common sights along the intertidal and subtidal shorelines of San Francisco Bay.[6] Creosote is a complex mixture of chemicals but is primarily composed of polynuclear aromatic hydrocarbons, many of which are identified as priority pollutants and represent a potential risk to water quality and aquatic life. Removal of dilapidated pilings could mitigate the potential adverse effects of these structures on water quality and aquatic life, and advance long-term goals for management and restoration of subtidal habitats in the Bay. However, the removed pilings can be characterized as a hazardous waste under California regulations.[7] As discussed below in Section 5.17.2.2, the DTSC has developed alternative management standards that allow for disposal of treated wood as a nonhazardous waste.

5.17.1.3 Hazardous Building Materials within Project Area

Although many of the structures along the San Francisco waterfront could include hazardous building materials such as asbestos-containing materials and lead-based paint, only the Pier 27 shed, and Pier 27 Annex building, and Pier 29 shed are discussed in this section because they would be demolished or undergo major renovation for the America's Cup Village in 2013 and/or the James R. Herman Cruise Terminal and Northeast Wharf Plaza. A survey of these buildings in 1999 identified asbestos-containing materials and lead-based paint in each of these structures.[8] Asbestos-containing materials were identified in the Pier 27 shed roofing (mastic and flashing), heating, ventilation and air conditioning system gaskets, drywall joint compound, and floor tile and mastic; in the Pier 27 Annex building floor tile and sheet flooring on the first and second floors, roofing cement, pipe insulation, and paint of the bituminous insulation covering on the roof; and in the Pier 29 shed felt on the parapet wall, roof flashing, sealant around the windows on the skylights, field patch, and roof patching mastic. Delaminated lead-based paint was identified on many of the building components of the Pier 27 shed, Pier 27 Annex building, and Pier 29 shed, with lead concentrations as high as 437,000 milligrams per kilogram. While some of the paint sampled during the 1999 survey would not be classified as lead-based paint because the

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6 California State Coastal Conservancy and Ocean Protection Council, NOAA National Marine Fisheries Service and Restoration Center, San Francisco Bay Conservation and Development Commission, and San Francisco Estuary Partnership, *San Francisco Bay Subtidal Habitat Goals Report, Conservation Planning for the Submerged Areas of t*he Bay, 2010.

7 California Department of Toxic Substances Control, *Requirements for Generators of Treated Wood Waste (TWW, Fact Sheet,* December 2008.

8 RGA, *Pre-Renovation Asbestos and Lead-Based Paint Survey Report, Pier 27, 29, and 31 and Annex Building (Piers 27½ and 29½), San Francisco, CA*, August 11, 1999.

concentration of lead does not exceed 5,000 milligrams per kilogram, all of the paint sampled could be classified as a hazardous waste based on total or soluble lead concentrations. The only other project site undergoing major renovation is Piers 30-32, which will undergo seismic upgrades to accommodate the AC34 team bases. The seismic upgrade would not disturb hazardous building materials.

In addition, historic pilings along the waterfront are typically constructed of wood that has been treated with creosote and encased in concrete. Creosote-treated piles and/or structures, many of which may be submerged, are present at Pier 98; Piers 84 and 88; Pier 70; Pier 64; Rincon Point Open Water Basin; Wharves 6, 7, and 8; and adjacent to China Basin Channel.

5.17.2 Regulatory Framework

Hazardous materials and hazardous wastes are subject to extensive federal, state, and local regulations, with the major objective of protecting public health and the environment. In general, these regulations define hazardous materials; establish reporting requirements; set guidelines for handling, storage, transport, remediation, and disposal of hazardous wastes; and require health and safety provisions for workers and the public. The major federal, state, and regional agencies enforcing these regulations include the U.S. EPA, U.S. Occupational Safety and Health Administration (OSHA), and the U.S. Department of Transportation (DOT) at the federal level; the Department of Toxic Substances Control (DTSC), the State Water Resources Control Board, and the California Regional Water Quality Control Board (RWQCB) at the state level; and the Bay Area Air Quality Management District (BAAQMD) at the regional level. Various agencies and departments of the City and County of San Francisco implement and enforce these requirements, as discussed below.

5.17.2.1 Federal Regulations

State and local agencies often have either parallel or more stringent rules than federal agencies. In most cases, state law prevails over federal law and enforcement of these laws is the responsibility of the state, or of a local agency to which enforcement powers are delegated.

5.17.2.2 State Regulations

Asbestos-Containing Materials

Section 19827.5 of the California Health and Safety Code requires that local agencies not issue demolition or alteration permits until an applicant has demonstrated compliance with notification requirements under applicable federal regulations regarding hazardous air pollutants, including asbestos. The BAAQMD 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 10 days in advance of any proposed demolition or abatement work. Notification includes the names and addresses of operations and persons responsible; description and location of the structure to be demolished or altered, including size, age, and prior use, and the approximate amount of friable asbestos; scheduled starting and completion dates of demolition or abatement; nature of planned

work and methods to be employed; procedures to be employed to meet BAAQMD requirements; and the name and location of the waste disposal site to be used. The BAAQMD randomly inspects asbestos removal operations. In addition, the BAAQMD will inspect any removal operation when a complaint has been received.

The local office of the State of California Occupational Safety and Health Administration (Cal-OSHA) must be notified of asbestos abatement to be carried out. Asbestos abatement contractors must follow state regulations contained in 8 CCR 1529 and 8 CCR 341.6 through 341.14 where there is asbestos-related work involving 100 square feet or more of asbestos-containing materials.

Asbestos removal contractors must be certified as such by the Contractors Licensing Board of the State of California. The owner of the property where abatement is to occur must have a Hazardous Waste Generator Number assigned by and registered with California Environmental Protection Agency, Department of Toxic Substances Control. The contractor and hauler of the material are required to file a Hazardous Waste Manifest, which details the hauling of the material from the site and the disposal of the material. Pursuant to California law, the Port of San Francisco would not issue the required building permit until the applicant has complied with the notice and abatement requirements described above.

Creosote

Treated wood, including creosote-treated piles and structures, contains hazardous chemicals at elevated levels and can be characterized as a hazardous waste under California regulations.[9] However, the DTSC has developed alternative management standards that allow for disposal of treated wood as a nonhazardous waste. These standards, contained in Title 22 of the CCR, Division 4.5, Chapter 34, simplify and facilitate the safe and economical disposal of treated wood waste. They provide for less stringent storage requirements, extended accumulation periods, shipment by a nonhazardous waste hauler without a hazardous waste manifest, and disposal at specific nonhazardous waste landfills. The alternative management standards specify different management requirements for households, businesses that generate treated wood waste incidental to their normal course of business, and businesses that generate treated wood waste during their normal course of business.

In accordance with these standards, employees who handle the treated wood waste or would otherwise be expected to come into contact with the waste must be trained in the applicable regulations related to the handling of treated wood waste. In addition, the standards require that treated wood waste is segregated from other wastes, appropriately stored and labeled, and transported to an authorized treated wood waste disposal facility. The alternative management standards specify that treated wood waste should not be burned, scavenged, or stored in contact with the ground, and allow for disposal of the treated wood waste at a Class III landfill. Reuse of creosoted-treated pilings and structures is not allowed unless they are reused onsite, or if the use is consistent with allowable reuses for creosote-treated wood.

[9] California Department of Toxic Substances Control, *Requirements for Generators of Treated Wood Waste (TWW, Fact Sheet,* December 2008.

5.17.2.3 Local Regulations

The City and County of San Francisco has enacted local regulations to address the potential to encounter hazardous materials in the soil and hazardous building materials, and to ensure the safe handling of hazardous materials and hazardous wastes. The following sections of the San Francisco Health Code, implemented by the San Francisco Department of Public Health (DPH) as the Hazardous Materials Unified Program Agency and briefly summarized below, would apply to the potential to encounter hazardous materials in the soil, and the use of hazardous materials under the proposed project:

- Article 22A (Analyzing the Soils for Hazardous Waste, formerly the Maher Ordinance) requires that projects located bayward of the historic high tide line that would involve disturbance of more than 50 cubic yards of soil prepare a site history report to identify whether past site uses may have caused contamination, conduct soil testing for the presence of the potentially hazardous constituents, prepare a soils analysis report, and prepare a Site Mitigation Plan (if contamination is identified). If hazardous materials remain in the soil or groundwater, approval of the Site Mitigation Plan by the DPH may be conditioned upon submittal of a Risk Management Plan, Health and Safety Plan, and possibly a Cap Maintenance Plan to prevent exposure to hazardous materials in soil or groundwater after construction of the project. Upon completion of site mitigation, the site owner must submit certification that the project has received certification or verification for the appropriate state or federal agency that mitigation is complete. The entire waterfront from Aquatic Park to Pier 80 is located bayward of the historic high tide line, and the DPH may also require compliance with Article 22A at sites westward of the historic high tide line if the DPH has reason to believe that hazardous materials may be present in the soil at the property.

- Article 21 (Hazardous Materials) provides for safe handling of hazardous materials in the city. It requires any person or business that handles, sells, stores, or otherwise uses specified quantities of hazardous materials to keep a current certificate of registration and to implement a hazardous materials business plan (HMBP). Threshold quantities are 500 pounds for solids, 55 gallons for liquids, and 200 cubic feet for compressed gases. Every business that must implement an HMBP must also obtain a certificate of registration certifying that the HMBP meets the requirements of Article 21. This article also specifies requirements for the installation and operation of underground storage tanks, reporting of unauthorized releases, and closure of permitted facilities.

- Article 21A (Risk Management Plan) requires any business that handles, sells, stores, or otherwise uses regulated substances[10] in quantities exceeding specified threshold amounts to register with the DPH and prepare a Risk Management Plan. The Risk Management Plan must be submitted to the DPH before a Certificate of Occupancy can be issued.

- Article 22 (Hazardous Waste) provides for safe handling of hazardous wastes in the City. It authorizes the DPH to implement the state hazardous waste regulations, including authority to conduct inspections and document compliance.

[10] Regulated substances include those regulated under Section 68.130 of Title 40 of the Code of Federal Regulations, or those identified as an extremely hazardous substance in Appendix A of Part 355 of Title 40 of the Code of Federal Regulations, and those identified in Chapter 6.95, Article 2 of the California Health and Safety Code.

Lead-Based Paint

Work that could result in the disturbance of lead-based paint must comply with Section 3425 of the San Francisco Building Code, Work Practices for Lead-Based Paint on pre-1979 Buildings and Steel Structures. Where there is any work that may disturb or remove lead-based paint on the exterior of any building built prior to December 31, 1978, Section 3425 requires specific notification and work standards and identifies prohibited work methods and penalties.

Section 3425 applies to the exterior of all buildings or steel structures on which original construction was completed prior to 1979 (which are assumed to have lead-based paint on their surfaces, unless demonstrated otherwise through laboratory analysis), and to the interior of residential buildings, hotels, and child care centers. The ordinance contains performance standards, including establishment of containment barriers, at least as effective at protecting human health and the environment as those in the HUD Guidelines (the most recent Guidelines for Evaluation and Control of Lead-Based Paint Hazards) and identifies prohibited practices that may not be used in disturbances or removal of lead-based paint. Any person performing work subject to the ordinance shall, to the maximum extent possible, protect the ground from contamination during exterior work; protect floors and other horizontal surfaces from work debris during interior work; and make all reasonable efforts to prevent migration of lead paint contaminants beyond containment barriers during the course of the work. Cleanup standards require the removal of visible work debris, including the use of a High Efficiency Particulate Air Filter (HEPA) vacuum following interior work.

The ordinance also includes notification and signage requirements. Prior to the commencement of work, the responsible party must provide written notice to the director of the San Francisco Department of Building Inspection (DBI) indicating the address and location of the project; the scope of work, including specific location; methods and tools to be used; the approximate age of the structure; anticipated job start and completion dates for the work; whether the building is residential or nonresidential, owner-occupied or rental property; the dates by which the responsible party has or will fulfill any tenant or adjacent property notification requirements; and the name, address, telephone number, and pager number of the party who will perform the work. Further notice requirements include signage when containment is required, requirements for signage when containment is required, notice to occupants, availability of pamphlet related to protection from lead in the home, and Early Commencement of Work (Requested by Tenant). The ordinance contains provisions regarding inspection and sampling for compliance by the DBI and enforcement, and describes penalties for non-compliance with the requirements of the ordinance.

5.17.3 Impacts and Mitigation Measures

5.17.3.1 Significance Criteria

The City has not formally adopted significance standards for impacts related to hazards and hazardous materials, but generally considers that implementation of the project could have a potentially significant impact related to hazards and hazardous materials if it were to:

- Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials;

- Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment;

- Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within 1/4 mile of an existing or proposed school;

- Be located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, create a significant hazard to the public or the environment;

- For a project located within an area covered by 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, result in a safety hazard for people residing or working in the project area;

- For a project within the vicinity of a private airstrip, result in a safety hazard for people residing or working in the project area;

- Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan; or

- Expose people or structures to a significant risk of loss, injury, or death involving fires.

Due to the nature of the proposed project, there is no further discussion of the following criteria in this section for the reasons described below:

- ***Hazardous emissions or handling of hazardous or acutely hazardous materials, substances, or waste within ¼ mile of an existing or proposed school.*** Impacts related to toxic air contaminants are analyzed in Section 5.8, Air Quality.

- ***Safety hazards in the vicinity of an airport.*** The nearest airports to the proposed project are the San Francisco International and Oakland International Airports, both more than 8 miles from the project area. Because the project is located more than 8 miles from an airport and would not involve construction of aboveground structures that could interfere with air traffic, impacts related to safety hazards in the vicinity of a public or private airport are not applicable to the project and are not discussed further.

5.17.3.2 Approach to Analysis

This analysis evaluates the proposed project's potential effects related to hazards and hazardous materials. Construction-related effects would be impacts that could occur during construction activities, including the potential for a release of hazardous materials during relocation of existing tenants, the potential for a release of hazardous materials during construction, potential exposure to hazardous materials in soil, and potential exposure to hazardous building materials. Overall, compliance with regulatory requirements for these activities would ensure that hazardous materials impacts would be less than significant, as described below.

Operational effects of the AC34 events would be related to the use of hazardous materials at the team bases, the use of diesel for generators at the spectator venues, and potential releases of hazardous materials from event support boats and spectator boats during the AC34 events. Similarly, compliance with regulatory requirements would generally ensure that these impacts would be less than significant. Impacts related to fire hazards would be less than significant with compliance with the Port of San Francisco Building Code.

For the James R. Herman Cruise Terminal and Northeast Wharf Plaza, additional construction activities would be conducted and limited soil disturbance, if any, would be required for construction of the wharf plaza. Operational effects of the James R. Herman Cruise Terminal and Northeast Wharf Plaza would be limited to small quantities of hazardous materials for routine purposes. However, impacts related to a potential release of hazardous materials during construction and operation, and the potential for exposure to hazardous materials in the soil would be less than significant with implementation of regulatory requirements. Further, impacts related to impairment or interference with an adopted emergency response plan or emergency evacuation plan and fire hazards would be less than significant with compliance with the Port of San Francisco Building Code.

5.17.3.3 AC34 Events and Cruise Terminal Impacts and Mitigation Measures

America's Cup

Impact HZ-1: Construction and operation of the America's Cup facilities and events could have a substantial adverse effect related to the routine transport, use, or disposal of hazardous materials. (Less than Significant with Mitigation)

Construction at the AC34 venues would require the relocation of existing tenants, some of which may use hazardous materials. Additionally, during construction of the AC34 venues, the project sponsor would use a variety of hazardous materials. During the events, operation of the team bases would involve the use of hazardous materials, including the AC34 race and support boats and spectator boats would require fueling, and diesel generators would be used to supply supplemental energy at the spectator venues. Hazardous materials releases from the AC34 race and support boats and spectator boats could also occur. Impacts related to these uses of hazardous materials are discussed below.

Relocation of Tenants that Use Hazardous Materials

As discussed in Chapter 3, Project Description, implementation of the AC34 events would require the relocation of a number of tenants in piers along the northeast waterfront. Because some of these tenants, including existing maritime tenants, may use hazardous materials, the public and environment could be exposed to hazardous materials during closure and transport of hazardous materials handling facilities. However, facilities undergoing closure would be required to comply with Article 21 of the San Francisco Health Code to reduce the potential for hazardous materials to be left in place. Compliance would include preparation and implementation of a closure plan addressing the need for further maintenance of the closed facility; methods to ensure that the

threat to public health and the environment from residual hazardous materials is eliminated; and methods to ensure that hazardous materials used at the facility are appropriately removed, disposed of, neutralized, or reused. The closure plan would be submitted to the DPH for approval and, upon submittal, the DPH may add additional requirements for closure. Where a release is discovered, investigation and cleanup could be required under the oversight of the Local Oversight Program. In this case, a corrective action plan may be required and the DPH would determine the adequacy of the plan and may also request state or federal agency review. The DPH findings would be published for public review. With implementation of these legal requirements, impacts related to a release of hazardous materials during facility closure would be *less than significant*.

Construction-Related Use of Hazardous Materials

As described in Chapter 3, Project Description, the majority of the construction activities for the AC34 2012 event would be conducted at Piers 30-32 and 80 (for the construction of the team bases) and at Marina Green (for construction of the America's Cup Village). For the AC34 2013 event, construction would primarily be conducted at Piers 27-29 (for construction of the America's Cup Village), as well as at other piers to seismically strengthen the piers, construct race support facilities (such as a cafeteria or ancillary office and storage space), and construct berthing for AC34 sponsor and spectator boats. During construction of these AC34 venues, diesel fuel and minor amounts of hazardous materials such as paints, fuels, solvents, and adhesives would be used, and an inadvertent release of large quantities of these materials into the environment could adversely affect soil and Bay water quality. As described in Section 5.16, Hydrology and Water Quality, the project would be subject to the Construction General Stormwater Permit issued by the RWQCB. In accordance with these regulatory requirements, the project sponsor would be required to prepare and implement a Storm Water Pollution Prevention Plan (SWPPP) to minimize construction water quality impacts. The SWPPP would identify hazardous materials sources within the construction area and recommend site-specific best management practices (BMPs) to prevent discharge of these materials into stormwater and Bay waters. In addition, transportation of hazardous materials is well regulated by the California Highway Patrol and the California Department of Transportation. With implementation of the water quality control measures required under the Construction General Stormwater Permit, potential hazardous materials impacts associated with a release of hazardous materials during construction above and near the Bay would be *less than significant*.

Use of Hazardous Materials During AC34 Events – Team Bases

During the AC34 events, the team bases constructed on Piers 30-32 and Pier 80 would be used for boat maintenance and repair. Additionally, boat fabrication and assembly would occur at Pier 80. Boat repair and maintenance facilities typically use and store a wide range of chemicals and other materials, many of which may be hazardous, including fuels, oils, alkaline and acidic solutions, cleaning solvents, disinfectants, detergents, degreasers, rust inhibitors, and antifouling paints. If accidently released, these materials could affect Bay water quality because the team bases would be located on piers, directly above the Bay.

The project sponsor would design the facilities at Pier 80 to establish a clean working environment in compliance with applicable hazardous materials and health and safety regulations including Articles 21, 21A, and 22 of the San Francisco Health Code. As such, much of the boat fabrication and assembly would be conducted within Shed A to provide a clean and enclosed environment necessary for the adhesive and laminating processes. All carbon materials would be stored in freezer units onsite, and then used in the clean environment of Shed A to ensure health and safety as well as the quality of the finished product. Adhesives used to bond the components together would be stored in hazardous materials storage cabinets, and all mixing would be conducted within specialized, controlled areas.

A variety of maintenance and repair activities would also occur in designated work areas at Pier 80. A mechanic shop would be provided to service on-board systems such as winches and deck hardware. Sewing machines would be used to fabricate sails in the sail loft work area, and metal projects would be conducted within the metal work area that would include lathes and mill equipment. Another work area would be used for woodworking, and all abrasive surface preparation would be conducted in a designated work area. Touch-up painting would be conducted within an appropriately designed point booth equipped with an extraction fan.

To the extent feasible, the project sponsor would implement practices at the team bases at both locations and the fabrication and assembly facilities at Pier 80 to promote recycling of materials and use of environmentally friendly products and procedures, such as limiting the use of diesel powered equipment, using equipment powered with electricity or alternative fuels rather than diesel, and using environmentally friendly alternatives to industrial solvents and other maintenance chemicals.

The use of hazardous materials at the team bases at Pier 80 and Piers 30-32 would be subject to the City's hazardous materials handling requirements specified in Article 21 of the San Francisco Health Code (discussed in the Section 5.17.2.3, Local Regulations). In accordance with Article 21, any facility that handles hazardous materials in excess of threshold quantities would be required to obtain a Certificate of Registration from the DPH and to implement an HMBP that includes inventories, a program for reducing the use of hazardous materials and generation of hazardous wastes, site layouts, a program and implementation plan for training all new employees and annual training for all employees, and emergency response procedures and plans. Similarly, the project sponsor would be required to comply with the City's hazardous waste handling requirements specified in Health Code Article 22.

In addition, the Port of San Francisco would require a Team Base Operations Manual. As described in Chapter 3, the Team Base Operations Manual would set forth specifications and standards for boat building, maintenance, and cleaning practices. The manual would incorporate regulatory and permitting requirements of Articles 21 and 22 of the San Francisco Health Code and also include environmental and safety requirements, standards and best management practices that would be applicable to all proposed industrial-related practices at the team bases, including but not limited to boat fabrication and assembly, equipment and materials use and storage, and maintenance and cleaning activities. The Team Base Operations Manual would also contain a list of all applicable environmental and safety permits required for AC34.

In addition, if regulated substances are used at the boat fabrication and assembly facilities on Pier 80, the project sponsor would be required to comply with the Risk Management and Prevention Program specified in Article 21A of the San Francisco Health Code, implemented by the DPH. This program requires businesses that handle regulated substances above threshold quantities to prepare a written Risk Management Plan addressing the potential effects of an accidental release, a program for preventing a release, and emergency response procedures in the event of a release.

Incorporation of safe handling methods planned as part of the project and compliance with the San Francisco Health Code, which incorporates state and federal requirements, would minimize potential exposure of site personnel and the public to any accidental release of hazardous materials or waste and would also protect against potential environmental contamination. In addition, transportation of hazardous materials is well regulated by the California Highway Patrol and the California Department of Transportation. Therefore, impacts related to the use, transport, and disposal of hazardous materials at the team bases would be *less than significant*.

Use of Hazardous Materials During AC34 Events–Diesel Generators

Supplemental power would be required at spectator and event areas in San Francisco, as well as on Alcatraz and at the Fort Baker Pier, to power television screens, public address and entertainment systems, lighting and other equipment uses because no electrical facilities currently exist at many of these areas. The needed power would be supplied by portable diesel generators, resulting in an increased use of diesel fuel. However, the use of this fuel would be temporary (limited to the duration of the AC34 events). Further, within San Francisco, use of these generators would be subject to the requirements of a permit from the San Francisco Fire Department that applies to the use of generators with a capacity of more than 60 gallons of diesel fuel. The requirements of this permit address requirements for fire safety and refueling of the generators, and prohibit the fueling of generators at the location where they are used. Temporary generators on Port of San Francisco property would also be subject to a building permit from the Port. With implementation of safety and control measures from the Fire Code needed for compliance with these regulatory requirements, impacts related to the use of diesel for the diesel generators would be *less than significant*. Air quality impacts resulting from the use of diesel generators are discussed in Section 5.8 Air Quality.

Use of Hazardous Materials During AC34 Events–Event and Spectator Vessels

As discussed in more detail in Chapter 3, Project Description and in Impact HY-1 (see Section 5.16, Hydrology and Water Quality), the AC34 events are expected to attract an estimated 2,280 spectator boats, including an estimated 2,200 recreational boats, to San Francisco Bay on an average peak day in 2013. In addition, there would be a number of AC34-related vessels for support, media, tender boats, and other uses. This project-induced increase in vessel traffic would increase the use of fuels during the AC34 events. Vessel fueling would occur at the Bay Area marina facilities that are subject to local permitting requirements of the Regional Water Quality Control Board National Pollutant Discharge Elimination System (NDPES) industrial stormwater permit (SIC Code 4493) and local regulatory requirements for the storage and dispensing of fuel, and therefore the

increased use of fuel by recreational and event vessels would not represent an increased risk related to a release of fuel.

As discussed in Impact HY-1, discharge of fuel, oil, oily wastes, and hazardous substances is prohibited into or upon the navigable waters of the United States or the waters of the contiguous zone if such discharge causes a film or sheen upon or discoloration of the surface of the water, or causes a sludge or emulsion beneath the surface of the water (see Section 5.16, Hydrology and Water Quality). If a discharge occurs, the responsible party must control the source of the discharge, prevent further discharges, halt or slow the spread of the discharge, and remove as much of the substance as possible using mechanical means such as containment booms, vacuum trucks, and absorbents. In addition, all boats 26 feet or longer must display an oily waste discharge placard in the engine compartment or near fuel pumping stations that notifies passengers and crew about discharge restrictions. In addition, as part of the proposed project, the project sponsor is preparing a Waste Management Plan that would include a discussion of the potential for the discard of wastes such as electronic devices, batteries, used oil, paints, caulk, adhesives, and solvents into the Bay during boat operation, berthing, or mooring. Despite regulations regarding operations of vessels within U.S. waters and preparation of a Waste Management Plan as part of the AC34 events, impacts related to a release of hazardous materials from a race-related or spectator vessel would be *potentially significant* because many boaters, including international visiting vessels, may not be familiar with U.S. regulations and there would also be an increased burden of enforcement due to the increased number of boats during the AC34 events. Implementation of **Mitigation Measure M-BI-12** (Visiting Mariners Information) would require the project sponsor to prepare, as part of the Water and Traffic Plan, information to educate boaters and marinas about environmentally sound boating practices and access to environmental services to ensure employment of clean boating habits. The plan would also specify procedures for dissemination of this information to visiting boaters prior to or upon arrival to San Francisco Bay for the AC34 2012 and 2013 races. With implementation of **Mitigation Measure M-BI-12**, hazardous materials impacts related to a release of hazardous materials from a race-related or spectator vessel would be *less than significant*.

Mitigation: See **Mitigation Measure M-BI-12** (Visiting Mariners Information)

Impact HZ-2: Construction and operation of the America's Cup facilities and events would not create a significant hazard to the public or the environment as a result of a release of hazardous materials in soil, or location of project activities on a government list of hazardous materials sites. (Less than Significant)

Although many of the venues would be constructed in an area that could be underlain by earthquake fill materials and some could be constructed on or near a site included on a governmental list of hazardous materials sites, all work at the Port of San Francisco facilities (including the team bases at Piers 30-32 and Pier 80 and the America's Cup Village at Piers 27-29) would occur on existing piers. Only temporary surface facilities (such as tents and bleachers)

would be constructed at the remaining project sites, include the America's Cup Village at Marina Green and spectator venues in San Francisco and on GGNRA lands. Because construction of the AC34 venues would require limited or no soil disturbance, there is a low potential to encounter hazardous materials in the soil during construction.

However, construction work at the team bases at Piers 30-32 and Pier 80 and the America's Cup Village at Piers 27-29 in 2013) would be conducted in areas that are bayward of the historic high tide line. If construction at any of these sites disturbed 50 cubic yards or more of soil, the project sponsor would be required to implement Article 22A of the San Francisco Health Code. In accordance with this article, the project sponsor would prepare a site history report, conduct soils testing, prepare a soils analysis report and if appropriate, prepare a Site Mitigation Plan and certification report. If the presence of hazardous materials were indicated, a site health and safety plan would also be required. The soil analysis report would be submitted to the DPH, and if required on the basis of the soil analysis report, a site mitigation plan would be prepared to (1) assess potential environmental and health and safety risks; (2) recommend cleanup levels and mitigation measures, if any are necessary, that would be protective of workers and visitors to the property; (3) recommend measures to mitigate the risks identified; (4) identify appropriate waste disposal and handling requirements; and (5) present criteria for onsite reuse of soil. If required, the recommended measures would be completed during construction. Upon completion, a certification report would be required stating that all mitigation measures recommended in the site mitigation report have been completed and that completion of the mitigation measures has been verified through follow-up soil sampling and analysis, if required. Further, the DPH could require implementation of these same measures for other sites that are not located bayward of the high tide line if contamination is suspected.

If the approved Site Mitigation Plan includes leaving hazardous materials in soil or the groundwater with containment measures such as landscaping or a cap to prevent exposure to hazardous materials, the project sponsor would ensure the preparation of a risk management plan, health and safety plan, and possibly a cap maintenance plan in accordance with DPH requirements. These plans would specify how unsafe exposure to hazardous materials left in place would be prevented, as well as safe procedures for handling hazardous materials should site disturbance be required. The DPH could require a deed notice, and the requirements of these plans would transfer to the new property owners in the event that the property was sold.

Because of the limited grading and excavation that is required for the project, and implementation of the requirements of Article 22A of the San Francisco Health Code for any project located bayward of the historic high tide line that involves excavation of 50 cubic yards or more of soil, impacts related to the potential to encounter hazardous materials in the soil would be *less than significant*.

Mitigation: Not required

Impact HZ-3: Construction and operation of the America's Cup facilities and events could create a significant hazard to the public or the environment as a result of a release of hazardous building materials in structures that would be demolished and creosote-treated pilings and structures that would be removed. (Less than Significant with Mitigation)

As discussed in Section 5.17.1, Setting, above, a 1999 survey identified asbestos-containing materials in the Pier 27 shed roofing (mastic and flashing), heating, ventilation and air conditioning system gaskets, drywall joint compound, and floor tile and mastic; in the Pier 27 Annex building floor tile and sheet flooring on the first and second floors, roofing cement, pipe insulation, and paint of the bituminous insulation covering on the roof; and in the Pier 29 shed felt on the parapet wall, roof flashing, sealant around the windows on the skylights, field patch, and roof patching mastic. Delaminated lead-based paint was identified on many of the building components of the Pier 27 shed, Pier 27 Annex building, and Pier 29 shed, with lead concentrations as high as 437,000 milligrams per kilogram. While some of the paint sampled during the 1999 survey would not be classified as lead-based paint because the concentration of lead does not exceed 5,000 milligrams per kilogram, all of the paint sampled could be classified as a hazardous waste based on total or soluble lead concentrations. These buildings could also include fluorescent light ballasts containing PCBs or DEHP and fluorescent light tubes containing mercury vapors. Demolition and renovation of these buildings would expose workers and the public to hazardous building materials if they were not abated prior to demolition. In addition, removal of creosote-treated piles from the Rincon Point Open Water Basin could expose workers and the public if not properly handled and disposed of once removed.

Asbestos-Containing Materials and Lead-Based Paint

As discussed in Section 5.17.2, Regulatory Framework, there is a well-established regulatory framework for the abatement of asbestos-containing materials and lead-based paint. Abatement of asbestos-containing materials is addressed in Section 19827.5 of the California Health and Safety Code, which requires that local agencies not issue demolition or alteration permits until an applicant has demonstrated compliance with notification requirements under applicable federal regulations regarding hazardous air pollutants, including asbestos. The BAAQMD 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 10 days in advance of any proposed demolition or abatement work. Further, asbestos abatement contractors must follow state regulations contained in 8 CCR 1529 and 8 CCR 341.6 through 341.14 where there is asbestos-related work involving 100 square feet or more of asbestos-containing materials.

Section 3425 of the San Francisco Building Code, Work Practices for Lead-Based Paint on Pre-1979 Buildings and Steel Structures applies to the exterior of all buildings or steel structures on which original construction was completed prior to 1979 (which are assumed to have lead-based paint on their surfaces, unless demonstrated otherwise through laboratory analysis), and to the interior of residential buildings, hotels, and childcare centers. The ordinance specifies performance standards, including establishment of containment barriers to protect human health and the environment as effectively as those required by HUD Guidelines (the most recent Guidelines for Evaluation and Control of Lead-Based Paint Hazards).

Compliance with these regulations and implementation of the required procedures, already established as part of the permit review process, would ensure that impacts related to exposure to asbestos-containing materials and lead-based paint would be less than significant with compliance with regulatory requirements.

Other Hazardous Building Materials

Other hazardous building materials that could be present within the Pier 27 and Pier 29 buildings include electrical transformers that could contain PCBs, fluorescent light ballasts that could contain PCBs or DEHP, and fluorescent light tubes that could contain mercury vapors. Damage of these materials could pose health threats for construction workers and the environment and, if not properly disposed of, could present *a potentially significant* impact. However, implementation of **Mitigation Measure M-HZ-3** (Removal of Hazardous Building Materials) would require that the presence of such materials be evaluated prior to demolition or renovation and, if such materials were present, that they be properly handled during removal and building demolition or renovation. This would reduce the potential impacts of exposure to these hazardous building materials to a *less-than-significant* level.

Creosote-Treated Piles and Structures

As discussed in Section 5.17.1.3, Hazardous Building Materials within Project Area, above, historic piles along the waterfront are typically constructed of wood that has been treated with creosote and encased in concrete, and creosote-treated piles are present in the Rincon Point Open Water Basin. During removal of the creosote-treated piles from this basin, workers and the public could be exposed to unsafe levels of creosote if the piles and structures are not appropriately managed and disposed of once removed. However, the project sponsor would implement DTSC's Alternative Management Standards for Treated Wood Waste (described in Section 5.17.2.2, State Regulations). In accordance with these standards, employees who handle the treated wood waste or would otherwise be expected to come into contact with the waste would be trained in the applicable regulations related to the handling of treated wood waste. In addition, the treated wood waste would be segregated from other wastes, appropriately stored and labeled, and transported to an authorized treated wood waste disposal facility in accordance with the alternative management standards. The treated wood waste would not be burned, scavenged, or stored in contact with the ground. Likely disposal sites for the piles and structures are the Altamont Landfill and Resource Recovery Facility, Keller Canyon Landfill, Santa Cruz Class III Landfill, Buena Vista Drive Sanitary Landfill, and the City of Watsonville Landfill. Reuse of the creosoted-treated pilings and structures would not be allowed unless they are reused onsite, or if the use is consistent with allowable reuses for creosote-treated wood. Compliance with these standards and required procedures would ensure that potential hazardous materials-related impacts of removal of creosote-treated piles would be *less than significant*.

Impact HZ-3 Summary

As discussed above, implementation of the measures described above in compliance with established regulatory framework addressing the demolition of structures including asbestos-containing materials and lead-based paint, and disposal of treated wood waste such as the

creosote-treated piles that would be removed as part of the project, would ensure that the impacts related to a release of these hazardous building materials would be *less than significant*. The impact related to exposure to other hazardous building materials, including fluorescent light ballasts containing PCBs or DEHP and fluorescent light tubes containing mercury vapors, would be *potentially significant*, but in the event that such materials are present in structures to be demolished or removed, implementation of **Mitigation Measure M-HZ-3** (Removal of Hazardous Building Materials), which would require legal disposition of these materials, would reduce this impact to a *less-than-significant* level.

> **Mitigation Measure M-HZ-3: Removal of Hazardous Building Materials**
>
> The project sponsor shall ensure that any building planned for demolition or renovation is surveyed for hazardous building materials including PCB-containing electrical equipment, fluorescent light ballasts containing PCBs or DEHP, and fluorescent light tubes containing mercury vapors. These materials shall be removed and properly disposed of prior to the start of demolition or renovation. Old light ballasts that are removed during renovation shall be evaluated for the presence of PCBs. In the case where the presence of PCBs in the light ballast cannot be verified, the light ballast shall be assumed to contain PCBs and handled and disposed of as such, according to applicable laws and regulations. Any other hazardous building materials identified either before or during demolition or renovation shall be abated according to federal, state, and local laws and regulations.

Impact HZ-4: The America's Cup events and facilities would not expose people or structures to a significant risk of loss, injury, or death involving fires, nor would it impair implementation of or physically interfere with and adopted emergency response plan or emergency evacuation plan. (Less than Significant)

The City and County of San Francisco ensures fire safety primarily through provisions of the San Francisco Building Code and the Fire Code, and the Port of San Francisco ensures fire safety primarily through the provisions of the Port of San Francisco Building Code. The only permanent structure that would be constructed at an AC34 venue would be the building core and shell of the cruise terminal at Pier 27. Accordingly, this structure would be required to comply with the Port of San Francisco Building Code that requires the building to be equipped with a fire protection system and constructed of noncombustible materials or with fire-resistive construction, and that the structure include fire walls, fire barriers, fire partitions, smoke barriers, and smoke partitions. The final building plans would be reviewed by the Port Fire Marshal (as well as the Chief Harbor Engineer) to ensure conformance with these provisions. The temporary facilities at the spectator venues and team bases would also be subject to a building permit from the DBI or Port of San Francisco, and an operational permit from the San Francisco Fire Department that would specify requirements regarding occupancy, fire protection, and maintenance of an adequate means of egress to and from the tents, bleachers, and all other temporary facilities. Consequently, the proposed project would not create a substantial fire hazard.

None of the facilities constructed for the AC34 events would include the introduction of new residents or workers that would permanently contribute to traffic or pedestrian congestion along

the San Francisco waterfront where the majority of the project activities would occur. Although there would be a large influx of spectators and event staff during the AC34 events, these events would be of short duration, and the probability of an emergency occurring during the events is extremely low. Nevertheless, as described in Chapter 3, Project Description, the AC34 events would include implementation of a Public Safety Plan that would address all safety and security measures (including emergency and rescue services) to protect the AC34 sponsors, staff, participants, the media, guests, spectator vessels, and the public. The plan would include specific measures to ensure a high level of security within and around all elements of the AC34 venues and within and around sensitive locations. Consequently, the proposed project would not interfere with emergency response or emergency evacuation plans.

With implementation of the permitting requirements of the DBI and Port of San Francisco, and the Public Safety Plan as part of the project, impacts related to potential fire hazards and interference with emergency response or emergency evacuation plans would be *less than significant*.

Mitigation: Not required

James R. Herman Cruise Terminal and Northeast Wharf Plaza

Impact HZ-5: Construction and operation of the James R. Herman Cruise Terminal and Northeast Wharf Plaza would not have a substantial adverse effect related to the routine transport, use, or disposal of hazardous materials. (Less than Significant)

Cruise Terminal Phase 1 Construction

Phase 1 of the cruise terminal construction would be coordinated with the development of the proposed America's Cup Village at Piers 27-29. As described in Impact HZ-1, diesel fuel and minor amounts of hazardous materials such as paints, fuels, solvents, and adhesives would be used during this construction, and an inadvertent release of large quantities of these materials into the environment could adversely affect soil and Bay water quality. However, as described in Section 5.16, Hydrology and Water Quality, the project would be subject to the Construction General Stormwater Permit issued by the RWQCB. In accordance with these regulatory requirements, the project sponsor would be required to prepare and implement a SWPPP to minimize construction water quality impacts. The SWPPP would identify hazardous materials sources within the construction area and recommend site-specific BMPs to prevent discharge of these materials into stormwater. With implementation of the water quality control measures required under the Construction General Stormwater Permit, potential water quality impacts associated with a release of hazardous materials during Phase 1 construction of the cruise terminal would be *less than significant*.

Cruise Terminal Phase 2 Construction and Wharf Plaza Construction

Phase 2 of the cruise terminal construction would be conducted after the conclusion of the AC34 race events and removal of all temporary facilities at Piers 27-29. During this phase, the Port would complete the interior spaces of the cruise terminal (e.g., Customs and Border Protection

offices) and install interior building equipment (e.g., screening facilities). Exterior maritime equipment (e.g., mobile gangway, bollards, and fendering) required for cruise terminal operations would also be installed. Land-based construction activities for construction of the Northeast Wharf Plaza could include demolition of existing urban waterfront hardscaping--such as asphalt, concrete, and wood—as well as potentially subsequent soil-disturbing activities--such as grading and excavation adjacent to Bay waters. Although a release of hazardous materials could occur during these construction activities, the impacts associated with such a release would be *less than significant* with implementation of the water quality control measures required under the Construction General Stormwater Permit as described above.

Cruise Terminal Project Long-Term Operation

Operation of the cruise terminal and commercial uses at the wharf plaza could involve the storage and use of common types of hazardous materials, such as cleaners, disinfectants, and chemical agents required to maintain the sanitation of the commercial bathrooms and food preparation areas. These commercial products are labeled to inform users of potential risks and to instruct them in appropriate handling procedures. If hazardous materials were used above threshold quantities, the owner would be required to comply with the City's hazardous materials handling requirements specified in Article 21 of the San Francisco Health Code (discussed in Section 5.17.2.3, Local Regulations), obtain a Certificate of Registration from the DPH, and implement an HMBP. Implementation of safety measures needed for compliance with the San Francisco Health Code, which incorporates state and federal requirements, would minimize potential exposure of site personnel and the public to any accidental releases of hazardous materials or waste and would also protect against potential environmental contamination. In addition, transportation of hazardous materials is regulated by the California Highway Patrol and the California Department of Transportation. Therefore, potential impacts related to the routine use, transport, and disposal of hazardous materials associated with operation of the Cruise Terminal project would be *less than significant*.

Mitigation: Not required

Impact HZ-6: Construction and operation of the James R. Herman Cruise Terminal and Northeast Wharf Plaza would not create a significant hazard to the public or the environment as a result of a release of hazardous materials in soil or sediment or location of project activities on a government list of hazardous materials sites. (Less than Significant)

Cruise Terminal Phase 1 Construction

Phase 1 of the cruise terminal construction would be coordinated with the development of the proposed America's Cup Village at Piers 27-29. As described in Impact HZ-2, there would be limited soil disturbance, if any, required for this construction, and therefore there would be a low potential to encounter substantial amounts of hazardous materials in the soil during construction. However, the cruise terminal would be constructed in an area that is bayward of the historic high tide line. If construction were to disturb 50 cubic yards or more of soil, the project sponsor would

be required to implement requirements consistent with Article 22A of the San Francisco Health Code, which would ensure that impacts related to exposure to hazardous materials in soil would be *less than significant*.

Cruise Terminal Phase 2 Construction and Long-Term Operation

Phase 2 construction and operation of the cruise terminal would not require any additional ground disturbance. Therefore there would be *no impact* related to the potential to encounter hazardous materials in the soil for these project components.

Wharf Plaza Construction and Operation

Land-based construction activities for construction of the Northeast Wharf Plaza could include demolition of existing urban waterfront hardscaping and potentially subsequent soil-disturbing activities, such as grading and excavation. As described above, if construction were to disturb 50 cubic yards or more of soil, the project sponsor would be required to implement requirements consistent with Article 22A of the San Francisco Health Code, which would ensure that impacts related to exposure to hazardous materials in soil would be *less than significant*. Operation of the cruise terminal would not require any additional ground disturbance, so there would be no impact related to the potential to encounter hazardous materials in the soil.

Mitigation: Not required

Impact HZ-7: Construction and operation of the James R. Herman Cruise Terminal and Northeast Wharf Plaza could create a significant hazard to the public or the environment as a result of a release of hazardous building materials in structures that would be demolished and creosote-treated pilings and structures that would be removed. (Less than Significant with Mitigation)

Cruise Terminal Phase 1 Construction

Phase 1 of the cruise terminal construction would be coordinated with the development of the proposed America's Cup Village at Piers 27-29. As described in Impact HZ-3, asbestos-containing materials and lead-based paint have been identified in the Pier 27 shed, Pier 27 Annex building, and the Pier 29 shed that would be at least partially demolished for construction of the cruise terminal. These buildings could also include fluorescent light ballasts containing PCBs or DEHP and fluorescent light tubes containing mercury vapors. However, there is a well-established regulatory framework for the abatement of asbestos-containing materials and lead-based paint, and impacts related to exposure to these hazardous building materials would be *less than significant* with implementation of safety and control measures needed for compliance with regulatory requirements.

Impacts related to exposure to other hazardous building materials (including fluorescent light ballasts containing PCBs or DEHP and fluorescent light tubes containing mercury vapors) would

be *potentially significant.* Implementation of **Mitigation Measure M-HZ-3** (Removal of Hazardous Building Materials) would reduce this impact to *a less-than-significant* level.

Cruise Terminal Phase 2 Construction and Long-Term Operation

There would be no additional building demolition required for Phase 2 construction or long-term operation of the cruise terminal. Therefore, there would be *no impact* related to exposure to hazardous building materials for this project component.

Wharf Plaza Construction and Long-Term Operation

Although construction of the Northeast Wharf Plaza could include demolition of existing urban waterfront hardscaping--such as asphalt, concrete, and wood--it is not likely that this hardscaping would include hazardous building materials, such as asbestos-containing materials or lead-based paint. Long-term operation of the wharf plaza would involve no exposure to hazardous building materials. Therefore, impacts related to exposure to hazardous building materials would be *less than significant* for this project component.

Creosote-Treated Pilings and Structures (Fill Removal)

As discussed in Section 5.17.1, Setting, above, a 1999 survey identified asbestos-containing materials in the Pier 27 shed roofing (mastic and flashing), heating, ventilation and air conditioning system gaskets, drywall joint compound, and floor tile and mastic; in the Pier 27 Annex building floor tile and sheet flooring on the first and second floors, roofing cement, pipe insulation, and paint of the bituminous insulation covering on the roof; and in the Pier 29 shed felt on the parapet wall, roof flashing, sealant around the windows on the skylights, field patch, and roof patching mastic. Delaminated lead-based paint was identified on many of the building components of the Pier 27 shed, Pier 27 Annex building, and Pier 29 shed, with lead concentrations as high as 437,000 milligrams per kilogram. While some of the paint sampled during the 1999 survey would not be classified as lead-based paint because the concentration of lead does not exceed 5,000 milligrams per kilogram, all of the paint sampled could be classified as a hazardous waste based on total or soluble lead concentrations. These buildings could also include fluorescent light ballasts containing PCBs or DEHP and fluorescent light tubes containing mercury vapors. Demolition and renovation of these buildings would expose workers and the public to hazardous building materials if they were not abated prior to demolition.

