

3.8 SOUNDSCAPE AND NOISE

This section describes the existing soundscape and noise environment in the project area and identifies sensitive land uses or land use activities to define the affected environment for later assessment of noise and vibration impacts on humans. Noise effects on marine and terrestrial wildlife as a sensitive receptor vary by species and a number of biological factors, and