Creosote-Treated Piles and Structures

As discussed in Section 5.17.1.3, Hazardous Building Materials within Project Area, above, historic piles along the waterfront are typically constructed of wood that has been treated with creosote and encased in concrete, and creosote-treated piles or structures are present at Pier 98; Piers 84 and 88; Pier 70; Pier 64; Wharves 6, 7, and 8; and adjacent to China Basin Channel. As described in Impact HZ-3, during removal of the creosote-treated piles and structures at these locations, workers and the public could be exposed to unsafe levels of creosote if the piles and structures are not appropriately managed and disposed of during construction. However, the project sponsor would implement DTSC's Alternative Management Standards for Treated Wood

Waste (described in Section 5.17.2.2, State Regulations). In accordance with these standards, employees who handle the treated wood waste or would otherwise be expected to come into contact with the waste would be trained in the applicable regulations related to the handling of treated wood waste. In addition, the treated wood waste would be segregated from other wastes, appropriately stored and labeled, and transported to an authorized treated wood waste disposal facility in accordance with the alternative management standards. The treated wood waste would not be burned, scavenged, or stored in contact with the ground. Likely disposal sites for the piles and structures are the Altamont Landfill and Resource Recovery Facility, Keller Canyon Landfill, Santa Cruz Class III Landfill, Buena Vista Drive Sanitary Landfill, and the City of Watsonville Landfill. Reuse of the creosoted-treated pilings and structures would not be allowed unless they are reused onsite, or if the use is consistent with allowable reuses for creosote-treated wood. Compliance with these standards and required procedures would ensure that potential impacts of removal of creosote-treated piles and structures would be *less than significant*.

Impact HZ-8: The Cruise Terminal and Northeast Wharf Plaza would not expose people or structures to a significant risk of loss, injury, or death involving fires nor would it impair implementation of or physically interfere with and adopted emergency response plan or emergency evacuation plan. (Less than Significant)

As discussed in Impact HZ-4, the Port of San Francisco ensures fire safety primarily through the provisions of the Port of San Francisco Building Code. Accordingly, construction of the James R. Herman Cruise Terminal and Northeast Wharf Plaza would be required to comply with the Port of San Francisco Building Code, which would require that the building be equipped with a fire protection system and constructed of noncombustible materials or with fire-resistive construction, and that the structure include fire walls, fire barriers, fire partitions, smoke barriers, and smoke partitions. The final building plans would be reviewed by the Port Fire Marshal (as well as the Chief Harbor Engineer) to ensure conformance with these provisions. Occupants of new Cruise Terminal project could contribute to congestion if an emergency evacuation were required in the waterfront area. However, project construction would be required to conform to the provisions of the Port of San Francisco Building Code, which specify minimum requirements regarding means of egress to safeguard the public health. With implementation of all safety measures in compliance with the Port of San Francisco Building Code regulatory requirements, impacts related to potential fire hazards and impairment or interference with an emergency response or evacuation plan would be *less than significant*.

Mitigation: Not required

5.17.3.4 Future Long-Term Impacts and Mitigation Measures

Impact LT-HZ: Future long-term development under the Host Agreement could result in potential hazards and hazardous materials impacts. (Less than Significant with Mitigation)

As described in Chapter 3, the Host Agreement provides the Event Authority with certain long-term development rights under specified conditions. Although no site-specific development projects or programs have been developed, this EIR analyzes at a conceptual level an assumed type and level of development based on current land use policies and guidelines. Any development project proposed for the San Francisco waterfront in the future pursuant to the Host Agreement would be subject to its own separate CEQA review and permitting processes, as applicable.

As discussed in Chapter 3, Project Description, the piers, seawall lots, and Open Water Basins where long-term development could occur are within the Port of San Francisco's jurisdiction Although the long-term development projects would be subject to separate CEQA review, the potential impacts on hazards and hazardous materials would likely be similar to those described above in Impacts HZ-1 through HZ-4 for development on the piers, aprons, structures, and water basins.

In general, impacts related to a release of hazardous materials during construction (Impact HZ-1) would be less than significant with implementation of the requirements of the Construction General Stormwater Permit issued by the RWQCB, and impacts related to the use of hazardous materials during operation would be *less than significant* with implementation of safety measures in compliance with Articles 21, 21A, and 22 of the San Francisco Health Code and preparation of an Operations Plan in accordance with Port of San Francisco requirements. Additionally, if more than 50 cubic yards of soil were disturbed for construction of the long-term development projects, preparation of a site history report, soils testing, preparation of a soils analysis report and if appropriate, preparation of a Site Mitigation Plan and certification report in compliance with Article 22A of the San Francisco Health Code would ensure that impacts related to exposure to hazardous materials in soil would be less than significant, as described above under Impact HZ-2. Additionally, if the approved the Site Mitigation Plan includes leaving hazardous materials in soil or the groundwater with containment measures such as landscaping or a cap to prevent exposure to hazardous materials, the project sponsor would ensure the preparation of a risk management plan, health and safety plan, and possibly a cap maintenance plan in accordance with DPH requirements. These plans would specify how unsafe exposure to hazardous materials left in place would be prevented, as well as safe procedures for handling hazardous materials should site disturbance be required. The DPH could require a deed notice, and the requirements of these plans would transfer to the new property owners in the event that the property was sold.

Similarly, if building demolition or removal of creosote-treated piles or structures is required for construction of the long-term development projects, impacts related to exposure to asbestos-containing materials and lead-based paint, as well as impacts related to the management and disposal of creosote-treated piles and structures, would be *less than significant* with implementation

of the measures specified in existing regulations, as described in Impact HZ-3. However, impacts related to other hazardous building materials would be *potentially significant*, and the project sponsor would implement a measure similar to **Mitigation Measure M-HZ-3** (Removal of Hazardous Building Materials), requiring appropriate disposition of fluorescent light ballasts containing PCBs or DEHP and fluorescent light tubes containing mercury vapors, if present, thereby reducing this impact to a less-than-significant level.

Similar to Impact HZ-4, it is expected that future long-term development impacts related to impairment or interference with an adopted emergency response or emergency evacuation plan and fire safety would be *less than significant* with implementation of the requirements of the Port of San Francisco Building Code.

Construction and operation of marinas in the Brannan Street Wharf Open Water Basin and Rincon Point Open Water Basin would be subject to the Nonpoint Source Pollutant Control Program, discussed in Section 5.16, Hydrology and Water Quality (see Section 5.16.2.2, State Regulations), and implemented by the SWRCB and the California Coastal Commission. This program includes required management measures for fueling station design, waste management facilities, liquid material control, petroleum control, and boat cleaning and maintenance. Through its permit process, the BCDC is vested with the authority to implement management measures applicable to marinas and could specify nonpoint source pollution control measures in its Major Permit for the project. As part of its regional responsibility for protecting water quality, the RWQCB may also review BCDC's Major Permit and conditions for the project. Further, the marinas would be required to implement the requirements of Articles 21 and 22 of the San Francisco Health Code for the management of hazardous materials and hazardous wastes. With implementation of the specified non-point source management measures, subject to review and approval by the BCDC, and the San Francisco Health Code requirements. hazardous materials impacts related to construction and operation of the marinas would be *less than significant*.

Mitigation Measure M-LT-HZ: Mitigation of Hazards and Hazardous Materials Impacts from Long-Term Development on Port Properties

The project sponsor shall ensure that any building planned for demolition or renovation is surveyed for hazardous building materials including PCB-containing electrical equipment, fluorescent light ballasts containing PCBs or DEHP, and fluorescent light tubes containing mercury vapors. These materials shall be removed and properly disposed of prior to the start of demolition or renovation. Old light ballasts that are removed during renovation shall be evaluated for the presence of PCBs. In the case where the presence of PCBs in the light ballast cannot be verified, the light ballast shall be assumed to contain PCBs and handled and disposed of as such, according to applicable laws and regulations. Any other hazardous building materials identified either before or during demolition or renovation shall be abated according to federal, state, and local laws and regulations.

5.17.3.5 Cumulative Impacts

Impact C-HZ: The project, in combination with other past, present, and reasonably foreseeable future projects, could result in significant adverse cumulative hazards and hazardous materials impacts. (Less than Significant with Mitigation)

Impacts from hazards are generally site specific, and do not generally result in cumulative impacts unless the potentially cumulative projects are in close proximity to one another. Therefore, the geographic scope of potential hazards and hazardous materials is limited to the project area and immediate vicinity.

America's Cup Facilities and Operations and the Cruise Terminal Project

The AC34 events and the cruise terminal and northeast wharf plaza and many of the projects listed in Table 5.1-1 could involve some uses of hazardous materials, resulting in a potentially significant cumulative impact. However, the proposed project's (AC34 and the cruise terminal) impacts related to the routine transport, use, or disposal of hazardous materials would be less than significant with implementation of measures in compliance with existing regulations, including Articles 21, 21A, and 22 of the San Francisco Health Code and the proposed project's contribution to this cumulative impact would not be cumulatively considerable with implementation of measures in compliance these regulations (see Impact HZ-1). Further, the uses of hazardous materials as part of the projects listed in Table 5.1-1 would be subject to the same regulatory requirements.

Limited, if any, soil disturbance would be required for the proposed AC34 project, and therefore the project would not likely result in the disturbance of contaminated soil during construction (see Impact HZ-2). While other projects listed in Table 5.1-1 could encounter hazardous materials in the soil, resulting in a potentially significant impact, the proposed project's contribution to this impact would not be cumulatively considerable (i.e., would be less than significant) with implementation of the requirements of Article 22A of the San Francisco Health Code.

The proposed project would result in the demolition or renovation of existing buildings that could include hazardous building materials and the removal of creosote-treated piles and structures. Based on the age of many buildings throughout much of the city, many of the projects listed in Table 5.1-1 could also require demolition or renovation of buildings that include hazardous building materials or creosote-treated piles, resulting in a potentially significant cumulative impact. However, as discussed above, the proposed project would implement measures to comply with existing regulations for abatement of asbestos-containing materials and lead-based paint as well as existing regulations for management and treatment of creosote-treated piles and structures. The project sponsor would also implement **Mitigation Measure M-HZ-3** (Removal of Hazardous Building Materials) which requires a survey for other hazardous building materials as well as removal and disposal of these materials in accordance with applicable laws. With implementation of these regulatory requirements and **Mitigation Measure M-HZ-3**, the proposed project's contribution to this impact would not be cumulatively considerable (i.e., would be less than significant).

Mitigation: See **Mitigation Measure M-HZ-3** (Removal of Hazardous Building Materials)

5.18 Mineral and Energy Resources

This section addresses potential effects of the project on mineral and energy resources. Existing regional resources are described. In addition, regarding energy, existing infrastructure at each project site is described based on site-specific information developed for the project and published relevant information. For purposes of the analysis in this section, energy resources are defined to include fuel, energy, and water. The project's impacts on water supply are further addressed in Section 5.12, Utilities and Service Systems. The project's impacts related to energy usage as it may affect climate change are discussed in Section 5.9, Greenhouse Gas Emissions.

5.18.1 Setting

5.18.1.1 Mineral Resources

In accordance with the Surface Mining and Reclamation Act of 1975 (discussed in Section 5.18.2.2, State Regulations, below), the California Department of Conservation, Division of Mines and Geology, currently known as the California Geological Survey, has mapped nonfuel mineral resources of the state to show where economically significant mineral deposits are either present or likely to occur, based on the best available scientific data. These resources have been mapped using the California Mineral Land Classification System, which includes the following four Mineral Resource Zones (MRZs):

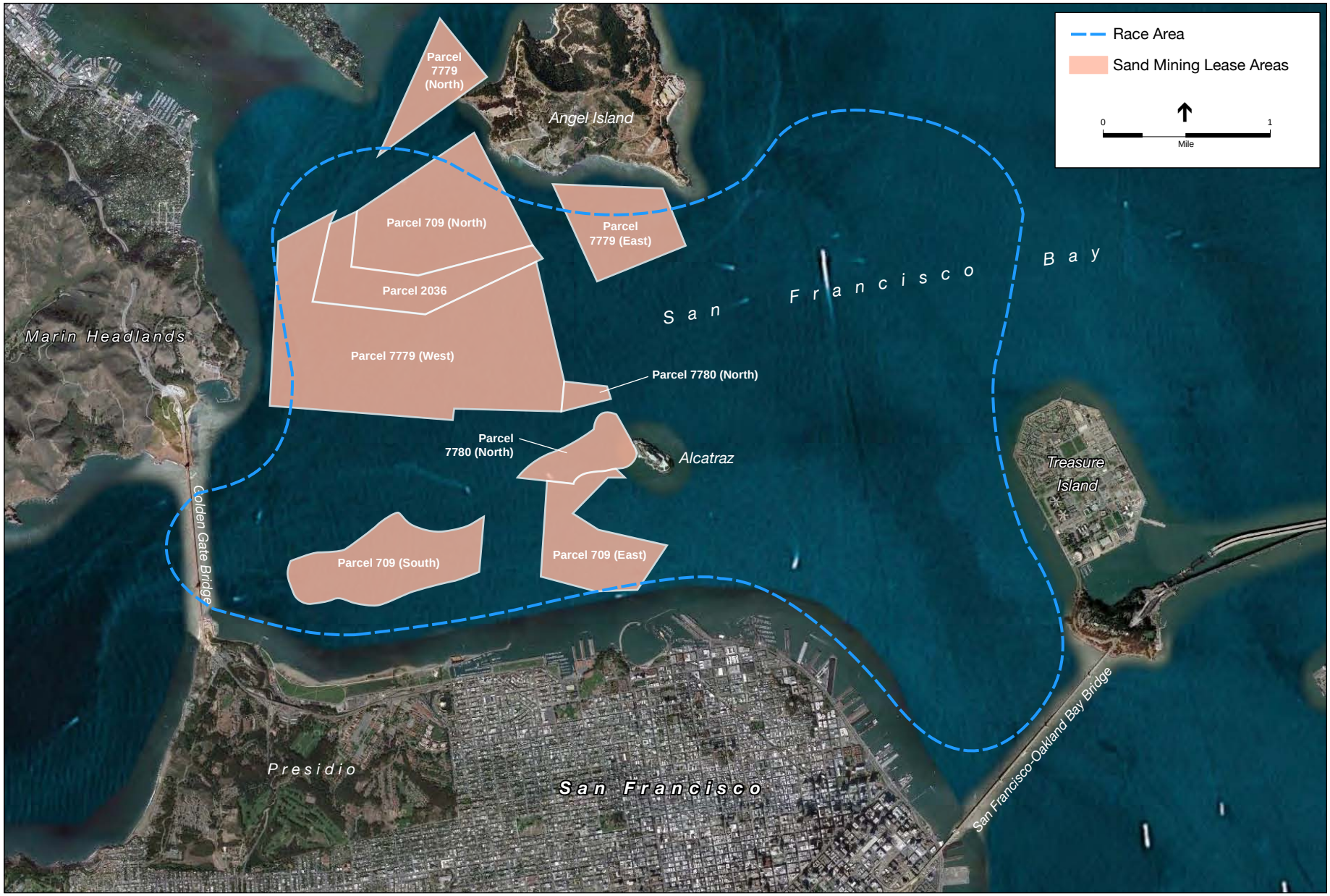
- *MRZ-1*. Areas where adequate information indicates that no significant mineral deposits are present, or where it is judged that little likelihood exists for their presence.
- *MRZ-2*. Areas where adequate information indicates that significant mineral deposits are present, or where it is judged that a high likelihood exists for their presence.
- *MRZ-3*. Areas containing mineral deposits, the significance of which cannot be evaluated.
- *MRZ-4*. Areas where available information is inadequate for assignment to any other zone.

In accordance with this mapping, the entire San Francisco Bay waterfront is mapped as either MRZ-1 or MRZ-4, indicating that substantial mineral resources do not occur along the waterfront.[1] The *San Francisco General Plan* does not identify and areas of important mineral resources in the city.

Within the Central Bay, sand mining has occurred for more than 70 years, and sand mining is currently conducted within four parcels owned by the State Lands Commission, shown on **Figure 5.18-1**.[2] Hanson Marine Operations holds the lease for these parcels. The company is currently permitted to mine a total of 1.39 million cubic yards of sand per year and is applying for a

[1] California Department of Conservation, Division of Mines and Geology, "Update of Mineral Land Classification: Aggregate Minerals in the South San Francisco Bay Production-Consumption Region," DMG Open-File Report 96-03, 1996

[2] California State Lands Commission, *Draft San Francisco Bay and Delta Sand Mining Environmental Impact Report*, State Clearinghouse No. 2007072036, CSLC EIR No. 742, July, 2010.



SOURCE: ESRI, 2008; California State Lands Commission, 2008; Google Maps; ESA

Case No. 2010.0493E: AC34 / Cruise Terminal and Northeast Wharf Plaza (210317)

Figure 5.18-1
Sand Mining Lease Areas in the Central Bay

new 10-year lease to increase the total permitted volume to 1.54 million cubic yards per year. In addition, the City and County of San Francisco (CCSF) is permitted by the United States Army Corps of Engineers to dredge 350,000 to 600,000 cubic yards of commercial grade sand material as part of its sand mining operations along the outer jetty and entrance channel to the West Harbor of the San Francisco Marina near Marina Green.[3]

5.18.1.2 Energy

California's Energy Use and Supply

Californians consumed 280,032 gigawatt hours (GWH) of electricity in 2009.[4] Of this, San Francisco consumed 5,550 GWH while Marin County consumed 1,456 GWH. In 2009, the California electricity mix included natural gas (56.7 percent), coal (1.8 percent), large hydroelectric plants (12.2 percent), and nuclear (15.8 percent). The remaining 13.9 percent was supplied from renewable resources such as wind, solar, geothermal, biomass, and small hydroelectric facilities.[5] California's natural gas use grew from 41.5 percent in 2006 to 56.97 percent in 2009.[6,7]

In 2002, California established its Renewable Portfolio Standard program[8] with the goal of increasing the annual percentage of renewable energy in the state's electricity mix by the equivalent of at least 1 percent of sales, with an aggregate total of 20 percent by 2017. The California Public Utilities Commission subsequently accelerated that goal to 2010 for retail sellers of electricity (Public Utilities Code Section 399.15(b)(1)). Then-Governor Schwarzenegger signed Executive Order S-14-08 in 2008, increasing the target to 33 percent renewable energy by 2020. In September 2009, then-Governor Schwarzenegger continued California's commitment to the Renewable Portfolio Standard by signing Executive Order S-21-09, which directs the Air Resources Board under its Assembly Bill (AB) 32 authority to enact regulations to help the state meet its Renewable Portfolio Standard goal of 33 percent renewable energy by 2020. In September 2010, the California Air Resources Board adopted its Renewable Electricity Standard regulations, which require all of the state's load-serving entities to meet this target. Additional energy efficiency measures are needed to meet these goals as well as the AB 32 greenhouse gas (GHG) reduction goal of reducing statewide GHG emissions to 1990 levels by 2020 (see Section 5.9, Greenhouse Gas Emissions, for a discussion of AB 32).

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3 San Francisco Planning Department, *San Francisco Marina Renovation Project, Draft Environmental Impact Report*, State Clearinghouse No. 2003122131, September 6, 2005.

4 California Energy Commission, Energy Consumption Data Management Service, Electricity Consumption by County, available online at http://ecdms.energy.ca.gov/elecbycounty.aspx, accessed May 3, 2011.

5 California Energy Commission, *Energy Almanac, California's Major Sources of Energy*, available online at http://energyalmanac.ca.gov/overview/energy_sources.html, accessed May 3, 2011.

6 California Energy Commission, "2006 Net System Power Report," April 2007.

7 California Energy Commission, *Energy Almanac, California's Major Sources of Energy*, available online at http://energyalmanac.ca.gov/overview/energy_sources.html, accessed May 3, 2011.

8 The Renewable Portfolio Standard is a flexible, market-driven policy to ensure that the public benefits of wind, solar, biomass, and geothermal energy continue to be realized as electricity markets become more competitive. The policy ensures that a minimum amount of renewable energy is included in the portfolio of electricity resources serving a state or country.

California's energy goals include reducing energy use in existing homes and commercial buildings, generating one-third of the state's electricity using renewable resources, decreasing petroleum dependence through the use of alternative transportation fuels and vehicles, and reducing greenhouse gas emissions to 1990 levels by 2020.[9] Energy efficiency one of the state's priority goal because it has the biggest potential for long-term and lasting energy savings, and California's energy efficiency policies over the last 30 years have saved California consumers more than $56 billion in energy costs.

Through 2010, California has been awarded approximately $5 billion from the American Recovery and Reinvestment Act of 2009 that will help meet these goals and foster energy efficiency, build the domestic renewable industry, modernize the electric transmission grid, and increase the use of alternative fuels and vehicles. As of December 2010, project developers are proposing 345 new renewable power plants in California, and the California Energy Commission has certified nine solar thermal power plants that sought funding under the American Recovery and Reinvestment Act of 2009.

Current Energy Providers

Pacific Gas and Electric Company

San Francisco receives most of its electricity from Pacific Gas and Electric Company (PG&E), which also provides natural gas and electricity to most of Northern California. PG&E has an electricity generation portfolio that totals approximately 6,870 megawatts.[10] In total, the 2009 PG&E power mix consisted of natural gas (34.6 percent), coal (1.3 percent), large hydroelectric plants (13.0 percent), nuclear (20.5 percent), eligible renewable resources (14.4 percent), other fossil fuel (1.2 percent), and unspecified sources (15 percent). Renewable Portfolio Standard-eligible renewable resources[11] used include geothermal (29.7 percent), biomass and waste (30.1 percent), small hydroelectric (17.8 percent), wind (22.3 percent), and solar (less than 1 percent). In 2009, PG&E's retail customers purchased 108,503 GWH of electricity.[12] PG&E provides the San Francisco Public Utilities Commission (SFPUC) Power Enterprise with transmission and distribution services west of Newark, pursuant to an Interconnection Agreement regulated by the Federal Energy Regulatory Commission.

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9 California Energy Commission, "2010 Integrated Energy Policy Report Update," CEC-100-2010-001-CMF.

10 Pacific Gas and Electric Company (PG&E), "2009 Corporate Responsibility and Sustainability Report, PG&E's Sustainable Journey, Working Collaboratively to Find the Right Balance for a More Sustainable Future, a Summary."

11 In accordance with the Renewable Portfolio Standard, eligible renewable resources include geothermal facilities, hydroelectric facilities with a capacity rating of 30 megawatts (MW) or less, biomass, selected municipal solid waste facilities, solar facilities, and wind facilities. Two percent of the renewable energy resources used by PG&E in 2008 were not eligible under the Renewable Portfolio Standard because they came from open-market purchases.

12 California Energy Commission, Energy Consumption Data Management System, Electricity Consumption by Planning Area, available online at http://ecdms.energy.ca.gov/elecbyplan.aspx, accessed May 3, 2011.

SFPUC Power Enterprise

The remainder of San Francisco's electricity is provided by the SFPUC's hydroelectric facilities in the Hetch Hetchy system, operated by the SFPUC Power Enterprise. This system provides a long-term annual average of 1.7 billion kilowatt-hours (kWh) of electrical power and includes 150 miles of high-voltage transmission lines that carry this power from the SFPUC power generation facilities on the Tuolumne River to Newark, where the Hetch Hetchy power system is linked to California's electricity grid. The SFPUC Power Enterprise provides electricity to some of the Hetch Hetchy water system components as well as to all City and County of San Francisco (CCSF) facilities, San Francisco International Airport, Norris Industries (a federal facility), and the Modesto and Turlock Irrigation Districts (for municipal and agricultural water supply pumping). While the quantity of power produced exceeds the CCSF's municipal power needs on an annual basis, the CCSF must supplement its power sources to meet municipal demand and its contractual obligations during the summer and fall months, when power generation is reduced so that water can be stored in the Hetch Hetchy system for water supply purposes.

Marin Clean Energy

Energy in Marin County is provided by Marin Clean Energy. Launched in May 2010, Marin Clean Energy is California's first community choice aggregation program.[13,14] Marin County consumers have a choice of purchasing energy through two programs provided by Marin Clean Energy. The Light Green Program provides power from sources consisting of 25 percent renewable power, while the Deep Green program provides power from 100 percent renewable energy. Marin Clean Energy is being implemented in two phases. The first phase, already implemented, includes a small number of residential, commercial, and municipal customers. The second phase, scheduled to begin in January 2012, will include all remaining customers. PG&E provides electricity to those customers not served by Marin Clean Energy.

Natural Gas

Natural gas is the cleanest of the fossil fuels used in the state and will continue to be a substantial energy source for the foreseeable future.[15] Estimates of recoverable shale reserves are as high as 842 trillion cubic feet, which would comprise a 37-year supply at today's consumption rates.

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13 Marin Clean Energy, "How it Works," available online at http://marincleanenergy.info/index.php?option=com_content&view=article&id=141%3Ahow-it-works&catid=81&Itemid=77, accessed May 4, 2011.

14 Community choice aggregation permits any city, county, or city and county to aggregate the electric loads of residents, businesses, and municipal facilities to facilitate the purchase and sale of electrical energy. Before passage of Assembly Bill 117, which authorizes community choice aggregation, individual customer participation in electric load aggregation programs required customers' positive written declaration indicating their choice to participate (opt-in programs). In contrast, the new program provides for aggregating customer loads within city or county boundaries, but each customer is given an opportunity to leave their community's aggregation program and thereby continue to be served by the incumbent distribution utility (opt-out program). If a customer makes no negative declaration, that customer is served through the community choice aggregation program. This is a major departure from previous aggregation structures as it frees the aggregator from the need to market the program and ensures wide-scale customer participation.

15 California Energy Commission, "2009 Integrated Energy Policy Report, Final Commission Report," December 2009.

PG&E operates one of the largest natural gas distribution networks in the country, including 48,850 miles of natural gas transmission and distribution pipelines.[16] In all, PG&E delivers gas to approximately 4.3 million customer accounts in Northern and Central California, including San Francisco and Marin Counties.

Transportation Fuels

California's transportation sector uses roughly half of the energy consumed in the state. In 2007, the California Energy Commission—in partnership with the California Air Resources Board and other state, federal, and local agencies—prepared the State Alternative Fuels Plan which identifies strategies to increase the use of alternative fuels to meet California's goals for reducing petroleum consumption, improving energy security, and increasing in-state production of biofuels.

Energy Service at Port of San Francisco Piers, Water Areas, and Seawall Lots

Electricity is provided to the Port of San Francisco by PG&E and from the Hetch Hetchy system, operated by the SFPUC Power Enterprise. As described in Chapter 3, Project Description, the Port completed installation of a shoreside power system (12-megawatt substation) in 2010 at Piers 27-29 for cruise ships, in partnership with the San Francisco Bay Area Air Quality Management District (BAAQMD). The shoreside power system receives power from the Hetch Hetchy system and enables cruise ships equipped with the technology to receive an electrical supply to plug into the City's electrical grid while in port, instead of relying on the vessel's diesel generators for power, thereby substantially reducing the use of diesel and related diesel emissions.

Energy Service at Alcatraz

Since the electrical cable connecting Alcatraz with San Francisco power was severed more than 50 years ago, Alcatraz operations have relied on electrical power generated from diesel generators on the island.[17] The National Park Service is planning to install solar photovoltaic panels on the two buildings and a battery bank to reduce reliance on the diesel generators. The solar photovoltaic panels will supply approximately 38 percent of the island's estimated existing annual load and the battery bank will meet the island's nighttime electrical load and emergency needs, thereby reducing reliance on fossil fuels. Because the available roof area is not adequate for a solar photovoltaic system that could provide all of the island's power needs, the existing diesel generators will continue to be used, but will be upgraded to reduce emissions.

[16] Pacific Gas and Electric Company (PG&E), "2009 Corporate Responsibility and Sustainability Report, PG&E's Sustainable Journey, Working Collaboratively to Find the Right Balance for a More Sustainable Future, a Summary."

[17] National Park Service, United States Department of the Interior, "Categorical Exclusion Approval for Energy Infrastructure Improvements on Alcatraz Island National Historic Landmark, PMIS 150682 (PEPC 23349) Categorical Exclusion Approval," January 22, 2010.

5.18.2 Regulatory Framework

5.18.2.1 Federal Regulations

National Energy Conservation Policy Act

The National Energy Conservation Policy Act serves as the underlying authority for federal energy management goals and requirements. Signed into law in 1978, it has been regularly updated and amended by subsequent laws and regulations. This act is the foundation of most federal energy requirements.

National Energy Policy Act of 2005

The National Energy Policy Act of 2005 sets equipment energy efficiency standards and seeks to reduce reliance on nonrenewable energy resources and provide incentives to reduce current demand on these resources. For example, under the act, consumers and businesses can attain federal tax credits for purchasing fuel-efficient appliances and products, including hybrid vehicles; constructing energy-efficient buildings; and improving the energy efficiency of commercial buildings. Additionally, tax credits are available for the installation of qualified fuel cells, stationary microturbine power plants, and solar power equipment.

Executive Order 13423 (Strengthening Federal Environmental, Energy, and Transportation Management), signed in 2007, strengthens the key energy management goals for the federal government and sets more challenging goals than the Energy Policy Act of 2005. The energy reduction and environmental performance requirements of Executive Order 13423 were expanded upon in Executive Order 13514 (Federal Leadership in Environmental, Energy, and Economic Performance), signed in 2009.

Energy and Independence Security Act of 2007 and Corporate Average Fuel Economy Standards

The Energy and Independence Security Act of 2007 sets federal energy management requirements in several areas, including energy reduction goals for federal buildings, facility management and benchmarking, performance and standards for new buildings and major renovations, high-performance buildings, energy savings performance contracts, metering, energy-efficient product procurement, and reduction in petroleum use and increase in alternative fuel use. This act also amends portions of the National Energy Policy Conservation Act.

Leadership in Energy and Environmental Design (LEED®) Green Building Rating System

The Leadership in Energy and Environmental Design (LEED®) is a green building rating system developed and administered by the U.S. Green Building Council, a Washington D.C.-based nonprofit coalition of building industry leaders. The LEED® rating system is designed to promote design and construction practices that increase profitability while reducing the negative environmental impacts of buildings and improving occupant health and well-being. The LEED®

rating system offers four certification levels for new construction—Certified, Silver, Gold, and Platinum—that correspond to the number of credits accrued in five green design categories: sustainable sites, water efficiency, energy and atmosphere, materials and resources, and indoor environmental quality. LEED® standards cover new commercial construction and major renovation projects, interiors projects, and existing building operations.

LEED® credits are awarded on a 100-point scale. Building designs that achieve a score of 50 to 59 points achieve a Silver certification, while designs that achieve a score of 60 to 79 achieve a Gold certification. Up to 10 bonus points can be achieved for innovative design or a design that addresses regionally specific environmental issues.

5.18.2.2 State Regulations

Surface Mining and Reclamation Act of 1975

The Surface Mining and Reclamation Act (SMARA) of 1975 (found in Chapter 9, Division 2, Section 2710 et seq. of the Public Resources Code) requires the State Mining and Geology Board to adopt state policies for the reclamation of mined lands and the conservation of mineral resources. These policies are found in Title 24 of the California Code of Regulations, Division 2, Chapter 8, Subchapter 1.

In accordance with SMARA, the State has established the California Mineral Land Classification System to help identify and protect mineral resources in areas that are subject to urban expansion or other irreversible land uses that would preclude mineral extraction. Protected mineral resources include construction materials, industrial and chemical mineral materials, metallic and rare minerals, and nonfluid mineral fuels.

2008 California Energy Action Plan Update

The *2008 Energy Action Plan Update* provides a status update to the *2005 Energy Action Plan II,* which is the State of California's principal energy planning and policy document.[18] The plan continues the goals of the original *Energy Action Plan*, describes a coordinated implementation plan for state energy policies, and identifies specific action areas to ensure that California's energy is adequate, affordable, technologically advanced, and environmentally sound. First-priority actions to address California's increasing energy demands are energy efficiency, demand response (i.e., reduction of customer energy usage during peak periods in order to address system reliability and support the best use of energy infrastructure), and the use of renewable sources of power. To the extent that these actions are unable to satisfy the increasing energy and capacity needs, the plan supports clean and efficient fossil-fired generation.

[18] California Public Utilities Commission and California Energy Commission, "2008 Update, Energy Action Plan," February 2008.

California Green Building Standards Code

The 2010 California Green Building Standards Code, as specified in Title 24, Part 11 of the California Code of Regulations, specifies building standards to improve public health, safety, and general welfare by enhancing the design and construction of buildings through the use of building concepts having a positive environmental impact and encouraging sustainable construction practices in five categories: planning and design, energy efficiency, water efficiency and conservation, material conservation and resource efficiency, and environmental quality. The provisions of this code apply to the planning, design, operation, construction, replacement, use and occupancy, location, maintenance, removal and demolition of every building or structure or any appurtenances connected or attached to such building structures throughout California.

Building Energy Efficiency Standards

The Energy Efficiency Standards for Residential and Nonresidential Buildings, as specified in Title 24, Part 6, of the California Code of Regulations, were established in 1978 in response to a legislative mandate to reduce California's energy consumption. The standards are updated periodically to allow consideration and possible incorporation of new energy efficiency technologies and methods. The California Energy Commission adopted an update in 2008, and these standards became effective on January 1, 2010. California's building energy efficiency standards (along with those for energy-efficient appliances) have saved more than $56 billion in electricity and natural gas costs since 1978, and it is estimated that the standards will save an additional $23 billion by 2013.[19]

Senate Bill 1078 and 107 and Executive Order 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 expands the state's Renewable Portfolio Standard to 33 percent renewable power by 2020. In September 2009, then-Governor Schwarzenegger continued California's commitment to the Renewable Portfolio Standard by signing Executive Order S-21-09, which directs the ARB 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.

5.18.2.3 Local Regulations

Sustainability Plan for City and County San Francisco

The *Sustainability Plan for City and County San Francisco*, adopted in 1997, contains a set of general goals and specific objectives and actions for San Francisco to ensure that the city's current energy needs are met without sacrificing the ability of future generations to meet their own needs. The

[19] California Energy Commission, California's Energy Efficiency Standards for Residential and Nonresidential Buildings, available online at http://www.energy.ca.gov/title 24/, accessed May 4, 2011.

major energy goals expressed in the plan are to reduce overall power use by maximizing energy efficiency; to maintain an energy supply based on renewable, environmentally sound resources; to eliminate climate-changing and ozone-depleting emissions and toxic contaminants associated with energy production and use; and to base energy decisions on the goal of creating a sustainable society.

Electricity Resource Plan

The *Electricity Resource Plan* for San Francisco presents an action plan to meet the growth in demand for electricity, as well as to allow the shutdown of the Hunters Point power plant and replacement of the aging power plants at Potrero. The main components of the plan include demand reduction through energy efficiency and load management; use of renewable energy resources; construction of medium-sized generation plants using the most efficient gas-fired generators and cogeneration plants; construction of small-scale distributed generation, such as fuel cells, package cogeneration plants, and micro-turbines; and improved power transmission from the San Francisco Peninsula. The plan calls for a renewed commitment and an accelerated pace to achieving the goals of the 1997 Sustainability Plan, including the elimination of all fossil-fuel power; an energy supply based on renewable, environmentally sound resources; and maximum energy efficiency. The *Electricity Resource Plan* identifies specific energy savings and production goals for each component of the plan.

GoSolarSF

On July 1, 2008, the San Francisco Public Utilities Commission launched its "GoSolarSF" program to San Francisco's businesses and residents, offering incentives in the form of a rebate program that could pay for approximately half the cost of installation of a solar power system and more to those qualifying as low-income residents.

The San Francisco Planning Department and the San Francisco Department of Building Inspection have also developed a streamlining process for solar photovoltaic permits and priority permitting mechanisms for projects pursuing LEED® Gold certification.

San Francisco Green Building Code

The CCSF Green Building Code is Chapter 13C of the San Francisco Building Code. The purpose of the Green Building Code is to promote the health, safety and welfare of San Francisco residents, workers, and visitors by minimizing the use and waste of energy, water and other resources in the construction and operation of the CCSF's building stock and by providing a healthy indoor environment. Under the Green Building Code, residential buildings over 75 feet in height, newly constructed commercial buildings over 5,000 square feet, new first time build outs of commercial interiors that are over 25,000 square feet, and major alterations of over 25,000 square feet in all buildings are subject to an unprecedented level of required LEED® Green Building Rating System™ certifications. High-rise residential projects and large commercial projects (greater than 25,000 square feet or a high-rise) are required to achieve LEED® Silver certification, and achieve a 50 percent reduction in the use of potable water for landscaping and

30 percent reduction in water use. Effective January 1, 2012, large commercial projects must achieve LEED® Gold certification and comply with LEED® requirements for provision of on-site renewable energy. This ordinance combines the mandatory elements of the 2010 California Green Building Standards Code with stricter local requirements.

Port of San Francisco Green Building Code

The Port of San Francisco adopted the California Green Standards Code with local amendments as Chapter 13C of the Port of San Francisco Building Code. Under this code, newly constructed buildings and structures as well as major alterations and first-time build-outs of commercial spaces that are 25,000 feet or more and significant upgrades to residential buildings within the jurisdiction of the Port of San Francisco are subject to an unprecedented level of required LEED® Green Building Rating System™ certifications. All commercial projects are required to achieve LEED® Silver certification, and effective January 1, 2012, projects must achieve LEED® Gold certification.

San Francisco Water Efficient Landscaping Ordinance

The San Francisco Water Efficient Landscaping Ordinance (codified in the San Francisco Administrative Code, Chapter 63) establishes a framework for planning, designing, installing, maintaining, and managing water-efficient landscaping in new construction and rehabilitation projects. The ordinance encourages the use of climate-appropriate and local California native species, and establishes provisions for water management and the prevention of wasteful use of water in landscapes. To ensure that water is used efficiently without waste, the ordinance sets a Maximum Applied Water Allowance, using state mandated formulas and accounting for local climatic conditions, and this allowance may not be exceed unless the landscaped area is irrigated with gray water or harvested rain water. Under this ordinance, turf areas may not exceed 25 percent of the total landscaped area or be installed on steep slopes.

The San Francisco Water Efficient Landscaping Ordinance applies to these three tiers of projects:

(1) Tier 1: All public agency, residential, and commercial new construction landscape projects and rehabilitated landscape projects with a modified landscape area equal to or greater than 1,000 square feet and less than 2,500 square feet

(2) Tier 2: All public agency, residential and commercial new construction and rehabilitated landscape projects with a modified landscape area equal to or greater than 2,500 square feet

(3) The irrigation and maintenance of any landscape irrigation system in the City and County of San Francisco

For Tier 1 and 2 projects, applicants must submit landscape documentation to the SFPUC. For Tier 1 projects, the package must include a description of the proposed landscape project, the selection of low-water-use or climate-appropriate plants, water-efficient irrigation system components, and other applicable project information. For Tier 2 projects, the required documentation includes a landscape plan, irrigation plan, soil management report, grading plan,

and calculation of the Maximum Applied Water Allowance. For other projects, the applicant may submit a compliance plan that includes a programmatic approach to compliance with the ordinance. Upon completion of the landscape project, Tier 1 and 2 projects must also submit a Certificate of Landscape Completion for review and approval by the SFPUC, and a certificate of occupancy cannot be issued until this certification is approved. Audits for compliance with the Maximum Allowable Water Allowance may be required by the SFPUC.

The SFPUC may waive some or all of the requirements of this ordinance if, based on a site inspection, the SFPUC determines that compliance is not feasible. This ordinance complies with the requirements of Article 10.8 of the California Government Code, enacted by the State as the Water Conservation in Landscaping Act.

San Francisco Green Landscaping Ordinance

The San Francisco Green Landscaping Ordinance amends the San Francisco Planning Code and Public Works Code to enhance new development and substantial alterations of existing buildings. The goals of the ordinance are to:

- Promote healthier and more plentiful plantings through screening, parking lot, and street tree controls
- Increase permeability through front yard and parking lot controls
- Encourage responsible water use through increasing "climate appropriate" plantings
- Improve screening by creating an ornamental fencing requirement and requiring screening for newly defined vehicle use areas.

Climate-appropriate plants are defined in Section 802.1 of the San Francisco Public Works Code and Section 63.3 of the San Francisco Administrative Code (the San Francisco Water Efficient Landscaping Ordinance) and include those that are defined as "low" or "very low" use by the California Department of Water Resources; are defined as "no water," "little water," or "little to moderate water for San Francisco according to the Sunset Western Addition Garden Book; function as part of an engineered stormwater management feature approved by the SFPUC; are classified as low water use by San Francisco's Department of Public Works, Recreation and Parks District, or the SFPUC; appear in the "San Francisco Street Tree Species List" established by the Department of Public Works; are undergoing testing by the Department of Public Works or the Recreation and Parks Department; or have been approved for a specific wet soil location by the Department of Public Works or SFPUC based on naturally occurring water sources.

Bay Friendly Landscaping and Gardening Coalition

The Bay-Friendly Landscaping and Gardening Coalition (a membership organization comprised of public agencies, utilities, non-profits, landscape professionals, and associations from all nine Bay Area counties) provides a whole-system, sustainable approach to designing, constructing, and maintaining landscapes, both public and private. This approach is based on seven primary principles:

- Landscaping locally
- Landscaping for less plant and construction waste to the landfill
- Nurturing the soil
- Conserving water
- Conserving energy
- Protecting water and air quality
- Creating and Protecting Wildlife Habitat

Under this system, landscapes are evaluated with the Bay-Friendly Scorecard for Civic and Commercial Landscapes. This scorecard has nine required practices and a total of 215 points. The nine required practices do not contribute to earning points but all nine must be met in order for the project to be Bay-Friendly. In addition, a minimum of 60 points must be earned to be considered a Bay-Friendly Rated Landscape. It is not possible to earn all 215 points in any given project as some points are conflicting such as points earned for no lawn and points earned for grasscycling. A low score is 60 to 74, a medium score is 75 to 89, and a high score is 90 or greater. In general, achieving a low score and all of the nine required practices is quite readily done, especially if Bay-Friendly goals are set early in the project. Achieving a medium and especially a high score can be increasingly difficult depending upon the site constraints and opportunities, budget constraints, or functions of the landscape and the knowledge/experience of the project team in implementing Bay-Friendly practices. The Bay-Friendly Scorecard is consistent with the LEED® rating system.

5.18.3 Impacts and Mitigation Measures

5.18.3.1 Significance Criteria

The City has not formally adopted significance standards for impacts related to mineral and energy resources, but generally considers that implementation of the project could have a potentially significant impact related to mineral and energy resources if it were to:

- 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;

- 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; or

- Encourage activities that result in the use of large amounts of fuel, water, or energy, or use these in a wasteful manner.

Due to the nature of the proposed project, there would be no impact related to the following criteria for the reasons described below:

- ***Loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan.*** As discussed in Section 5.18.1.1, Mineral Resources, the entire San Francisco waterfront is mapped by the California

Geologic Survey as either MRZ-1 or MRZ-4, indicating that substantial mineral resources do not occur along the waterfront,[20] and the *San Francisco General Plan* does not identify any areas of important mineral resources in San Francisco. Therefore, construction and operation of the America's Cup facilities and construction and operation of the James R. Herman Cruise Terminal and Northeast Wharf Plaza would not result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan.

- ***Loss of availability of a known mineral resource that would be of value to the region and the residents of the state.*** The submerged lands and tidelands within the Port of San Francisco property, where all of the project-related in-water construction would occur, are formerly state-owned lands held in trust for the people of California by the City and County of San Francisco for the purposes of maritime commerce, navigation, and fisheries (the public trust) use. (See Chapter 4, Plans and Policies, for a description of the public trust and the State Lands Commission.) As such, minerals in these lands are reserved to the state and are under the jurisdiction of the State Lands Commission. However, there are no mineral resources identified along the waterfront within the Port jurisdiction. Further, as described in Chapter 3, Project Description, the project sponsor would obtain a lease from the State Lands Commission for any dredging or applicable work within its jurisdiction.

  The AC34 2012 and 2013 race courses would be located in Central San Francisco Bay, above the four State Lands Commission parcels where the CCSF and Hanson Marine Operations currently conduct sand mining. Hanson is applying for a new lease to expand its sand mining operations. While the race events could temporarily interfere with access to these mineral resources (on race days only), there would be no new construction that would temporarily or permanently reduce the availability of these resources. Therefore, the project would not result in a loss of availability of a known mineral resource that would be of value to the region and the residents of the state.

5.18.3.2 Approach to Analysis

This analysis evaluates the proposed project's potential effects on energy resources including fuel, energy, and water. Overall, compliance with the Energy Efficiency Standards for Residential and Nonresidential Buildings (specified in Title 24, Part 6, of the California Code of Regulations), Port of San Francisco Building Code Chapter 13C, and San Francisco Water Efficient Landscaping Ordinance would minimize the use of these resources and ensure that they are not used in a wasteful manner. Additionally, development and implementation of the People Plan and Sustainability Plan to be prepared as part of the project in accordance with the 34th America's Host Agreement (as described in Chapter 3, Project Description) would also seek to reduce AC34 potential effects on energy resources.

[20] California Department of Conservation, Division of Mines and Geology, "Update of Mineral Land Classification: Aggregate Minerals in the South San Francisco Bay Production-Consumption Region," DMG Open-File Report 96-03, 1996

5.18.3.3 AC34 Event and Cruise Terminal Impacts

America's Cup

Impact ME-1: The America's Cup facilities and events would not encourage activities that would result in the use of large amounts of fuel, energy, or water or use these in a wasteful manner. (Less than Significant)

The 34th America's Cup would use fuel, energy, and water during construction of the AC34 facilities and during the events. With the exception of the 2013 America's Cup Village to be constructed at Piers 27-29 and seismic upgrades to Piers 30-32, all of the proposed structures would be temporary. The 2013 America's Cup Village would be constructed on Port property and would therefore be subject to the California Energy Efficiency Standards for Residential and Nonresidential Buildings (specified in Title 24, Part 6, of the California Code of Regulations), the Port of San Francisco Building Code Chapter 13C, which would require the project to meet various energy efficiency standards.

Use of Energy Resources During Construction of AC34 Facilities

Although construction activities for the AC34 facilities would require the use of fuel, energy, and water, many of the construction activities would include seismic upgrades and repairs to existing piers and other improvements to Port of San Francisco facilities, providing a long-term benefit to the Port. Additionally, construction of temporary facilities at GGNRA and Marina Green would not require extensive construction activities, and would therefore not require large amounts fuel, energy, or water. Further, the amount of energy, fuel, and water used for the AC34 construction activities would not be atypical for normal construction projects within the City of San Francisco. Therefore the use of these resources during construction would not be wasteful.

Use of Energy Resources During AC34 Events

The amount of energy, fuel, and water used for AC34 events would not be substantially different from what would be used for other large events occurring within San Francisco, and would be temporary in nature, occurring only during the AC34 events in 2012 and 2013. Further, the project sponsor would comply with state and local requirements for efficient use of fuel, energy, and water. The proposed project would include development and implementation of an event Sustainability Plan describing event-related sustainability activities taking place in San Francisco and throughout the event life cycle. The plan would be led by the Event Authority in consultation with the San Francisco Department of the Environment and other involved organizations. It would be an overarching document covering event sustainability activities implemented by various organizations. The Sustainability Plan would identify sustainability-related regulations applicable to the proposed project, and would cover both onshore and offshore event sustainability activities such as carbon emissions, waste, water, food, habitat protection, and transport. It would make reference to other plans being developed for the event, such as the People Plan, which would include strategies that would reduce the use of transportation-related fuels. In addition, event-related infrastructure would be required to comply with Chapter 13C of the Port of San Francisco Building Code. With compliance with state and local energy and water efficiency requirements, and

implementation of the People Plan and Sustainability Plan, the AC34 events would not use large amounts of energy, fuel, or water or use these resources in a wasteful manner as discussed below.

Fuel. The 34th America's Cup would require the use of fuels for transportation needs for event-related employees, vendors, and media; transportation needs for the up to 334,000 viewers during an average peak race weekend race day; operation of the AC34 race event and support boats; operation of the estimated 2,280spectator boats during an average peak day race weekend race day; and provision of power to the spectator and event facilities.

The project sponsor would prepare a Draft People Plan (described in Chapter 3, Project Description) that includes an overall strategy for management of bicycles, pedestrians, transit, and private automobiles. Implementation of this plan would include strategies that would reduce the use of transportation-related fuels. The Draft People Plan has been structured according to four guiding principles: resource efficiency, environmental sustainability, strategic adaptability, and positive legacy. These principles favor walking, bicycling, and transit over the private automobile while emphasizing the need for effective communication and information tools that allow large numbers of users to make individual decisions that support the success of the plan as a whole. These principles of the People Plan would reduce the use of fuels needed for transportation needs.

Operation of the AC34 event and support boats would require the use of fuels during the events as well as during setup and demobilization for the events. The influx of spectator boats would also result in an increase in fuel consumption for travel to the events, and transport or idling during the events. While this increased boating activity would increase the use of fuels, the effects would be temporary (limited to the duration of the events and periods of time immediately before and after the events). In addition, the majority of the spectator vessels are expected to be local vessels within the Bay Area, and many of the spectator vessels would be sailboats that do not have large marine diesel engines.

Supplemental power would also be required at spectator and event facilities to power television screens, public address and entertainment systems, lighting, vendor equipment, and other equipment uses at most spectator areas and facilities because no existing electrical facilities currently exist at many of these project areas. The needed power would be supplied by portable gas or diesel generators, resulting in an increased use of fuel. However, the Event Authority, in consultation with the San Francisco Department of the Environment, would prepare a Sustainability Plan (described in Chapter 3, Project Description) that would describe how the AC34 events would minimize the use of fossil fuels. Such strategies could include use of alternative fuels or access to the city's power grid. The Plan would promote sustainability activities throughout the event life cycle, and would consider factors such as carbon emissions, waste, water, food, and transport. The shoreside power transformer at Pier 27, constructed by the Port to provide power to cruise ships while at Port, would be temporarily relocated offsite until the Phase 2 improvements at the Pier 27 are implemented (approximately 2 years). During this time, the approximately 20 to 22 shoreside-power capable cruise ships expected to use the shoreside power system each year would instead continue to rely on their diesel generators for

power. While this would result in an increase in the use of fuels compared to what would occur with use of the shoreside power system, the use of fuels would be consistent with recent conditions, and would only be temporary until the shoreside power system is used after completion of Phase 2 of the Cruise Terminal.

For the reasons discussed above, the use of fuels during the AC34 events would be minimized, and in the case of the shoreside power system, would be temporary, and fuel would not be used in a wasteful manner.

Energy. The 34th America's Cup would require the use of energy for operation of the AC34 villages, team bases, media operations, entertainment, food preparation, and ancillary office uses. The cruise terminal core and shell building would be constructed for the 2013 America's Cup Village at Pier 27. This is the only permanent structure being constructed for AC34, and the design of this building would need to meet or exceed the energy efficiency requirements of the Energy Efficiency Standards for Residential and Nonresidential Buildings (specified in Title 24, Part 6, of the California Code of Regulations, and described in Section 5.18.2.2, State Regulations) and the Port of San Francisco Building Code Chapter 13C (described in Section 5.18.2.3, Local Regulations). Accordingly, the structure would need to achieve the LEED® Silver standard at a minimum. In accordance with these requirements, the building would need to be a minimum of 15 percent more energy efficient than it would be under Title 24 energy efficiency requirements. The project sponsor would also be required to commission the building's energy system, which includes conducting a systematic quality assurance review of the entire design and construction process to verify and document that the building systems and components are planned, designed, installed, tested, operated, and maintained to meet the project requirements.

Additionally, the Event Authority, in consultation with the San Francisco Department of the Environment, would prepare a Sustainability Plan (described in Chapter 3, Project Description) that would describe energy efficiency mechanisms during operation of the AC34 events, including the America's Cup Village as well as the team bases, media operations, entertainment, food preparation, and ancillary office uses during both events. The Sustainability Plan would promote sustainability activities throughout the event life cycle, and would consider factors such as carbon emissions, waste, water, food, and transport.

For the reasons discussed above, the use of energy during the AC34 events would be minimized and would not be used in a wasteful manner.

Water. The 34th America's Cup would require the use of water at the 2013 America's Cup Village at Pier 27 for landscaping, toilet flushing, and other indoor activities. During both the 2012 and 2013 events, water would also be required for boat washing and maintenance, food service, and other event activities. For the 2013 America's Cup Village at Pier 27, the project sponsor would be required to comply with the Port Building Code Chapter 13C. Accordingly, the project sponsor would be required to incorporate plumbing fixtures and fixture fittings to reduce the amount of indoor potable water used by 30 percent relative to the requirements of the California Building Code, and would also be required to reduce wastewater production by 20 percent through the use

of water-conserving fixtures or non-potable water systems. To further reduce the indoor use of potable water, a rainwater harvesting system would be constructed as part of the building core and shell of the cruise terminal. The harvested rainwater water could be used for nonpotable purposes such as toilet flushing and air conditioner make up water at the 2013 America's Cup Village.

For outdoor water use (landscape irrigation), the project sponsor would be required to use climate-appropriate plants in the landscaping, submit the required landscape documentation to the SFPUC in accordance with the San Francisco Water Efficient Landscaping Ordinance (described in Section 5.18.2.3, Local Regulations), and install weather- or soil moisture-based irrigation controllers that would automatically adjust irrigation in response to changes in plants' needs as weather conditions change, in accordance with the Port of San Francisco Building Code. In addition, harvested rainwater could be used for the landscape irrigation, thereby reducing or eliminating the use of potable water for landscaping and other outdoor uses. Compliance with these standards and the use of harvested rainwater would ensure that water is used efficiently and not used in a wasteful manner at the 2013 America's Cup Village at Pier 27.

In addition, the Event Authority, in consultation with the San Francisco Department of the Environment, would prepare a Sustainability Plan (described in Chapter 3, Project Description) that would describe how water would be used efficiently during operation of the AC34 events, including the 2012 America's Cup Village as well as the team bases, media operations, entertainment, food preparation, and ancillary office uses during both events. According to preliminary estimates, the additional 292,000 spectators and 765 employees that would be in San Francisco on peak race days would generate about 972,000 gpd of water demand, primarily for toilet flushing and sanitary needs.[21] The 24,000 spectators outside of San Francisco on peak race days would also increase water demand. However, for the most part, the bathroom facilities in San Francisco would be constructed in accordance with the San Francisco Green Building Code and Port of San Francisco Building Code Chapter 13C. The 24,000 spectators outside of San Francisco would also use bathroom facilities constructed in accordance with the California Green Building Code, at a minimum. These building codes require the use of water efficient plumbing fixtures and fixture fittings, and therefore, water used for these services would not be used in a wasteful manner.

While boat washing at the team bases would use approximately 200 gallons of water per wash, the project sponsor may utilize a truck-mounted package treatment system to recycle the water as discussed in Chapter 3, Project Description, which would minimize the use of water for boat washing operations. Regardless, this use of water would be temporary, limited primarily to the race day events and practice periods before the races. Therefore, there would not be a large amount of water used for boat washing, and with recycling the water would not be used in a wasteful manner.

[21] Hydroconsult Engineers, *Draft Technical Memorandum: 34th America's Cup/Cruise Terminal: Estimated Water/ Wastewater Flow Rates*, May 16, 2011.

Impact Summary

As discussed above, construction activities for the AC34 facilities would require the use of fuel, energy, and water. However, many of the construction activities would include seismic upgrades and repairs to existing piers and other improvements to Port of San Francisco facilities. Additionally, construction of temporary facilities at GGNRA and Marina Green would not require extensive construction activities, and would therefore not require large amounts fuel, energy, or water. Further, the amount of energy, fuel, and water used for the AC34 construction activities would not be atypical for a normal construction project within the City of San Francisco. Therefore, the use of these resources during construction would not be wasteful.

Implementation of the AC34 2012 and 2013 events would result in a temporary increase of fuel, energy and water; however, not in amounts substantially different from what would be used for other large events occurring within San Francisco. Further, the project sponsor would comply with state and local requirements for efficient use of fuel, energy and water, and the proposed project would include development and implementation of an event Sustainability Plan describing event-related sustainability activities taking place in San Francisco and throughout the event life cycle, such that the project would result in the use of large amounts of fuel, water, or energy in a wasteful manner. Additionally, the People Plan would include strategies that would reduce the use of transportation-related fuels during the AC34 events. Relocation of the shoreside power transformer from Pier 27 would result in only a temporary increase in the use of fuels by cruise ships between 2012 and 2013. Therefore, impacts related to the wasteful use of water, fuel, and energy during operation of the AC34 events would be *less than significant*.

Mitigation: Not required

James R. Herman Cruise Terminal and Northeast Wharf Plaza

Impact ME-2: Construction and operation of the James R. Herman Cruise Terminal and Northeast Wharf Plaza would not encourage activities that would result in the use of large amounts of fuel, water, or energy, or use these in a wasteful manner. (Less than Significant)

The James R. Herman Cruise Terminal and Northeast Wharf Plaza project would relocate the existing primary cruise terminal from Pier 35 to Pier 27. This relocation would not result in an increase of cruise ships calls, which currently amount to 40 to 80 calls a year. The proposed cruise terminal would accommodate the increasing size of cruise ships (from an average capacity of 2,600 passengers per ship to 4,000 passengers per ship), a current trend that is likely to continue regardless of the project.

The James R. Herman Cruise Terminal and Northeast Wharf Plaza would also include planting trees along the vehicular entrance aisle to the ground transportation area (GTA), and planting areas would be installed between the GTA bus parking areas and the adjacent taxi pickup/dropoff area and the Northwest Wharf Plaza. In addition, the Northeast Wharf Plaza would provide an

approximately 2½-acre open space at the south end of Pier 27. The multiuse recreational space is proposed to consist of a natural turf underlain by a soil bed and base drain mat.

Use of Energy Resources During Construction of Cruise Terminal and Northeast Wharf Plaza

Construction of the cruise terminal and construction of the wharf plaza would require the use of fuel, energy, and water. However, the amount of these resources used would not be atypical of a normal construction project within the City of San Francisco. Therefore, the use of these resources during construction would not be wasteful.

Use of Energy Resources During Operation of Cruise Terminal and Northeast Wharf Plaza

Fuel. While at port, cruise ships typically rely on onboard diesel generators for power. However, the Port has constructed a shoreside power transformer at Pier 27 to provide power to cruise ships while at port. While this transformer would be temporarily relocated offsite during the AC34 events, it would be relocated back to Pier 27 at the completion of the events and would be upgraded from 12 megawatts to 20 megawatts to support larger cruise ships. Use of the shoreside power system would reduce the reliance of cruise ships on diesel generators for power when at port.

Energy. The cruise terminal would require the use of energy for lighting, heating, cooling, ventilation, food preparation, and equipment operation. The design of the building would need to meet or exceed the energy efficiency requirements of the Port of San Francisco Building Code Chapter 13C (described in Section 5.18.2.3, Local Regulations). Accordingly, the structure would need to achieve the LEED® Silver standard at a minimum. The project sponsor would also be required to commission the building's energy system, which includes conducting a systematic quality assurance review of the entire design and construction process to verify and document that the building systems and components are planned, designed, installed, tested, operated, and maintained to meet the project requirements. Consistent with these requirements, the cruise terminal design includes photovoltaic solar collectors for the roof.

The cruise ship shoreside power infrastructure would be relocated back to Pier 27 to power cruise ships while berthed at the pier and would be upgraded from 12 megawatts to 20 megawatts to support larger cruise ships. While use of the shoreside power system would increase the use of energy during operation of the cruise terminal, the energy is provided by the Hetch Hetchy system operated by the SFPUC Power Enterprise and it would reduce the reliance on diesel fuel. Therefore, energy would not be used in a wasteful manner.

Water. Operation of the cruise terminal would require the indoor use of water for toilet flushing and other sanitary needs, food preparation, and other indoor activities. However, the amount of water needed would be similar to existing conditions, and in accordance with the Ports Building Code Chapter 13C, the project sponsor would be required to incorporate plumbing fixtures and fixture fittings to reduce the amount of potable water used by 30 percent relative to the requirements of the California Building Code, and would also be required to reduce wastewater production by 20 percent through the use of water-conserving fixtures or non-potable water

systems. To further reduce the indoor use of potable water, a rainwater harvesting system would be constructed as part of the building core and shell of the cruise terminal as discussed in Impact ME-1, above. The harvested rainwater water could be used for nonpotable purposes such as toilet flushing and air conditioner make up water.

For outdoor water use (landscape irrigation at the Cruise Terminal project), the project sponsor would be required to use climate-appropriate plants, submit the required landscape documentation to the SFPUC in accordance with the San Francisco Water Efficient Landscaping Ordinance (described in Section 5.18.2.3, Local Regulations), and install weather- or soil moisture-based irrigation controllers that would automatically adjust irrigation in response to changes in plants' needs as weather conditions change, in accordance with the Port of San Francisco Building Code Chapter 13C. In addition, harvested rainwater could be used for the landscape irrigation, thereby reducing or eliminating the use of potable water for landscaping and other outdoor uses. Compliance with these standards and use of harvested rain water would ensure that water is not used wastefully during operation of the Cruise Terminal project.

Impact Summary

As discussed above, construction of the cruise terminal and construction of the wharf plaza would require the use of fuel, energy, and water. However, the amount of these resources used would not be atypical of a normal construction project within the City of San Francisco, and construction of the cruise terminal would contribute to the economic vitality of the Port. Therefore the use of these resources during construction would not be wasteful.

During operation of the cruise terminal, use of the shoreside power transformer to be relocated back to Pier 27 would provide power to cruise ships while at port and would reduce the reliance of cruise ships on diesel generators for power when at port, similar to existing conditions. In accordance with the Port of San Francisco Building Code Chapter 13C, the cruise terminal would need to meet the LEED® Gold standard at a minimum. The project sponsor would also be required by the Port of San Francisco Building Code Chapter 13C to incorporate plumbing fixtures and fixture fittings to reduce the amount of potable water used by 30 percent and reduce wastewater production by 20 percent through the use of water-conserving fixtures or non-potable water systems. For outdoor water use, the project sponsor would be required to submit the required landscape documentation to the SFPUC in accordance with the San Francisco Water Efficient Landscaping Ordinance and install weather- or soil moisture-based irrigation controllers that would automatically adjust irrigation in response to changes in plants' needs as weather conditions change, in accordance with the Port of San Francisco Building Code Chapter 13C. Further, harvested rainwater would be used for some nonpotable uses. With implementation of the Port of San Francisco Building Code Chapter 13C and San Francisco Water Efficient Landscaping Ordinance, impacts related to the wasteful use of fuel, energy, and water would be *less than significant* during operation of the Cruise Terminal project.

Mitigation: Not required

5.18.3.4 Future Long-Term Development Impacts

Impact LT-ME: Future long-term development under the Host Agreement would not result in adverse impacts on mineral or energy resources. (Less than Significant)

As described in Chapter 3, the 34th America's Cup Host and Venue Agreement (Host Agreement) provides the Event Authority with certain long-term development rights under specified conditions. Although no site-specific development projects or programs have been developed, this EIR analyzes at a conceptual level an assumed type and level of development based on current land use policies and guidelines. Any development projects proposed for the SF Waterfront in the future pursuant to the Host Agreement would be subject to its own separate CEQA review and permitting processes, as applicable.

As discussed in Section 5.18.2.3, Local Regulations, above, construction on the piers and seawall lots and within the Open Water Basins along the waterfront within the Port of San Francisco's jurisdiction, including those subject to long-term development under the Host Agreement are subject to the Port of San Francisco Building Code Chapter 13C. In accordance with this code, the long-term development projects would need to meet the LEED® Gold standard at a minimum, effective January 1, 2012, and the project sponsor would be required to provide onsite renewable energy, purchase offsite renewable energy, or achieve a 25-percent reduction in energy usage. The project sponsor would also be required by the Port of San Francisco Building Code Chapter 13C to incorporate plumbing fixtures and fixture fittings to reduce the amount of potable water used by 30 percent and reduce wastewater production by 20 percent through the use of water-conserving fixtures or non-potable water systems. For outdoor water use, the project sponsor would be required to submit the required landscape documentation to the SFPUC in accordance with the San Francisco Water Efficient Landscaping Ordinance and install weather- or soil moisture-based irrigation controllers that would automatically adjust irrigation in response to changes in plants' needs as weather conditions change, in accordance with the Port of San Francisco Building Code. With implementation of the Port of San Francisco Building Code Chapter 13C and San Francisco Water Efficient Landscaping Ordinance, impacts related to the wasteful use of fuel, energy, and water would be *less than significant* for the long-term development projects.

Mitigation: Not required

5.18.3.5 Cumulative Impacts

Impact C-ME: The project, in combination with other past, present, and reasonably foreseeable future projects, would not result in significant adverse cumulative impacts on mineral or energy resources. (Less than Significant)

Potential cumulative impacts on mineral and energy resources are evaluated on a regional basis.

America's Cup Facilities and Operations

The proposed AC34 project would use fuel, energy, and water. Although many projects in the region, including those listed in Table 5.1, would also use these resources, cumulative impacts on energy resources would be less than significant because the project and all of the regional projects would be required to comply with the California Green Building Standards Code at a minimum and would also be subject to local green building ordinances such as the San Francisco Green Building Code and Port of San Francisco Building Code Chapter 13C, which must be as stringent as the state requirements and are often more stringent. In addition, the project sponsor would implement fuel-efficient methods to address transportation needs as well as energy efficiency measures in accordance with the People Plan and Sustainability Plan to be completed as part of the project, as described in Impact ME-1. Because the building codes encourage sustainable construction practices related to planning and design, energy efficiency, and water efficiency and conservation, energy consumption would be expected to be reduced compared to existing conditions as result of implementation of the projects. Therefore, cumulative impacts related to wasteful use of energy resources would be *less than significant*.

James R. Herman Cruise Terminal and Northeast Wharf Plaza

The proposed cruise terminal and wharf plaza project would use fuel, energy, and water. Although many projects in the region, including those listed in Table 5.1, would also use these resources, cumulative impacts would be less than significant because the project and all of the regional projects would be required to comply with the California Green Building Standards Code at a minimum and would also be subject to local green building ordinances such as that of the Port of San Francisco, which must be as stringent as the state requirements and are often more stringent. Because these building codes encourage sustainable construction practices related to planning and design, energy efficiency, and water efficiency and conservation, energy consumption would be expected to be reduced compared to existing conditions as result of implementation of the projects. Therefore, cumulative impacts related to wasteful use of energy resources would be *less than significant*.

Mitigation: Not required

5.19 Agricultural and Forest Resources

This section examines the effects of the proposed 34th America's Cup and James R. Herman Cruise Terminal and Northeast Wharf Plaza on agricultural and forest resources.

5.19.1 Setting

5.19.1.1 Port of San Francisco Piers, Water Areas, and Seawall Lots

Many of the AC34 facilities and venues and the Cruise Terminal and Northeast Wharf Plaza, as identified in Chapter 3, would be located at sites within the jurisdiction of the Port of San Francisco. These sites are all piers and open water basins located along the San Francisco Bay shoreline and surrounded by an urbanized area of San Francisco. The California Department of Conservation's Farmland Mapping and Monitoring Program identifies all the sites and all of San Francisco as "Urban and Built-up Land," which is defined as an area of intensive use with much of the land covered by structures.[1] No farmlands or forest lands are identified within any of these Port of San Francisco piers, water areas, or seawall lots.

5.19.1.2 America's Cup Spectator Venues

Golden Gate National Recreation Area (GGNRA) and the San Francisco Maritime National Historic Park (SAFR)

The AC34 facilities within the Golden Gate National Recreation Area (GGNRA) and San Francisco Maritime National Historical Park (SAFR), which are both under the jurisdiction of the National Park Service (NPS), include Alcatraz Island, Crissy Field, Cavallo Point, Fort Mason, and Aquatic Park.

The California Department of Conservation's Farmland Mapping and Monitoring Program identifies Alcatraz Island and Cavallo Point as "Other Land."[2] This category includes land that contains low-density rural developments, brush, timber, wetland, and riparian areas that are not suitable for livestock grazing, confined livestock, poultry, or aquaculture facilities. There are no areas designated on or near the GGGNRA project sites as Prime Farmland, Unique Farmland, or Farmland of Statewide or Local Importance.

There are no areas under Williamson Act contract on the NPS lands. These sites are parks and have various park uses, including open space, recreation, and historic buildings. No farmlands, forest land, or timberlands are identified within any of these NPS sites.

[1] California Department of Conservation (CDC), 2004, *Bay Area Region Important Farmland 2004 and Urbanization 1984-2004*, ftp://ftp.consrv.ca.gov/pub/dlrp/FMMP/pdf/urban_change/bayarea_urban_change1984_2004.pdf, accessed February 2, 2009.

[2] Ibid.

Marina Green and Vicinity

The AC34 facilities within the jurisdiction of the San Francisco Recreation and Park Department (RPD) include Marina Green, the yacht harbor, and Golden Gate Yacht Club. These facilities are all park land and marinas located along the San Francisco Bay shoreline and surrounded by an urbanized area of San Francisco. The California Department of Conservation's Farmland Mapping and Monitoring Program identifies all of these sites and all of San Francisco as "Urban and Built-up Land."[3] No farmlands or forest lands are identified within any of these RPD sites or water areas.

AC34 Live Sites

The AC34 Live Sites would include Union Square, Embarcadero, Justin Herman Plaza, and Civic Center. These sites are located within fully developed existing neighborhoods in an urbanized area of San Francisco. The California Department of Conservation's Farmland Mapping and Monitoring Program identifies these sites and all of San Francisco as "Urban and Built-up Land."[4] No farmlands or forest land are identified within the city.

5.19.2 Impacts and Mitigation Measures

5.19.2.1 Significance Criteria

The City has not formally adopted significance standards for impacts related to aesthetics, but generally consider that implementation of a project could have a potentially significant impact related to agricultural and forest resources if it were to:

- Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance, as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use;
- Conflict with existing zoning for agricultural use, or a Williamson Act contract;
- Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code Section 12220(g)) or timberland (as defined by Public Resources Code Section 4526);
- Result in the loss of forest land or conversion of forest land to non-forest use; or
- 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 forest land to non-forest use.

[3] Ibid.
[4] Ibid.

5.19.2.2 Approach to Analysis

In determining whether impacts on agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Department of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts on forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment Project; and forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board.

5.19.2.3 AC34 Event and Cruise Terminal Impacts

America's Cup

Impact AG-1: Construction and operation of AC34 facilities and events would not (a) convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance; (b) conflict with existing zoning for agricultural use, or a Williamson Act contract; (c) conflict with existing zoning for or cause rezoning of forest land or timberland; (d) result in the loss of forest land or conversion of forest land to non-forest use; or (e) involve other changes in the existing environment that, due to their location or nature, could result in conversion of Farmland to non-agricultural use or forest land to non-forest use. (No Impact)

None of the AC34 facilities, venues, or spectator sites contains any Prime Farmland, Unique Farmland, Farmland of Statewide Importance, forest, or timberlands; support agricultural or timber uses; are zoned for agricultural or timber uses; or are under a Williamson Act contract. Therefore, the construction and operation of the AC34 facilities and events would have *no impact* on agricultural or forest resources.

Mitigation: Not required

James R. Herman Cruise Terminal and Northeast Wharf Plaza

Impact AG-2: Construction and operation of the James R. Herman Cruise Terminal and Northeast Wharf Plaza would not (a) convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance; (b) conflict with existing zoning for agricultural use, or a Williamson Act contract; (c) conflict with existing zoning for or cause rezoning of forest land or timberland; (d) result in the loss of forest land or conversion of forest land to non-forest use; or (e) involve other changes in the existing environment that, due to their location or nature, could result in conversion of Farmland to non-agricultural use or forest land to non-forest use. (No Impact)

Pier 27 contains no Prime Farmland, Unique Farmland, Farmland of Statewide Importance, forest, or timberlands; does not support agricultural or timber uses; is not zoned for agricultural or timber uses; and is not under a Williamson Act contract. Therefore, the construction and

operation of the James R. Herman Cruise Terminal and Northeast Wharf Plaza would have *no impact* on agricultural or forest resources.

Mitigation: Not required

5.19.2.4 Program-Level Impacts

Impact LT-AG: Long-term development would not result in impacts on agricultural or forest resources. (No Impact)

As described in Chapter 3, the 34th America's Cup Host and Venue Agreement (Host Agreement) provides the Event Authority with certain long-term development rights under specified conditions. Although no site-specific development projects or programs have been developed, this EIR analyzes at a conceptual level an assumed type and level of development based on current land use policies and guidelines.

As indicated in Section 5.19.1.1, above, the piers and seawall lots within the Port of San Francisco's jurisdiction, including those subject to long-term development under the Host Agreement, have no farmlands or forest lands. Thus, there would be n*o impact* on agricultural or forest resources.

Mitigation: Not required

5.19.2.5 Cumulative Impacts

Impact C-AG: The project, in combination with other past, present, and reasonably foreseeable future projects, would not result in significant adverse cumulative impacts on agricultural or forest resources. (No Impact)

The proposed project would have no impact on agricultural or forest resources, nor would other proposed cumulative projects in the vicinity. Therefore, the project would not contribute to cumulative impacts on agricultural or forest resources.

Mitigation: Not required

CHAPTER 6
Other CEQA Issues

6.1 Growth Inducement

Section 15126.2(d) of the CEQA Guidelines requires that an environmental impact report (EIR) discuss "the 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."

Growth can be induced directly through the construction of substantial new housing to attract additional population, or indirectly, such as by creating substantial new employment opportunities that attract employees to the area, in turn stimulating demand for additional housing or public services to serve the added workforce, or by extending to a previously unserved area infrastructure needed to support residential or economic growth, such as roads or essential utility services.

6.1.1 34th America's Cup (AC34)

Because of its temporary nature, the construction and hosting of AC34 races and events in 2012 and 2013 (AC34 2012 and AC34 2013) would not be growth-inducing. No residences would be constructed as part of the AC34 2012 and AC34 2013 facilities and events, so there would be no direct growth inducement. Regarding indirect growth inducement, the employment that would be generated, albeit substantial, would not attract a substantial number of new employees from outside the area because of the short-term nature of the jobs involved.

AC34 2012 and AC34 2013 would be located in a fully developed urban area served by existing roads and utilities. As described in Chapter 3, many AC34 facilities would be temporary, and the proposed permanent improvements needed to support AC34 are generally related to seismic upgrades or repairs, and fire, safety, and access improvements to the piers that would be used. Seismic upgrades and other permanent improvements would increase the potential for future development of some piers, such as at Piers 30-32, Pier 26, and Pier 28. (Potential long-term uses at these piers are discussed in Section 6.1.2, Long-Term Development, below.) While such upgrades and improvements would remove an obstacle to growth (e.g., by removing the lack of structural capacity to support substantial development), they would not in and of themselves directly induce substantial growth. The piers within the Port's jurisdiction are designated for uses

consistent with the Public Trust, and any future major development of these piers would be subject to project-specific environmental review. Therefore, the growth-inducing effect of the pier upgrades and improvements would not be significant.

Before and during the AC34 events, highly specialized staff such as (but not limited to) race teams, race and shore team staff, and race officials from outside the area would relocate to the Bay Area temporarily and depart at the conclusion of the races. The Bay Area labor pool is expected to fill the balance of AC34 jobs, which include jobs in construction, catering and other food service, retail sales, entertainment, crowd and traffic management, cleaning and waste management, and security. Temporary jobs of this nature would typically be filled by local workers, and it is likely that the local labor pool could accommodate AC34 employment requirements, especially given the downturn experienced in most economic sectors in the Bay Area over the past decade. In addition, as described in Chapter 3, AC34 implementation plans would include a Workforce Development Plan that includes local hiring opportunities for San Francisco residents for AC34-related infrastructure improvements and AC34 event-related activities, further enhancing the potential for local residents to fill AC34 jobs. Therefore, the economic activity generated by AC34 would not be growth-inducing.

6.1.2 Permanent Project Development

As described above, the AC34 2012 and AC34 2013 events would be temporary in nature and would not be growth-inducing. However, the Cruise Terminal project would be a long-term, permanent development with potential for growth inducement. Similarly, long term development of Port properties as provided for under the 34th America's Cup Host and Venue Agreement (Host Agreement) would also have the potential for growth inducement. These two project components are discussed separately below.

6.1.2.1 James R. Herman Cruise Terminal and Northeast Wharf Plaza

As described in Chapter 3, one of the proposed projects consists of development of a new passenger cruise terminal and wharf plaza at Pier 27. The James R. Herman Cruise Terminal would become the Port of San Francisco's primary cruise terminal, and Pier 35, which currently serves as the Port's main cruise terminal, would serve as a secondary terminal facility, reversing the existing relationship of cruise facilities at the two piers. The new cruise terminal would employ approximately 220 workers, many of whom would be reassigned from the existing primary cruise terminal at Pier 35. This number of jobs is insignificant relative to Association of Bay Area Governments (ABAG) estimates of existing and projected 2035 jobs in the City: based on ABAG's 2009 projections,[1] total jobs at the cruise terminal would represent about 0.04 percent of citywide jobs in 2010 and about 0.09 percent of citywide jobs projected to be added between 2010 and 2035. Although cruise ships are anticipated to become larger over time, increasing ship size would occur absent the proposed project. The new, larger cruise terminal may enhance the

[1] Association of Bay Area Governments, *Projections and Priorities 2009: Building Momentum, San Francisco Bay Area Population, Household, and Job Forecasts*, August 2009.

Port's ability to accommodate regular port calls by the larger ships and could help encourage cruise lines to keep San Francisco on their cruise itineraries, but given the popularity of San Francisco as a destination it is unlikely that the cruise ship terminal project in itself would substantially increase the number of port calls or required staffing to accommodate larger ships. In any event, the additional staff needed to accommodate the increased capacity of the larger ships would not be substantial. It is expected that a net increase of about 70 new employees would be needed both to serve the new cruise terminal and to accommodate expected increases in cruise ship capacity over the life of the project.

The Northeast Wharf Plaza, primarily consisting of public open space supporting passive recreational enjoyment, would also include retail space that is expected to generate about 14 new jobs. The new cruise terminal and wharf plaza combined, therefore, would add about 84 new jobs. This represents roughly 0.04 percent of the new jobs projected to be added in San Francisco between 2010 and 2035. This relatively small number of jobs would readily be accommodated by the local labor pool.

The cruise terminal and wharf plaza would not include residential construction or the extension of infrastructure to areas currently not served. The Cruise Terminal project site is located in a fully urbanized area served by existing roads and utilities. The utility improvements included in the project would serve only the cruise terminal itself, as described in Chapter 3. Therefore, the proposed Cruise Terminal project would not be growth-inducing.

6.1.2.2 Future Long-Term Development Sites

As described in Chapter 3 (under "Long-Term Development Rights"), the Host Agreement between the City and County of San Francisco (CCSF or City) and the America's Cup Event Authority (Event Authority) provides the Event Authority, subject to various contingencies, long-term rights to develop certain Port properties. The Host Agreement indicates that the CCSF can enter into Disposition and Development Agreements with the Event Authority for future potential development at Piers 30-32, Seawall Lot 330, and Piers 26, 28, 19, 19½, 23, and 29, as well as at the Rincon Point and Brannan Street Wharf Open Water Basins. Any future development resulting from such agreements would be required to undergo separate environmental review under CEQA when (and if) site-specific development projects at the sites were proposed.

In the absence of any current development proposals for these sites, the Port assessed possible development programs that could be considered. As discussed in Section 5.4, Population and Housing, development of all the potential sites under existing land use designations would increase the city's population by roughly 580 people and generate about 3,070 jobs. ABAG forecasts that the city's population will increase by about 159,000 people between 2010 and 2035 and that the city will gain about 238,100 new jobs over this period.[2] Population growth resulting from development of all the long-term sites would represent about 0.4 percent of the projected

[2] Ibid.

citywide population growth, and new jobs would represent about 1.3 percent of citywide job growth. Thus, while development of the long-term sites in itself would represent growth, the generation of new jobs and provision of new housing would not encourage substantial new growth that is not currently projected for San Francisco.

This growth would be located within the Port, which is one of 10 designated Priority Development Areas (PDAs) in San Francisco. PDAs are locally identified areas located near transit and having infill development opportunities that are part of a regional planning initiative called FOCUS. Led by ABAG and the Metropolitan Transportation Commission (MTC) in coordination with the Bay Area Air Quality Management District (BAAQMD) and the San Francisco Bay Conservation and Development Commission (BCDC), FOCUS is a regional development and conservation strategy that links land use and transportation planning and promotes a connected and more compact land use pattern. Future growth in the region would be focused in the community-identified PDAs.[3] The growth assumed at the potential long-term development sites would be consistent with the CCSF's identification of the Port as an area of the City where future growth will be focused.[4]

PDAs are also important components of the regional planning effort currently underway in response to the Sustainable Communities Strategy (Senate Bill 375), a state law passed in 2008. ABAG and MTC, the agencies leading the Bay Area's regional planning for the Sustainable Communities Strategy, recently released an initial draft plan for the region (called the "Initial Vision Scenario") that focuses much of the region's projected growth within the PDAs.[5] While Senate Bill 375 does not alter the authority of jurisdictions over local land use and development decisions, the potential development assumed in this EIR analysis would be generally consistent with growth currently envisioned under the Sustainable Communities Strategy, given that it would be located in a PDA.

According to the CCSF Planning Department's Projections 2009 land use allocation,[6] the portion of the City fronting the Bay along the waterfront from the Hyde Street Pier to India Basin has an estimated 2010 population of 1,317 and 16,666 jobs. This area is projected to add almost 7,000

[3] FOCUS (a partnership of Association of Bay Area Governments [ABAG], Metropolitan Transportation Commission [MTC], Bay Conservation and Development Commission ([BCDC], and Bay Area Air Quality Management District [BAAQMD]), About Focus, www.bayareavision.org/initiatives/index.html; Priority Development Areas, www.bayareavision.org/initiatives/prioritydevelopmentareas.html, Focus: Places and Choices for All, www.bayareavision.org/initiatives/PDFs/FOCUS_Brochure_12-08.pdf.

[4] Within the Port PDA, most development will be associated with job growth rather than housing or mixed development with housing (unlike the development envisioned for most PDAs) because of state restrictions on residential development within the Port. (CCSF Planning Department, letter to Marisa Raya, Regional Planner, ABAG, Subject: SCS Vision Scenario Place Types and Policies: San Francisco Input, December 17, 2010, attachment to Executive Summary: Informational Item for February 24, 2011 hearing, www.sf-planning.org/ftp/files/plans-and-programs/emerging_issues/scs/SCS_staff_report-2-24-11.pdf, February 17, 2011.)

[5] Association of Bay Area Governments and Metropolitan Transportation Commission, Bay Area Plan: Initial Vision Scenario for Public Discussion, apps.mtc.ca.gov/meeting_packet_documents/genenda_1629/Initial_Vision_Scenaro_Report_-_FINAL.pdf, March 11, 2011)

[6] San Francisco Planning Department, P2009 Land Use Allocation.

residents and about 27,000 jobs by 2035.[7] Population growth resulting from development of all the long-term sites would represent about 8 percent of the population growth projected for this Port area and about 11 percent of its projected job growth. Thus, as noted above with respect to citywide projections, the growth in jobs and housing assumed to occur at the long-term development sites would not represent substantial new growth that is not already forecasted to occur at the Port and vicinity. The land use allocation cited above does not specifically assume substantial new development at the long-term development sites ; as few of the long-term development sites are capable of accommodating substantial changes in land use given their current physical condition (the condition that would have been assumed when the land use allocation was prepared). Should the population and employment growth assumed for the long-term development sites occur, it would likely result from a shift, or relocation, of development currently forecasted to occur elsewhere within the Port or in other parts of the City or both. In the absence of any specific proposal(s) for these Port sites, it would be speculative to assume that their availability for development in itself would stimulate employment or residential growth substantially beyond that already projected for the Port and City. As noted in the discussion of the other projects above (and consistent with the PDA designation discussed above), the long-term development sites are located in a fully urbanized area served by existing roads and utilities.

Based on this analysis, the potential development assumed at the long-term development sites would not have a substantial growth-inducing impact, and no mitigation is required. As noted above, site-specific development projects would require additional CEQA review if and when such future projects were proposed.

6.2 Secondary Effects

Section 15064(d) of the CEQA Guidelines requires that an EIR discuss the potential direct impacts and "reasonably foreseeable indirect physical changes in the environment which may be caused by the project." Indirect, or secondary, effects are not immediately related to the project but are caused by the project. Changes in the physical environment that are speculative or unlikely to occur are not considered "reasonably foreseeable" and thus do not require analysis in an EIR. Secondary effects may occur later in time than the project itself or may occur in a different geographic area. Due to the singularity and magnitude of the AC34 event and its potential regional implications, this section specifically addresses implications of the AC34 project to result in secondary effects. Discussion of secondary effects of the Cruise Terminal project is incorporated into the analysis in Chapter 5, Environmental Setting, Impacts, and Mitigation Measures.

[7] These estimates are based on the land use allocation for the travel analysis zones (TAZs) adjacent to San Francisco Bay between the Hyde Street Pier and India Basin; this area does not entirely coincide with the Port PDA, as some of the TAZs include some non-Port lands. These estimates do, however, indicate population and jobs levels for the area including and in close proximity to the Port PDA.

The AC 34 event would encourage, require, or otherwise result in other events and activities that would occur during the AC34 preparation and event timeframe. These include other planned activities that have been included in the Host Agreement (e.g., long-term development rights), as well as other "unplanned" events and activities that can be expected to occur (e.g., improvements at other Bay Area marinas in order to accommodate AC34 event visitors in the region). Some of these events and activities may be intended, resulting from a logical chain of events triggered by the AC34 event.

Planned and unplanned events and activities that are fairly attributed to the AC34 event (i.e., activities and events that would not occur at all or not occur in the next two years "but for" the AC34 event) are considered as relevant subjects. Activities and events that are speculative or unlikely to occur would not be considered as reasonably foreseeable related events generating indirect effects as a result of the project. Similarly, activities or events that are likely to occur whether or not the AC34 event is approved (e.g., routine repair of local marina facilities) are not considered an indirect effect of the project. Secondary effects may or may not occur contemporaneously with AC34 and may occur beyond the geographic boundaries described in the project description.

Due to the international appeal and unique nature of the AC34 events proposed for San Francisco, the City and AC34, project sponsors anticipate that 4.4 to 6.5 million people could attend the proposed AC34 events. This estimate consists of about 54 percent residents and 46 percent tourists and including both land-based and water-based spectators (see Appendix PD). This magnitude of people in the Bay Area during the two years of AC34 events has a high likelihood of triggering a range of related events. Related events and activities resulting from the AC34 events that may result in secondary effects could occur during the time period prior to the AC34 events as well as during the actual race events themselves.

Pre-event activities would occur during 2011 and up to the first racing events associated with AC34 that are scheduled to begin in the summer of 2012. Many of these types of secondary activities are similar to the direct events associated with the AC34 event. There is the potential for development projects related to marinas and other boating facilities (both public and private) to occur in other jurisdictions throughout the San Francisco Bay area.

The types of facilities where development could occur include marinas and harbors, yacht clubs, boat yards, guest docks, fuel docks, boat slips, launch ramps, and anchorages. There are over 60 boating facilities located in the counties of Marin, Contra Costa, Alameda, San Mateo, Solano, and Sonoma.[8] Some examples of potential effects include the release of toxic materials at boat yards during maintenance/repair/cleaning activities as well as during possible dredging activities.

[8] San Francisco Department of the Environment, California Department of Boating and Waterways, and the California Coastal Commission, 2009-2010 San Francisco Bay Area Clean Boating Map.

Other types of facilities that could see development or redevelopment projects resulting from AC34 include piers, berths for large private spectator vessels, and other facilities for spectators, crews, and visitors to the AC34 events. While many jurisdictions may not be within viewing distance of the AC34 racing events, temporary and/or permanent facilities may be constructed in order to host viewing events, regattas, and other sailing-related activities in conjunction with the races similar to proposed activities at the America's Cup Village in San Francisco. For example, these sites may install large outdoor television screens for viewing the races remotely as are planned for Union Square, Justin Herman Plaza, and the Civic Center in San Francisco.

Additional improvements may be constructed in other jurisdictions to handle the anticipated increase in tourism during the AC34 events. These improvements could include roadway and public transportation improvements, infrastructure upgrades, and park and recreation facility upgrades near waterfront areas. Hotels and other lodging facilities may be renovated and/or new ones constructed to house the influx of tourists. Other cultural and tourist destinations unrelated to the AC34 events, or sailing, may likewise enhance their facilities in order to take advantage of the increased number of visitors. Data from the California Travel and Tourism Commission indicate that 30 percent of San Francisco tourists also visit other destinations in the region.[9]

There is also the potential for the acceleration of projects already in the planning phase as well as reactivation of idle plans. These long-term plans may allow for specific development projects to proceed in advance of the AC34 events and could include port, marina, or waterfront master plans; area, community, or specific plans; plan for the San Francisco Bay Trail; and plans for the San Francisco Bay Water Trail.

Secondary effects could also occur during the race event itself, in both 2012 and 2013. Many of these potential effects are related to the increase in boating activities anticipated throughout San Francisco Bay. Some of these potential impacts include water, air quality, and noise effects from boating; sewage treatment at marina facilities; and accidental spills during fueling. Disturbance of wildlife in sensitive habitat areas may also occur as boats travel from other locations to AC34 viewing areas in the Central Bay. Other possible effects are related to the possible influx of tourists to other jurisdictions. Public services such as police protection/event security, emergency medical services, and solid waste disposal could be affected.

To the extent that such secondary effects are reasonably foreseeable, this EIR includes consideration of these indirect effects in evaluating the significance of the potential physical effects of the proposed project under the appropriate resource topic in Chapter 5. Please refer to Chapter 5, and specifically to Section 5.2, Land Use; Section 5.12, Utilities and Service Systems; Section 5.13, Public Services; Section 5.14, Biological Resources; and Section 5.16, Hydrology and Water Quality.

[9] Bay Area Council Economic Institute and Beacon Economics, *The America's Cup: Economic Impacts of a Match on San Francisco Bay*, 2010.

6.3 Significant Unavoidable Impacts

In accordance with Section 21067 of the California Environmental Quality Act (CEQA), and with Sections 15126(b) and 15126.2(b) of the CEQA Guidelines, the purpose of this section is to identify impacts that could not be eliminated or reduced to less-than-significant levels by mitigation measures included as part of the project, or by other mitigation measures that could be implemented, as included in Chapter 5, Environmental Setting, Impacts, and Mitigation Measures. These findings are subject to final determination by the San Francisco Planning Commission as part of the CEQA finding for the EIR. If necessary, this chapter will be revised in the Final EIR to reflect the findings of the Planning Commission.

As described in Chapter 5, the impacts listed below would be considered significant and unavoidable, even with implementation of feasible mitigation measures. With the exception of the impacts listed below, all other project impacts would either be no impact, less than significant, or reduced to less-than significant levels by implementation of the identified mitigation measures.

6.3.1 34th America's Cup Project

Land Use

- Significant and unavoidable impacts associated with long-term development of marinas at the Rincon Point and Brannan Street Wharf Open Water Basins which would conflict with the intended long-term ecological and public benefits of these open water basins under the adopted Bay Conservation and Development Commission (BCDC) Special Area Plan policies for these areas

Cultural and Paleontological Resources

- Potentially significant and unavoidable impacts associated with long-term development at Piers 30-32 due to the unknown effect on the Embarcadero Historic District

Transportation and Circulation

- Significant and unavoidable level of service impacts at 12 signalized and unsignalized intersections plus other nearby intersections in the project area during AC34 2012 events during either weekday or Saturday midday conditions (including Embarcadero/Beach, Embarcadero/Howard, King/Third, Lombard/Divisadero, Lombard/Fillmore, Bay/Laguna, Bay/Van Ness, Bush/Van Ness, Pine/Van Ness, Lombard/Van Ness, Lincoln/25th, Lombard/Lyon)

- Significant and unavoidable level of service impacts at 18 signalized and unsignalized intersections in the project area during AC34 2013 events during either weekday or Saturday midday conditions (including Embarcadero/Beach, Embarcadero/Broadway, Embarcadero/Howard, Embarcadero/Folsom, Embarcadero/Harrison, Embarcadero/ Bryant, Fremont/Folsom, King/Third, King/Fourth, Lombard/Divisadero, Lombard/ Fillmore, Bay/Laguna, Bay/Van Ness, Bush/Van Ness, Pine/Van Ness, Lombard/Van Ness, Lincoln/25th, Lombard/Lyon)

- Significant and unavoidable impacts contributing to congestion in downtown San Francisco and along the waterfront during the AC34 2013 events

- Significant and unavoidable impacts on traffic operations at secondary viewing areas and vicinity during AC34 2012 and 2013 events

- Significant and unavoidable impacts on transit capacity of Muni lines, Presidio Go shuttle service, AC Transit lines, WETA ferry lines, Golden Gate Transit bus and ferry lines, Blue & Gold ferry lines, Caltrain service, and SamTrans lines and impacts on transit operations related to additional traffic congestion from the project during AC34 2012 and 2013 events; and on transit capacity of BART lines during the AC34 2013 events

- Significant and unavoidable impacts on the transportation network in combination with other special events occurring simultaneously in San Francisco during the AC34 2012 and 2013 events

- Significant and unavoidable impacts on traffic and transit due to long-term development under the Host Agreement

- Significant and unavoidable cumulative level of service impacts at multiple intersections along The Embarcadero (including Embarcadero/Broadway, Embarcadero/Washington, Embarcadero/Mission, Embarcadero/Howard, Embarcadero/Folsom)

Noise

- Potentially significant and unavoidable noise impacts from noise increases associated with use of public address systems, and/or amplified music at Piers 27-29 and Marina Green during AC34 events at these venues would be reduced with a noise control plan and volume controls but the effectiveness of reducing the noise levels below the thresholds is unknown

- Significant and unavoidable but temporary vehicle noise increase during AC34 weekend events at 8 intersections in the project area, with no feasible mitigation to reduce traffic and associated noise levels below the threshold

Air Quality

- Significant and unavoidable construction-related air quality impacts due to emissions of criteria pollutants and precursors that would exceed Bay Area Air Quality Management District (BAAQMD) thresholds even with construction vehicle emissions minimization and restrictions on off-road construction equipment

- Significant and unavoidable construction impact due to potential health risks from exposure of sensitive receptors to toxic air contaminants even with construction vehicle emissions minimization and restrictions on off-road construction equipment (This impact also applies to the Pier 27 Shed Variant.)

- Significant and unavoidable operations impact due to emissions of criteria pollutants and precursors from vessels, traffic, temporary decommissioning of shoreside power, and other sources during the AC34 events, even with emission controls for race-sponsored vessels

- Significant and unavoidable operations impact due to potential health risks from exposure of sensitive receptors to toxic air contaminants in diesel exhaust even with emission controls for race-sponsored vessels and clean diesel engines for temporary power

- Significant, unavoidable air quality impact because long-term development under the Host Agreement could result in construction and operational emissions of air pollutant emissions that exceed BAAQMD thresholds even with implementation of feasible mitigation

- Significant, unavoidable contribution to cumulative air quality impacts because the project's contribution to cumulative impacts would exceed BAAQMD thresholds even with implementation of feasible mitigation

6.3.2 Cruise Terminal Project

Transportation and Circulation

- Significant and unavoidable impact on capacity utilization standard on the F-Market & Wharves historic streetcar line

- Significant and unavoidable cumulative impact on transit conditions on the F-Market & Wharves historic streetcar line

Noise

- Significant and unavoidable cumulative impact on roadway noise at five road segments in the vicinity of the cruise terminal due to the contribution from cruise terminal vehicle trips during weekends, midday

Air Quality

- Significant and unavoidable construction-related air quality impacts due to emissions of criteria pollutants and precursors that would exceed Bay Area Air Quality Management District (BAAQMD) thresholds even with construction vehicle emissions minimization and restrictions on off-road construction equipment

- Significant, unavoidable contribution to cumulative air quality impacts because the project's contribution to cumulative impacts would exceed BAAQMD thresholds even with implementation of feasible mitigation

6.4 Significant Irreversible Environmental Changes

CEQA Guidelines Section 15126.2(c) specifies that the EIR shall discuss the significant irreversible environmental changes associated with a project relevant to land use changes, nonrenewable resources, and environmental accidents.

6.4.1 Changes that Commit Future Generations to Similar Uses

The AC34 events would not commit future generations to similar uses. All AC34 venues would be temporary. Some of the AC34 venues, however, could subsequently be redeveloped as provided for

in the Host Agreement, but there are no specific proposals for long-term development of these sites at this time. This EIR considers the impacts of such long-term development projects assuming they would be generally consistent with surrounding retail, commercial, entertainment, and maritime-related uses already on the waterfront, or—in the case of Seawall Lot 330—residential use on the west side of the Embarcadero. Similarly, there are no proposals for development of marinas, but long-term future development of marinas at the Rincon Point Open Water Basin and/or at the Brannan Street Wharf Open Water Basin would be changed from the existing open space uses. Development of these areas, although reversible, would be difficult to change in the short run.

Regardless of the winner of the America's Cup in 2013, any future hosting of the America's Cup in the City and County of San Francisco would be subject to a separate Host and Venue Agreement. Such an event would be subject to a separate environmental review pursuant to CEQA. Therefore, the proposed 34th America's Cup event in 2012 and 2013 would not commit project sites to future race-related uses associated with future races.

By redeveloping Piers 27-29 with the James R. Herman Cruise Terminal and Northeast Wharf Plaza, the project would partially change the uses on this site. Although the Pier 27 shed is currently used as a secondary cruise terminal, it would become the Port's primary terminal under the proposed project. Also, existing tenants of Piers 27-29 would be relocated. Other uses on the east and northeast side of The Embarcadero are similar maritime, tourist waterfront, and open space uses. The project would intensify the cruise terminal land use and commit future generations to the Northeast Wharf Plaza land use, both of which could not be easily changed or "reversed" in the future.

6.4.2 Use of Nonrenewable Resources

The proposed project would consume natural resources (fuel, oil, etc.) during construction activities, for both the AC34 events and the cruise terminal. During operation of the AC34 events, energy would be consumed for race preparation, spectator boats, lighting, heating/cooling, vending, media coverage, and transportation. The AC34 project would include development and implementation of a Sustainability Plan to promote resource sustainability and environmental stewardship in staging the AC34 event. The plan would include strategies and programs to minimize waste, manage its carbon footprint and greenhouse gas emissions.

Operation of the cruise terminal would also consume nonrenewable resources, although consumption of such resources already occurs under existing conditions at Pier 35. Neither the construction nor operation and use of the project would consume nonrenewable resources in amounts substantially different from or greater than typical urban development or similar land uses. As discussed in this EIR, the proposed projects would not affect agricultural, forest, or mineral resources or access to such resources. Therefore, the projects would not involve a large commitment of nonrenewable resources.

6.4.3 Irreversible Damage from Environmental Accidents

As discussed fully in Section 5.17, Hazards and Hazardous Materials, the project's operation would result in use of hazardous materials typical for boat construction and maintenance, as well as maritime facility maintenance. Hazardous materials storage at Pier 27 in the long term would be substantially similar to storage at Pier 35 under existing conditions. Consistent with applicable regulatory requirements, these products are labeled to inform users of risks and to instruct them in proper disposal methods. Most of these materials are consumed or neutralized through use, resulting in little hazardous waste, and the project would therefore not pose a substantial public health or safety hazard. The project would not result in any irreversible damage from environmental accidents.

CHAPTER 7
Alternatives

7.1 Introduction

This chapter presents the CEQA alternatives analysis for the 34th America's Cup (AC34) and James R. Herman Cruise Terminal and Northeast Wharf Plaza (Cruise Terminal) projects. It discusses the methodology used to identify and screen alternatives; presents the project objectives in the context of the alternatives analysis; reviews the significant impacts of the projects identified in Chapter 5 of this EIR; analyzes and compares the selected alternatives; identifies the environmentally superior alternative; and describes alternatives considered but eliminated from further consideration. For the selected alternatives, this analysis evaluates the alternatives' impacts against existing environmental conditions and compares the potential impacts of the alternatives against those of the proposed projects as described in Chapter 5.

7.1.1 CEQA Requirements for Alternatives Analysis

The CEQA Guidelines, Section 15126.6(a), state that an environmental impact report (EIR) must describe and evaluate a reasonable range of alternatives to the proposed project that would feasibly attain most of the project's basic objectives, but that would avoid or substantially lessen any identified significant adverse environmental effects of the project. An EIR is not required to consider every conceivable alternative to a proposed project. Rather, it must consider a reasonable range of potentially feasible alternatives that will foster informed decision-making and public participation.

CEQA Guidelines Section 15126.6(e) states that, "The specific alternative of 'no project' shall also be evaluated along with its impact." CEQA Guidelines Section 15126.6(f)(1) states that the factors that may be taken into account when addressing the feasibility of alternatives are site suitability, economic viability, availability of infrastructure, general plan consistency, other plans or regulatory limitations, jurisdictional boundaries (projects with a regionally significant impact should consider the regional context), and whether the proponent can reasonably acquire, control or otherwise have access to the alternative site (or the site is already owned by the proponent). The EIR must evaluate the comparative merits of the alternatives and include sufficient information about each alternative to allow meaningful evaluation, analysis, and comparison with the proposed project. Specifically, the CEQA Guidelines set forth the following criteria for selecting and evaluating alternatives:

- [T]he discussion of alternatives shall focus on alternatives to the project or its location which are capable of avoiding or substantially lessening any significant effects of the project, even if these alternatives would impede to some degree the attainment of the project objectives, or would be more costly. (Section 15126.6[b])

- The range of potential alternatives shall include those that could feasibly accomplish most of the basic objectives of the project and could avoid or substantially lessen one or more of the significant effects. (Section 15126.6[c])

- The specific alternative of "no project" shall also be evaluated along with its impact. (Section 15126.6[e][1])

- The alternatives shall be limited to ones that would avoid or substantially lessen any of the significant effects of the project. Of those alternatives, the EIR need examine in detail only the ones that the lead agency determines could feasibly attain most of the basic objectives of the project. The range of feasible alternatives shall be selected and discussed in a manner to foster meaningful public participation and informed decision-making. (Section 15126.6[f])

7.1.2 Approach to Alternatives Analysis

In accordance with CEQA, an alternative selected for analysis must meet the following three criteria: (1) the alternative would attain *most* of a project's basic objectives; (2) the alternative would *avoid or substantially lessen* the significant environmental impacts of the proposed project; and (3) the alternative must be *feasible*. An EIR need not consider an alternative whose impact cannot be reasonably ascertained and whose implementation is remote and speculative. Furthermore, an EIR need not consider every conceivable alternative, but must consider a reasonable range of alternatives that will foster informed decision-making and public participation.

The alternatives selection process for the proposed projects was guided, in part, by the magnitude and severity of the impacts identified, with particular focus on feasible strategies that could lessen or avoid significant and unavoidable impacts. In addition, potential alternatives were identified from previous development proposals or engineering studies as well as through review of scoping comments received following issuance of the Notice of Preparation (see Chapter 2, Section 2.2, Environmental Review Process). A preliminary list of alternative concepts and strategies was screened based on the three criteria listed above. In most cases, an alternative concept or strategy was eliminated from further consideration based on either its inability to attain most of the project's basic objectives or its infeasibility of implementation. Implementation of mitigation measures identified for the proposed projects were also considered in the context of the various alternatives as a possible strategy to avoid or substantially lessen significant impacts. The alternatives identification and selection process resulted in the final alternatives that were determined to represent a reasonable range of alternatives, which are described and analyzed in this EIR.

The alternatives analysis for the AC34 and Cruise Terminal projects are discussed separately in Sections 7.2 and 7.3, respectively. Including the no project alternative, there are four alternatives

for the AC34 project and two alternatives for the Cruise Terminal project. However, because there would be a separate discretionary approval action for the two projects, the discussion of each alternative addresses what would occur both with and without implementation of the other project in order to address all possible outcomes. Sections 7.2 and 7.3 provide a detailed description of each alternative, its ability to meet the project objectives, and an evaluation of its environmental impacts compared to those of the proposed project. The alternatives considered but rejected from further study are discussed in Section 7.4.

7.1.3 Overview of Selected Alternatives

The following alternatives are analyzed in this EIR:

AC34 Project

- AC34 No Project Alternative
  - with Cruise Terminal Project
  - without Cruise Terminal Project

- AC34 Open Ocean Alternative
  - with Cruise Terminal Project
  - without Cruise Terminal Project

- Reduced Intensity AC34 and Long-Term Development Alternative
  - with Cruise Terminal Project
  - without Cruise Terminal Project

- Reduced Spectator Berthing Alternative
  - with Cruise Terminal Project
  - without Cruise Terminal Project

Cruise Terminal Project

- Cruise Terminal No Project Alternative
  - with AC34 Project
  - without AC34 Project

- Renovation of Pier 27 Shed Alternative
  - with AC34 Project
  - without AC34 Project

Table 7-1 and **Table 7-2** summarize the characteristics of the proposed project along with each of the alternatives for the AC34 and Cruise Terminal projects, respectively. A detailed description of each AC34 alternative is presented in Section 7.2.3, and detailed description of each Cruise Terminal alternative is presented in Section 7.3.3.

7.2 AC34 Project Alternatives Analysis

7.2.1 AC34 Project Objectives

As presented in Chapter 3, the objectives of the AC34 project are presented below and are used in the identification and analysis of alternatives. The objectives of the AC34 project are to:

- Establish San Francisco and San Francisco Bay as a world-class venue for the sport of sailing and generate interest in the sport by hosting America's Cup World Series events in 2012 followed by successful America's Cup events in 2013

- Provide public viewing opportunities of the America's Cup and the America's Cup World Series live racing events at close range from various locations on the waterfront around Central San Francisco Bay to increase the general public's access to the event and expand the appeal of the sport of sailing to the general public

- Create a center of activity for the America's Cup and the America's Cup World Series by improving the existing resources of The Embarcadero and the San Francisco waterfront to establish a cohesive sense of place and identity for the AC34 participants (i.e., teams, event guests and staff, media personnel), visitors, and spectators of the events that enhance the landside viewing opportunities and provide adequate facilities for spectator vessels

- Provide infrastructure upgrades and other installations to improve existing facilities in consolidated areas for team base activities, spectator viewing, and entertainment venues, including the public piers along San Francisco's waterfront, for use during the America's Cup in 2013 and the America's Cup World Series in 2012, consistent with Port of San Francisco building code requirements and the Secretary of the Interior's Standards for the Treatment of Historic Properties (Secretary's Standards)

- Facilitate access to and from desired destinations based on smart transportation strategies presented in the America's Cup People Plan for the racing teams, event personnel, event sponsors, members of the media and spectators; while satisfying the access needs of residents, workers, and visitors not associated with the races

- Emphasize natural resource stewardship by incorporating sustainability principles in the planning and management of all race events and operations, including zero waste strategies identified in the America's Cup Waste Management Plan

- Implement navigational and operational safety guidelines for race team, support, and spectator boat activities associated with the America's Cup and the America's Cup World Series that meet United States Coast Guard regulations, the America's Cup Protocol, and the safe limits of event boats and equipment; minimize conflicts with existing commercial maritime activities; and establish sustainable environmental practices and standards to help protect the ecological health of San Francisco Bay

- Encourage investment in infrastructure upgrades on Port property required to stage the America's Cup and the America's Cup World Series, for which the City would provide commensurate future long-term development rights on Port of San Francisco properties as contemplated under the Host Agreement

TABLE 7-1
CHARACTERISTICS OF AC34 PROJECT AND ALTERNATIVES

Project Characteristic	Event / Phase	Proposed Project	AC34 PROJECT ALTERNATIVES							
			No Project Alternative		Open Ocean Alternative		Reduced Intensity AC34 and Long-Term Development Alternative		Reduced Spectator Berthing Alternative	
			With Cruise Terminal	Without Cruise Terminal	With Cruise Terminal	Without Cruise Terminal	With Cruise Terminal	Without Cruise Terminal	With Cruise Terminal	Without Cruise Terminal
AC34 Operational Characteristics										
Location of AC34 Races	AC34 2012	Central San Francisco Bay	N/A	N/A	Open Waters, Pacific Ocean	Open Waters, Pacific Ocean	N/A	N/A	Same as Proposed Project	Same as Proposed Project
	AC34 2013	Central San Francisco Bay	N/A	N/A	Open Waters, Pacific Ocean	Open Waters, Pacific Ocean	Same as Proposed Project	Same as Proposed Project	Same as Proposed Project	Same as Proposed Project
Location of AC Village	AC34 2012	Marina Green	N/A	N/A	Same as Proposed Project	Same as Proposed Project	N/A	N/A	Same as Proposed Project	Same as Proposed Project
	AC34 2013	Piers 27-29	N/A	N/A	Same as Proposed Project	Same as Proposed Project	Same as Proposed Project	Same as Proposed Project	Same as Proposed Project	Same as Proposed Project
Location of Team Bases	AC34 2012	Piers 30-32/BSW OWB and/or Pier 80	N/A	N/A	Same as Proposed Project	Same as Proposed Project	N/A	N/A	Same as Proposed Project	Same as Proposed Project
	AC34 2013	Piers 30-32, BSW OWB, and Pier 80	N/A	N/A	Same as Proposed Project	Same as Proposed Project	Same as Proposed Project	Same as Proposed Project	Same as Proposed Project	Same as Proposed Project
AC34 Schedule	AC34 2012	Summer-Fall 2012	N/A	N/A	Same as Proposed Project	Same as Proposed Project	N/A	N/A	Same as Proposed Project	Same as Proposed Project
	AC34 2013	Summer-Fall 2013	N/A	N/A	Same as Proposed Project	Same as Proposed Project	Same as Proposed Project	Same as Proposed Project	Same as Proposed Project	Same as Proposed Project
Visitation	AC34 2012	Peak Weekend Day: 197,000 Peak Week Day 45,000 Total Visitation 1,454,000	N/A	N/A	Less than Proposed Project	Less than Proposed Project	N/A	N/A	Similar to Proposed Project	Similar to Proposed Project
	AC34 2013	Peak Weekend Day: 334,000 Peak Week Day 50,000 Total Visitation 5,490,000	N/A	N/A	Less than Proposed Project	Less than Proposed Project	Similar to Proposed Project	Similar to Proposed Project	Similar to Proposed Project	Similar to Proposed Project
Staffing (Peak Daily)	AC34 2012	4,000	N/A	N/A	Less than Proposed Project	Less than Proposed Project	N/A	N/A	Similar to Proposed Project	Similar to Proposed Project
	AC34 2013	9,200	N/A	N/A	Less than Proposed Project	Less than Proposed Project	Similar to Proposed Project	Similar to Proposed Project	Similar to Proposed Project	Similar to Proposed Project
Permanent Construction (AC34 and Cruise Terminal Projects)										
Piers 27-29	AC34 2013 (Phase 1); and 2014 (Phase 2)	• Demolish Pier 27 shed and a portion of Pier 29 shed • Demolish Pier 27 annex building • Construct Pier 27 Cruise Terminal core building and shell • Construct new Pier 29 shed east/corner wall • Repair surface and provide ADA access • Repair the Piers 27-29 substructure, if needed • Strengthen and seismically upgrade Pier 29 superstructure, if needed • Repair Pier 29 apron and fendering, if needed • Relocate shoreside power • Install stormwater management features • Repair Piers 27-29 and Piers 29-31 marginal wharfs, if needed • Complete Cruise Terminal and construct Northeast Wharf Plaza	Reduced demolition to retain the northeast end of Pier 27 shed and connection to Pier 29 shed All other components similar to but completed sooner than under Proposed Project	N/A	Same as Proposed Project	• Demolish all or parts of Pier 27 and Pier 29 sheds • Retrofit remaining shed with temporary walls or replace with temporary structures	Same as Proposed Project	• Demolish all or parts of Pier 27 and Pier 29 sheds • Retrofit remaining shed with temporary walls or replace with temporary structures	Same as Proposed Project	Same as Proposed Project
Piers 30-32	AC34 2012/ 2013	• Seismic upgrades and repair • Repair and strengthen marginal wharf • Raise depressed area between Piers 30-32 • Install stormwater management features	N/A	N/A	Same as Proposed Project	Same as Proposed Project	Similar to Proposed Project, but for AC34 2013 only	Similar to Proposed Project, but for AC34 2013 only	Same as Proposed Project	Same as Proposed Project

TABLE 7-1 (Continued)
CHARACTERISTICS OF AC34 PROJECT AND ALTERNATIVES

Project Characteristic	Event / Phase	Proposed Project	AC34 PROJECT ALTERNATIVES							
			No Project Alternative		Open Ocean Alternative		Reduced Intensity AC34 and Long-Term Development Alternative		Reduced Spectator Berthing Alternative	
			With Cruise Terminal	Without Cruise Terminal	With Cruise Terminal	Without Cruise Terminal	With Cruise Terminal	Without Cruise Terminal	With Cruise Terminal	Without Cruise Terminal
Permanent Construction (AC34 and Cruise Terminal Projects) (cont.)										
Piers 26 and 28	AC34 2012/ 2013	• Fire, safety and access improvements • Roof and exterior wall repairs • Possible apron and fender repairs	N/A	N/A	Same as Proposed Project	Same as Proposed Project	Similar to Proposed Project, but for AC34 2013 only	Similar to Proposed Project, but for AC34 2013 only	Same as Proposed Project	Same as Proposed Project
Piers 19, 19½ and 23	AC34 2012/2013	• Repair of the deck and piling for the north and south aprons, if needed • Fire, safety and access improvements, if needed	N/A	N/A	Same as Proposed Project	Same as Proposed Project	Similar to Proposed Project	Similar to Proposed Project, but for AC34 2013 only	Same as Proposed Project	Same as Proposed Project
Dredging	AC34 2012/ 2013	• Dredging of BSW OWB to -17 feet MLLW • Dredging of RP OWB to -12 feet MLLW • Dredging of Pier 28 South to -12 feet MLLW	N/A	N/A	Same as Proposed Project	Same as Proposed Project	Same as Proposed Project but for AC34 2013 only	Same as Proposed Project but for AC34 2013 only	Similar to Proposed Project, but no dredging of RP OWB	Similar to Proposed Project, but no dredging of RP OWB
AC34 Temporary Installations										
Floating Docks, Wave Attenuators, and/or Moorings	AC34 2012/ 2013	Pier 80, Piers 30-32, BSW OWB, Piers 26 and 28, RP OWB, Piers 19 and 23, Piers 27-29, Aquatic Park, Marina Green	N/A	N/A	Same as Proposed Project	Same as Proposed Project	Same as Proposed Project, but for AC34 2013 only, and excluding Marina Green	Same as Proposed Project, but for AC34 2013 only, excluding Marina Green	Similar to Proposed Project, but excluding RP OWB and adding Pier 9	Similar to Proposed Project, but excluding RP OWB and adding Pier 9
Landside Installations at City/Port Facilities	AC34 2012/ 2013	Piers 27-29, Piers 30-32, Piers 26 and 28, Piers 19, 19½, and 23, Marina Green, Live Sites	N/A	N/A	Similar to Proposed Project	Similar to Proposed Project	Same as Proposed Project, but for AC34 2013 only	Same as Proposed Project, but for AC34 2013 only	Same as Proposed Project	Same as Proposed Project
Landside Installations on GGNRA Lands	AC34 2012/ 2013	Crissy Field, Fort Mason, Aquatic Park, Fort Mason, Alcatraz, Fort Baker Pier at Cavallo Point	N/A	N/A	Largely reduced compared to Proposed Project	Largely reduced compared to Proposed Project	Same as Proposed Project, but for AC34 2013 only	Same as Proposed Project, but for AC34 2013 only	Same as Proposed Project	Same as Proposed Project
Tenant Displacement and Relocation										
Tenant Displacement and Relocation	AC34 2012/ 2013	• Existing tenants at Piers 30-32, Seawall Lot 330, Pier 26, Pier 28, Pier 19, Pier 19½, Pier 23, Piers 27-29 and Pier 29½ displaced prior to the AC34 2012 event. • Teatro Zinzanni relocates to Third/ Channel Streets in Mission Bay, Embarcadero/Broadway, or non-Port site TBD; Bauer's California Coach Sales and Service relocates to Pier 50; SF Soccer relocates to Pier 17	N/A	N/A	Same as Proposed Project	Same as Proposed Project	Same as Proposed Project	Same as Proposed Project	Same as Proposed Project, but also Pier 9	Same as Proposed Project, but also Pier 9
AC34 Long-Term Development Rights										
AC34 Long-Term Development Rights	Post AC34	• 250 ksf Residential at Seawall Lot 330 • 262 ksf Retail/Commercial at Piers 26, 28, 30-32, 19, 23 and 29 • 533 ksf Office at Piers 28, 30-32, and 23 • 264 ksf Entertainment/Assembly at Piers 26, 28, 30-32, 19, 23 and 29 • 50 ksf Maritime uses at Pier 19½ • 2 Cruise Ship berths at Piers 30-32 • Marinas at BSW OWB and RP OWB	N/A	N/A	Same as Proposed Project	Same as Proposed Project	This represents one possible reduced development scenario: • 125K Residential at Seawall Lot 330 • 131K Retail/ Commercial at Piers 26, 28, 30-32, 19, 23 and 29 • 267K Office at Piers 28, 30-32, and 23	This represents one possible reduced development scenario: • 125K Residential at Seawall Lot 330 • 131K Retail/ Commercial at Piers 26, 28, 30-32, 19, 23 and 29 • 267K Office at Piers 28, 30-32, and 23	Same as Proposed Project, but marina at South Beach or Mission Bay instead of at RP OWB	Same as Proposed Project, but marina at South Beach or Mission Bay instead of at RP OWB

TABLE 7-1 (Continued)
CHARACTERISTICS OF AC34 PROJECT AND ALTERNATIVES

Project Characteristic	Event / Phase	Proposed Project	AC34 PROJECT ALTERNATIVES							
			No Project Alternative		Open Ocean Alternative		Reduced Intensity AC34 and Long-Term Development Alternative		Reduced Spectator Berthing Alternative	
			With Cruise Terminal	Without Cruise Terminal	With Cruise Terminal	Without Cruise Terminal	With Cruise Terminal	Without Cruise Terminal	With Cruise Terminal	Without Cruise Terminal
AC34 Long-Term Development Rights (cont.)										
AC34 Long-Term Development Rights (cont.)							• 132K Entertainment/ Assembly at Piers 26, 28, 30-32, 19, 23 and 29 • 25K Maritime uses at Pier 19½ • 1 Cruise Ship berth at Piers 30-32 • 1 or 2 Marinas (at South Beach and/or Mission Bay)	• 132K Entertainment/ Assembly at Piers 26, 28, 30-32, 19, 23 and 29 • 25K Maritime uses at Pier 19½ • 1 Cruise Ship berth at Piers 30-32 • 1 or 2 Marinas (at South Beach and/or Mission Bay)		
BCDC SAP Amendments										
for AC34 Project	AC34 2012/2013 for temporary berthing; Fill removal TBD	Amendments to permit temporary berthing at RP OWB and BSW OWB for the AC34 events. Associated fill removal at possible sites near Piers 98, 84, 88, 70, 64, and/or China Basin Channel	N/A	N/A	Same as Proposed Project	Same as Proposed Project	Same as Proposed Project, but for AC34 2013 only	Same as Proposed Project, but for AC34 2013 only	Amendments to permit temporary berthing at BSW OWB and Broadway OWB for the AC34 events, but not for RP OWB. Same fill removal options as proposed project.	Amendments to permit temporary berthing at BSW OWB and Broadway OWB for the AC34 events, but not for RP OWB. Same fill removal options as proposed project.
for Cruise Terminal Project	2012/2013	Various amendments to allow cruise terminal and provide comparable public benefit. Associated fill removal at possible sites near Piers 98, 84, 88, 70, 64, and/or China Basin Channel	Same as Proposed Project	N/A	Same as Proposed Project	N/A	Same as Proposed Project	N/A	Same as Proposed Project	N/A
Cruise Terminal Shared Use										
Shared Use	Post AC34	Up to 100 annual shared use events at the Cruise Terminal	Same as Proposed Project	N/A	Same as Proposed Project	N/A	Same as Proposed Project	N/A	Same as Proposed Project	N/A

NOTES:
BSW = Brannan Street Wharf RP = Rincon Point OWB = Open Water Basin ksf = thousand square feet MLLW = mean lower low water ADA = Americans with Disabilities Act TBD = To Be Determined

TABLE 7-2
CHARACTERISTICS OF CRUISE TERMINAL PROJECT AND ALTERNATIVES

Project Characteristic	Event / Phase	Proposed Project	CRUISE TERMINAL/WHARF PLAZA PROJECT ALTERNATIVES			
			No Project Alternative		Renovation of Pier 27 Shed Alternative	
			With AC34	Without AC34	With AC34	WithoutAC34
AC34 Operational Characteristics						
Location of AC34 Races	AC34 2012	Central San Francisco Bay	Same as Proposed Project	N/A	Same as Proposed Project	N/A
	AC34 2013	Central San Francisco Bay	Same as Proposed Project	N/A	Same as Proposed Project	N/A
Location of AC Village	AC34 2012	Marina Green	Same as Proposed Project	N/A	Same as Proposed Project	N/A
	AC34 2013	Piers 27-29	Same as Proposed Project	N/A	Same as Proposed Project	N/A
Location of Team Bases	AC34 2012	Piers 30-32/BSW OWB and/or Pier 80	Same as Proposed Project	N/A	Same as Proposed Project	N/A
	AC34 2013	Piers 30-32, BSW OWB, and Pier 80	Same as Proposed Project	N/A	Same as Proposed Project	N/A
AC34 Schedule	AC34 2012	Summer-Fall 2012	Same as Proposed Project	N/A	Same as Proposed Project	N/A
	AC34 2013	Summer-Fall 2013	Same as Proposed Project	N/A	Same as Proposed Project	N/A
Visitation	AC34 2012	Peak Weekend Day: 197,000 Peak Week Day 45,000 Total Visitation 1,454,000	Same as Proposed Project	N/A	Same as Proposed Project	N/A
	AC34 2013	Peak Weekend Day: 334,000 Peak Week Day 50,000 Total Visitation 5,490,000	Same as Proposed Project	N/A	Same as Proposed Project	N/A
Staffing (Peak Daily)	AC34 2012	4,000	Same as Proposed Project	N/A	Same as Proposed Project	N/A
	AC34 2013	9,200	Same as Proposed Project	N/A	Same as Proposed Project	N/A
Permanent Construction (AC34 and Cruise Terminal Projects)						
Piers 27-29	AC34 2013 (Phase 1); and 2014 (Phase 2)	• Demolish Pier 27 shed and a portion of Pier 29 shed • Demolish Pier 27 annex building • Construct Pier 27 Cruise Terminal core building and shell • Construct new Pier 29 shed east/corner wall • Repair surface and provide ADA access • Repair the Piers 27-29 substructure, if needed • Strengthen and seismically upgrade Pier 29 superstructure, if needed • Repair Pier 29 apron and fendering, if needed • Relocate shoreside power • Install stormwater management features • Repair Piers 27-29 and Piers 29-31 marginal wharfs, if needed • Complete Cruise Terminal and construct Northeast Wharf Plaza	• Demolish all or parts of Pier 27 and Pier 29 sheds • Retrofit remaining shed with temporary walls or replace with temporary structures	N/A	• Demolish north and south sides of Pier 27 shed and a portion of Pier 29 shed • Construct new Pier 29 shed east/corner wall; and new Pier 27 east and west walls • Bring Pier 27 shed up to current code standards • Install internal rooms for security processing, elevators and escalators, and insulation in Pier 27 shed • Provide ADA compliant ramps from the GTA to the Pier 27 building; • Demolish Pier 27 Annex building • Construct Northeast Wharf Plaza	• Demolish south end of Pier 27 shed • Bring remaining Pier 27 shed up to current code standards • Install internal rooms for security processing, elevators and escalators, and insulation in Pier 27 shed • Provide ADA compliant ramps from the GTA to the Pier 27 building; • Demolish Pier 27 Annex building • Construct Northeast Wharf Plaza
Piers 30-32	AC34 2012/ 2013	• Seismic upgrades and repair • Repair and strengthen marginal wharf • Raise depressed area between Piers 30-32 • Install stormwater management features	Same as Proposed Project	N/A	Same as Proposed Project	N/A
Piers 26 and 28	AC34 2012/ 2013	• Fire, safety and access improvements • Roof and exterior wall repairs • Possible apron and fender repairs	Same as Proposed Project	N/A	Same as Proposed Project	N/A
Piers 19, 19½ and 23	AC34 2012/ 2013	• Repair of the deck and piling for the north and south aprons, if needed • Fire, safety and access improvements, if needed	Same as Proposed Project	N/A	Same as Proposed Project	N/A

TABLE 7-2 (Continued)
CHARACTERISTICS OF CRUISE TERMINAL PROJECT AND ALTERNATIVES

Project Characteristic	Event / Phase	Proposed Project	CRUISE TERMINAL/WHARF PLAZA PROJECT ALTERNATIVES			
			No Project Alternative		Renovation of Pier 27 Shed Alternative	
			With AC34	Without AC34	With AC34	WithoutAC34
Permanent Construction (AC34 and Cruise Terminal Projects) (cont.)						
Dredging	AC34 2012/ 2013	• Dredging of BSW OWB to -17 feet MLLW • Dredging of RP OWB to -12 feet MLLW • Dredging of Pier 28 South to -12 feet MLLW	Same as Proposed Project	N/A	Same as Proposed Project	N/A
AC34 Temporary Installations						
Floating Docks, Wave Attenuators, and/or Moorings	AC34 2012/ 2013	Pier 80, Piers 30-32, BSW OWB, Piers 26 and 28, RP OWB, Piers 19 and 23, Piers 27-29, Aquatic Park, Marina Green	Same as Proposed Project	N/A	Same as Proposed Project	N/A
Landside Installations at City/Port Facilities	AC34 2012/ 2013	Piers 27-29, Piers 30-32, Piers 26 and 28, Piers 19, 19½, and 23, Marina Green, Live Sites	Same as Proposed Project	N/A	Same as Proposed Project	N/A
Landside Installations on GGNRA Lands	AC34 2012/ 2013	Crissy Field, Fort Mason, Aquatic Park, Fort Mason, Alcatraz, Fort Baker Pier at Cavallo Point	Same as Proposed Project	N/A	Same as Proposed Project	N/A
Tenant Displacement and Relocation						
Tenant Displacement and Relocation	AC34 2012/ 2013	• Existing tenants at Piers 30-32, Seawall Lot 330, Pier 26, Pier 28, Pier 19, Pier 19½, Pier 23, Piers 27-29 and Pier 29½ displaced prior to the AC34 2012 event. • Teatro Zinzanni relocates to Third/ Channel Streets in Mission Bay, Embarcadero/Broadway, or non-Port site TBD; Bauer's California Coach Sales and Service relocates to Pier 50; SF Soccer relocates to Pier 17	Same as Proposed Project	N/A	Same as Proposed Project	N/A
AC34 Long-Term Development Rights						
AC34 Long-Term Development Rights	Post AC34	• 250 ksf Residential at Seawall Lot 330 • 262 ksf Retail/Commercial at Piers 26, 28, 30-32, 19, 23 and 29 • 533 ksf Office at Piers 28, 30-32, and 23 • 264 ksf Entertainment/Assembly at Piers 26, 28, 30-32, 19, 23 and 29 • 50 ksf Maritime uses at Pier 19½ • 2 Cruise Ship berths at Piers 30-32 • Marinas at BSW OWB and RP OWB	Same as Proposed Project	N/A	Same as Proposed Project	N/A
BCDC SAP Amendments						
for AC34 Project	AC34 2012/2013 for temporary berthing; Fill removal TBD	Amendments to permit temporary berthing at RP OWB and BSW OWB for the AC34 events. Associated fill removal at possible sites near Piers 98, 84, 88, 70, 64, and/or China Basin Channel	Same as Proposed Project	N/A	Same as Proposed Project	N/A
for Cruise Terminal Project	2012/2013	Various amendments to allow cruise terminal and provide comparable public benefit. Associated fill removal at possible sites near Piers 98, 84, 88, 70, 64, and/or China Basin Channel	N/A	N/A	Same as Proposed Project	Same as Proposed Project
Cruise Terminal Shared Use						
Shared Use	Post AC34	Up to 100 annual shared use events at the Cruise Terminal	N/A	N/A	Same as Proposed Project	Same as Proposed Project

NOTES:
BSW = Brannan Street Wharf RP = Rincon Point OWB = Open Water Basin ksf = thousand square feet MLLW = mean lower low water ADA = Americans with Disabilities Act TBD = To Be Determined

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7.2.2 AC34 Project Significant Impacts

As stated in the CEQA Guidelines, alternatives to a project must substantially lessen or avoid any of the significant environmental impacts associated with the project. The following summarizes the conclusions for potentially significant and significant impacts identified in Chapter 5 of this EIR.

Significant and Unavoidable Impacts

Land Use

- Significant and unavoidable impacts associated with long-term development of marinas at the Rincon Point and Brannan Street Wharf Open Water Basins which would conflict with the intended long-term ecological and public benefits of these open water basins under the adopted Bay Conservation and Development Commission (BCDC) Special Area Plan policies for these areas

Cultural and Paleontological Resources

- Potentially significant and unavoidable impacts associated with long-term development at Piers 30-32 due to the unknown effect on the Embarcadero Historic District

Transportation and Circulation

- Significant and unavoidable level of service impacts at 12 signalized and unsignalized intersections plus other nearby intersections in the project area during AC34 2012 events during either weekday or Saturday midday conditions (including Embarcadero/Beach, Embarcadero/Howard, King/Third, Lombard/Divisadero, Lombard/Fillmore, Bay/Laguna, Bay/Van Ness, Bush/Van Ness, Pine/Van Ness, Lombard/Van Ness, Lincoln/25th, Lombard/Lyon)

- Significant and unavoidable level of service impacts at 18 signalized and unsignalized intersections in the project area during AC34 2013 events during either weekday or Saturday midday conditions (including Embarcadero/Beach, Embarcadero/Broadway, Embarcadero/Howard, Embarcadero/Folsom, Embarcadero/Harrison, Embarcadero/ Bryant, Fremont/Folsom, King/Third, King/Fourth, Lombard/Divisadero, Lombard/ Fillmore, Bay/Laguna, Bay/Van Ness, Bush/Van Ness, Pine/Van Ness, Lombard/Van Ness, Lincoln/25th, Lombard/Lyon)

- Significant and unavoidable impacts contributing to congestion in downtown San Francisco and along the waterfront during the AC34 2013 events

- Significant and unavoidable impacts on traffic operations at secondary viewing areas and vicinity during AC34 2012 and 2013 events

- Significant and unavoidable impacts on transit capacity of Muni lines, Presidio Go shuttle service, AC Transit lines, BART, WETA ferry lines, Golden Gate Transit bus and ferry lines, Blue & Gold ferry lines, Caltrain service, and SamTrans lines and impacts on transit operations related to additional traffic congestion from the project during AC34 2012 and 2013 events

- Significant and unavoidable impacts on the transportation network in combination with other special events occurring simultaneously in San Francisco during the AC34 2012 and 2013 events

- Significant and unavoidable impacts on traffic and transit due to long-term development under the Host Agreement

- Significant and unavoidable cumulative level of service impacts at multiple intersections along The Embarcadero (including Embarcadero/Broadway, Embarcadero/Washington, Embarcadero/Mission, Embarcadero/Howard, Embarcadero/Folsom)

Noise

- Potentially significant and unavoidable noise impacts from noise increases associated with use of public address systems, and/or amplified music at Piers 27-29 and Marina Green during AC34 events at these venues would be reduced with a noise control plan and volume controls but the effectiveness of reducing the noise levels below the thresholds is unknown

- Significant and unavoidable but temporary vehicle noise increase during AC34 weekend events at 8 intersections in the project area, with no feasible mitigation to reduce traffic and associated noise levels below the threshold

Air Quality

- Significant and unavoidable construction-related air quality impacts due to emissions of criteria pollutants and precursors that would exceed Bay Area Air Quality Management District (BAAQMD) thresholds even with construction vehicle emissions minimization and restrictions on off-road construction equipment

- Significant and unavoidable construction impact due to potential health risks from exposure of sensitive receptors to toxic air contaminants even with construction vehicle emissions minimization and restrictions on off-road construction equipment (This impact also applies to the Pier 27 Shed Variant.)

- Significant and unavoidable operations impact due to emissions of criteria pollutants and precursors from vessels, traffic, temporary decommissioning of shoreside power, and other sources during the AC34 events, even with emission controls for race-sponsored vessels

- Significant and unavoidable operations impact due to potential health risks from exposure of sensitive receptors to toxic air contaminants in diesel exhaust even with emission controls for race-sponsored vessels and clean diesel engines for temporary power

- Significant, unavoidable air quality impact because long-term development under the Host Agreement could result in construction and operational emissions of air pollutant emissions that exceed BAAQMD thresholds even with implementation of feasible mitigation

- Significant, unavoidable contribution to cumulative air quality impacts because the project's contribution to cumulative impacts would exceed BAAQMD thresholds even with implementation of feasible mitigation

Significant Impacts that Can be Mitigated to Less than Significant

Cultural and Paleontological Resources

- Potentially significant impacts on historic resources due to proposed repairs and alteration to the bulkhead wharf and substructure at historic piers could be mitigated through prior approval of designs that ensure compliance with the Secretary's Standards

- Potentially significant impacts on contributing resources to the Embarcadero Historic District (bulkhead wharf section 10, Red's Java House, and Pier 28) due to pile driving vibration impacts could be mitigated through pre-construction assessment, vibration monitoring during construction, and corrective actions as needed

- Potentially significant impact due to relocation of Teatro Zinzanni to a site within the Northeast Waterfront Historic District could be mitigated through conformance with design guidelines consistent with Article 10 of the Planning Code

- Potentially significant indirect impacts on historic earthen fortifications in or near spectator venues could be mitigated through protection measures such as fencing, signage, area closures, educational programs, and crowd control developed and implemented in coordination with the park jurisdiction as part of the Parks Event Operations Plan

- Potentially significant impacts on historic resources due to attachment, anchoring, or bracing of temporary floating dock installations to the Marina Seawall could be mitigated through prior approval of plans to ensure compliance with Secretary's Standards

- Potentially significant impacts on archeological resources, including shipwrecks, could be mitigated with measures to prepare for and respond to inadvertent discovery of such resources

- Potentially significant impacts on disturbance of human remains could be mitigated with measures to prepare for and respond to inadvertent discovery of such finds

- Potentially significant impact on historic resources due to long-term development under the Host Agreement involving alterations and rehabilitation of historic piers and bulkheads could be mitigated through implementation of measures to guide the proposed improvements so that the work would be consistent with the Secretary's Standards

- Potentially significant contributions to cumulative impacts on historic resources, archeological resources, and human remains could be mitigated through measures identified for the AC34 project impacts

Noise and Vibration

- Significant construction-related noise impacts at levels in excess of standards and due to temporary but substantial increases in ambient noise levels at sensitive receptors could occur at or near the Marina Green and at or near certain piers along the waterfront, but impacts could be mitigated with noise controls and pile driving noise reduction measures during construction

- Significant noise impacts during AC34 events from noise increases associated with use of generators at Piers 27-29 and Marina Green could be mitigated with shielding or acoustical enclosures

- Potentially significant vibration impacts on fragile structures due to pile driving activities during construction could be mitigated with implementation of geotechnical recommendations for vibration monitoring and control measures

- Significant impact because construction associated with long-term development under the Host Agreement would result in temporary but substantial increases in ambient noise levels at sensitive receptors could be mitigated with noise reduction measures

Wind and Shadow

- Potentially significant wind hazard impact due to proposed expansion of public open space at the end of Piers 27-29 if hazardous wind conditions coincide with public access to the area, but impact could be mitigated with posting of warning signs, limiting public access during hazardous winds, and through implementation of design features that provide wind protection for public access areas

Recreation

- Potentially significant impact due to increased use of recreational resources at secondary viewing areas and associated substantial deterioration of recreational resources could be mitigated through agency coordination for protection of recreational resources and implementation of crowd control and post-event repairs

Biological Resources, Upland

- Potentially significant impacts on sensitive upland and bird species due to construction and AC34 events could be mitigated through appropriate signage, fencing, restrictions on fireworks and night lighting, offshore protection of marine-protected zone, and other protection measures

- Potentially significant impacts on sensitive natural upland communities due to construction and AC34 events could be mitigated through signage at sensitive natural community areas

- Potentially significant impacts on protected wetlands due to construction and AC34 events could be mitigated with appropriate signage

- Potentially significant impacts on movement and nesting of bird and bat species due to construction could be mitigated through seasonal restrictions on demolition of structures on piers as feasible, nest and roost avoidance, and other protective measures

- Potentially significant impacts on movement and nesting of bird species during AC34 events could be mitigated through restrictions on spectator boat traffic, offshore buffers and protection for breeding birds, and other protective measures

- Potentially significant impact because long-term development under the Host Agreement could affect sensitive species or breeding birds or bats during construction and operation, but impacts could be mitigated through seasonal restrictions on demolition of structures on

piers, nest and roost avoidance, windows and landscaping to minimize bird strikes, and other protective measures

Biological Resources, Marine

- Significant impact on sensitive fish species, marine mammals, and Magnuson-Stevens Act-managed fish species and their habitats due to in-water construction and lighting on floating docks could be mitigated through pile driving noise reduction, controlling night lighting at floating docks and other control measures

- Potentially significant impact on sensitive natural marine communities (eelgrass beds) during AC34 events due to visiting boats unfamiliar with San Francisco Bay sensitive habitats could be mitigated through providing information to visiting mariners

- Potentially significant impact on the movement of marine mammals during construction could be mitigated by pile driving noise reduction; and potentially significant impacts on the movement of marine mammals during operations could be mitigated by imposing restrictions on low-flying aircraft and providing information to visiting mariners

- Potentially significant conflicts with local plans protecting marine biological resources could be avoided with implementation of mitigation measures identified in this EIR

- Potentially significant impacts from introduction of non-native or invasive species from foreign vessels during operations could be mitigated by providing information to visiting mariners; and potentially significant impacts from spreading already introduced invasive species during construction could be mitigated with development and implementation of an invasive species control plan

- Significant impact because long-term development under the Host Agreement could affect sensitive marine species and their habitats due to in-water construction and operational activities, but impacts could be mitigated through controlling night lighting at floating docks, pile driving noise reduction, and control measures for maintenance and operation of marinas

- Potentially significant contribution to cumulative construction impacts on marine biological resources could be reduced to less than significant with implementation of mitigation measures identified in this EIR

Geology and Soils

- Significant impact related to groundshaking for the improvements at Piers 30-32 in the absence of site-specific geotechnical investigation, but could be mitigated with site-specific geotechnical investigations and implementation of its recommendations in the project design

- Potentially significant impacts related to liquefaction, earthquake-induced settlement, lateral displacement, and consolidation settlement could be mitigated with a site-specific geotechnical investigation and implementation of its recommendations in the project design

- Potentially significant impact due to large number of spectators in the vicinity of facilities with structural concerns (e.g., Torpedo Wharf at Crissy Field, pier at Fort Mason, and Municipal Pier at Aquatic Park) could be mitigated with signage and restricted access at structurally unsound viewing locations

- Significant impact due to long-term development under the Host Agreement could result in adverse geologic and seismic hazards but could be mitigated with site-specific geotechnical investigations and implementation of its recommendations in the project design

Hydrology and Water Quality

- Potentially significant impact due to in-water construction that could substantially degrade water quality from use and handling of fuels, hazardous materials, and cement, but could be mitigated with implementation of water quality best management practices

- Potentially significant impact due to increased boating discharges, spills, and littering that could substantially degrade water quality, but could be mitigated by providing notification and education of all visiting mariners using the Bay and providing marine species control at Port facilities

- Potentially significant impact due to long-term development under the Host Agreement could substantially degrade water quality from use and handling of fuels, hazardous materials, and cement, but impacts could be mitigated through implementation of water quality best management practices

Hazards and Hazardous Materials

- Potentially significant impact due to the potential for release of hazardous materials from race-related or spectator vessels, which could be mitigated through notification and education of all visiting mariners using the Bay

- Potentially significant impact related to release of hazardous building materials during demolition of structures or removal of creosote-treated materials, which could be mitigated through surveys and implementation of approved removal and disposal protocols

- Significant impact because long-term development under the Host Agreement could result in release of hazardous building materials during demolition of structures, which could be mitigated through surveys and implementation of approved removal and disposal protocols

7.2.3 Selected AC34 Project Alternatives

Four alternatives to the AC34 project were identified for CEQA evaluation: AC34 No Project Alternative, AC34 Open Ocean Alternative, Reduced Intensity AC34 and Long-Term Development Alternative, and Reduced Spectator Berthing Alternative. These four alternatives were determined to adequately represent the range of feasible alternatives required under CEQA. These alternatives are described and evaluated below.

7.2.3.1 AC34 No Project Alternative

As required by CEQA Guidelines Section 15126.6(e), the No Project Alternative must be evaluated along with its impacts to allow decision-makers to compare the impacts of approving the proposed project with the impacts of not approving it. The No Project Alternative represents what would be reasonably expected to occur in the foreseeable future if the project were not approved.

Description of the AC34 No Project Alternative with the Cruise Terminal Project

Under this alternative, the AC34 project would not be implemented but the Cruise Terminal project would be implemented as proposed. The City and County of San Francisco (CCSF) would not serve as the host city for the AC34 events, and accordingly, the AC34 events would be held in another venue(s) with another host city (cities) outside the Bay Area. Consequently, no AC34 race series would be held in the Central San Francisco Bay in summer-fall 2012 and summer-fall 2013, no associated AC34 venues would be developed, and no AC34-related visitation would occur in San Francisco or surrounding area in 2012 or 2013.[1]

As a result, under this alternative, there would be no temporary installations and permanent infrastructure improvements at, and/or associated use of, the proposed venue sites on Port of San Francisco (Port) and CCSF properties, and GGNRA lands for the AC34 project. This includes the AC34-proposed landside and/or waterside improvements at, and AC34 use of the following: Pier 80, Piers 30-32, Pier 28, Pier 26, Seawall Lot 330, Pier 19, Pier 19½, Pier 23, Piers 27-29, Pier 29½, Crissy Field, Marina Green, Fort Mason, Aquatic Park, Fort Baker Pier at Cavallo Point, Alcatraz; the Brannan Street Wharf, Rincon Point, and Northeast Wharf Open Water Basins and other water areas; and Civic Center, Union Square and Justin Herman Plaza. The project sites would remain in their current conditions with continuance of all existing land uses and routine maintenance as needed. However, with the exception of Piers 27-29, discussed below, this alternative would not preclude future proposals for redevelopment at the Port properties, but in the absence of specific proposals for seismic and infrastructure improvements, many of the Port properties, including those in poor structural condition, would remain in their current state for an indefinite period.

All site characteristics within the areas that would be affected by the proposed AC34 project would remain in their existing condition, with the exception of Piers 27-29, which would be developed with the Justin R. Herman Cruise Terminal and Northeast Wharf Plaza under this alternative. It is assumed that since no AC Village at Piers 27-29 would be developed under this alternative, that there would be the potential for the proposed Cruise Terminal project to be fully constructed and operational (including use of shoreside power) somewhat earlier in 2014 than proposed under the project. In addition, because the spectator viewing areas on the northeast end of Piers 27-29 would not be required, this alternative assumes that the demolition of Pier 27 and Pier 29 sheds would be reduced. Demolition of the Pier 27 shed would be reduced to open up only the site area for construction of the cruise terminal, and the northeast (outboard) end of Pier 27 shed would remain, including the existing connection with Pier 29. In general, all operational characteristics of the cruise terminal under this alternative, including the site to be used for both the cruise terminal and shared uses, would be identical to that proposed under the project, as described in Chapter 3, except that the bus/truck turnaround area at the tip of Piers 27-29 would be eliminated. A new area for public access at the tip of Piers 27-29 would no longer be proposed.

[1] Golden Gate Yacht Club and Oracle Racing Team are both based in the Bay Area, and consequently some incidental visitation to the Bay Area would occur related to AC34, although such visitation would not be associated with attending AC34 race series the Bay Area.

This alternative would avoid tenant displacement from Port facilities that would occur under the proposed AC34 project. However, existing tenants at Piers 27 and some or all tenants at Pier 29 would be displaced as part of the Cruise Terminal project under this alternative. As under the proposed project, affected tenants, including Teatro Zinzanni dinner theater, Bauer's California Coach Sales and Service, and San Francisco Soccer's Telegraph Field, would be relocated to other appropriate and available alternative locations prior to demolition/construction activities at Piers 27-29 for the cruise terminal and wharf plaza. Assumptions of tenant relocation would be same as described for the proposed project in Chapter 3.

Under this alternative, since no AC34 project would occur, no associated BCDC amendments related to the AC34 project would be sought, including those that would permit temporary berthing of yachts at the Brannan Street Wharf and Rincon Point Open Water Basins. However, all of the proposed BCDC amendments for the Cruise Terminal project would be required under this alternative, including those that would allow comparable public benefit, and would result in fill removal at possible Port sites near Piers 98, 84, 88, 70, 64, and/or China Basin Channel. The BCDC amendments would be revised to exclude the proposed removal of structures at the east end of Piers 27-29, since the retention of the existing sheds at the tip of the pier would reduce wind impacts associated with the project.

Furthermore, there would be no future long-term development and associated use of the long-term development sites under this alternative that would occur as part of the proposed AC34 project. This includes the potential landside and/or waterside improvements, and associated long-term use of, Piers 30-32, Seawall Lot 330, Pier 28, Pier 26, Pier 19, Pier 19½, Pier 23, Pier 29; and Brannan Street Wharf and Rincon Point Open Water Basins. Nevertheless, given the site's identification in the Port's Waterfront Plan as a "Mixed-Use Opportunity Area," it could reasonably be expected that in the future, a subsequent development proposal(s) separate from that associated with the AC34 project would be considered and/or implemented on one or more of the long-term development sites. Any such proposals would be subject to its own environmental review and approvals.

Description of the AC34 No Project Alternative without the Cruise Terminal Project

Under this version of the No Project Alternative, neither the AC34 project nor the Cruise Terminal project would be implemented. All aspects of this alternative as it relates to AC34 would be identical to that described above for the *AC34 No Project Alternative with Cruise Terminal Project.* As a result, this alternative assumes that no AC34 race series would be held in the Central San Francisco Bay in 2012 or 2013; no AC34 venues would be developed with the temporary and/or permanent improvements proposed by the project; and no associated AC34-related visitation would occur in San Francisco or surrounding area. Similarly, this alternative would also avoid tenant displacement from Port facilities that would otherwise occur as part of the AC34 project; and would not result in potential long-term development and associated use of the long-term development sites that would occur as part of proposed AC34 project.

In addition, the James R. Herman Cruise Terminal and Northeast Wharf Plaza project would not occur under this alternative. Instead, the existing Pier 35 facilities would continue to serve as the

primary cruise ship terminal, and the existing Pier 27 facilities would continue to serve as the backup cruise terminal, as currently occurs. Both the existing Pier 35 and Pier 27 facilities would undergo basic maintenance as needed to keep these facilities operational, however, no major capital improvements would occur under this alternative at either Piers 35 or Pier 27. An exception would be any improvements that would need to be made at Pier 35 and/or Pier 27 to meet applicable regulatory requirements, including improvements in shoreside power to comply with California Air Resource Board (CARB) regulations for reducing at-berth emissions from cruise ships.[2] As discussed in Chapter 3, Project Description, Pier 35 has become increasingly constrained for accommodating modern cruise ship operations, as cruise ship size, servicing and security requirements have grown. Pier 35 is also in deteriorating physical condition, so the remaining number of years that Pier 35 can serve as a viable primary cruise terminal is uncertain.

Furthermore, BCDC amendments for the AC34 and Cruise Terminal projects, including those that would allow comparable public benefit, and result in fill removal at other Port locations, would not be required under this alternative.

Under this alternative, the project sites would remain in their current conditions with continuance of all existing land uses and routine maintenance as needed. However, this alternative would not preclude future proposals for redevelopment at the Port properties, but in the absence of specific proposals for seismic and infrastructure improvements, many of the Port properties, including those in poor structural condition, would remain in their current state for an indefinite period.

Ability of the AC34 No Project Alternative to Meet Project Objectives

The AC34 No Project Alternative, with or without the Cruise Terminal project, would not meet the AC34 project sponsors' objectives. It would not establish San Francisco or San Francisco Bay as a world-class venue for the sport of sailing by hosting the America's Cup event, and therefore would not create a center of activity for that event on the San Francisco waterfront or provide public viewing opportunities of the event at a close range. The No Project Alternative would not provide infrastructure improvements to existing facilities, and the long-term development at Port properties as envisioned under the Host Agreement would not occur. The racing events would not occur, so the access to the event sites would not be considered. Also, natural resource stewardship and navigational and operational safety guidelines would not be considered in relation to the AC34 event.

Impacts of the AC34 No Project Alternative

No AC34 Project, With or Without the Cruise Terminal Project

Under the AC34 No Project Alternative, with or without the Cruise Terminal project, all impacts associated with construction, operation, and long-term development rights of the AC34 project would be avoided, including the significant, adverse impacts listed above in Section 7.2.2, and none

[2] In December 2007 the CARB approved a regulation to reduce emissions from diesel auxiliary engines on passenger and other categories of ships while berthing at California ports, including the Port of San Francisco. The regulation compliance schedule requires a fleet operator to reduce at-berth emission at the port of 50 percent by 2014, 70 percent by 2017, and 80 percent by 2020.

of the identified mitigation measures would be required. Assuming the Cruise Terminal project would also not be implemented, current land uses at all Port and CCSF properties and GGNRA lands would remain unchanged, and no impacts associated with tenant displacement on Port properties would occur. Since there would be no permanent repairs or seismic and infrastructure improvements to project sites (including Piers 30-32, 26, 28, 9, 19, 19½, 23, 27-29; dredging at Brannan Street Wharf [Piers 32-36] and Rincon Point [14-22½] open water basins, and Piers 28-30 water area; and apron and fender repairs at Piers 9-15 water area, Piers 17-19 water area, and Fort Mason piers), these facilities would be expected to remain in their current state, including those in poor structural conditions, with only basic maintenance, in the absence of other development proposals. None of the impacts associated with temporary installations at the Marina Green or GGNRA lands would occur.

In the absence of the AC34 event, the Port could partner with other private developers to implement various development options individually or collectively at the same locations along the waterfront as the AC34 project sites, and they would be subject to the same regulations and requirements applicable to the AC34 with respect to land use planning and design, environmental review, and permitting. Seismic upgrades and other infrastructure, fire, safety and access improvements would still be required at many of the piers as part of any future development. Any future development(s) would be expected to result in a range of environmental impacts--possibly similar to many of the impacts identified for the AC34 project--and project-specific environmental review under CEQA would be required. Due to the unique nature of the AC34 event, it is unlikely that other future development projects would attract such a large number of visitors and visiting boats, and as such, impacts associated with the multitude of expected visitors and visiting boats would be avoided.

The AC34 No Project Alternative would not result in a new division of an established community or change land use character; and there would be no conflicts with the zoning ordinance or General Plan, and no amendments to the Port of San Francisco Waterfront Land Use Plan and the BCDC Special Area Plan would be required. The visual and aesthetic setting along the waterfront would not change on either a temporary or permanent basis, and scenic vistas and the visual character of the project area would remain in their present condition. None of the potential impacts on archeological or historical resources would occur, and thus there would be no compatibility issues with the Embarcadero Historic District. There would be no increase in visitors or employment at the project site related to either construction or operation, and no impact to population and housing. Transportation conditions along the waterfront would remain unchanged, although future development as stated above would be expected to affect long-term circulation and transit conditions regardless of the proposed project, as described under the cumulative impacts in Section 5.6, Transportation and Circulation. The AC34 No Project Alternative would result in no changes to existing ambient noise levels or any other construction- or operation-related noise or vibration changes. There would be no construction or operational emissions of air pollutants—including criteria pollutants, precursors, toxic air contaminants, and greenhouse gases—as described below in Section 7.3, shoreside power would continue at Pier 27 and upgrades to Pier 35 shoreside power would be provided consistent with regulatory requirements.

The AC34 No Project Alternative would result in neither the demolition of existing structures nor the construction of new buildings on Piers 27–29, and consequently, there would be no changes to existing wind or shadow conditions. This alternative would not change the demand for utilities, public services, or recreational facilities in the project area from existing conditions; would not result in the construction of any recreational space or otherwise degrade existing recreational facilities; and there would be no impacts related to these criteria. None of the impacts on upland and marine biological resources identified for the AC34 project would occur, including potential impacts on bird, bat, fish and marine mammal species and impacts on sensitive wetland or subtidal biological communities. Similarly, the potential for degradation of water quality associated with in-water and near-water construction and operational activities would be avoided, but other future development could result in similar impacts and would require similar best management practices and water quality protection measures. There would be no change in the potential for exposure to hazardous materials associated with releases from race-related or spectator vessels or from demolition of structures or removal of creosote-treated materials, although the long-term benefits from removal of these existing hazardous materials would not occur. There would be no impacts on mineral, energy, agriculture, and forest resources under the AC34 No Project Alternative, and associated energy efficiency benefits of replacement of existing Piers 27-29 and Pier 35 operations with the proposed LEED® Silver Certification would not occur.

No AC34 Project but Implementation of the Cruise Terminal Project

If the Cruise Terminal project were to be implemented without the AC34 project, the proposed Phase 1 construction activities for the cruise terminal would proceed as described in Chapter 3, except demolition of the Pier 27 shed would be reduced to open up only the site area for construction of the cruise terminal, and the northeast (outboard) end of Pier 27 shed would remain, including the existing connection with Pier 29. Impacts associated with this component of the Cruise Terminal project would largely be the same as those described in Chapter 5 of this EIR, except that potential wind impacts would be avoided due to the retention of structures at the Piers 27-29 tip, and a new area for public access would no longer be proposed. However, retention of a portion of the Pier 27 shed and east end of the Pier 29 shed would preclude the area proposed for the bus/truck turnaround area, and transportation/circulation impacts related to operations of the Cruise Terminal project and ground transportation area would be exacerbated. Another difference from the proposed Cruise Terminal project would be that Phase 2 construction of the cruise terminal could occur immediately after Phase 1 rather than being interrupted by the AC34 2013 events proposed for this site. The construction period for the cruise terminal would likely be shortened, reducing the duration of construction-related impacts (i.e., noise, dust, traffic, etc.) in the project vicinity. Consequently, operation of the cruise terminal would likely occur sooner under this scenario. If the new cruise terminal opened sooner, shoreside power at the Port's primary cruise terminal would occur earlier. Compared to the proposed projects as described in Chapter 3, this would result in a reduction of localized diesel and other air pollutant emissions associated with cruise ships hoteling in port. The extent of this reduction would depend on the number of cruise ships scheduled to dock in San Francisco during the time between the proposed start date of operation and the earlier start date.

AC34 No Project Alternative – Conclusions

The AC34 No Project Alternative would meet none of the AC34 project objectives. The AC34 No Project Alternative would avoid all environmental impacts associated with construction and operation of the proposed AC34 project, but would also indefinitely delay needed seismic and infrastructure improvements to aging piers on Port property until and if another development proposal were to occur. In the meantime, these structures would continue to remain in their current state. Due to the proposed schedule of events beginning in 2012, implementation of this alternative could jeopardize the ability of the America's Cup Event Authority to secure other appropriate venues at another location in time for the scheduled race events.

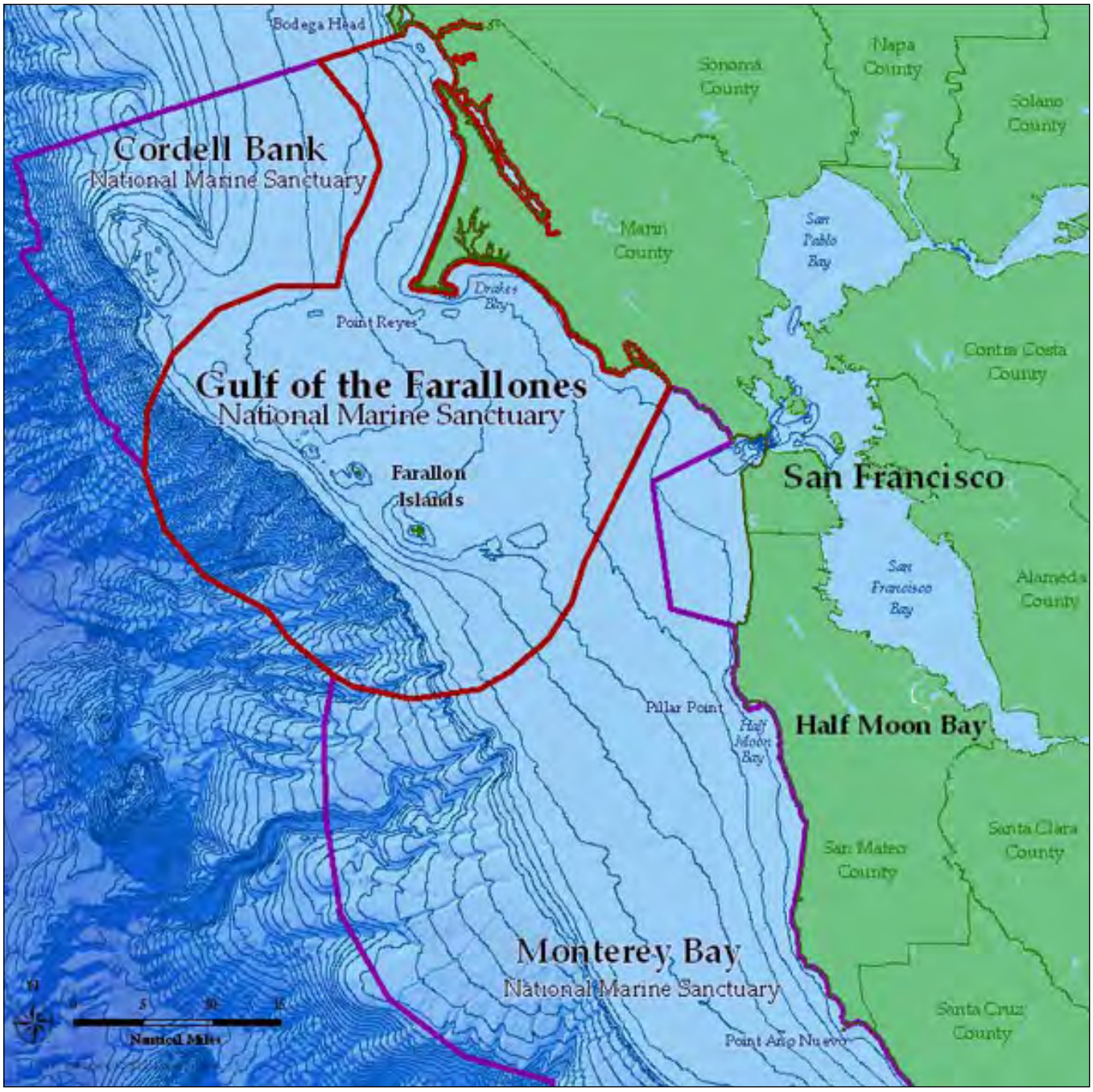
7.2.3.2 AC34 Open Ocean Alternative

Description of the AC34 Open Ocean Alternative with the Cruise Terminal Project

Under this alternative, it is assumed that the AC34 Open Ocean Alternative would be implemented in conjunction with the Cruise Terminal project as proposed. The City and County San Francisco would serve as the host city for AC34, and the AC34 events would be held in summer-fall 2012 and summer-fall 2013 similar to the proposed project. However, in contrast to the proposed project, under this alternative the AC34 race series would be held in the open waters of the Pacific Ocean (conceptually comparable to previous America's Cup races held in other parts of the world) instead of within San Francisco Bay as proposed under the project. Since the races would be held off the coast away from populated areas, this alternative would not enable land-based viewing from the shores of San Francisco and surrounding areas by spectators of AC34 races, and consequently, overall AC34 spectator venues and associated visitation (including visitation at secondary viewing areas) under this alternative would be considerably less than under the proposed project. This alternative was selected for analysis because it would reduce environmental impacts identified at land-based spectator venues and secondary viewing areas.

The specific ocean location where the AC34 race series would be held is not identified in this alternative, nor have the AC34 project sponsors studied a specific open water location off the coast of San Francisco for the races. However, for the purposes of this EIR and alternatives analysis, it is assumed the series would be located in the Pacific Ocean, beyond the Golden Gate, and offshore of the San Francisco (and possibly Marin County) ocean shoreline. Given that most coastal waters offshore of the Golden Gate and out approximately 40 miles are in close proximity to one of three existing national marine sanctuaries, it is possible that the AC34 races would be entirely or partially located within the boundaries of the more calm water areas of the Gulf of the Farallones National Marine Sanctuary (GFNMS) or adjacent Monterey Bay National Marine Sanctuary (MBNMS) or Cordell Bank National Marine Sanctuary (CBNMS); see **Figure 7-1**.[3] This alternative assumes any

[3] Designated in 1981, GFNMS spans an area of 1,279-square-miles north and west of San Francisco Bay. The MBNMS was designated in 1992, and encompasses 6,094-square-miles of ocean. GFNMS has administrative jurisdiction over the northern portion of the MFNMS, from the San Mateo/Santa Cruz County line northward to the boundary between the two sanctuaries. CBNMS was designated in 1989, and protects an area of 529-square-miles.



SOURCE: Tim Reed; Gulf of the Farallones National Marine Sanctuary

Case No. 2010.0493E: AC34 / Cruise Terminal and Northeast Wharf Plaza (210317)

Figure 7-1
Boundary Map of Marine Sanctuaries in San Francisco Vicinity

portion of the races that would be held in the open ocean would be conducted in compliance with all applicable state and federal maritime, environmental, and safety laws and regulations, including those developed specifically for the marine sanctuaries. Any activities in the marine sanctuaries would be subject to the Marine Protection, Research, and Sanctuaries Act and pursuant to that act, would require involvement of the National Oceanic and Atmospheric Administration (NOAA) and the U.S. Environmental Protection Agency (U.S. EPA). Similar to the proposed project, the project sponsors would work with the U.S. Coast Guard to establish navigational and operational safety guidelines.

Under this alternative, it is presumed that the race boats selected specifically for the AC34 race events could be designed to accommodate an open water Pacific Ocean race course and that the relative number of AC34 teams, team operations, and sponsor boats would be the same as for the proposed project. In addition, it is further presumed that a suitable race course could be identified off the coast of San Francisco that meets the required wind, current, and wake conditions necessary for the race event as well as satisfies all navigational and safety requirements, although it is as yet unknown if all safety considerations for the race events could be fulfilled in the Open Ocean Alternative. Detailed studies would need to be conducted to determine feasibility.

Similar to the proposed project, under this alternative, Piers 30-32, the Brannan Street Wharf Open Water Basin, Pier 28, Pier 26 and Pier 80 would be used for team bases for 2012 and 2013, Marina Green would be used for the AC Village in 2012, and Piers 27-29 would be used for the AC Village in 2013, along with Piers 19, 19 ½, 23 as with the proposed project. All temporary installations and permanent infrastructure improvements at, and/or associated use of, these AC34 venues would be similar to the proposed project. However, since this alternative would not allow for adequate land-based viewing of the AC34 races, the AC34 landside spectator venues proposed under the project (i.e., at Crissy Field, Marina Green [2013], Fort Mason, and Aquatic Park) would be largely reduced or eliminated under this alternative, and likely be limited to one or more "live sites" to allow remote viewing of the AC34 races on video screens. As a result, given the absence of land-based viewing of the races and the reduced AC34 spectator venues under this alternative, overall land-based AC34 visitation would be largely reduced compared to anticipated visitation under the proposed project, and would occur primarily at the AC Village, team bases, and live sites; there would be no secondary viewing areas on land.

It is assumed the relative number of AC34 team operations and sponsor boats associated with the AC34 events, and the number of large private spectator yachts that would attend AC34 under this alternative, would be similar to the number under the proposed project. Consequently, the overall level of additional temporary berthing facilities (floating docks) that would be installed would be similar to the proposed project (i.e., at the AC Village and team bases, as well as at Brannan Street Wharf and Rincon Point Open Water Basins, Pier 19, and Pier 23). The number of large private spectator yachts that would attend the AC34 event and watch the races would be expected to be similar to that which would occur under the proposed project. However, holding the AC34 races in the open water conditions of the Pacific Ocean would preclude some smaller recreational boats unable to handle the open ocean from watching the AC34 races from the perimeter of the race course, whereas the number of commercial charter boats used to watch the

races could be greater than that estimated under the proposed AC34 project. All boats would have to travel a substantially greater distance each racing day between the San Francisco waterfront and the location of the race course in the Pacific Ocean. Safety risks would be associated with this alternative because the water conditions of the Pacific Ocean are not conducive for racing the currently designed AC34 yachts. In addition, spectator boats attempting to view the race in the open water would also add to the safety risks, likely requiring more extensive monitoring and controls to limit incursions or distractions between the race team yachts and spectator and media boats.

As under the proposed project, the improvements required to support the proposed AC Village at Piers 27-29 under this alternative would be coordinated with the phased development of the proposed Cruise Terminal project, including demolition of Pier 27 shed and portion of Pier 29 shed, and the construction of the cruise terminal core building and shell. Similarly, following the AC34 event, the cruise terminal would be completed and Northeast Wharf Plaza would be constructed. Furthermore, all operational characteristics of the Cruise Terminal project under this alternative, including the site to be used for both the cruise terminal and shared uses, would be identical to that proposed under the project.

Tenant displacement from certain Port facilities that would occur under this alternative would be similar to that which would occur for the AC34 project. As under the proposed project, prior to entering into leases with the Event Authority for use as AC34 venues, current tenants on Port properties identified for AC34 venues (including Teatro Zinzanni dinner theater, Bauer's California Coach Sales and Service, and San Francisco Soccer's Telegraph Field) would be relocated to other appropriate and available locations.

All BCDC amendments related to AC34 under the project would be sought under this alternative, including those that would permit temporary berthing of yachts at the Brannan Street Wharf and Rincon Point Open Water Basins. Similarly, all of the proposed BCDC amendments for the Cruise Terminal and Northeast Wharf Plaza project would be required under this alternative, including those that would allow comparable public benefit, and would result in fill removal at possible Port sites near Piers 98, 84, 88, 70, 64, and/or China Basin Channel.

Under this alternative, potential future long-term development and associated use of the long-term development sites would occur under conditions specified in the Host Agreement as under the proposed AC34 project. This includes the potential landside and/or waterside improvements, and associated long-term use of, Piers 30-32, Seawall Lot 330, Pier 28, Pier 26, Pier 19, Pier 19½, Pier 23, and Pier 29; and Brannan Street Wharf and Rincon Point Open Water Basins described in Chapter 3.

Description of the AC34 Open Ocean Alternative without the Cruise Terminal Project

Under this alternative, it is assumed that the AC34 Open Ocean Alternative would be implemented, but the Cruise Terminal project would not. The City and County of San Francisco would serve as the host city for AC34, and the AC34 events would be held in summer-fall 2012 and summer-fall 2013 similar to the proposed project. However, under this alternative, the AC34 race series would be held in the open waters of the Pacific Ocean (conceptually comparable to

previous America's Cup races held in other parts of the world) instead of within San Francisco Bay as proposed under the project. No specific location has been identified nor have detailed studies been conducted, as described above under the *Description of the AC34 Open Ocean Alternative with the Cruise Terminal Project*). Since the races would be held off the coast away from populated areas, this alternative would not enable land-based viewing from the shores of San Francisco and surrounding areas by spectators of AC34 races, and consequently, overall AC34 spectator venues and associated visitation (including visitation at secondary viewing areas) under this alternative would be considerably less than under the proposed project. This alternative was selected for analysis because it would reduce environmental impacts identified at land-based spectator venues and secondary viewing areas.

Under this alternative, Piers 30-32, the Brannan Street Wharf Open Water Basin, Pier 28, Pier 26 and Pier 80 would be used for team bases for 2012 and 2013, similar to the proposed project. All temporary installations and permanent infrastructure improvements at, and/or associated use of, the AC34 team base venues would be similar to the proposed project. However, since this alternative would not allow for adequate land-based viewing of the AC34 races, the AC34 landside spectator venues proposed under the project (i.e., at Crissy Field, Marina Green [2013], Fort Mason, and Aquatic Park) would be largely reduced or eliminated under this alternative, and likely be limited to one or more "live sites" to allow remote viewing of the AC34 races on video screens. As a result, given the absence of land-based viewing of the races and the reduced AC34 spectator venues under this alternative, overall land-based AC34 visitation would be largely reduced compared to anticipated visitation under the proposed project, and would occur primarily at the AC Village, team bases, and live sites; there would be no land-based viewing from the secondary viewing areas identified for the proposed project.

It is assumed the relative number of AC34 team operations and sponsor boats associated with the AC34 events, and the number of large private spectator yachts that would attend AC34 under this alternative, would be similar to the number under the proposed project. Consequently, the overall level of temporary berthing facilities (floating docks) that would be installed would be similar to the proposed project (i.e., at the AC Village and team bases, as well as at Brannan Street Wharf and Rincon Point Open Water Basins, and other locations). The number of large private spectator yachts that would attend the AC34 event and watch the races would be expected to be similar to that which would occur under the proposed project. However, holding the AC34 races in the open water conditions of the Pacific Ocean would preclude some smaller recreational boats unable to handle the open ocean from watching the AC34 races from the perimeter of the race course, whereas the number of commercial charter boats used to watch the races would be expected to be greater than that expected under the proposed AC34 project. All boats would have to travel a substantially greater distance each racing day between the San Francisco waterfront and the location of the race course in the Pacific Ocean. Safety risks would be associated with this alternative because the water conditions of the Pacific Ocean are not conducive for racing the currently designed AC34 yachts. In addition, spectator boats attempting to view the race in the open water could also add to the safety risks, likely requiring more extensive monitoring and controls to limit incursions or distractions between the race team yachts and spectator and media boats.

The Cruise Terminal project would not occur under this alternative scenario, but nonetheless, Piers 27-29 would still serve as the AC Village in 2013 and it is assumed that partial demolition of existing sheds would take place (see Section 7.3.3.1, *Description of the Cruise Terminal No Project Alternative with the AC34 Project*, below, for a more detailed description of this scenario). Either a portion of the east end of the Pier 27 and Pier 29 sheds would be removed and retrofitted with temporary walls, or the existing Pier 27 shed would be demolished in its entirety, and temporary structures would be installed in its place. This alternative scenario assumes that the existing shoreside power transformer would be temporarily relocated off-site for the duration of the AC 2013 events and would be restored upon completion of the events. Due to the use of Piers 27-29 for the AC34 events, displacement and relocation of existing tenants at Piers 27-29 would occur, similar to the proposed project.

All BCDC amendments related to AC34 under the project would be sought under this alternative, including those that would permit temporary berthing of yachts at the Brannan Street Wharf and Rincon Point Open Water Basins.

It is assumed under this alternative that potential future long-term development and associated use of the long-term development sites would occur under conditions specified in the Host Agreement as under the proposed AC34 project. This includes the potential landside and/or waterside improvements, and associated long-term use of Piers 30-32, Seawall Lot 330, Pier 28, Pier 26, Pier 19, Pier 19½, Pier 23, Pier 29, and Brannan Street Wharf and Rincon Point Open Water Basins.

As discussed above, the Cruise Terminal project would not occur under this alternative. As a result, the existing Pier 35 facilities would continue to serve as the primary cruise ship terminal, and the existing Pier 27 facilities would continue to serve as the backup cruise terminal, as currently occurs, except during the construction and operational phases required for the AC34 2013 events. The existing Pier 35 facilities would undergo basic maintenance as needed to keep these facilities operational, however, no major capital improvements would occur under this alternative at Pier 35. An exception would be any improvements that would need to be made at Pier 35 to meet applicable regulatory requirements, including improvements in shoreside power to comply with California Air Resources Board (CARB) regulations for reducing at-berth emissions from cruise ships. As discussed in Chapter 3, Project Description, Pier 35 has become increasingly constrained for accommodating modern cruise ship operations, as cruise ship size, servicing and security requirements have grown. Pier 35 is also in deteriorating physical condition, so the remaining number of years that Pier 35 can serve as a viable primary cruise terminal is uncertain. Following completion of the AC34 events, the Port would restore the Pier 27 shed as needed to resume operations as the backup cruise terminal.

In addition, those BCDC amendments for the Cruise Terminal project, including those that would allow comparable public benefit, and result in fill removal at Piers 98, 84, 88, 70, 64, and/or China Basin Channel, would not be required under this alternative.

Ability of the Open Ocean Alternative to Meet Project Objectives

The Open Ocean Alternative would meet or partially meet some but not all of the AC34 project sponsors' objectives. It would establish San Francisco as a world-class venue for the sport of sailing by hosting the team bases, America's Cup Village, and AC34 Live Sites in a similar fashion as other cities that hosted previous America's Cup events, but it would not establish San Francisco Bay as a world class sailing venue. A combination of world class shore facilities and close proximity world class sailing locations would better meet the objective of establishing both San Francisco and San Francisco Bay as a world class sailing venue. However, because landside viewing opportunities would be limited to pre- and post-event boat transport to the open ocean, it would not achieve the objective of providing public viewing opportunities for the general public from San Francisco at close range and making the sport more accessible to a wide range of spectators; and thus this alternative would not respond to the project sponsors' objectives for spectator viewing conditions. Under this alternative, the America's Cup facilities would create somewhat of a center of activity along The Embarcadero, but the extended distance between the team base, the AC Village, and the open ocean race course would disperse the activities and spectators across a wider area and there would be no landside viewing opportunities of the race events. This alternative would provide adequate facilities for spectator vessels.

The alternative would include infrastructure improvements for team bases and the America's Cup Village, but temporary installations for spectator viewing would be limited to a short viewing window of the boats as they parade between the San Francisco Bay and the Pacific Ocean. This alternative would still provide for physical access to and from live sites, AC Village, team bases and programmed facilities based on transportation strategies presented in the People Plan, although overall spectator attendance would likely be reduced due to limited viewing opportunities. The alternative would emphasize environmental stewardship, and while it would include the establishment of navigational and operational safety guidelines in the open ocean for race team, support, and spectator boat activities, it is unlikely that all safety concerns could be achieved given the extreme nature and location of the race course in the Pacific Ocean.

The Open Ocean Alternative is less likely to achieve the objective of hosting a successful America's Cup for a number of reasons. The Open Ocean Alternative would require teams to completely redesign the type of vessels that are currently undergoing design for sailing in San Francisco Bay to address safety concerns. For example, racing yachts would need to be designed with a higher structural capability, with substantially higher power and fuel use requirements for support boats. The additional expense involved in redesigning the vessels might also have the effect of discouraging competitors, who would not be able to benefit from the substantial investments made in high technological refinements to advance the race. This alternative would also extend the amount of travel time between bases located on the San Francisco waterfront and the race course in the Pacific Ocean, from minutes to hours. In addition, it is likely that the schedule of races would have to be reduced as a result of travelling time and less predictable weather conditions. Because the open ocean racing does not provide the reliable racing conditions required by broadcasters to enable them to commit to long term broadcast schedules, it is also likely to result in less media coverage from major networks interested in showcasing the AC34 and San Francisco.

Finally, long-term development could occur under this alternative, commensurate with infrastructure upgrades conducted for the AC34 facilities.

Impacts of Open Ocean Alternative

Open Ocean Alternative, With or Without the Cruise Terminal Project — Impacts Compared to the Proposed Project

Under the Open Ocean Alternative, with or without the Cruise Terminal project, environmental impacts would be similar to those identified for many components of the proposed project. All of the significant impacts associated with the long-term development rights under the Host Agreement would be the same for the Open Ocean Alternative as for the proposed project since there would be no change in the assumptions or agreements for long-term development, and all of the same mitigation measures would apply. All of the significant and unavoidable impacts described above in Section 7.2.2 would be essentially the same for this alternative as the proposed project (i.e., those associated with transportation and circulation, air quality, and noise) since the primary spectator venues sponsored by the Event Authority would be the same, although the magnitude of these impacts would be somewhat reduced assuming a reduction in overall visitation. All of the construction impacts related to the AC village, team bases, operations, hospitality, and temporary berthing would be the same as for the proposed project, specifically construction-related impacts on historic and archeological resources, noise/vibration, air quality, biological resources (upland and marine), geology and soils, water quality, and hazardous materials, and all the same mitigation measures as those identified in Chapter 5 of this EIR would be required to reduce impacts to less than significant. However, construction impacts associated with the spectator venues would be somewhat reduced due to the reduction in visitation and associated reduction in programmed facilities. There would be no impacts at any of the anticipated secondary viewing areas, since the race course would likely not be visible from locations around the Bay. However, spectators may indirectly affect other lands stretching between the San Francisco Bay and the Pacific Ocean in attempts to get a view of the race from non-programmed areas. Recreational areas used under the Golden Gate Bridge and along the Pacific Ocean may be affected for longer periods of time as the boats transit between the San Francisco waterfront and the race course in the Pacific Ocean.

Other differences in impacts of the Open Ocean Alternative and those of the proposed project would be associated with impacts on biological resources in the proposed race course area and with impacts from visitors at the spectator venues and recreational spectator boats. Unlike the proposed project, under the Open Ocean Alternative, all impacts at the secondary viewing areas would be avoided, including impacts on recreational resources, upland biological resources, historic resources, and transportation and circulation. Under the proposed project, the race course in Central San Francisco Bay would pose potential impacts on bird species that use the area and nearshore areas for rafting, foraging, nesting, and roosting although these impacts could be mitigated to a level of less than significant; moving the race course to the open water of the Pacific Ocean would reduce potential impacts on nearshore nesting and roosting habitats as well as minimize impacts on rafting and foraging. However, given proximity of the race course to, if not presence within, two marine sanctuaries and the potential for the presence of greater

numbers of whales, the Open Ocean Alternative would result in potentially increased impacts on whales that are more likely to be present in the Pacific Ocean than in the Bay. Similar mitigation measures as identified for the proposed project, including Mitigation Measure M-BI-14 (Restrictions on Low-Flying Aircraft**),** would be required, but the effectiveness of these measures in the open water conditions in the Pacific Ocean is unknown.

Under the Open Ocean Alternative, air quality emissions would likely result in significant and unavoidable impacts, similar to the proposed project. While there may be a reduced number of small recreational boats traveling to the open ocean race course, there could be a larger number of charter boats, and in any event, all boats would have to travel a substantially greater distance each racing day between the San Francisco waterfront and the location of the race course on the Pacific Ocean. Monitoring and controlling the boats on the Pacific Ocean would be challenging and could present safety issues. On land, the Open Ocean Alternative would likely attract fewer visitors at the spectator venues and essentially eliminate spectators at the anticipated secondary viewing areas, thereby reducing direct and indirect effects on upland special status species located at or near spectator venues, reducing transportation impacts at spectator venues and secondary viewing area, reducing air quality emissions, and reducing noise impacts at spectator venues during the AC34 events. However, regardless of the reduced severity of impacts, implementation of mitigation measures identified for the proposed project would be required to reduce impacts to a less than significant level. The significant, unavoidable impacts identified for the proposed project—related to transportation, air quality, and noise—are assumed to also occur under the Open Ocean alternative, even though the magnitude of these impacts would be somewhat reduced assuming a reduction in overall visitation.

Impacts of the Open Ocean Alternative, With or Without the Cruise Terminal Project

The AC34 activities under the Open Ocean Alternative would not result in a new division of an established community or change land use character; however, similar to the proposed project, the long term development under the Host Agreement would conflict with conditions of applicable land use plans, and amendments to the Port of San Francisco Waterfront Land Use Plan and the BCDC Special Area Plan would be required. Furthermore, possible future development of permanent marinas in the Rincon Point and Brannan Street Wharf Open Water Basins would result in significant and unavoidable land use impacts due to conflict with the intended long-term ecological and public benefits of these open water basins under the adopted BCDC policies for these areas. This alternative would not have a substantial effect on scenic vistas, scenic resources, or visual character of the project areas, including possible future long-term development assuming that future developments would be designed in conformance with applicable design guidelines. There would be a short-term, minor increase in visitors and employment in the project site area due to AC34 construction and operation, but impacts on population and housing would be less than significant. This alternative would result in potentially significant impacts on the Embarcadero Historic District resources due to proposed repairs and alterations to historic structures and potential for impacts on archeological resources, and mitigation measures similar to those for the proposed project would be required that would reduce these impacts to less than significant. Impacts of long-term development on Piers 30-32

would result in potentially significant and unavoidable impacts due to the unknown effects on the Embarcadero Historic District.

Transportation and circulation impacts would include levels of service effects and transit impacts less severe than the proposed project due to reduced numbers of spectators, though, similar to the proposed project, these effects would be addressed through the mitigation measures and the People Plan; but impacts could still remain significant and unavoidable. Potentially significant noise and vibration effects associated with project construction activities, particularly due to pile driving for installation of temporary docks and upgrades to piers, would require the same mitigation measures as those for the proposed project; but there would be potentially significant and unavoidable noise impacts that would occur during the AC34 events due to noise increases associated with use of public address systems, and/or amplified music at Piers 27-29 and Marina Green and due to vehicle noise increases during weekend peak events for which there are no feasible mitigation measures. Construction and operational emissions of air pollutants—including criteria pollutants, precursors, and toxic air contaminants—could occur at levels exceeding BAAQMD thresholds. Overall vessel emissions during AC34 race events would occur farther away from sensitive receptors, which would reduce health risks at those waterfront locations, however, overall regional air emissions would be anticipated to increase due to longer travel distance for AC34 race support, charter boats and spectator vessels to and from the open ocean race course. Greenhouse gas emissions would be consistent with applicable plans and policies and be less than significant.

The Open Ocean Alternative, with and without the Cruise Terminal, would result in less than significant impacts on the demand for utilities, public services, and recreational facilities in the project area compared to existing conditions, and would not require the construction of any recreational space or otherwise substantially degrade existing recreational facilities, and there would be no impacts related to these criteria. Similar potential impacts on upland and marine biological resources identified for the AC34 project would occur, including potential impacts on bird, bat, fish and marine mammal species and impacts on sensitive wetland or subtidal biological communities, but as described below, at a reduced magnitude on bird species and breeding habitat due to the relocation of AC34 race events to the open ocean. Similar mitigation measures to that of the proposed project could reduce these impacts to less than significant. However, the potential for direct and indirect impacts to marine mammals and other marine species during the race events under the Open Ocean Alternative would likely be greater than those of the proposed project as discussed below.

There would be the potential for groundshaking impacts, and mitigation measures similar to those identified for the proposed project would be required. Similarly, the potential for degradation of water quality associated with in-water and near-water construction and operational activities would require similar best management practices and water quality protection measures as identified for the project. Potential for exposure to hazardous materials associated with releases from race-related or spectator vessels, or from demolition of structures or removal of creosote-treated materials would occur under this alternative, although there would be long-term benefits from removal of these existing hazardous materials. There would be no

impacts on mineral, agriculture, and forest resources under the Open Ocean Alternative, and impacts on energy would be less than significant due to energy efficiency benefits of replacement of existing uses on project sites with facilities with upgraded energy efficiency and sustainability standards.

Impacts of the Open Ocean Alternative, Without the Cruise Terminal Project

In the event that the Cruise Terminal project were not approved and implemented, impacts of the Open Ocean Alternative would be essentially the same as described above. The Open Ocean Alternative without the Cruise Terminal, however, would include partial demolition of the existing sheds on Piers 27-29 to allow for use of Piers 27-29 for the AC Village in 2013. Following completion of the AC34 events, the Port would restore the Pier 27 shed as needed to resume operations as the backup cruise terminal. There would be short-term, construction-related impacts associated with the restoration of the Pier 27 shed, including air quality and noise impacts, but these effects would be similar or less in duration and magnitude to those identified for Phase 2 construction of the cruise terminal, and would be less than significant.

Open Ocean Alternative – Conclusions

The Open Ocean Alternative would achieve some of the AC34 project objectives and only partially meet most of the objectives. It would not meet the objectives of establishing San Francisco Bay as a world-class sailing venue, providing equal public viewing opportunities at close range around Central San Francisco Bay, would not enhance landside viewing opportunities, and would not take advantage of the Central Bay's natural geography to provide spectator viewing for the general public in proximity to the AC34 races. Currently, the AC34 yachts are not designed for racing in the open water of the Pacific Ocean, and to address safety concerns, teams would be required to completely redesign the racing yachts that are currently being designed for sailing in San Francisco Bay. Many impacts of the Open Ocean Alternative would be largely identical to those of the proposed project, and all mitigation measures identified for the proposed project would be required. Construction impacts and those associated with long-term development rights under the Host Agreement would be the same as for the proposed project. Impacts at the anticipated secondary viewing areas would be avoided, including impacts on recreational resources, upland biological resources, historic resources, and transportation and circulation. However, spectators may indirectly affect other lands stretching between the San Francisco Bay and the Pacific Ocean that may contain resources in attempts to get a view of the race from non-programmed areas. Recreational areas used under the Golden Gate Bridge and along the Pacific Ocean may be affected for longer periods of time as the boats transit between the San Francisco waterfront and the race course in the Pacific Ocean. There would be reduced biological resource impacts on breeding birds in nearshore habitats, but potential impacts on whales would be greater than those of the proposed project. All of the significant and unavoidable impacts identified for the proposed project would also occur under the Open Ocean Alternative.

7.2.3.3 Reduced Intensity AC34 and Long-Term Development Alternative

Description of the Reduced Intensity AC34 and Long-Term Development Alternative with the Cruise Terminal Project

Under this alternative, it is assumed that the Reduced Intensity AC34 and Long-term Development Alternative would be implemented in conjunction with the Cruise Terminal project as proposed. The City and County of San Francisco would serve as the host city for the AC34 2013 event (i.e., the Louis Vuitton Cup, America's Cup Challenger Series; potential America's Cup Defender Series; the Match; and 2013 Youth America's Cup), which, as under the proposed project, would occur in summer-fall 2013 with races held in the Central San Francisco Bay. However, under this alternative, the AC34 2012 events (including America's Cup World Series and 2012 Youth America's Cup) would be held in another venue(s) with another host city (cities) outside the Bay Area, and no associated AC34 2012 event-related visitation would occur in San Francisco or the surrounding area. In addition, this alternative assumes a reduced level of development under the long-term development rights under the Host Agreement and includes alternative long-term marina locations to the proposed long-term marina development in the Rincon Point (Piers 14-22.5) and Brannan Street Wharf (Piers 32-36) Open Water Basins. This alternative was selected for analysis because it would reduce environmental impacts identified as due to the AC34 2012 construction and operation as well as those associated with the long-term development rights.

As a result, under this alternative, there would be no temporary installations and permanent infrastructure improvements at, and/or associated use of, the proposed venue sites on Port and CCSF properties and GGNRA lands for the AC34 2012 event. This would include no AC34 2012 landside and/or waterside improvements at Pier 80, Piers 30-32, the Brannan Street Wharf (Piers 32-36) Open Water Basin, Pier 28, Pier 26, Marina Green, Crissy Field, Fort Mason, Aquatic Park, Fort Baker Pier at Cavallo Point, Alcatraz, Union Square and Justin Herman Plaza. There would be no need to construct the AC Village or associated temporary docking at the Marina Green for the AC 2012 events. Any permanent improvements proposed at the primary team bases under the project (e.g., seismic improvements at Piers 30-32, dredging, etc.) would only occur as required for the AC34 2013 event, although construction could still occur during 2012.

As under the proposed project, the improvements under this alternative required to support the proposed AC Village in 2013 at Piers 27-29 would be coordinated with the phased development of the proposed Cruise Terminal project, including demolition of Pier 27 shed and portion of Pier 29 shed, and the construction of the terminal core building and shell. Similarly, following the AC34 event, the cruise terminal would be completed and Northeast Wharf Plaza would be constructed. Furthermore, all operational characteristics of the Cruise Terminal project under this alternative, including for the site to be used for both the cruise terminal and shared uses, would be identical to that proposed under the project.

Tenant displacement from certain Port facilities that would occur under this alternative would be similar to that which would occur for the AC34 project. As under the proposed project, prior to entering into leases with the Event Authority for use as AC34 venues, current tenants on Port properties identified for AC34 venues (including the Teatro Zinzanni dinner theater, Bauer's

California Coach Sales and Service, and San Francisco Soccer's Telegraph Field) would be relocated to other appropriate and available alternative sites.

The BCDC permits and/or amendments related to AC34 under the project would be sought under this alternative, including those that would permit temporary berthing of yachts at the Brannan Street Wharf and Rincon Point Open Water Basins. With regard to long-term marina development rights, this alternative assumes that such marina development would be located in open water areas in South Beach and/or Mission Bay that can accommodate additional marina capacity in a manner consistent with BCDC Bay Plan recreation policies. The objective of these changes would be to reduce project conflicts with the planning policy and associated ecological benefit objectives of these open water basins, as identified in the BCDC Special Area Plan.

The proposed BCDC amendments for the Cruise Terminal project as proposed in the project would remain the same under this alternative, including those would allow comparable public benefit, and result in fill removal at possible Port sites near Piers 98, 84, 88, 70, 64, and/or China Basin Channel.

In addition, under this alternative, it is assumed potential future long-term development and associated use of the long-term development sites on land as provided under the Host Agreement would be reduced compared to that described in Chapter 3, Project Description, for the proposed project. The reduced long-term development scenario could range from no development at all to anything less than the assumed level of development for the proposed project. As described in Chapter 3, Section 3.4.8, Long-Term Development Rights, there are currently no specific development proposals under consideration at any of the sites. Therefore, for the purposes of this EIR, the proposed AC34 project included a conceptual level of development taking into consideration applicable land use, zoning, and planning requirements (see Chapter 3).

Under this alternative, the reduced long-term development scenario encompasses a wide variety of possible development options, albeit reduced from the assumed level of development for the proposed project. For illustration, if it were to be assumed that long-term development on land would be reduced by half of that analyzed under the AC34 project, development would consist of the following: approximately 125,000 square feet of residential development would occur at Seawall Lot 330; 131,000 square feet of retail/commercial uses and 132,000 square feet of entertainment/assembly uses would be developed at Piers 26, 28, 30-32, 19, 23 and 29; 267,000 square feet of office uses would occur at Piers 28, 30-32, and 23; 25,000 square feet of maritime uses would be developed at Pier 19½; and Piers 30-32 would have one cruise ship berth. As described above, this alternative assumes that long-term marina development would be located in open water areas in South Beach and/or Mission Bay that can accommodate additional marina capacity in a manner consistent with BCDC Bay Plan recreation policies to avoid the significant and unavoidable land use impacts associated with long-term development of a marina at the Rincon Point or Brannan Street Wharf Open Water Basins. Under this reduced development assumption, it is assumed that CCSF would provide appropriate reimbursement to the Event Authority if development levels were to be less than the infrastructure investments committed for the AC34 project.

Description of the Reduced Intensity AC34 and Long-Term Development Alternative without the Cruise Terminal Project

Under this alternative, it is assumed that the AC34 Reduced Intensity Alternative would be implemented, but the Cruise Terminal project would not. The City and County of San Francisco would serve as the host city for the AC34 2013 event only, which, as under the project, would occur in summer-fall 2013 with races held in the Central San Francisco Bay. However, under this alternative, the AC34 2012 events would be held in another venue(s) with another host city (cities) outside the Bay Area, and no associated AC34 2012 event-related visitation would occur in San Francisco or the surrounding area. In addition, this alternative assumes a reduced level of development under the long-term development rights under the Host Agreement and includes alternative long-term marina locations to the proposed long-term marina development in the Rincon Point (Piers 14-22.5) and Brannan Street Wharf (Piers 32-36) Open Water Basins. This alternative was selected for analysis because it would reduce environmental impacts identified as due to the AC34 2012 construction and operation as well as those associated with the long-term development rights.

This alternative would include no AC34 2012 landside and/or waterside improvements at Pier 80, Piers 30-32, the Brannan Street Wharf (Piers 32-36) Open Water Basin, Pier 28, Pier 26, Marina Green, Crissy Field, Fort Mason, Aquatic Park, Fort Baker Pier at Cavallo Point, Alcatraz, Union Square and Justin Herman Plaza. There would be no need to construct the AC Village or associated temporary docking at the Marina Green for the AC 2012 events.

Under this alternative, Piers 30-32, the Brannan Street Wharf (Piers 32-36) Open Water Basin, Pier 28, Pier 26 and Pier 80 would still be used for team bases for AC34 2013, similar to that proposed by project for AC34 2013. If mooring sites for AC72 race boats in the Brannan Street Wharf Open Water Basin were fewer than 10, a limited number of spectator boats could be in this area. All temporary installations and permanent infrastructure improvements at, and/or associated use of, the team base venues for AC34 2013 would be similar to that described for the proposed project.

It is assumed the proposed other land-based spectator venues (e.g., Crissy Field, Fort Mason, Aquatic Park, Justin Herman Plaza, Union Square and Civic Center) and race-sponsored venues (e.g., Fort Baker Pier at Cavallo Point and Alcatraz) for AC34 2013 under this alternative would be similar to that estimated for the proposed project. In addition, the overall level of temporary berthing facilities (floating docks) that would be installed for AC34 2013 would be similar to the proposed project (i.e., at the AC Village and team bases, as well as at Rincon Point Open Water Basin, and other locations).

The Cruise Terminal project would not occur under this alternative scenario, but nonetheless, Piers 27-29 would still serve as the AC Village in 2013 and it is assumed that partial demolition of existing sheds would take place (see Section 7.3.3.1, *Description of the Cruise Terminal No Project Alternative with the AC34 Project*, below, for a more detailed description of this scenario). Either a portion of the east end of the Pier 27 and Pier 29 sheds would be removed and retrofitted with temporary walls, or the existing Pier 27 shed would be demolished in its entirety, and temporary

structures would be installed in its place. This alternative scenario assumes that the existing shoreside power transformer would be temporarily relocated off-site for the duration of the AC 2013 events and would be restored upon completion of the events. Due to the use of Piers 27-29 for the AC34 events, tenant displacement and relocation of existing tenants at Piers 27-29 would occur, similar to the proposed project.

All BCDC amendments related to AC34 under the project would be sought under this alternative, including those that would permit temporary berthing of yachts at the Brannan Street Wharf and Rincon Point Open Water Basins. With regard to long-term marina development rights, this alternative assumes that such marina development would be located in open water areas in South Beach and/or Mission Bay that can accommodate additional marina capacity in a manner consistent with BCDC Bay Plan recreation policies. The objective of these changes would be to reduce project conflicts with the planning policy and associated ecological benefit objectives of these open water basins, as identified in the BCDC Special Area Plan.

Under this alternative, it is assumed that potential future long-term land and waterside development and associated use of the long-term development sites as provided under the Host Agreement would be reduced compared to that described in Chapter 3, Project Description, for the proposed project. The reduced long-term development scenario could range from no development at all to anything less than the assumed level of development for the proposed project.

Under this alternative, the reduced long-term development scenario encompasses a wide variety of possible development options, albeit reduced from the assumed level of development for the proposed project. For illustration, if it were to be assumed that long-term development on land would be reduced by half of that analyzed under the AC34 project, development would consist of the following: approximately 125,000 square feet of residential development would occur at Seawall Lot 330; 131,000 square feet of retail/commercial uses and 132,000 square feet of entertainment/ assembly uses would be developed at Piers 26, 28, 30-32, 19, 23 and 29; 267,000 square feet of office uses would occur at Piers 28, 30-32, and 23; 25,000 square feet of maritime uses would be developed at Pier 19½; and Piers 30-32 would have one cruise ship berth. As described above, this alternative assumes that long-term marina development would be located in open water areas in South Beach and/or Mission Bay that can accommodate additional marina capacity in a manner consistent with BCDC Bay Plan recreation policies to avoid the significant and unavoidable land use impacts associated with long-term development of a marina at the Rincon Point or Brannan Street Wharf Open Water Basins. Under this reduced development assumption, it is assumed that CCSF would provide appropriate reimbursement to the Event Authority if development levels were to be less than the infrastructure investments committed for the AC34 project.

As discussed above, the Cruise Terminal project would not occur under this alternative. As a result, the existing Pier 35 facilities would continue to serve as the primary cruise ship terminal, and the existing Pier 27 facilities would continue to serve as the backup cruise terminal, as currently occurs, except during the construction and operational phases required for the AC34 2013 events. The existing Pier 35 facilities would undergo basic maintenance as needed to keep these facilities operational, however, no major capital improvements would occur under this

alternative at Pier 35. An exception would be any improvements that would need to be made at Pier 35 to meet applicable regulatory requirements, including improvements in shoreside power to comply with CARB regulations for reducing at-berth emissions from cruise ships. As discussed in the EIR Project Description, Pier 35 has become increasingly constrained for accommodating modern cruise ship operations, as cruise ship size, servicing and security requirements have grown. Pier 35 is also in deteriorating physical condition, so the remaining number of years that Pier 35 can serve as a viable primary cruise terminal is uncertain. Following completion of the AC34 events, the Port would restore the Pier 27 shed as needed to resume operations as the backup cruise terminal.

The BCDC amendments for the Cruise Terminal and Northeast Wharf Plaza project, including those that would allow comparable public benefit, and result in fill removal at various Port sites, would not be required under this alternative.

Ability of the Reduced Intensity AC34 and Long-Term Development Alternative to Meet Project Objectives

The Reduced Intensity AC34 and Long-Term Development Alternative would partially meet the AC34 project sponsors' objectives in 2013. However, because of the elimination of the 2012 events, there would be less programmed events to promote San Francisco and San Francisco Bay as a world-class venue for the sport of sailing. It would provide landside viewing opportunities and a center of activity along The Embarcadero and the San Francisco waterfront for the 2013 events, but would not for the 2012 events. This alternative would provide adequate facilities for spectator vessels for the 2013 events. This alternative would include the same infrastructure improvements for team bases and America's Cup Village, though they would not serve the 2012 events. The alternative would provide for physical access to and from desired destinations based on transportation strategies presented in the People Plan in 2013. The alternative would emphasize environmental stewardship, and it would include the establishment of navigational and operational safety guidelines in the Bay for race team, support, and spectator boat activities.

Without the America's Cup World Series event in 2012, however, this alternative would not further the objectives to establish San Francisco as a world class sailing venue. Hosting the America's Cup World Series event in 2012 would introduce San Francisco as a world-class sailing venue, generate interest in the 2013 Americas Cup race, and serve to attract other world class sailing events in the future. It would also provide infrastructure upgrades and create a center of activity on the waterfront as early as 2012. This alternative would not meet those objectives. Under this alternative, long-term development would be less intensive than as proposed under the project, and would not provide the America's Cup Event Authority with the requisite long-term development value necessary to invest in the same level of up-front capital improvements necessary to support the America's Cup Event. As such, the alternative would only partially meet the objective to encourage investment in infrastructure upgrades required as part of the AC34 facilities.

Impacts of Reduced Intensity AC34 and Long-Term Development Alternative

Reduced Intensity AC34 and Long-Term Development Alternative, With or Without the Cruise Terminal Project — Impacts Compared to the Proposed Project

Under the Reduced Intensity AC34 and Long-Term Development Alternative, with or without the Cruise Terminal project, environmental impacts would be similar to those identified for the proposed project but would eliminate all construction and operational impacts associated with AC34 2012 events and would reduce the severity of impacts identified with long-term development of Port properties under the Host Agreement commensurate with the percent reduction in the magnitude of development compared to that analyzed for the proposed project. All of the construction impacts related to the AC village at Piers 27-29 in 2013, team bases, operations, hospitality, temporary berthing, and spectator venues would be nearly the same as for the proposed project—specifically construction-related impacts on historic and archeological resources, noise/vibration, air quality, biological resources (upland and marine), geology and soils, water quality, and hazardous materials—and all the same mitigation measures as those identified in Chapter 5 of this EIR would be required to reduce impacts to less than significant. There would be no construction-related impacts for temporary berthing and other installations at the Marina Green for AC34 2012 as included in the proposed project. This would reduce construction noise impacts (specifically to residents along Marina Boulevard) as well as associated air quality emissions. In addition, potential for impacts on the historic seawall at the Marina Green would be avoided. All operational impacts associated with the AC34 2012 events (i.e., those associated with historic and archeological resources, transportation, noise, air quality, wind, biological resources, water quality, and hazardous materials) would be avoided, including the potentially significant and unavoidable noise impact associated with use of public address systems, and/or amplified music at Marina Green in 2012. However, all of those same impacts would still occur before, during, and after the AC34 2013 events, and all the same mitigation measures would still be required. There would still be significant and unavoidable noise, transportation, and air quality impacts associated with the 2013 event.

Overall, the severity of all impacts identified for long-term development options on Port property under the Host Agreement would be reduced compared to the proposed project, commensurate with the percent reduction in the magnitude of development. There would be reduced impacts related to transportation, noise, air quality, and greenhouse gas emissions during both construction and operational phases. If the long-term development were to include one or two marinas at Mission Bay and/or South Beach instead of at the Rincon Point (Piers 14-22½) or Brannan Street Wharf (Piers 32-36) Open Water Basins, this alternative would avoid the impact associated with conflict with the intended long-term ecological and public benefits of these open water basins under the adopted BCDC policies for these areas. Otherwise, all other impacts of a new marina would be similar to those described for the proposed project but would occur at the new location. Similar to the proposed project, future site-specific CEQA review would be required for development of a marina at any location when and if such a development proposal occurs.

If long-term development rights under the Host Agreement were completely eliminated, then all associated impacts identified in Chapter 5 of this EIR would be avoided, although future, similar

development at any of the identified Port locations could still occur under a separate development proposal subject to separate CEQA review. Due to the unknown nature of specific development proposals at any of the Port locations subject to development under the Host Agreement, the potential remains for all identified impacts to occur, and identified mitigation measures would still apply to this alternative.

Impacts of the Reduced Intensity AC34 and Long-Term Development Alternative, With or Without the Cruise Terminal Project

The AC34 activities under the Reduced Intensity AC34 and Long-Term Development Alternative would not result in a new division of an established community or changed land use character. This alternative would not have a substantial effect on scenic vistas, scenic resources, or visual character of the project areas, including possible future long-term development assuming that future developments would be designed in conformance with applicable design guidelines.

As with the proposed project, there would be a short-term, minor increase in visitors and employment in the project site area due to AC34 construction and operation for the 2013 events, with less impacts than the proposed project, that would still be less than significant. This alternative would result in significant impacts on historic resources due to proposed repairs and alterations to historic structures and potential for impacts on archeological resources, and mitigation measures similar to those for the proposed project would be required to reduce those impacts to a level of less than significant; however, potential impacts on the historic seawall at the Marina Green would be avoided. Impacts of long-term development on Piers 30-32 would be potentially significant and unavoidable due to the unknown effects on the Embarcadero Historic District.

Transportation and circulation impacts would include levels of service effects and transit impacts similar to the proposed project during 2013, but all 2012 operational traffic impacts would be avoided. Significant noise and vibration effects associated with project construction activities, particularly due to pile driving for installation of temporary docks and upgrades to piers, would require the same mitigation measures as those for the proposed project, but operational impacts associated with the AC Village at the Marina Green in 2012 would be avoided, including significant and unavoidable noise impacts associated with use of public address systems, and/or amplified music at Marina Green in 2012. Both construction and operational noise from long-term development under the Host Agreement would be less than levels identified for the proposed project.

The Reduced Intensity AC34 and Long-Term Development Alternative would require the demolition of existing structures on Piers 27–29 and potentially expanding public open space areas exposed to high wind conditions, but there would be no impacts on shadows. This alternative would result in less than significant impacts on the demand for utilities, public services, or recreational facilities in the project area compared to existing conditions, and would not require the construction of any recreational space or otherwise substantially degrade existing recreational facilities. Potentially significant impacts on recreational facilities at secondary viewing areas in 2013 would be the same as for the proposed project, mitigated to less than significant by the same

measures, but those impacts in 2012 would be avoided. Similar impacts on upland and marine biological resources identified for the AC34 project would occur, including potential impacts on bird, bat, fish and marine mammal species and impacts on sensitive wetland or subtidal biological communities, but as described below, at a reduced magnitude on bird and marine mammal species due to the elimination of the AC34 2012 race events.

There would be the potential for groundshaking impacts, and mitigation measures similar to those identified for the proposed project would be required. Similarly, the potential for degradation of water quality associated with in-water and near-water construction and operational activities would require similar best management practices and water quality protection measures as identified for the project. Potential for exposure to hazardous materials associated with releases from race-related or spectator vessels, or from demolition of structures or removal of creosote-treated materials would occur under this alternative, although there would be long-term benefits from removal of these existing hazardous materials. There would be no impacts on mineral, agriculture, and forest resources under the Reduced Intensity AC34 and Long-Term Development Alternative, and impacts on energy would be less than significant due to energy efficiency benefits of replacement of existing uses on project sites with uses with upgraded energy efficiency and sustainability standards.

Impacts of the Reduced Intensity AC34 and Long-Term Development Alternative, Without the Cruise Terminal Project

In the event that the Cruise Terminal project were not approved and implemented, impacts of the Reduced Intensity AC34 and Long-Term Development Alternative would be essentially the same as described above. Under this scenario, without concurrent implementation of the Cruise Terminal project, partial demolition of the existing sheds on Piers 27-29 would occur to allow for use of Piers 27-29 for the AC Village in 2013. Following completion of the AC34 events, the Port would restore the Pier 27 shed as needed to resume operations as the backup cruise terminal. There would be short-term, construction-related impacts associated with the restoration of the Pier 27 shed, including air quality and noise impacts, but these effects would be similar or less in duration and magnitude to those identified for Phase 2 construction of the cruise terminal, and would be less than significant.

Reduced Intensity AC34 and Long-Term Development Alternative– Conclusions

The Reduced Intensity AC34 and Long-Term Development Alternative would partially achieve the project objectives, but would not achieve any of the objectives related to the AC34 2012 events, including establishing San Francisco as a world-class venue for the AC34 2012 events or for providing infrastructure upgrades and other installations for the AC34 2012 events. Depending on the level of reduced development associated with the long-term development rights, this alternative would achieve from not at all to partially meeting the objective related to long term development of Port properties under the Host Agreement. Overall impacts of this alternative would be similar to that of the proposed project and nearly all the same mitigation measures would be required, though it would apply only to the AC34 2013 events. All of the construction and operational impacts associated with the AC34 2012 events would be completely avoided, and while

most of these same impacts would occur for the AC34 2013 events, the overall duration of impacts would be reduced, including the significant and unavoidable impacts on transportation, air quality, and noise. The severity of impacts identified for long-term development options on Port property under the Host Agreement would be avoided or reduced, but the level of reduction and specific nature and magnitude of such impacts would depend on future site-specific development proposal and many of the same mitigation measures could still be required.

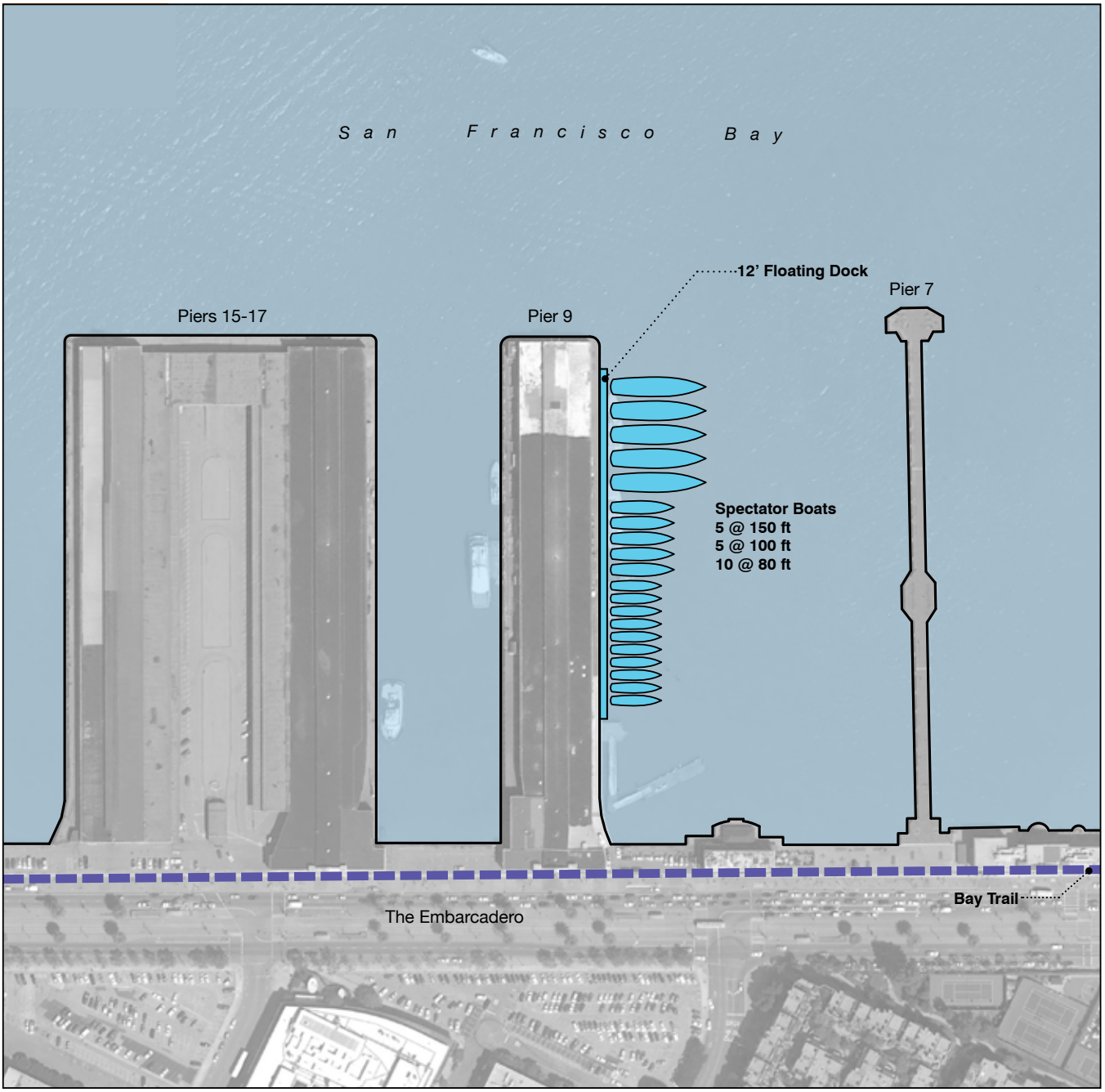
7.2.3.4 AC34 Reduced Spectator Berthing Alternative

Description of the AC34 Reduced Spectator Berthing Alternative with the Cruise Terminal Project

Under this alternative, it is assumed that the AC34 Reduced Spectator Berthing Alternative would be implemented in conjunction with the Cruise Terminal project as proposed. The City and County of San Francisco would serve as the host city for AC34, and the AC34 events would be held in summer-fall 2012 and summer-fall 2013 just as in the proposed project. However, under this alternative, Rincon Point Open Water Basin would not be considered for use as a temporary berthing facility or for long-term development of a permanent marina. Partial replacement berthing capacity for private spectator boats in 2013 would be provided at Pier 9 in the Broadway Open Water Basin (Piers 3 and 9), as designated in the BCDC Special Area Plan, with potentially as much as 550 linear feet of temporary floating docks, gangways, and bow anchor moorings installed on the south side of Pier 9. A possible configuration of the temporary berthing at Pier 9 is shown in **Figure 7-2**. In addition, supplemental berthing would be provided at various other existing locations along Port properties that currently have berthing capabilities. Assuming that minimum boat draft requirements would be similar to those which would have been necessary at the Rincon Point Open Water Basin, it is likely that substantially less dredging would be required at Pier 9 compared to the Rincon Point Open Water Basin. This alternative was selected for analysis because it would reduce environmental impacts identified at the Rincon Point Open Water Basin and because BCDC, a responsible and permitting agency for the AC34 project, requested an alternative that would reduce conflicts with its Special Area Plan.

All other temporary installations and permanent infrastructure improvements at the venues associated with the AC34 events would be the same as identified for the proposed project. This includes the landside and/or waterside components at the following locations during the AC34 events: Pier 80, Piers 30-32, Pier 28, Pier 26, Seawall Lot 330, Pier 19, Pier 19½, Pier 23, Piers 27-29, Pier 29½, Crissy Field, Marina Green, Fort Mason, Aquatic Park; the Brannan Street Wharf and Northeast Wharf Open Water Basins; and Civic Center, Union Square and Justin Herman Plaza. In addition, existing facilities at Fort Baker Pier at Cavallo Point and Alcatraz would be used for the AC34 events.

Under this alternative, Piers 30-32, the Brannan Street Wharf Open Water Basin, Pier 28, Pier 26 and Pier 80 would be used for team bases for both the AC34 2012 and AC34 2013 events, and the AC Village would be at the Marina Green in 2012, the same as for the proposed project. Similarly, the improvements required to support the proposed AC Village at Piers 27-29 in 2013 under this



SOURCE: AECOM

Case No. 2010.0493E: AC34 / Cruise Terminal and Northeast Wharf Plaza (210317)

Figure 7-2
Temporary Pier 9 Berthing under
Reduced Spectator Berthing Alternative

alternative would be coordinated with the phased development of the proposed Cruise Terminal project, including demolition of Pier 27 shed and portion of Pier 29 shed, and the construction of the cruise terminal core building and shell. Similarly, following the AC34 2013 event, the cruise terminal would be completed and Northeast Wharf Plaza would be constructed. Furthermore, all operational characteristics of the Cruise Terminal project under this alternative, including the site to be used for both the cruise terminal and shared uses, would be identical to the proposed project.

Tenant displacement from certain Port facilities that would occur under this alternative would be similar to that which would occur for the proposed project. As under the proposed project, prior to entering into leases with the Event Authority, current tenants on Port properties identified for AC34 venues (including Teatro Zinzanni dinner theater, Bauer's California Coach Sales and Service, and San Francisco Soccer's Telegraph Field) would be relocated to other appropriate and available locations. Additional Port maritime tenants, including the San Francisco Bar Pilots, Water Emergency Transit Authority, and Blue & Gold Fleet, would potentially have to relocate vessels from the Pier 9 south apron to alternative berthing locations during the AC34 race event period in 2013.

The BCDC amendments to the Special Area Plan related to the AC34 project that would be required under this alternative would permit temporary berthing of yachts at the Brannan Street Wharf Open Water Basin and the Broadway Open Water Basin, but would not include an amendment permitting berthing in the Rincon Point Open Water Basin. Similarly, all of the proposed BCDC amendments for the Cruise Terminal and Northeast Wharf Plaza project would be required. Under this alternative, the proposed Special Area Plan amendments would provide for comparable public benefit, and would result in fill removal at possible Port sites near Piers 98, 84, 88, 70, 64, and/or China Basin Channel.

Under this alternative, potential future long-term development and associated use would occur the same as under conditions specified in the Host Agreement under the proposed project, with the exception of Rincon Point Open Water Basin, which would be excluded. Thus, potential future long-term development would include the potential landside improvements and associated long-term use of Piers 30-32, Seawall Lot 330, Pier 28, Pier 26, Pier 19, Pier 19½, Pier 23, and Pier 29; and potential waterside improvements at the Brannan Street Wharf Open Water Basin only, as described in Chapter 3. Pursuant to the Host Agreement, the City and the Event Authority could negotiate a new location for long term marina use, likely in areas of South Beach or Mission Bay that have room for expanded marina capacity and that meet BCDC's Bay Plan recreation policies for marina siting.

Description of the AC34 Reduced Spectator Berthing Alternative without the Cruise Terminal Project

Under this alternative, it is assumed that the AC34 Reduced Spectator Berthing Alternative would be implemented but the Cruise Terminal project would not. The City and County of San Francisco would serve as the host city for AC34, and the AC34 events would be held in summer-fall 2012 and summer-fall 2013 just as in the proposed project. However, under this

alternative, Rincon Point Open Water Basin (Piers 14-22½) would not be considered for use as a temporary berthing facility or for long-term development of a permanent marina. Partial replacement berthing capacity for private spectator boats in 2013 would be provided at Pier 9 in the Broadway Open Water Basin (Piers 3 and 9), as designated in the BCDC Special Area Plan, with potentially as much as 550 linear feet of temporary floating docks, gangways, and bow anchor moorings installed on the south side of Pier 9; a possible configuration of the temporary berthing at Pier 9 is shown in Figure 7-2. In addition, supplemental berthing would be provided at various other existing locations along Port properties that currently have berthing capabilities. Assuming that minimum boat draft requirements would be similar to that which would have been necessary at the Rincon Point Open Water Basin, it is likely that substantially less dredging would be required at Pier 9 compared to the Rincon Point Open Water Basin. This alternative was selected for analysis because it would reduce environmental impacts identified at the Rincon Point Open Water Basin and because BCDC, a responsible and permitting agency for the AC34 project, requested an alternative that would reduce conflicts with its Special Area Plan.

All other temporary installations and permanent infrastructure improvements at the venues associated with the AC34 events would be the same as identified for the proposed project. This includes the landside and/or waterside components at the following locations during the AC34 events: Pier 80, Piers 30-32, Pier 28, Pier 26, Seawall Lot 330, Pier 19, Pier 19½, Pier 23, Piers 27-29, Pier 29½, Crissy Field, Marina Green, Fort Mason, Aquatic Park; the Brannan Street Wharf and Northeast Wharf Open Water Basins; and Civic Center, Union Square and Justin Herman Plaza. Under this alternative, Piers 30-32, the Brannan Street Wharf Open Water Basin, Pier 28, Pier 26 and Pier 80 would be used for team bases for both the AC34 2012 and AC34 2013 events, and the AC Village would be at the Marina Green in 2012, same as for the proposed project. In addition, existing facilities at Fort Baker Pier at Cavallo Point and Alcatraz would be used for the AC34 events.

The Cruise Terminal project would not occur under this alternative scenario, but nonetheless, Piers 27-29 would still serve as the AC Village in 2013 and it is assumed that partial demolition of existing sheds would take place (see Section 7.3.3.1, *Description of the Cruise Terminal No Project Alternative with the AC34 Project*, below, for a more detailed description of this scenario). Either a portion of the east end of the Pier 27 and Pier 29 sheds would be removed and retrofitted with temporary walls, or the existing Pier 27 shed would be demolished in its entirety, and temporary structures would be installed in its place. This alternative scenario assumes that the existing shoreside power transformer would be temporarily relocated off-site for the duration of the AC 2013 events and would be restored upon completion of the events.

Tenant displacement from certain Port facilities would occur under this alternative, including relocation of existing tenants at Piers 27-29, due to the use of Piers 27-29 for the AC34 events. Additional Port maritime tenants, including the San Francisco Bar Pilots, Water Emergency Transit Authority, and Blue & Gold Fleet, would potentially have to relocate vessels from the Pier 9 south apron to alternative berthing locations during the AC34 race event period in 2013.

The BCDC amendments to the Special Area Plan related to the AC34 project that would be required under this alternative would permit temporary berthing of yachts at the Brannan Street Wharf Open Water Basin and the Broadway Open Water Basin, but would not include an amendment authorizing temporary berthing in the Rincon Point Open Water Basin. In addition, the proposed Special Area Plan amendments would provide for comparable public benefit and could result in fill removal at possible Port sites near Piers 98, 84, 88, 70, 64, and/or China Basin Channel.

It is assumed under this alternative that potential future long-term development and associated use would occur the same as under conditions specified in the Host Agreement as under the proposed project for all potential long-term development sites other than the Rincon Point Open Water Basin. This includes the potential landside and/or waterside improvements, and associated long-term use of, Piers 30-32, Seawall Lot 330, Pier 28, Pier 26, Pier 19, Pier 19½, Pier 23, Pier 29, and Brannan Street Wharf Open Water Basin. Pursuant to the Host Agreement, the City and the Event Authority could negotiate a new location for long-term marina use, likely in areas of South Beach or Mission Bay that have room for expanded marina capacity and that meet BCDC's Bay Plan recreation policies for marina siting.

As discussed above, the Cruise Terminal project would not occur under this alternative. As a result, the existing Pier 35 facilities would continue to serve as the primary cruise ship terminal, and the existing Pier 27 facilities would continue to serve as the backup cruise terminal, as currently occurs, except during the construction and operational phases required for the AC34 2013 events. The existing Pier 35 facilities would undergo basic maintenance as needed to keep these facilities operational; however, no major capital improvements would occur under this alternative at Pier 35. An exception would be any improvements that would need to be made at Pier 35 to meet applicable regulatory requirements, including improvements in shoreside power to comply with CARB regulations for reducing at-berth emissions from cruise ships. As discussed in Chapter 3, Project Description, Pier 35 has become increasingly constrained for accommodating modern cruise ship operations, as cruise ship size, servicing and security requirements have grown. Pier 35 is also in deteriorating physical condition, so the remaining number of years that Pier 35 can serve as a viable primary cruise terminal is uncertain. Following completion of the AC34 events, the Port would restore the Pier 27 shed as needed to resume operations as the backup cruise terminal.

In addition, the BCDC amendments for the Cruise Terminal project, including those that would allow comparable public benefit, and result in fill removal at Piers 98, 84, 88, 70, 64, and/or China Basin Channel, would not be required under this alternative.

Ability of the AC34 Reduced Spectator Berthing Alternative to Meet Project Objectives

The Reduced Spectator Berthing Alternative would meet most of the AC34 project objectives, though not necessarily to the same extent as the proposed project. It would establish San Francisco and San Francisco Bay as a world-class venue for the sport of sailing, provide public viewing opportunities at close range from various locations on the waterfront, provide

infrastructure upgrades and other installations to improve existing facilities in consolidated areas, facilitate access to and from the event venues, emphasize natural resource stewardship, and implement navigational and operational safety guidelines.

The replacement of temporary berthing at the Rincon Point Open Water Basin with reduced berthing at the Broadway Open Water Basin would affect the sense of a center of activity along The Embarcadero and San Francisco waterfront, and would split the proposed AC34 center of activity along The Embarcadero, with event venues concentrated north of the Ferry Building and team base activities concentrated just south of the Bay Bridge. The elimination of the Rincon Point Open Water Basin berthing facilities would reduce the ability to accommodate spectator vessels greater than 150 feet in length, an important element of the America's Cup Event. As shown in Chapter 3, Figure 3-28, the Rincon Point Open Water Basin can accommodate approximately 26 vessels of 100 feet or greater in length, including 16 vessels greater than 165 feet in length. By contrast, Pier 9 cannot accommodate any vessels greater than 150 feet in length because of maneuverability constraints. Pier 9, as shown in Figure 7-2, would be able to accommodate approximately 20 vessels, including 10 up to 80 feet in length, 5 up to 100 feet in length, and 5 up to 150 feet in length. Thus, this alternative would not meet the objective of providing adequate facilities for spectator vessels. Without the opportunity for large vessel accommodation at the Rincon Point Open Water Basin, this alternative would not achieve the goal of a cohesive center of activity to the same extent as the proposed project. This alternative would encourage investment in infrastructure upgrades on Port property, although different from those assumed under the proposed project because it would not include any long-term development of a marina in the Rincon Point Open Water Basin but instead in areas of South Beach or Mission Bay.

Impacts of AC34 Reduced Spectator Berthing Alternative

Reduced Spectator Berthing Alternative, With or Without the Cruise Terminal Project — Impacts Compared to the Proposed Project

Under the Reduced Spectator Berthing Alternative, with or without the Cruise Terminal project, environmental impacts would be similar to those identified for all components of the proposed project. Similar to the proposed project, this alternative would require amendments to the BCDC Special Area Plan due to conflicts with policies requiring the preservation or creation of open water basins applicable to the Brannan Street Wharf Open Water Basin. Unlike the proposed project, however, this alternative would also require similar amendments due to conflicts with policies applicable to the Broadway Open Water Basin, but there would be no conflicts with policies regarding the Rincon Point Open Water Basin. This alternative would avoid the significant and unavoidable land use impact associated with long-term development of a marina at the Rincon Point Open Water Basin, but all of the other significant and unavoidable impacts described above in Section 7.2.2 would be the same for this alternative as the proposed project (i.e., those associated with transportation and circulation, air quality, noise, and cultural resources).

This alternative would also avoid the significant impacts identified due to the in-water construction activities required for the temporary berthing at the Rincon Point Open Water Basin,

including 29,000 cubic yards of dredging and installation of 1,300 feet of floating docks. Impacts on air quality, noise, marine biological resources, and water quality in the vicinity of Piers 14-22½ would therefore be avoided under this alternative, but similar construction impacts would result in the vicinity of Pier 9 and require the same mitigation measures. However, it is likely that limited dredging would be required at Pier 9 relative to the Rincon Point Open Water Basin and reduced pile driving would be needed since the floating docks at Pier 9 would be less than half the size as those under the proposed project (i.e., up to 550 feet compared to 1,300 feet). Therefore, associated environmental effects on marine biological resources as well as water quality, air quality, and noise would be less for this alternative than under the proposed project. Any dredging that would be necessary at Pier 9 would be subject to sediment testing and analysis by the Dredged Material Management Office in order to ensure its suitability for disposal at an approved aquatic or upland location. Subtidal habitats affected by any dredging or berthing-related activities at Pier 9 are also likely to be reduced compared to the effects of the proposed project at the Rincon Point Open Water Basin where there are more open waters, greater mixing, and better habitat conditions.

All construction impacts related to the AC village, team bases, operations, and hospitality at the remaining project sites would be the same as for the proposed project, specifically construction-related impacts on historic and archeological resources, noise/vibration, air quality, biological resources (upland and marine), geology and soils, water quality, and hazardous materials, and all the same mitigation measures as those identified in Chapter 5 of this EIR would be required to reduce impacts to less than significant. Because there would be reduced berthing available for private spectator boats under this alternative, there could be proportionately fewer spectator boats during AC34 project operations, and an incremental decrease in related impacts (i.e., air quality emissions and impacts from visiting boats), although those spectator vessels could instead berth elsewhere at other Port of San Francisco locations or other Bay Area locations.

With the exception of the long-term development of a marina at the Rincon Point Open Water Basin, all of the significant impacts associated with the long-term development rights under the Host Agreement would be the same for the Reduced Spectator Berthing Alternative as for the proposed project since there would be no change in the assumptions or agreements for long-term development, and all of the same mitigation measures would apply. However, development of a long-term marina at another location such as South Beach or Mission Bay would result in similar environmental impacts as those identified for the proposed project at a different location, except it would avoid the land use impact associated with conflicts with and intended ecological benefits of the BCDC's policies applicable to the Rincon Point Open Water Basin.

Impacts of the Reduced Spectator Berthing Alternative, With or Without the Cruise Terminal Project

The AC34 activities under the Reduced Spectator Berthing Alternative would not result in a new division of an established community or change land use character; however, this alternative would result in conflicts with the BCDC Special Area Plan policies regarding open water basins with respect to the Brannan Street Wharf, Broadway, and Northeast Wharf Open Water Basins. Temporary berthing at these open water basins would result in less-than-significant impacts on

the intended ecological benefits of the BCDC open water basin policies, although long-term marinas within the Brannan Street Wharf Open Water Basins would conflict with the intended long-term ecological and public benefits of these open water basins under the adopted BCDC policies for this area, and would be a significant and unavoidable impact. This alternative would not have a substantial effect on scenic vistas, scenic resources, or visual character of the project areas, including possible future long-term development assuming that future developments would be designed in conformance with applicable design guidelines. There would be a short-term, minor increase in visitors and employment in the project site area due to AC34 construction and operation, but impacts on population and housing would be less than significant. This alternative would result in potentially significant impacts on the Embarcadero Historic District resources due to proposed repairs and alterations to historic structures and potential for impacts on archeological resources, and mitigation measures similar to those for the proposed project would be required that would reduce these impacts to less than significant. Impacts of long-term development on Piers 30-32 would be potentially significant and unavoidable due to the unknown effects on the Embarcadero Historic District.

Transportation and circulation impacts would include levels of service effects and transit impacts similar to the proposed project since the overall numbers of spectators would be roughly the same; similar to the proposed project, these effects would be addressed through the mitigation measures and the People Plan, but could still remain significant and unavoidable. Potentially significant noise and vibration effects associated with project construction activities, particularly due to pile driving for installation of temporary docks and upgrades to piers (though at Pier 9 and not at the Rincon Point Open Water Basin) would require the same mitigation measures as those for the proposed project; and similar to the proposed project, there would be potentially significant and unavoidable noise impacts that would occur during the AC34 events due to noise increases associated with use of public address systems, and/or amplified music at Piers 27-29 and Marina Green and due to vehicle noise increases during weekend peak events for which there are no feasible mitigation measures. Construction and operational emissions of air pollutants—including criteria pollutants, precursors, and toxic air contaminants—could occur at levels exceeding BAAQMD thresholds. Overall vessel emissions and associated health risks during AC34 race events would be essentially the same as those of the proposed project at those waterfront locations, and overall regional air emissions would also be essentially the same. Greenhouse gas emissions would be consistent with applicable plans and policies and would be less than significant. This alternative would result in potential for alteration of wind patterns to affect public areas on Piers 27-29, either with or without the Cruise Terminal project, since demolition of all or part of the existing sheds would occur under either scenario, but the same mitigation measures identified for the proposed project would reduce this impact to less than significant.

The Reduced Spectator Berthing Alternative, with and without the Cruise Terminal, would result in less than significant impacts on the demand for utilities, public services, and recreational facilities in the project area compared to existing conditions, and would not require the construction of any recreational space or otherwise substantially degrade existing recreational facilities, and there would be no impacts related to these criteria. Similar potential impacts on upland biological resources identified for the AC34 project would occur, including potential

impacts on bird and bat species. Similar mitigation measures to that of the proposed project could reduce these impacts to less than significant. Impact on marine biological resources would result from in-water construction, with reduced impacts at the Rincon Point Open Water Basin and somewhat increased impacts at Pier 9, as well as from visiting vessels; similar mitigation measures to that of the proposed project could reduce these impacts to less than significant.

There would be the potential for groundshaking impacts, and mitigation measures similar to those identified for the proposed project would be required. Similarly, the potential for degradation of water quality associated with in-water and near-water construction and operational activities would require best management practices and water quality protection measures as identified for the project, with localized impacts at Pier 9 instead of at the Rincon Point Open Water Basin. Potential for exposure to hazardous materials associated with releases from race-related or spectator vessels, or from demolition of structures or removal of creosote-treated materials would occur under this alternative, although there would be long-term benefits from removal of these existing hazardous materials. There would be no impacts on mineral, agricultural, and forest resources under the Reduced Spectator Berthing Alternative, and impacts on energy would be less than significant due to energy efficiency benefits of replacement of existing uses on project sites with facilities with upgraded energy efficiency and sustainability standards.

Impacts of the Reduced Spectator Berthing Alternative, Without the Cruise Terminal Project

In the event that the Cruise Terminal project were not approved and implemented, impacts of the Reduced Spectator Berthing Alternative would be essentially the same as described above. The Reduced Spectator Berthing Alternative without the Cruise Terminal, however, would include partial demolition of the existing sheds on Piers 27-29 to allow for use of Piers 27-29 for the AC Village in 2013. Following completion of the AC34 events, the Port would restore the Pier 27 shed as needed to resume operations as the backup cruise terminal. There would be short-term, construction-related impacts associated with the restoration of the Pier 27 shed, including air quality and noise impacts, but these effects would be similar or less in duration and magnitude to those identified for Phase 2 construction of the cruise terminal, and would be less than significant.

AC34 Reduced Spectator Berthing Alternative - Conclusions

The Reduced Spectator Berthing Alternative would achieve most of the AC34 project objectives though not necessarily to the same extent as the proposed project. It would not provide adequate facilities for spectator vessels and would not achieve the goal of a cohesive center of activity to the same extent as the proposed project. The alternative would not conflict with conditions of applicable land use plans to the Port of San Francisco Waterfront Land Use Plan and the BCDC Special Area Plan at the Rincon Point Open Water Basin, and would avoid the significant and unavoidable land use impact associated with long-term development of a marina at this open water basin. In addition, the Reduced Spectator Berthing Alternative would avoid impacts associated with in-water construction at the Rincon Point Open Water Basin, including impacts on marine biological resources. However, those same impacts would occur at the Broadway Open Water Basin but at a reduced scale because of the smaller area and reduced dredging requirements.

Nevertheless, most impacts of the Reduced Spectator Berthing Alternative would be largely identical to those of the proposed project, with or without implementation of the Cruise Terminal project, and all mitigation measures identified for the proposed project would be required. Under this alternative, impacts associated with long-term development rights under the Host Agreement would be the same as for the proposed project, except that impacts associated with construction and operation of a long-term marina at the Rincon Point Open Water basin would either be avoided or relocated to the vicinity of an alternate marina, such as at South Beach or Mission Bay.

7.2.4 Comparison of AC34 Project Alternatives and Environmentally Superior Alternative

The CEQA Guidelines require the identification of an environmentally superior alternative to the proposed project (Section 15126.6[e]). If it is determined that the "no project" alternative would be the environmentally superior alternative, then the EIR shall also identify an environmentally superior alternative among the other project alternatives (Section 15126.6[3]).

Table 7-3 compares the ability of the AC34 alternatives to meet the project objectives. As shown, the AC34 No Project Alternative would meet none of the project objectives, and the other three alternatives would only partially meet some, but not all of project objectives. The Open Ocean Alternative would not meet one of the primary objectives—providing public viewing opportunities in proximity to the race course afforded by the natural geography of the Central Bay—and to address safety concerns, teams would be required to completely redesign the racing yachts that are currently being designed for sailing in San Francisco Bay. By not providing facilities and venues for the AC34 2012 activities, the Reduced Intensity AC34 and Long-Term Development Alternative would only partially meet the fundamental project objectives of identifying San Francisco as a world-class venue for the America's Cup events and for providing facilities and public viewing opportunities for the America's Cup World Series in 2012; in addition, this alternative would only allow for limited long-term development of Port properties which would encourage investment in the infrastructure necessary for the America's Cup events consistent with terms of the Host Agreement. The AC34 Reduced Spectator Berthing Alternative would only partially meet the objective of providing a cohesive sense of identify and adequate facilities for spectator vessels, but would meet all other objectives.

Table 7-4 compares the impacts of the AC34 alternatives. The AC34 No Project Alternative would have no environmental impacts, and all project sites would remain in their current conditions with no permanent seismic, safety, access, or other infrastructure improvements that would occur under the proposed project.

The Open Ocean Alternative would have largely the same impact as those of the proposed project, and all mitigation measures identified for the proposed project would be required. However, it is assumed that under this alternative there would be reduced numbers of spectators that would come to watch the AC34 events compared to the proposed project. Depending on the degree of reduced spectatorship, there would be reduced transportation/circulation, noise/vibration, and air quality impacts due to the associated reduced level of construction and operational activities.

TABLE 7-3
ABILITY OF THE AC34 PROJECT ALTERNATIVES TO MEET THE PROJECT OBJECTIVES

Objective	Meets Objective?			
	AC34 No Project Alternative	**AC34 Open Ocean Alternative**	**Reduced Intensity AC34 and Long-Term Development Alternative**	**Reduced Spectator Berthing Alternative**
Establish San Francisco and San Francisco Bay as a world-class venue for the sport of sailing and generate interest in the sport by hosting America's Cup World Series events in 2012 followed by successful America's Cup events in 2013	No	Partially	Partially	Yes
Provide public viewing opportunities of the America's Cup and the America's Cup World Series live racing events at close range from various locations on the waterfront around Central San Francisco Bay to increase the general public's access to the event and expand the appeal of the sport of sailing to the general public	No	No	Partially	Yes
Create a center of activity for the America's Cup and the America's Cup World Series by improving the existing resources of The Embarcadero and the San Francisco waterfront to establish a cohesive sense of place and identity for the AC34 participants (i.e., teams, event guests and staff, media personnel), visitors, and spectators of the events that enhance the landside viewing opportunities and provide adequate facilities for spectator vessels	No	Partially	Partially	Partially
Provide infrastructure upgrades and other installations to improve existing facilities in consolidated areas for team base activities, spectator viewing, and entertainment venues, including the public piers along San Francisco's waterfront, for use during the America's Cup in 2013 and the America's Cup World Series in 2012, consistent with Port of San Francisco building code requirements and the Secretary of the Interior's Standards for the Treatment of Historic Properties	No	Partially	Partially	Yes
Facilitate access to and from desired destinations based on smart transportation strategies presented in the America's Cup People Plan for the racing teams, event personnel, event sponsors, members of the media and spectators; while satisfying the access needs of residents, workers, and visitors not associated with the races	No	Yes	Yes	Yes
Emphasize natural resource stewardship by incorporating sustainability principles in the planning and management of all race events and operations, including zero waste strategies identified in the America's Cup Waste Management Plan	No	Yes	Yes	Yes
Implement navigational and operational safety guidelines for race team, support, and spectator boat activities associated with the America's Cup and the America's Cup World Series that meet United States Coast Guard regulations, the America's Cup Protocol, and the safe limits of event boats and equipment; minimize conflicts with existing commercial maritime activities; and establish sustainable environmental practices and standards to help protect the ecological health of San Francisco Bay	No	Partially	Yes	Yes
Encourage investment in infrastructure upgrades on Port property required to stage the America's Cup and the America's Cup World Series, for which the City would provide commensurate future long-term development rights on Port of San Francisco properties as contemplated under the Host Agreement	No	Yes	Partially	Yes

TABLE 7-4
COMPARISON OF THE SIGNIFICANT ENVIRONMENTAL IMPACTS OF THE AC34 PROJECT ALTERNATIVES

Environmental Resource	Proposed Project	AC34 No Project Alternative	AC34 Open Ocean Alternative	Reduced Intensity AC34 and Long-Term Development Alternative	Reduced Spectator Berthing Alternative
Land Use	• Significant and unavoidable impacts associated with long-term development of marinas at the Rincon Point and Brannan Street Wharf Open Water Basins which would conflict with the intended long-term ecological and public benefits of these open water basins under the adopted BCDC Special Area Plan policies for these areas	No impacts	Same as Proposed Project	Similar to Proposed Project	Significant and unavoidable impacts associated with long-term development of marinas at the Brannan Street Wharf Open Water Basins which would conflict with the intended long-term ecological and public benefits of these open water basins under the adopted BCDC Special Area Plan policies for these areas
Aesthetics	• All impacts less than significant	No impacts	Same as Proposed Project	Similar to Proposed Project	Similar to Proposed Project
Population and Housing	• All impacts less than significant	No impacts	Similar to Proposed Project, but less severe	Similar to Proposed Project, but less severe	Similar to Proposed Project
Cultural and Paleontological Resources	• Potentially significant and unavoidable impacts associated with long-term development at Piers 30-32 due to the unknown effect on the Embarcadero Historic District • Potentially significant impacts on historic resources due to proposed repairs and alteration to the bulkhead wharf and substructure at historic piers could be mitigated through prior approval of designs that ensure compliance with the Secretary's Standards • Potentially significant impacts on contributing resources to the Embarcadero Historic District (bulkhead wharf section 10, Red's Java House, and Pier 28) due to pile driving vibration impacts could be mitigated through pre-construction assessment, vibration monitoring during construction, and corrective actions as needed • Potentially significant impact due to relocation of Teatro Zinzanni to a site within the Northeast Waterfront Historic District could be mitigated through conformance with design guidelines consistent with Article 10 of the Planning Code	No impacts	Similar to Proposed Project but no impacts at anticipated secondary viewing areas	Similar to Proposed Project, except for the following: • no impacts on historic seawall at Marina Green • less severe impacts at spectator venues	Same as Proposed Project

TABLE 7-4 (Continued)
COMPARISON OF THE SIGNIFICANT ENVIRONMENTAL IMPACTS OF THE AC34 PROJECT ALTERNATIVES

Environmental Resource	Proposed Project	AC34 No Project Alternative	AC34 Open Ocean Alternative	Reduced Intensity AC34 and Long-Term Development Alternative	Reduced Spectator Berthing Alternative
Cultural and Paleontological Resources (cont.)	• Potentially significant indirect impacts on historic earthen fortifications in or near spectator venues could be mitigated through protection measures such as fencing, signage, area closures, educational programs, and crowd control developed and implemented in coordination with the park jurisdiction as part of the Parks Event Operations Plan • Potentially significant impacts on historic resources due to attachment, anchoring, or bracing of temporary floating dock installations to the Marina Seawall could be mitigated through prior approval of plans to ensure compliance with Secretary's Standards • Potentially significant impacts on archeological resources, including shipwrecks, could be mitigated with measures to prepare for and respond to inadvertent discovery of such resources • Potentially significant impacts on disturbance of human remains could be mitigated with measures to prepare for and respond to inadvertent discovery of such finds • Potentially significant impact on historic resources due to long-term development under the Host Agreement involving alterations and rehabilitation of historic piers and bulkheads could be mitigated through implementation of measures to guide the proposed improvements so that the work would be consistent with the Secretary's Standards • Potentially significant contributions to cumulative impacts on historic resources, archeological resources, and human remains could be mitigated through measures identified for the AC34 project impacts				

TABLE 7-4 (Continued)
COMPARISON OF THE SIGNIFICANT ENVIRONMENTAL IMPACTS OF THE AC34 PROJECT ALTERNATIVES

Environmental Resource	Proposed Project	AC34 No Project Alternative	AC34 Open Ocean Alternative	Reduced Intensity AC34 and Long-Term Development Alternative	Reduced Spectator Berthing Alternative
Transportation and Circulation	• Significant and unavoidable level of service impacts at 12 signalized and unsignalized intersections plus other nearby intersections in the project area during AC34 2012 events during either weekday or Saturday midday conditions (including Embarcadero/Beach, Embarcadero/ Howard, King/Third, Lombard/Divisadero, Lombard/ Fillmore, Bay/Laguna, Bay/Van Ness, Bush/Van Ness, Pine/Van Ness, Lombard/Van Ness, Lincoln/25th, Lombard/Lyon) • Significant and unavoidable level of service impacts at 18 signalized and unsignalized intersections in the project area during AC34 2013 events during either weekday or Saturday midday conditions (including Embarcadero/ Beach, Embarcadero/Broadway, Embarcadero/Howard, Embarcadero/Folsom, Embarcadero/Harrison, Embarcadero/Bryant, Fremont/Folsom, King/Third, King/Fourth, Lombard/Divisadero, Lombard/Fillmore, Bay/Laguna, Bay/Van Ness, Bush/Van Ness, Pine/Van Ness, Lombard/Van Ness, Lincoln/25th, Lombard/Lyon) • Significant and unavoidable impacts contributing to congestion in downtown San Francisco and along the waterfront during the AC34 2013 events • Significant and unavoidable impacts on traffic operations at secondary viewing areas and vicinity during AC34 2012 and 2013 events • Significant and unavoidable impacts on transit capacity of Muni lines, Presidio Go shuttle service, AC Transit lines, BART, WETA ferry lines, Golden Gate Transit bus and ferry lines, Blue & Gold ferry lines, Caltrain service, and SamTrans lines and impacts on transit operations related to additional traffic congestion from the project during AC34 2012 and 2013 events • Significant and unavoidable impacts on the transportation network in combination with other special events occurring simultaneously in San Francisco during the AC34 2012 and 2013 events	No impacts	Less impacts at spectator venues and no impacts at anticipated secondary viewing areas, though there may be other areas near the Pacific Ocean which could experience increased traffic	Similar to Proposed Project but only for 2013, no impacts in 2012 and reduced impacts associated with long-term development rights	Similar to Proposed Project

TABLE 7-4 (Continued)
COMPARISON OF THE SIGNIFICANT ENVIRONMENTAL IMPACTS OF THE AC34 PROJECT ALTERNATIVES

Environmental Resource	Proposed Project	AC34 No Project Alternative	AC34 Open Ocean Alternative	Reduced Intensity AC34 and Long-Term Development Alternative	Reduced Spectator Berthing Alternative
Transportation and Circulation (cont.)	• Significant and unavoidable impacts on traffic and transit due to long-term development under the Host Agreement • Significant and unavoidable cumulative level of service impacts at multiple intersections along The Embarcadero (including Embarcadero/Broadway, Embarcadero/Washington, Embarcadero/Mission, Embarcadero/Howard, Embarcadero/Folsom)				
Noise and Vibration	• Potentially significant and unavoidable noise impacts from noise increases associated with use of public address systems, and/or amplified music at Piers 27-29 and Marina Green during AC34 events at these venues would be reduced with a noise control plan and volume controls but the effectiveness of reducing the noise levels below the thresholds is unknown • Significant and unavoidable but temporary vehicle noise increase during AC34 weekend events at 8 intersections in the project area, with no feasible mitigation to reduce traffic and associated noise levels below the threshold • Significant construction-related noise impacts at levels in excess of standards and due to temporary but substantial increases in ambient noise levels at sensitive receptors could occur at or near the Marina Green and at or near certain piers along the waterfront, but impacts could be mitigated with noise controls and pile driving noise reduction measures during construction • Significant noise impacts during AC34 events from noise increases associated with use of generators at Piers 27-29 and Marina Green could be mitigated with shielding or acoustical enclosures • Potentially significant vibration impacts on fragile structures due to pile driving activities during construction could be mitigated with implementation of geotechnical recommendations for vibration monitoring and control measures	No impacts	Similar to Proposed Project, but possibly reduced noise levels at spectator venues during the AC34 events; similar potentially significant and unavoidable impacts as the proposed project	Similar to Proposed Project but no operational impacts in 2012 and reduced construction and operation impacts associated with long-term development rights; potentially significant and unavoidable impacts would be avoided in 2012, but would be the same in 2013	Similar to Proposed Project, but reduced construction noise impacts at Rincon Point Open Water Basin

TABLE 7-4 (Continued)
COMPARISON OF THE SIGNIFICANT ENVIRONMENTAL IMPACTS OF THE AC34 PROJECT ALTERNATIVES

Environmental Resource	Proposed Project	AC34 No Project Alternative	AC34 Open Ocean Alternative	Reduced Intensity AC34 and Long-Term Development Alternative	Reduced Spectator Berthing Alternative
Noise and Vibration (cont.)	• Significant impact because construction associated with long-term development under the Host Agreement would result in temporary but substantial increases in ambient noise levels at sensitive receptors could be mitigated with noise reduction measures				
Air Quality	• Significant and unavoidable construction-related air quality impacts due to emissions of criteria pollutants and precursors that would exceed Bay Area Air Quality Management District (BAAQMD) thresholds even with construction vehicle emissions minimization and restrictions on off-road construction equipment • Significant and unavoidable construction impact due to potential health risks from exposure of sensitive receptors to toxic air contaminants even with construction vehicle emissions minimization and restrictions on off-road construction equipment • Significant and unavoidable operations impact due to emissions of criteria pollutants and precursors from vessels, traffic, temporary decommissioning of shoreside power, and other sources during the AC34 events, even with emission controls for race-sponsored vessels • Significant and unavoidable operations impact due to potential health risks from exposure of sensitive receptors to toxic air contaminants in diesel exhaust even with emission controls for race-sponsored vessels and clean diesel engines for temporary power • Significant, unavoidable air quality impact because long-term development under the Host Agreement could result in construction and operational emissions of air pollutant emissions that exceed BAAQMD thresholds even with implementation of feasible mitigation • Significant, unavoidable contribution to cumulative air quality impacts because the project's contribution to cumulative impacts would exceed BAAQMD thresholds even with implementation of feasible mitigation	No impacts	Similar to Proposed Project with slightly reduced operational emissions due to fewer visitors and associated traffic, but still likely exceeding BAAQMD thresholds Likely greater emissions associated with more race-related and spectator boats traveling greater distances each race day to view the races.	Similar to Proposed Project with reduced emissions (no operational impacts in 2012 and reduced impacts associated with long-term development rights) but still possibly exceeding BAAQMD thresholds	Similar to Proposed Project, but reduced construction and operational air pollutant emissions at Rincon Point Open Water Basin

TABLE 7-4 (Continued)
COMPARISON OF THE SIGNIFICANT ENVIRONMENTAL IMPACTS OF THE AC34 PROJECT ALTERNATIVES

Environmental Resource	Proposed Project	AC34 No Project Alternative	AC34 Open Ocean Alternative	Reduced Intensity AC34 and Long-Term Development Alternative	Reduced Spectator Berthing Alternative
Greenhouse Gas Emissions	• All impacts less than significant	No impacts	Same as Proposed Project	Same as Proposed Project	Same as Proposed Project
Wind and Shadow	• Potentially significant wind hazard impact due to proposed expansion of public open space at the end of Piers 27-29 if hazardous wind conditions coincide with public access to the area, but impact could be mitigated with posting of warning signs, limiting public access during hazardous winds, and through implementation of design features that provide wind protection for public access areas	No impacts	Same as Proposed Project, since AC Village spectators expected to be about the same	Similar to Proposed Project but only for 2013, no impacts in 2012	Same as Proposed Project
Recreation	• Potentially significant impact due to increased use of recreational resources at secondary viewing areas and associated substantial deterioration of recreational resources could be mitigated through agency coordination for protection of recreational resources and implementation of crowd control and post-event repairs	No impacts	Impacts at anticipated secondary viewing areas would be avoided, though there could be other areas under the Golden Gate Bridge and near the Pacific Ocean that could be affected	Same as Proposed Project	Same as Proposed Project
Utilities and Service Systems	• All impacts less than significant	No impacts	Same as Proposed Project	Same as Proposed Project	Same as Proposed Project
Public Services	• All impacts less than significant	No impacts	Same as Proposed Project	Same as Proposed Project	Same as Proposed Project
Biological Resources, Upland	• Potentially significant impacts on sensitive upland and bird species due to construction and AC34 events could be mitigated through appropriate signage, fencing, restrictions on fireworks and night lighting, offshore protection of marine-protected zone, and other protection measures • Potentially significant impacts on sensitive natural upland communities due to construction and AC34 events could be mitigated through signage at sensitive natural community areas • Potentially significant impacts on protected wetlands due to construction and AC34 events could be mitigated with appropriate signage • Potentially significant impacts on movement and nesting of bird and bat species due to construction could be mitigated through seasonal restrictions on demolition of	No impacts	Similar to Proposed Project with respect to construction impacts, but reduced impacts on rafting, foraging, and nesting birds during race events and reduced landside impacts on special status species at spectator venues due to fewer visitors to these areas	Similar to Proposed Project but no operational impacts in 2012 and reduced impacts associated with long-term development rights	Similar to Proposed Project

TABLE 7-4 (Continued)
COMPARISON OF THE SIGNIFICANT ENVIRONMENTAL IMPACTS OF THE AC34 PROJECT ALTERNATIVES

Environmental Resource	Proposed Project	AC34 No Project Alternative	AC34 Open Ocean Alternative	Reduced Intensity AC34 and Long-Term Development Alternative	Reduced Spectator Berthing Alternative
Biological Resources, Upland (cont.)	structures on piers as feasible, nest and roost avoidance, and other protective measures • Potentially significant impacts on movement and nesting of bird and bat species during AC34 events could be mitigated through restrictions on spectator boat traffic, offshore buffers and protection for breeding birds, and other protective measures • Potentially significant impact because long-term development under the Host Agreement could affect sensitive species or breeding birds or bats during construction and operation, but impacts could be mitigated through seasonal restrictions on demolition of structures on piers, nest and roost avoidance, windows and landscaping to minimize bird strikes, and other protective measures				
Biological Resources, Marine	• Significant impact on sensitive fish species, marine mammals, and Magnuson-Stevens Act-managed fish species and their habitats due to in-water construction could be mitigated through pile driving noise reduction and other control measures; and impacts to these species during operational activities would be mitigated through controlling night lighting at floating docks • Potentially significant impact on sensitive natural marine communities (eelgrass beds) during AC34 events due to visiting boats unfamiliar with San Francisco Bay sensitive habitats could be mitigated through providing information to visiting mariners • Potentially significant impact on the movement of marine mammals during construction could be mitigated by pile driving noise reduction; and potentially significant impacts on the movement of marine mammals could be mitigated by imposing restrictions on low-flying aircraft, and providing information to visiting mariners • Potentially significant conflicts with local plans protecting marine biological resources could be avoided with implementation of mitigation measures identified in this EIR	No impacts	Same as Proposed Project for construction impacts, but potential greater impact on whales due to activities in the open waters of the Pacific Ocean in or near marine sanctuaries	Similar to Proposed Project but no operational impacts in 2012 and reduced impacts associated with long-term development rights	Similar to Proposed Project, but reduced construction and operational impacts on marine mammals and subtidal habitats at Rincon Point Open Water Basin

TABLE 7-4 (Continued)
COMPARISON OF THE SIGNIFICANT ENVIRONMENTAL IMPACTS OF THE AC34 PROJECT ALTERNATIVES

Environmental Resource	Proposed Project	AC34 No Project Alternative	AC34 Open Ocean Alternative	Reduced Intensity AC34 and Long-Term Development Alternative	Reduced Spectator Berthing Alternative
Biological Resources, Marine (cont.)	• Potentially significant impacts from introduction of non-native or invasive species from foreign vessels during operations could be mitigated by providing information to visiting mariners; and potentially significant impacts from spreading already introduced invasive species during construction could be mitigated with development and implementation of an invasive species control plan • Significant impact because long-term development under the Host Agreement could affect sensitive marine species and their habitats due to in-water construction and operational activities, but impacts could be mitigated through controlling night lighting at floating docks, pile driving noise reduction, and control measures for maintenance and operation of marinas • Potentially significant contribution to cumulative impacts on marine biological resources could be reduced to less than significant with implementation of mitigation measures identified in this EIR				
Geology and Soils	• Significant impact related to groundshaking for the improvements at Piers 30-32 in the absence of site-specific geotechnical investigation, but could be mitigated with site-specific geotechnical investigations and implementation of its recommendations in the project design • Potentially significant impacts related to liquefaction, earthquake-induced settlement, lateral displacement, and consolidation settlement could be mitigated with a site-specific geotechnical investigation and implementation of its recommendations in the project design • Potentially significant impact due to large number of spectators in the vicinity of facilities with structural concerns (e.g., Torpedo Wharf at Crissy Field, pier at Fort Mason, and Municipal Pier at Aquatic Park) could be mitigated with signage and restricted access at structurally unsound viewing locations	No impacts	Same as Proposed Project	Same as Proposed Project	Same as Proposed Project

TABLE 7-4 (Continued)
COMPARISON OF THE SIGNIFICANT ENVIRONMENTAL IMPACTS OF THE AC34 PROJECT ALTERNATIVES

Environmental Resource	Proposed Project	AC34 No Project Alternative	AC34 Open Ocean Alternative	Reduced Intensity AC34 and Long-Term Development Alternative	Reduced Spectator Berthing Alternative
Geology and Soils (cont.)	• Significant impact due to long-term development under the Host Agreement could result in adverse geologic and seismic hazards but could be mitigated with site-specific geotechnical investigations and implementation of its recommendations in the project design				
Hydrology and Water Quality	• Potentially significant impact due to in-water construction that could substantially degrade water quality from use and handling of fuels, hazardous materials, and cement, but could be mitigated with implementation of water quality best management practices • Potentially significant impact due to increased boating discharges, spills, and littering that could substantially degrade water quality, but could be mitigated by providing notification and education of all visiting mariners using the Bay and providing marine species control at Port facilities • Potentially significant impact due to long-term development under the Host Agreement could substantially degrade water quality from use and handling of fuels, hazardous materials, and cement, but impacts could be mitigated through implementation of water quality best management practices	No impacts	Same as Proposed Project	Similar to Proposed Project but no operational impacts in 2012 and reduced impacts associated with long-term development rights	Similar to Proposed Project, but reduced construction and operational water quality impacts at Rincon Point Open Water Basin
Hazards and Hazardous Materials	• Potentially significant impact due to the potential for release of hazardous materials from race-related or spectator vessels, which could be mitigated through notification and education of all visiting mariners using the Bay • Potentially significant impact related to release of hazardous building materials during demolition of structures or removal of creosote-treated materials, which could be mitigated through surveys and implementation of approved removal and disposal protocols • Significant impact because long-term development under the Host Agreement could result in release of hazardous building materials during demolition of structures, which could be mitigated through surveys and implementation of approved removal and disposal protocols	No impacts	Same as Proposed Project	Same as Proposed Project	Same as Proposed Project

TABLE 7-4 (Continued)
COMPARISON OF THE SIGNIFICANT ENVIRONMENTAL IMPACTS OF THE AC34 PROJECT ALTERNATIVES

Environmental Resource	Proposed Project	AC34 No Project Alternative	AC34 Open Ocean Alternative	Reduced Intensity AC34 and Long-Term Development Alternative	Reduced Spectator Berthing Alternative
Mineral and Energy Resources	• All impacts less than significant	No impacts	Same as Proposed Project	Same as Proposed Project	Same as Proposed Project
Agriculture and Forest Resources	• No impacts	Same as proposed project	Same as Proposed Project	Same as Proposed Project	Same as Proposed Project

However, there could be increased biological resource impacts on whales due to the relocation of the race area from the San Francisco Bay to an offshore location in the Pacific Ocean. All race-related and spectator boats would have to travel substantially greater distances each race day to reach the open ocean race area, with correspondingly increased fuel consumption and air pollutant emissions. In addition, this alternative would involve significant safety issues for the AC34 race team and spectator boats operating in the Pacific Ocean. None of the significant and unavoidable impacts of the proposed project would be avoided by the Open Ocean Alternative.

The Reduced Intensity AC34 and Long-Term Development Alternative would have similar impacts to the proposed project, and nearly all the same mitigation measures would be required. In the absence of the AC34 2012 events, there would be an across-the-board reduction in environmental impacts associated with construction and operation of the AC34 2012 facilities and events. Furthermore, the severity of all impacts identified for long-term development options on Port property under the Host Agreement would be reduced, and possibly avoided, but the specific nature and magnitude of such impacts would depend on future site specific development proposal(s). This impact would avoid the potentially significant and unavoidable noise impact associated with use of public address systems, and/or amplified music at Marina Green in 2012.

The Reduced Spectator Berthing Alternative would result in impacts largely identical to those of the proposed project, and all mitigation measures identified for the proposed project would be required. However, this alternative would not conflict with conditions of applicable land use plans and amendments to the Port of San Francisco Waterfront Land Use Plan and the BCDC Special Area Plan at the Rincon Point Open Water Basin, and would avoid the significant and unavoidable land use impact associated with long-term development of a marina at this open water basin. In addition, the Reduced Spectator Berthing Alternative would reduce impacts associated with in-water construction at the Rincon Point Open Water Basin, including impacts on marine biological resources, but those same impacts would occur at the Broadway Open Water Basin at a reduced scale instead. Impacts associated with construction and operation of a long-term marina at the Rincon Point Open Water basin would either be avoided or relocated to the vicinity of an alternate marina, such as at South Beach or Mission Bay.

Although the No Project Alternative would result in the least physical environmental effects and fewest adverse impacts, it would meet none of the project objectives. The Open Ocean Alternative would meet some of the project objectives, and depending on the extent of reduction in spectatorship, there would be some degree of reduced impacts. However, in general, overall impacts on all resources would be similar to impacts of the proposed project, although there could be increased impacts on whales. The Reduced Spectator Berthing Alternative would avoid impacts associated with temporary or permanent berthing at the Rincon Point Open Water Basin, but all other impacts would be the same as those identified for the proposed project. The Reduced Intensity AC34 and Long-Term Development Alternative would reduce the duration and magnitude of impacts associated with both AC34 construction and operation, as well as reduce the magnitude and severity of impacts associated with long term development under the Host Agreement. Based on the above comparison and CEQA Guidelines Section 15126.6[3], the Reduced Intensity AC34 and Long-Term Development Alternative would provide the greatest

reduction in significant impacts compared to the proposed project and would therefore be considered the environmentally superior alternative.

7.3 Cruise Terminal Project Alternatives Analysis

7.3.1 Cruise Terminal Project Objectives

As presented in Chapter 3, the objectives of the Cruise Terminal project are presented below and are used in the identification and analysis of alternatives. The objectives of the proposed Cruise Terminal project are to:

- Design a new, modern cruise terminal that optimizes current and future operational needs and retains an important historic maritime use along San Francisco's northeastern waterfront that is compatible with and respects the physical form and characteristics defining the Embarcadero Historic District, which is listed on the National Register of Historic Places
- Provide a highly visible berth for ceremonial and visiting ships and vessels, as well as cruise ships, that preserves and promotes the maritime character of San Francisco's historic waterfront
- Integrate a ground transportation area that serves all cruise ship and passenger access and support needs off-street to avoid traffic impacts on The Embarcadero
- Develop an efficient facility that will lower the Port's operational and maintenance costs by the use of effective space planning and equipment to handle passenger circulation and provisioning, and will meet the evolved security and passenger handling demands of the cruise ship industry
- Maintain shoreside power in a new, modern cruise terminal facility to promote and expand access and use of San Francisco's electrical grid while ships are in port to avoid cruise ship diesel emissions
- Configure the cruise terminal in a way that will create opportunities for the Port to allow special event uses when the terminal is not occupied for cruise purposes to enable year-round, people-oriented uses at Pier 27, generate revenue to help finance public improvements, and create an inviting amenity that supports and activates use and enjoyment of the Northeast Wharf Plaza
- Develop the Northeast Wharf Plaza, a major public open space integrated with public access on Pier 27; create new views and access to San Francisco Bay; promote recreational enjoyment along San Francisco's public waterfront; and preserve open water areas for passive and active enjoyment of the Bay
- Develop a project that embodies the City's commitment to sustainability principles by following the guidelines from the U.S. Green Building Council to achieve a Leadership in Energy and Environmental Design (LEED®) Silver or better rating
- Integrate the design and construction of the Cruise Terminal project with the proposed AC34 race facilities and operations

7.3.2 Cruise Terminal Project Significant Impacts

As stated in the CEQA Guidelines, alternatives to a project must substantially lessen or avoid any of the significant environmental impacts associated with the project. The following summarizes the conclusions for potentially significant and significant impacts identified in Chapter 5 of this EIR.

7.3.2.1 Significant and Unavoidable Impacts

Transportation and Circulation

- Significant and unavoidable impact on capacity utilization standard on the F-Market & Wharves historic streetcar line
- Significant and unavoidable cumulative impact on transit conditions on the F-Market & Wharves historic streetcar line

Noise

- Significant and unavoidable cumulative impact on roadway noise at five road segments in the vicinity of the cruise terminal due to the contribution from cruise terminal vehicle trips during weekends, midday

Air Quality

- Significant and unavoidable construction-related air quality impacts due to emissions of criteria pollutants and precursors that would exceed Bay Area Air Quality Management District (BAAQMD) thresholds even with construction vehicle emissions minimization and restrictions on off-road construction equipment
- Significant, unavoidable contribution to cumulative air quality impacts because the project's contribution to cumulative impacts would exceed BAAQMD thresholds even with implementation of feasible mitigation

7.3.2.2 Significant Impacts that Can Be Mitigated to Less than Significant

Cultural and Paleontological Resources

- Potentially significant impact on surrounding historic resources (including Pier 29, Pier 29 Annex, Pier 23 Restaurant, and the Embarcadero Historic District) due to the design of the Northeast Wharf Plaza could be mitigated through compliance with performance criteria that ensures complementary design and compliance with Secretary's Standards
- Potentially significant impacts on archeological resources could be mitigated with measures to prepare for and respond to inadvertent discovery of such resources
- Potentially significant impacts on disturbance of human remains could be mitigated with measures to prepare for and respond to inadvertent discovery of such finds

Transportation and Circulation

- Potentially significant impact on traffic operations on The Embarcadero due to vehicles exiting the cruise terminal, which could be mitigated by relocating the vehicular access to the cruise terminal about 30 feet to the south

Wind and Shadow

- Potentially significant wind hazard impact due to proposed expansion of public open space at the end of Piers 27-29 if hazardous wind conditions coincide with public access to the area, but impact could be mitigated with posting of warning signs, limiting public access during hazardous winds, and through implementation of design features that provide wind protection for public access areas

Biological Resources

- Potentially significant impacts on movement and nesting of bird and bat species due to construction could be mitigated through seasonal restrictions on demolition of structures on piers, nest and roost avoidance, and other protective measures

- Potentially significant effect on migrating birds, which may be confused by the new source of night lighting, and/or clear glass windows, could be mitigated by shielded lights in areas where they are left on at night and incorporation of glazing designed to be visible to birds

Geology and Soils

- Significant impacts related to groundshaking, liquefaction, lateral displacement, earthquake-induced settlement, or location on a geologic unit that is unstable, which could be mitigated through preparation and adherence to recommendations of a site-specific geotechnical investigation.

Hydrology and Water Quality

- Potentially significant impact due to in-water construction that could substantially degrade water quality from use and handling of fuels, hazardous materials, and cement, but could be mitigated with implementation of water quality best management practices

Hazards and Hazardous Materials

- Significant impact related to release of hazardous building materials during demolition of structures, which could be mitigated through surveys and implementation of approved removal and disposal protocols

7.3.3 Cruise Terminal Project Selected Alternatives

Two alternatives to the proposed James R. Herman Cruise Terminal and Northeast Wharf Plaza project were identified for CEQA evaluation: the Cruise Terminal No Project Alternative and the Renovation of Pier 27 Shed Alternative. These two alternatives were determined to adequately represent the range of feasible alternatives required under CEQA. These alternative are described and evaluated below.

7.3.3.1 Cruise Terminal No Project Alternative

Description of the Cruise Terminal No Project Alternative with the AC34 Project

Under this alternative, the Cruise Terminal and Northeast Wharf project would not be implemented, but the AC34 project would occur as proposed. Piers 27-29 would still serve as the AC Village in 2013, and the AC34 project sponsors would be responsible for partial demolition of the existing sheds on Piers 27-29. Either a portion of the east end of the Pier 27 and Pier 29 sheds would be removed and retrofitted with temporary walls, or the existing Pier 27 shed would be demolished in its entirety and temporary structures would be installed in its place (similar to the assumptions for the Project Variant, described in Chapter 3, Section 3.6). This no project alternative assumes that the existing shoreside power transformer would be temporarily relocated off-site for the duration of the AC 2013 events and would be restored upon completion of the events. Due to the use of Piers 27-29 for the AC34 events, tenant displacement and relocation of existing tenants at Piers 27-29 would occur, similar to the proposed project (including Teatro Zinzanni dinner theater, Bauer's California Coach Sales and Service, and San Francisco Soccer's Telegraph Field).

As a result of the Cruise Terminal No Project Alternative, the existing Pier 35 facilities would continue to serve as the primary cruise ship terminal, and the existing Pier 27 facilities would continue to serve as the backup cruise terminal, as currently occurs, except during the construction and operational phases required for the AC34 2013 events. The existing Pier 35 facilities would undergo basic maintenance as needed to keep these facilities operational, however, no major capital improvements would occur under this alternative at Pier 35. An exception would be any improvements that would need to be made at Pier 35 to meet applicable regulatory requirements, including improvements in shoreside power to comply with CARB regulations for reducing at-berth emissions from cruise ships. As discussed in the EIR Project Description, Pier 35 has become increasingly constrained for accommodating modern cruise ship operations, as cruise ship size, servicing and security requirements have grown. Pier 35 is also in deteriorating physical condition, so the remaining number of years that Pier 35 can serve as a viable primary cruise terminal is uncertain. Following completion of the AC34 events, the Port would restore the Pier 27 shed as needed to resume operations as the backup cruise terminal.

Under this alternative, the proposed AC34 project would still occur. Accordingly, the City and County of San Francisco would serve as the host city for AC34, and the AC34 events would be held in summer-fall 2012 and summer-fall 2013, with races held in the Central San Francisco Bay. Similar to the proposed project, under this alternative, Piers 30-32, the Brannan Street Wharf (Piers 32-36) Open Water Basin, Pier 28, Pier 26 and Pier 80 would be used for team bases for 2012 and 2013; Marina Green would be used for the AC Village in 2012; Crissy Field, Fort Mason, Aquatic Park, Justin Herman Plaza, Union Square and Civic Center would be used as spectator venues; Fort Baker Pier at Cavallo Point and Alcatraz would be used for hospitality and private functions; and Rincon Point (Piers 14-22½) Open Water Basin, and other locations would be used as temporary berthing facilities. All temporary installations and permanent infrastructure improvements at, and/or associated use of, these AC34 venues would be similar to the proposed project.

In addition, BCDC amendments for the Cruise Terminal project, including those that would allow comparable public benefit, and could result in fill removal at Piers 98, 84, 88, 70, 64, and/or China Basin Channel, would not be required under this alternative, though the fill removal sites could still apply to the amendments required for the AC34 project. All BCDC amendments related to AC34 under the project would be sought under this alternative, including those that would permit temporary berthing of yachts at the Brannan Street Wharf and Rincon Point Open Water Basins.

Under this alternative, potential future long-term development and associated use of the long-term development sites would occur as under the proposed AC34 project. This includes the potential landside and/or waterside improvements, and associated long-term use of, Piers 30-32, Seawall Lot 330, Pier 28, Pier 26, Pier 19, Pier 19½, Pier 23, Pier 29; and Brannan Street Wharf and Rincon Point Open Water Basins.

Description of the Cruise Terminal No Project Alternative without the AC34

Under this alternative, it is assumed that neither the Cruise Terminal nor the AC34 project would be implemented. The description for this alternative is identical to that described for the *AC34 No Project Alternative without the Cruise Terminal Project*; please refer to Section 7.2.3.1, AC34 No Project Alternative, above, for characteristics of the Cruise Terminal No Project Alternative without AC34 Alternative.

Ability of the Cruise Terminal No Project Alternative to Meet Project Objectives

The No Cruise Terminal Alternative would not meet most of the Cruise Terminal project sponsors' objectives. It would not include the design of a new, modern cruise terminal that meets future operational needs. The surface parking lot on the pier would be retained, and the proposed ground transportation area would not be built. The Port's operational costs would not be lowered, and the existing terminals at Pier 35 and Pier 27 would less efficiently meet the security and passenger handling demands of the cruise ship industry. Shoreside power would be maintained, and new shoreside power service would be provided in Pier 35 pursuant to applicable regulations, but it would not be provided in a new, modern cruise terminal. The existing tenants of Pier 27 would remain, and special event uses would not occur on Pier 27. Under this alternative, the Northeast Wharf Plaza would not be constructed, so the alternative would not meet the objective to open up new views from a major public open space. The existing facility, which is not a LEED®-rated structure, would be retained, and it would not be integrated into the design and construction of the AC34 facilities and operations.

Impacts of the Cruise Terminal No Project Alternative

Impacts of the Cruise Terminal No Project Alternative, without the AC34 Project

Under the Cruise Terminal No Project Alternative, without the AC34 project, all impacts associated with construction and operation of the cruise ship terminal would be avoided, and none of the identified mitigation measures would be required. Current land uses at Piers 27–29

would not change and no structures would be constructed or demolished. The secondary cruise ship terminal, soccer field, dinner theater, Chinese New Year parade storage, and limousine service uses would continue at on the piers for the foreseeable future. Therefore, there would be no impacts to land use, aesthetic resources, or wind and shadow. The Cruise Terminal No Project Alternative would avoid the project's less than significant impact to historic architectural resources because the existing northeast end of the Piers 27–29 sheds would not be demolished. None of the cultural resource mitigation measures identified for the proposed Cruise Terminal project would be implemented. Given that no construction or operation actions different from existing conditions would occur, this alternative would neither displace residents nor housing units, and there would be no increase in employment or visitors. There would be no impact to population and housing.

Given there would be no construction or operational changes, the Cruise Terminal No Project Alternative would not increase pedestrian, vehicular, or bicycle trips or otherwise relocate trips from Pier 35. The existing inefficient transportation and circulation conditions at Pier 35 would remain. Circulation in and adjacent to the Pier 27 project site would be the same as it is under existing conditions, and both on-street and off-street parking capacity would remain unchanged. There would be no construction traffic-related impacts. The Cruise Terminal No Project Alternative would also result in no changes to existing ambient noise levels, and no construction- or operation-related noise or vibration changes would occur. Regarding air quality, pursuant to applicable regulations, shoreside power would gradually be provided, over time, at both Pier 27 and Pier 35 for all cruise ships. There would be no impact to air quality or greenhouse gases compared to existing conditions.

This alternative would not change the demand for utilities, public services, or recreational facilities at Piers 27–29, or surrounding area, from existing conditions. Given that this alternative would not result in changes to structures already present under existing conditions, there would be no impacts related to nesting birds, roosting bats, or bird strikes. There would be no impact to upland or marine biological resources. Continued maintenance of Piers 27–29 and Pier 35 could occur, as necessary, to meet seismic stability requirements and for ongoing maintenance dredging, but there would be no major new construction or demolition. Therefore, the alternative would not result in impacts related to geology and soils, hydrology and water quality, and hazards and hazardous materials. Existing asbestos-containing materials and lead-based paint could remain in place.

Operations under the Cruise Terminal No Project Alternative would not incorporate energy-efficient systems that would be incorporated into the proposed project to attain LEED® Silver Certification, although shoreside power would continue at Pier 27 and be implemented at the primary cruise terminal at Pier 35. There would be no impact to energy, mineral, agricultural, or forest resources.

Impacts of the Cruise Terminal No Project Alternative, with the AC34 Project

Under the Cruise Terminal No Project Alternative, with the AC34 project, all impacts associated with construction and operation of the cruise ship terminal would be avoided, and none of the identified mitigation measures for the Cruise Terminal project would be required. However, with

implementation of the AC34 project, it is assumed that Piers 27-29 would still serve as the AC Village in 2013, that partial demolition of existing sheds would take place, temporary walls or structures would be constructed, and existing tenants at Piers 27-29 would be displaced. Since Pier 27 would continue to operate as the backup cruise terminal, the long-term uses would not physically divide a community, and there would be no substantial change on the existing character of the vicinity. Similar to the Pier 27 Shed Variant, the removal of all or part of the existing sheds would enhance views of the Bay on Piers 27-29 and would have a less-than-significant impact on scenic vistas, visual resources, and the visual character of the site. There would be no impact on population and housing.

Depending on the design of the temporary walls or structures constructed after demolition of all or part of the existing sheds, impacts on historic resources could be potentially significant but could be mitigated to less-than-significant with conformance with Secretary's Standards. There would be no substantial long-term changes in transportation/circulation, noise/vibration, or greenhouse gases, since long-term land uses would remain essentially the same as existing conditions, although existing tenants could be replaced with the same or alternate tenants. Because the existing shoreside power transformer would be restored upon completion of the AC34 events, there would be no long-term changes in air quality. There would be short-term, construction-related impacts associated with the restoration of the Pier 27 shed, including air quality and noise impacts, but these effects would be similar or less in duration and magnitude to those identified for Phase 2 construction of the cruise terminal, and would be less than significant.

Partial demolition of the existing sheds could result in wind hazards, but similar to the proposed project, implementation of identified mitigation measures for the proposed project would reduce wind impacts to less than significant. All or partial demolition of the existing sheds could also affect nesting bird or bat species as well as result in the release of hazardous building materials, but implementation of mitigation measures similar to those identified for the proposed project would reduce these impacts to less than significant. Since it is assumed that long-term land uses would remain essentially the same as existing conditions and no in-water construction, there would be no impacts on recreation, utilities, public services, marine biological resources, geology, hydrology/water quality, mineral, energy, agricultural, or forest resources.

Cruise Terminal No Project Alternative – Conclusions

The Cruise Terminal No Project Alternative would meet only one of the Cruise Terminal project objectives—pursuant to applicable regulations, shoreside power would be implemented. It would not, however, result in a new and modern cruise terminal with associated amenities. The Cruise Terminal No Project Alternative would avoid all construction- and operation-related impacts that would occur under the proposed project. However, existing operational inefficiencies at Pier 35 would continue, including existing transportation and circulation issues in the surrounding area when cruise ships are in port. Under the No Project Alternative, the Port would have limited abilities to accommodate future demands in the cruise ship industry given the current trends in larger cruise ships and demands for more efficient operations. There would be no opportunities for year-round shared uses on an expansive waterfront parcel, and creation of a Northeast Wharf Plaza, as delineated in the BCDC Special Area Plan, would not occur.

7.3.3.2 Renovation of Pier 27 Shed Alternative

Description of the Renovation of Pier 27 Shed Alternative with AC34 Project

Under this alternative, it is assumed that the Renovation of Pier 27 Shed Cruise Terminal Alternative would be implemented in conjunction with the AC34 project as proposed. This alternative consists of renovating the existing facilities at Pier 27 with sufficient improvements to allow it to serve as the City's primary cruise terminal, allow development of the proposed Northeast Wharf Plaza, and accommodate the proposed AC Village at Piers 27-29 in 2013. This alternative was selected for analysis because it would reduce environmental impacts associated with demolition and with bird strikes.

This alternative is based in part on a prior cruise terminal design scheme (Scheme A – Renovation of Existing Shed) that was considered by the Port in July 2010 prior the Port's selection as host city for AC34 and Port Commission endorsement of the preferred cruise terminal concept design (Scheme B2 – New Construction, which was modified to the project as currently proposed). Under Scheme A, the existing Pier 27 shed would be renovated and developed into an 80,000-square foot terminal. The terminal would consist of a single story with a mezzanine area that would provide access to the visiting cruise ships by an overhead gangway above the pier apron. Improvements would include the creation of internal rooms for security processing, installing elevators and escalators, addition of insulation to the walls, roof and potentially the floor. Certain spaces within the renovated shed (e.g., baggage lay-down hall, the entrance vestibule and waiting lobby) would not contain heating or air conditioning utilities. The Pier 27 shed would be brought up to current code standards, including providing ADA compliant ramps from the ground transportation area to the terminal building. Scheme A was determined by the Port to provide less operational efficiency and flexibility, and pose potential higher long-term maintenance and repair costs, than the selected design for the project.

It is assumed that under this alternative, a portion of the east end of the existing Pier 27 shed would be removed, along with the easternmost portion of the Pier 29 shed to create an area for a temporary public viewing platform at the east end of Piers 27-29 for the AC Village in 2013 as well as a provisioning area for the cruise terminal. A portion of the west end of the Pier 27 shed would also be removed to create space for the proposed Northeast Wharf Plaza. A new east and corner wall for the Pier 29 shed would be constructed to complete the modified pier shed consistent with the Secretary's Standards, as well as new east and west walls for the truncated Pier 27 shed. In addition, it is assumed that any infrastructure improvements needed for the renovated Pier 27 shed would be completed prior to the AC34 2013 events (i.e., analogous to construction of the building core and shell of the proposed cruise terminal building). The Pier 27 Annex office building would also be demolished. During AC34 2013, the truncated Pier 27 shed would accommodate proposed AC34 team hospitality suites and associated uses at the AC Village. After the conclusion of the AC34 2013 event, the Port would complete improvements for the cruise terminal within the renovated Pier 27 shed and would construct the Northeast Wharf Plaza. It is assumed that the cruise terminal would be fully operational, including availability of shoreside power, in the 2014 cruise season.

As under the proposed project, under this alternative, the AC34 events would be held in summer-fall 2012 and summer-fall 2013, with races held in the Central San Francisco Bay. Similar to the proposed project, under this alternative, Piers 30-32, the Brannan Street Wharf (Piers 32-36) Open Water Basin, Pier 28, Pier 26 and Pier 80 would be used for team bases for 2012 and 2013; Marina Green would be used for the AC Village in 2012; Crissy Field, Fort Mason, Aquatic Park, Justin Herman Plaza, Union Square and Civic Center would be used at spectator venues; Fort Baker Pier at Cavallo Point and Alcatraz would be used for hospitality and private functions; and Rincon Point (Piers 14-22½) Open Water Basin and other locations would be used as temporary berthing facilities. All temporary installations and permanent infrastructure improvements at, and/or associated use of, these AC34 venues would be similar to the proposed project.

Tenant displacement from certain Port facilities that would occur under this alternative would be similar to that which would occur for the AC34 project. As under the proposed project, prior to entering into leases with the Event Authority for use as AC34 venues, the Teatro Zinzanni dinner theater, Bauer's California Coach Sales and Service, and San Francisco Soccer's Telegraph Field would relocate to other appropriate and available locations.

All BCDC amendments related to AC34 under the project would be sought under this alternative, including those that would permit temporary berthing of yachts at the Brannan Street Wharf and Rincon Point Open Water Basins. Similarly, all of the proposed BCDC amendments for the Cruise Terminal and AC34 projects would be required under this alternative, including those would allow comparable public benefit, and could result in fill removal at possible Port sites near Pier 64, and/or China Basin Channel.

Under this alternative, potential future long-term development and associated use of the long-term development sites would occur as under the proposed AC34 project. This includes the potential landside and/or waterside improvements, and associated long-term use of Piers 30-32, Seawall Lot 330, Pier 28, Pier 26, Pier 19, Pier 19½, Pier 23, Pier 29; and Brannan Street Wharf and Rincon Point Open Water Basins.

Description of the Renovation of Pier 27 Shed Alternative without the AC34 Project

Under this alternative, it is assumed that the Renovation of Pier 27 Shed Cruise Terminal Alternative would be implemented, but the AC34 project would not. This alternative consists of renovating the existing facilities at Pier 27 with sufficient improvements to allow it to serve at the City's primary cruise terminal and allow development of the proposed Northeast Wharf Plaza. This alternative was selected for analysis because it would reduce environmental impacts associated with demolition and with bird strikes.

This alternative is based in part on a prior cruise terminal design scheme (Scheme A – Renovation of Existing Shed) that was considered by the Port in July 2010 prior the Port's selection as host city for AC34 and Port Commission endorsement of the preferred cruise terminal concept design (Scheme B2 – New Construction). Port design Scheme A is described in more detail under *Renovation of Pier 27 Shed Alternative with AC34 Project*, above.

It is assumed that under this alternative, a portion of the west end of the Pier 27 shed would be removed to create space for the proposed Northeast Wharf Plaza. A new west wall would be constructed for the truncated Pier 27 shed. No modifications to the east portions of the Pier 27 shed or Pier 29 shed would occur. In addition, it is assumed that any infrastructure improvements needed for the renovated Pier 27 shed would be completed prior to the AC34 2013 events (i.e., analogous to construction of the building core and shell of the proposed cruise terminal building). The Pier 27 Annex office building would also be demolished. It is assumed that the cruise terminal would be fully operational, including availability of shoreside power, in the 2014 cruise season and possibly sooner due to the absence of the AC34 project.

Existing tenants at Piers 27 would be displaced as part of this alternative. As under the proposed project, the Teatro Zinzanni dinner theater, Bauer's California Coach Sales and Service, and San Francisco Soccer's Telegraph Field would relocate to other appropriate and available locations prior to demolition/construction activities at Piers 27-29.

All of the proposed BCDC amendments for the Cruise Terminal project would be required under this alternative, including those would allow comparable public benefit, and result in fill removal at possible Port sites near Pier 64, and/or China Basin Channel.

Ability of the Renovation of Pier 27 Shed Alternative to Meet Project Objectives

The Renovation of the Pier 27 Shed Alternative would partially meet the project sponsors' objectives. It would include the design of a modern cruise terminal that meets some operational needs, but the facility would be housed within a portion of the existing shed instead of in a new structure. The berth would be highly visible, due to demolition of the southern portion of the Pier 27 shed. A ground transportation area would be constructed, similar to that for the proposed project. The Port's operational costs would be lowered, and the renovated shed would meet some of the efficiency requirements for security and passenger handling. Shoreside power would be provided at Pier 27. Shared special event uses could occur. Under this alternative, the Northeast Wharf Plaza would be constructed, so the alternative would meet the objective to open up new views from a major public open space. The renovated structure would be LEED®-rated, and it would be integrated into the design and construction of the AC34 facilities and operations.

Impacts of the Renovation of Pier 27 Shed Alternative

Renovation of Pier 27 Shed Alternative, With or Without the AC34 Project — Impacts Compared to the Proposed Project

Under the Renovation of the Pier 27 Shed Alternative, with or without the AC34 project, many of the impacts associated with construction and operation of the cruise ship terminal would occur, although impacts associated with construction would be reduced due to decreased demolition and construction activities compared to the proposed project. Most of the mitigation measures identified for the proposed project would be required. Given that this alternative would retain a portion of the Pier 27 shed, overall demolition and construction effort would be reduced, so construction transportation, noise, and air quality impacts would be similar to, but somewhat less

than, those under the proposed project. Unlike the proposed project, the alternative would not have a significant impact related to bird strikes. The existing facades of the shed would not be replaced with glass, so birds would not be confused by night-time interior lighting, and no mitigation measures related to bird strikes would be required. However, operational transportation and circulation impacts would likely be the same as for the proposed project, with a significant and unavoidable impact on transit service on the F-Market & Wharves historic streetcar line.

Impacts of the Renovation of Pier 27 Alternative, With or Without the AC34 Project

The Renovation of the Pier 27 Shed Alternative would result in less-than-significant land use impacts similar to those of the proposed project. As under the proposed project, the demolition of the southwestern portion of the Pier 27 shed would reveal the renovated shed building, which would be set back behind the greenery of the Northeast Wharf Plaza. Also, if the AC34 events are held at Piers 27-29 in 2013, the northeastern tip of the pier would be opened by demolition of the northeast portion of sheds from Piers 27–29. These changes would open up scenic vistas compared to existing conditions, which would result in potentially significant wind impacts that would be mitigated to a less-than-significant level. There would be no shadow impacts. Aesthetic impacts would be similar to those under the proposed project and less than significant. The Renovation of the Pier 27 Shed Alternative would result in less than significant impacts to historic architectural resources, similar to the proposed project. Like the project, the design of the Northeast Wharf Plaza could potentially conflict with Secretary Standards; compliance with the cultural resource mitigation measures establishing adherence to design criteria and performance measures would be implemented, and impacts would be less than significant. This alternative would neither displace residents nor housing units, similar to the proposed Cruise Terminal project. Existing tenants at Piers 27–29 would be displaced, however, and similar to the proposed project, their relocation would result in no population or housing impacts.

Operational transportation would be less optimal than the project because the ground transportation area would be smaller under this alternative, limiting vehicle off-street staging and circulation to avoid queuing or back-ups on The Embarcadero roadway. Air quality and noise impacts would be similar to the proposed project, including potentially significant and unavoidable impacts on transportation, air quality and noise impacts, as the overall intensity of activity at the project site would be similar to that under the proposed project, and the same mitigation measures as identified for the proposed projects would be required. As under the proposed project, impacts to greenhouse gases would be less than significant.

Impacts to recreation would be similar to the proposed project, and less-than-significant, with the construction of the Northeast Wharf Plaza recreational space. Recreation impacts would be less than significant. The cruise terminal under this alternative would not increase demand for water or wastewater. This alternative would slightly increase demand for water and wastewater services associated with the ancillary commercial uses and Northeast Wharf Plaza, similar to the increased demand under the project. This increased demand would be incremental and result in less-than-significant impacts on utilities. This alternative could also include construction of new stormwater facilities or upgrading of existing facilities, the construction of which would have less-than-significant impacts. Impacts to public services—including fire and police—would be

less than significant, as they would be under the proposed project, given that the alternative would also primarily involve relocation of an existing use on the waterfront. There would be no impact to schools, as no new residential units, and very limited employment, would be generated by this alternative.

The alternative could have potentially significant impacts to nesting birds or roosting bats, like the proposed project. Implementation of the same mitigation measures as those identified for the proposed project would reduce impacts to less-than-significant levels. Unlike the proposed project, the alternative would not have a significant impact related to bird strikes. The existing facades of the shed would not be replaced with glass, so birds would not be confused by night-time interior lighting. Mitigation measures related to bird strikes would not be implemented. As with the proposed project, there would be no impacts to marine biological resources, as the alternative would include no in-water construction.

Similar to the proposed project, the Renovation of the Pier 27 Shed Alternative would not expose people or structures to substantial adverse effects related to fault rupture, groundshaking, liquefaction, lateral spreading, earthquake-induced settlement, or slope instability. Impacts related to geology and soils would be less than significant. Regarding hydrology and water quality, the Renovation of the Pier 27 Shed Alternative would result in impacts similar to those of the proposed project. Also, sea-level rise and tsunami impacts would similar to those under the proposed project, and less than significant.

This alternative would involve the removal of asbestos-containing materials and lead-based paint in the existing Pier 27 shed. Mitigation measures would be required, and would reduce impacts to less-than-significant levels, similar to those under the proposed project. There would be no impact to mineral resources. Regarding energy resources, this alternative would result in the construction and operational consumption of energy, similar to the proposed project, but impacts would be less than significant, although the efficiency of the building might be less than that under the project, and the ability to incorporate or meet LEED® criteria are constrained compared to the project. Shoreside power would be available at Pier 27, as under existing conditions and the proposed project. This alternative would have no impact on agricultural or forest resources, similar to the proposed project.

Renovation of Pier 27 Shed Alternative – Conclusions

The Renovation of the Pier 27 Shed Alternative would meet, or partially meet, all of the project objectives. The facility would not be completely new and modern, which would result in some operational inefficiencies and limited shared uses, as compared to the proposed project. This alternative would have a shorter construction duration than the proposed project, which would reduce construction transportation, air quality, noise, and hazardous materials impacts as compared to impacts under the proposed project, but most of the same mitigation measures would still be required. Operational transportation and circulation impacts would be the same as for the proposed project, with a significant and unavoidable impact on transit service on the F-Market & Wharves historic streetcar line. Bird strike impacts would also be less than those under the proposed project. Other impacts would be substantially similar to those under the

proposed project, including significant impacts to nesting birds and breeding bats, historic architectural resource, and wind hazards. These impacts would be reduced to a less-than-significant level through implementation of mitigation measures.

7.3.4 Comparison of Cruise Terminal Project Alternatives, and Environmentally Superior Alternative

The CEQA Guidelines require the identification of an environmentally superior alternative to the proposed project (Section 15126.6[e]). If it is determined that the "no project" alternative would be the environmentally superior alternative, then the EIR shall also identify an environmentally superior alternative among the other project alternatives (Section 15126.6[3]).

Table 7-5 compares the ability of the Cruise Terminal alternatives to meet the project objectives. As shown there, the Cruise Terminal No Project Alternative does not meet most of the project sponsor's objectives, and the Renovation of the Pier 27 Shed Alternative meets most of the project objectives, although some objectives would only be partially met due to a partial renovation instead of complete new construction.

Table 7-6 compares the impacts of the Cruise Terminal alternatives. The Cruise Terminal No Project Alternative would have no environmental impacts, but it would continue the operational inefficiencies and energy use of the existing primary cruise terminal at Pier 35. The Renovation of the Pier 27 Shed Alternative would avoid or reduce the proposed project's impacts related to construction transportation, air quality, noise, and hazards and hazardous materials. However, operational transportation and circulation impacts would be the same as those identified for the proposed project. The alternative would also reduce impacts related to bird strikes. Impacts to nesting birds and roosting bats, historic architectural resources, and wind hazards would be significant. These impacts would be reduced to a less-than-significant level with incorporated mitigation measures.

Based on the above comparison and CEQA Guidelines Section 15126.6[3], the environmentally superior alternative is the Renovation of the Pier 27 Shed Alternative.

7.4 Alternatives Considered but Rejected from Further Analysis

As part of the background and project development for both the AC34 and the Cruise Terminal projects, alternative concepts were considered but rejected for the reasons indicated below.

7.4.1 AC34 Project Alternatives Considered but Rejected

7.4.1.1 Southern Waterfront Alternative

Prior to the selection of San Francisco as the AC34 Host City and definition of the race program and venues now proposed in the project, the City considered a different package of Port facilities

TABLE 7-5
ABILITY OF THE CRUISE TERMINAL PROJECT ALTERNATIVES TO MEET OBJECTIVES

Objective	Meets Objective?	
	Cruise Terminal No Project Alternative	**Renovation of Pier 27 Shed Alternative**
Design a new, modern cruise terminal that optimizes current and future operational needs and retains an important historic maritime use along San Francisco's northeastern waterfront that is compatible with and respects the physical form and characteristics defining the Embarcadero Historic District, which is listed on the National Register of Historic Places	No	Partially
Provide a highly visible berth for ceremonial and visiting ships and vessels, as well as cruise ships, that preserves and promotes the maritime character of San Francisco's historic waterfront	No	Yes
Integrate a ground transportation area that serves all cruise ship and passenger access and support needs off-street to avoid traffic impacts on The Embarcadero.	No	Yes
Develop an efficient facility that will lower the Port's operational and maintenance costs by the use of effective space planning and equipment to handle passenger circulation and provisioning, and will meet the evolved security and passenger handling demands of the cruise ship industry	No	Partially
Maintain shoreside power in a new, modern cruise terminal facility to promote and expand access and use of San Francisco's electrical grid while ships are in port to avoid cruise ship diesel emissions	Yes	Yes
Configure the cruise terminal in a way that will create opportunities for the Port to allow special event uses when the terminal is not occupied for cruise purposes to enable year-round, people-oriented uses at Pier 27, generate revenue to help finance public improvements, and create an inviting amenity that supports and activates use and enjoyment of the Northeast Wharf Plaza	No	Partially
Develop the Northeast Wharf Plaza, a major public open space integrated with public access on Pier 27; create new views and access to San Francisco Bay; promote recreational enjoyment along San Francisco's public waterfront; and preserve open water areas for passive and active enjoyment of the Bay	No	Yes
Develop a project that embodies the City's commitment to sustainability principles by following the guidelines from the U.S. Green Building Council to achieve a Leadership in Energy and Environmental Design (LEED®) Silver or better rating	No	No
Integrate the design and construction of the Cruise Terminal project with the proposed AC34 race facilities and operations	No	Yes

TABLE 7-6
COMPARISON OF THE SIGNIFICANT ENVIRONMENTAL IMPACTS OF THE CRUISE TERMINAL PROJECT ALTERNATIVES

Environmental Resource	Proposed Project	Cruise Terminal No Project Alternative	Renovation of Pier 27 Shed Alternative
Land Use	• All impacts less than significant	No Impacts	Similar to Proposed Project
Aesthetics	• All impacts less than significant	No Impacts	Similar to Proposed Project
Cultural and Paleontological Resources	• Potentially significant impact on surrounding historic resources (including Pier 29, Pier 29 Annex, Pier 23 Restaurant, and the Embarcadero Historic District) due to the design of the Northeast Wharf Plaza could be mitigated through compliance with performance criteria that ensures complementary design and compliance with Secretary's Standards • Potentially significant impacts on archeological resources could be mitigated with measures to prepare for and respond to inadvertent discovery of such resources • Potentially significant impacts on disturbance of human remains could be mitigated with measures to prepare for and respond to inadvertent discovery of such finds	No Impacts	Same as Proposed Project
Population and Housing	• All impacts less than significant	No Impacts	Similar to Proposed Project
Transportation and Circulation	• Significant and unavoidable impact on capacity utilization standard on the F-Market & Wharves historic streetcar line • Significant and unavoidable cumulative impact on transit conditions on the F-Market & Wharves historic streetcar line • Potentially significant impact on traffic operations on The Embarcadero due to vehicles exiting the cruise terminal, which could be mitigated by relocating the vehicular access to the cruise terminal about 30 feet to the south	No Impacts	Similar to Proposed Project, but shorter construction duration would reduce construction-related transportation impacts
Noise and Vibration	• Significant and unavoidable cumulative impact on roadway noise at five road segments in the vicinity of the cruise terminal due to the contribution from cruise terminal vehicle trips during weekends, midday	No Impacts	Similar to Proposed Project, but shorter construction duration would reduce noise impacts
Air Quality	• Significant and unavoidable construction-related air quality impacts due to emissions of criteria pollutants and precursors that would exceed Bay Area Air Quality Management District (BAAQMD) thresholds even with construction vehicle emissions minimization and restrictions on off-road construction equipment • Significant, unavoidable contribution to cumulative air quality impacts because the project's contribution to cumulative impacts would exceed BAAQMD thresholds even with implementation of feasible mitigation	No Impacts	Similar to Proposed Project, but shorter construction duration would reduce construction-related emissions impacts
Greenhouse Gas Emissions	• All impacts less than significant	No Impacts	Similar to Proposed Project

TABLE 7-6 (Continued)
COMPARISON OF THE SIGNIFICANT ENVIRONMENTAL IMPACTS OF THE CRUISE TERMINAL PROJECT ALTERNATIVES

Environmental Resource	Proposed Project	Cruise Terminal No Project Alternative	Renovation of Pier 27 Shed Alternative
Wind and Shadow	• Potentially significant wind hazard impact due to proposed expansion of public open space at the end of Piers 27-29 if hazardous wind conditions coincide with public access to the area, but impact could be mitigated with posting of warning signs, limiting public access during hazardous winds, and through implementation of design features that provide wind protection for public access areas	No Impacts	Similar to Proposed Project
Recreation	• All impacts less than significant	No Impacts	Same as Proposed Project
Utilities and Service Systems	• All impacts less than significant	No Impacts	Similar to Proposed Project
Public Services	• All impacts less than significant	No Impacts	Same as Proposed Project
Biological Resources, Upland	• Potentially significant impacts on movement and nesting of bird and bat species due to building demolition and construction could be mitigated through seasonal restrictions on demolition of structures on piers, nest and roost avoidance, and other protective measures • Potentially significant effects on migrating birds, which may be confused by the new source of night lighting, and/or clear glass windows, could be mitigated by shielded lights in areas where they are left on at night and incorporation of glazing designed to be visible to birds	No Impacts	Similar to Proposed Project, but interior night lighting would be reduced under this alternative
Biological Resources, Marine	• No Impacts	No Impacts	Same as Proposed Project
Geology and Soils	• Significant impacts related to groundshaking, liquefaction, lateral displacement, earthquake-induced settlement, or location on a geologic unit that is unstable, which could be mitigated through preparation and adherence to recommendations of a site-specific geotechnical investigation	No Impacts	Same as Proposed Project
Hydrology and Water Quality	• Potentially significant impact due to in-water construction that could substantially degrade water quality from use and handling of fuels, hazardous materials, and cement, but could be mitigated with implementation of water quality best management practices	No Impacts	Same as Proposed Project
Hazards and Hazardous Materials	• Significant impact related to release of hazardous building materials during demolition of structures, which could be mitigated through surveys and implementation of approved removal and disposal protocols	No Impacts	Similar to Proposed Project, although some demolition would not occur, thereby reducing potential impacts.
Mineral and Energy Resources	• All impacts less than significant	No Impacts	Same as Proposed Project
Agriculture and Forest Resources	• No Impacts	No Impacts	Same as Proposed Project

to support the AC34 race events. The center of the race activities would have been south of the current project, and was known as the "Southern Waterfront" alternative. The Southern Waterfront program and facilities are listed in **Table 7-7**. This alternative would be considered in this EIR to avoid impacts related to primary and secondary spectator venues on Golden Gate National Recreation Area (GGNRA) lands and on and near the Marina Green.

TABLE 7-7
SOUTHERN WATERFRONT LOCATIONS AND USES

Location	Event Use
Pier 28	Team and Sponsor hospitality
Piers 30-32	Race viewing platform
Brannan Street Wharf	Race viewing
Pier 38 (or similar pier)	Large spectator vessels center
Seawall Lot (SWL) 330	Media Center
Pier 40	TBD
Pier 48	Team offices and storage
Pier 50	Race team bases
Pier 54	TBD
SWL 337	TV compound
Pier 80	Berthing of USA 17, Temporary heliport, Temporary facilities during construction, Staging of pre-regattas

NOTES: TBD = To Be Determined

SOURCE: Port of San Francisco, 2011

Under the Southern Waterfront alternative, all AC34 event activities would occur on the Port's Southern Waterfront, and would utilize more Port facilities than the proposed project. The public viewing areas would have been located in the South Beach-Rincon Hill neighborhood, and team bases would have been located in the Mission Bay area. The race activities would have been focused in the area east of San Francisco, in the vicinity of the Bay Bridge. Primary spectator venues would not have included Marina Green or National Park Service lands.

However, based on the preliminary design, the construction of the required facilities for the Southern Waterfront Alternative would be much more extensive than the construction identified for the proposed project. Construction activities would require demolition of all four sheds on Pier 50 and the construction of a permanent breakwater, in addition to seismic and substructure repairs of Piers 30-32 similar to that for the proposed project. Construction impacts of these components together with proposed improvements at other locations shown on Table 7-7 are expected to be substantially more severe than those associated with the proposed project, with both a longer duration and greater magnitude of construction impacts on water quality, marine biological resources, air quality, traffic, and noise. In particular, the construction of a permanent breakwater could result in long term impacts on water quality and biological resources that would not occur with the proposed project.

Operational impacts of this alternative would be expected to be relatively the same as those identified for the proposed project, depending on the specific details of the race course, spectator venues, and AC Village. Although the race course is assumed to be shifted farther south than the proposed course, it would be expected that impacts at spectator venues and secondary viewing areas would be similar to those for the proposed project but shifted farther south. Instead of potential impacts to southern Marin County, western Alameda County could be affected, including the cities of Oakland and Alameda. Thus, even though impacts on GGNRA lands and the Marina Green could be reduced, the same impacts would occur elsewhere along San Francisco's southern waterfront.

Therefore, despite the potential feasibility of the Southern Waterfront Alternative, this alternative was rejected from further consideration and analysis because of its inability to avoid or substantially lessen environmental impacts and its potential to result in greater environmental impacts compared to the proposed project.

Although not a CEQA issue relevant to the environmental analysis, the following information provides background on the development and preliminary considerations of this alternative. The estimated cost of construction of these facilities was $150 million, a financial obligation of the America's Cup Event Authority. To enable the recovery of this cost, the Southern Waterfront alternative provided the Event Authority with long-term development rights to Piers 30-32, Seawall Lot 330, and Pier 50. These costs were substantially higher than the proposed AC34 project costs. Costs to the Port and City also would have been greater than the current project. More facilities would have been occupied with AC34 activities on a rent-free basis. This program would have required relocation of a greater number of tenants, including maritime businesses, and the Port's maintenance center at Pier 50, which would have cost an estimated $16 million to re-establish at another Port location. The loss of Port rent and maritime revenue that would have occurred during the AC34 events was estimated at $14 million. The permanent revenue rent loss associated with ACEA long-term development of Piers 30-32, Seawall Lot 330, and Pier 50, was estimated at $3.1 million annually (2010 dollars). As the Port would have undertaken these tasks on behalf of the City to host the AC34, the City would have been responsible to fund these costs, which were estimated at $43 million. While the economic studies recognized that AC34 economic benefits could generate more than $24 million to the City's General Fund, they would not offset the City funding requirements of the Southern Waterfront alternative.

The San Francisco Board of Supervisors undertook a detailed review of the economic and financial analysis of the Southern Waterfront alternative as part of a fiscal feasibility assessment of AC34. The "Northern Waterfront" alternative emerged in large part to remedy these financial issues, which proposed the use of Port facilities for AC34 activities that are reflected in the proposed project analyzed in this EIR. Compared to the Southern Waterfront alternative, the Northern Waterfront alternative was more financially viable and could deliver equal or greater public benefits. Accordingly, the Northern Waterfront alternative was incorporated into the AC34 Host Agreement ultimately approved by the City and Event Authority.

7.4.1.2 Other Bay Area Host Cities or Berthing Facilities

Given AC34's impacts related to pier rehabilitation, floating dock installation, and dredging, consideration was also given to whether other waterfront locations in the Central Bay could be suitable to support the physical requirements of AC34. The requirements include the availability of an extensive amount (approximately 40 to 50 acres) of waterfront property for team bases and support space, waterfront public viewing areas, AC Village entertainment, hospitality, media and commercial space, multi-modal transportation access, and large open water areas with depths of 15 feet or more for racing boat and large spectator yacht berthing.

This combination of requirements restricted the range of possible sites to other established port facilities. The Port of San Francisco conducted outreach to other port facilities in the Bay Area, including the Port of Oakland, Port of Redwood City and City of Alameda to research whether their facilities could be considered as a location for AC34, or a portion thereof, such as the team bases. The Ports of Oakland and Redwood City are active maritime ports. The City of Alameda leases extensive land area from the U.S. Navy, formerly the Alameda Naval Air Station (NAS) in two locations: Alameda Point, located at the west end of the Alameda Island; and Alameda Landing, located on the north waterfront along the Oakland Estuary. Each of these locations either currently serves, or can accommodate deep-draft vessels that would meet or exceed the 17-foot water depth requirement for AC34 racing yachts. Berthing for AC boats and yachts would require in-water construction of temporary floats and gangways at any of these locations, similar to that proposed in San Francisco, and thus construction impacts at these other locations would be expected to be similar to those of the proposed project.

For Redwood City and Oakland, available land area is the main constraint that precludes team bases or a portion of the AC34 venues. Neither Redwood City nor Oakland has 10 to 15 acres that could be made available to support the team bases, let alone the full program of AC34 activities and spectator viewing facilities. For the Port of Oakland, an additional constraint is the potentially serious operational conflicts from the interaction among container ships, race boats, and large spectator yachts, especially given the relatively narrow shipping channel along Oakland Estuary to the Bay. Passing container ships create wake and current dynamics that can make navigating to and from terminal facilities difficult. Given these conflicts, it was determined that neither of these ports would be feasible as an alternative to San Francisco as a host city or to host a portion of the AC34 event.

These site constraints are common conditions for existing active maritime port facilities in the Bay Area. Generally, port facilities that are maintained and in good structural condition are in active cargo and maritime use, and have operational requirements that may constrain or preclude the type of racing yacht berthing and operations required to support AC34 events. Underutilized or vacant port or pier facilities may offer site opportunities that align with certain needs of the AC34 events but often have structural deficiencies that require repairs and code-required improvements, which in turn would trigger in-water construction and their associated environmental effects similar to those that would be generated by the project.

The pier and waterfront facilities in Alameda are large and under-utilized; the Alameda Point land under city lease is approximately 700 acres, and Alameda Landing is approximately 77 acres. The city leases land and facilities to various maritime, industrial, and commercial businesses on short- and long-term leases. However there is still a substantial amount of unprogrammed land area at both sites that could physically accommodate the AC Village, team bases, and/or spectator yacht berthing. These lands appear to possess basic site conditions that could accommodate AC34 team bases, large spectator yacht berthing, or other AC34 facilities, although the deepest berthing area in Alameda Point is in use for the USS Hornet, and federal Maritime Administration ready-reserve military vessels under long-term lease to the city. Team base operations at Alameda Landing would require assessment to confirm compatibility with necessary maritime access to and from the Port of Oakland container terminals across the Oakland Estuary. In addition, the structural condition of pile-supported pier deck and wharf areas in Alameda Landing are unknown and could require substantial repairs, or upgrades to utilities and infrastructure.

While it is possible that facilities in Alameda could accommodate the AC34 events in whole or in part, the transportation network is far more limited than San Francisco's to meet the spectator and transportation demand estimated for the 2012 and 2013 race events and venues. As an island community, Alameda has limited transportation options, restricted by the few tunnels and bridges accessing the island, and there are substantially fewer public transit options than are available in San Francisco. Traffic congestion and associated air quality and noise impacts associated with the AC34 travel demand would be expected to be much greater than projected for the proposed project. Accordingly, the location of AC34 in Alameda was rejected from further consideration as an alternative to San Francisco.

7.4.1.3 Alternative Concepts Raised During the Scoping Process

The following concepts were raised as "alternatives" during the scoping process. Although not developed as full programs that could meet all or most of the AC34 project objectives, these concepts nevertheless were considered in developing the alternatives considered for evaluation in this EIR. The concepts raised and the reasons why they are or are not considered as alternatives for evaluation in this EIR are described below:

1) Use of parking lots near Marina Green for temporary structures. This is included in the proposed project design. See Chapter 3, for site plan of Marina Green spectator venues showing use of the parking lot for temporary structures.

2) Design of cruise terminal that would be more compatible with historic district. This process is included as part of the proposed project. See Chapter 5, Section 5.5, for discussion of the proposed cruise terminal in relationship to the historic district.

3) Retain entirety of Pier 29 shed and instead provide viewing from barges or cruise ships and/or removal of the structure behind the Ferry Building (former Gabbiano's restaurant) to create an event viewing area and permanent open space. Retaining the entirety of the Pier 29 shed would not avoid or reduce any identified impact, since the proposed project would only remove the portion of the Pier 29 shed that is not historic or has already been compromised and the proposed design would be consistent with the Secretary's Standards.

Proposed viewing of the AC34 from barges or cruise ships is not included as part of the proposed project, but spectator viewing from commercial charter boats is considered as part of the visitation estimates for the AC34. The proposed project also considers viewing areas along The Embarcadero Promenade, including the Ferry Building and vicinity, as part of the anticipated visitation destinations. Removal of the former Gabbiano's restaurant is not considered necessary to meet the AC34 objectives, which aim to create a center of activity for the AC34 at the proposed AC Village at Piers 27-29. Furthermore, the structure behind the Ferry Building is under long-term lease. Demolition of the structure would also require the approval of the Bay Area Rapid Transit District which has a long-term agreement with the Port for facilities in the vicinity.

4) Removal of Piers 30–32 after the event to meet fill removal goals, or removal of other locations that would not require removal of historic resources. Removal of a portion of Piers 30-32 after the event would not be precluded because of the proposed project. Removal of a portion of Piers 30-32 could be considered as part of future long-term development for that site. The proposed amendments to the BCDC Special Area Plan under the proposed Cruise Terminal project include five Southern Waterfront non-historic locations as possible fill removal sites, including the LASH terminal at Pier 98, Piers 84 and 88 along Islais Creek, Pier 70 (Wharves 6, 7, and 8), Pier 64 remnant piles, and former restaurant on Pier 60 in China Basin Channel. See Chapter 3, Section 3.5.5, BCDC Special Area Plan Amendments for the Cruise Terminal and Northeast Wharf Plaza, for further description.

5) Alternatives that would result in a project consistent with the BCDC Special Area Plan. Conflicts with the BCDC Special Area Plan are described in Chapter 4 and Section 5.2. The Reduced Intensity AC34 and Long-Term Development Alternative as well as the Reduced Spectator Berthing Alternative, both analyzed in Section 7.2 above, encompass scenarios that would avoid or reduce conflicts with the BCDC Special Area Plan policies regarding the Rincon Point and Brannan Street Wharf Open Water Basins.

7.4.2 Cruise Terminal Project Alternatives Rejected

Consideration was given to whether other Port facilities could be improved to provide a modern cruise terminal instead of Pier 27. This has been a long-sought objective of the Port. The physical requirements for modern cruise terminal operations favor wide, large piers with wide aprons to fully support ship and passenger loading and supplies, baggage and provisions handling, and adequate work areas alongside the ship, long (approximately 1,300-foot) berths to accommodate cruise ships for up to 4,000 passengers, and water depth of 35 feet. These needs favor large piers over the Port's historic finger piers.

In 2006, the Port Commission created a Cruise Terminal Advisory Panel that considered different cruise terminal site options on the San Francisco waterfront, their relative strengths and weaknesses, and financial requirements and recommended a site and implementation plan. A Port staff report, dated September 7, 2007, reviews the site options and recommendations of the Advisory Panel and is incorporated by reference.[4] The Advisory Panel site review and considerations are summarized in Sections 7.4.2.1, 7.4.2.2, and 7.4.2.3, below.

[4] Memorandum to the San Francisco Port Commission: Accept Recommendations of the Cruise Terminal Advisory Panel and Conclude Process, September 20, 2007.

7.4.2.1 Piers 30-32 Cruise Terminal Alternative

There have been two prior development project proposals to construct a new cruise terminal at Piers 30-32. The most recent was the Bryant Street Pier project, a public-private development project that included a 100,000-square foot, two-berth cruise terminal and large mixed use development. Although the project sponsor secured all entitlements and approvals in 2003, an unexpected increase in pier substructure repair requirements undermined the financial feasibility of the project. The estimated cost in 2006 to strengthen the pier deck and substructure alone was $81 million, before factoring in construction of the cruise terminal building and support facilities. In light of these conditions, the Advisory Board concluded that, while the site area and location in the Northeast Waterfront makes Piers 30-32 desirable for a cruise terminal, the financial requirements far exceed available resources, especially if the Port intends to develop the terminal on its own with public funds.

In addition, due to the existing condition of Piers 30-32 compared to Piers 27-29, substantially more construction would be required to construct the cruise terminal at this site, and consequently would result in greater environmental impacts. Piers 27-29 is currently structurally sound and has been determined to meet necessary seismic standards for construction of the cruise terminal. Seismic and other infrastructure improvements at Piers 30-32 would require extensive in-water and subsurface construction, which would result in construction impacts on marine biological resources, noise, and air quality that would be avoided at the Piers 27-29 site. Operational impacts would be expected to be generally the same at both sites except that more periodic maintenance dredging would be required compared to that at Pier 27. Because this alternative, while feasible, would not avoid or substantially lessen environmental impacts and would result in greater environmental impacts, it was rejected from further consideration in this alternatives analysis.

7.4.2.2 Rehabilitation of Pier 35 Cruise Terminal Alternative

As the Port's current cruise terminal, its location in the Northeast Waterfront is advantageous because its proximity to visitor attractions and downtown San Francisco provides an exciting welcome to cruise passenger visitors, and contributes positively overall to San Francisco's tourism industry. However, Pier 35 has physical limitations for cruise operations which have increased as ship size and passenger volumes have grown. The pier is too small to meet the ship provisioning and passenger transportation management requirements on-site, resulting in bus, taxi and private automobile traffic spilling onto The Embarcadero. The pier aprons are too narrow to optimally manage the loading demands of current cruise ships. Space within the pier shed is managed to accommodate off-street transportation activity to the extent possible, but results in limitations on the amount of space left to support passenger waiting and baggage handling; the space is designed to support 600 passengers efficiently. This capacity falls far short of the 4,000-passenger capability that the Port seeks in a new cruise terminal, and has necessitated extensive manual labor to customize equipment, baggage claim and supply support for individual cruise ship calls. This has made Pier 35 the most expensive terminal to operate on the West Coast. Furthermore, Pier 35 is approaching 100 years in age and requires increasingly costly and extensive repairs and seismic improvements to maintain existing operations. The physical limitations and deteriorated condition

would make rehabilitation infeasible. Furthermore, rehabilitation of Pier 35 could result in significant effects on its historic status. Even an improved facility at this location would not meet current or long-term ship and passenger support requirements. Therefore, this alternative was rejected from further consideration.

7.4.2.3 Other Cruise Terminal Locations

Southern Waterfront Piers 50, 70, 80 and 94-96

The Advisory Panel also reviewed other Port facilities at Piers 50, 70, 80 and 94-96 because of their large size and physical capability to accommodate a cruise terminal. All of the sites are located south of China Basin Channel and in current use for another Port maritime industry, or the subject of a long-term planning and development strategy.

Pier 50 is located along the Mission Bay waterfront. It supports four large warehouses used for a variety of light industrial uses, include core maritime activities. Pier 50 is the location of the Port's Maintenance Center, which occupies Shed D and surrounding yard area at the outboard end of the pier. Pier 50 also supports Westar Marine Services, a harbor service company which requires berthing of tractor tugs, barges used for marine construction and hauling, and harbor support boats; and the U.S. Maritime Administration (MARAD), which berths ready-reserve ships at the pier's east end, to be on-call and ready to be put into service, as needed. The development of a cruise terminal at Pier 50 would require most or all of these maritime activities to be relocated. The relocation of the Maintenance Center alone would cost about $16 million, adding substantially to cruise terminal development costs. Given the relocation impacts on core maritime industrial businesses and the cost premium of providing replacement space for the Port's maintenance facility, Pier 50 is not considered a feasible option for the cruise terminal.

Pier 70 is a 65-acre waterfront area located east of Illinois Street, between Mariposa Street to the north and 22nd Street to the south. It is the home of the Port's ship repair and drydock industry and historic Union Iron Works and Bethlehem Steel yards. Pier 70 has been the subject of a three-year, detailed public process to develop a plan and implementation strategy that preserves the ship repair industry and a rich collection of historic buildings, and solicits new economic development investment that includes new public access and open space, and major infrastructure improvements. The "Pier 70 Preferred Master Plan" does not contemplate a cruise terminal at this location. The portion of Pier 70 that affords the most open land area and development flexibility, with minimal impact on National Register-eligible historic resources, is a waterfront development site that has just completed a solicitation process which led to the selection by the Port Commission of Forest City Development Corporation for exclusive negotiations. Accordingly, Pier 70 is not considered a feasible site for a cruise terminal.

Pier 80 and Piers 94-96 are the Port's remaining major cargo terminals located along the north and south sides of Islais Creek, respectively. In terms of land area and deep water berths, these facilities are the most viable facilities to sustain maritime cargo operations in San Francisco, which have fewer site options than the passenger cruise industry, and require an industrial

setting. As a core public trust use, cargo shipping requires expansive land area and freight rail access to maintain viability. In light of these conditions, and considering that the optimal location for a cruise terminal is the Northeast Waterfront rather than the Southern Waterfront, converting a portion of either of these cargo terminals to a cruise terminal is not considered a feasible alternative.

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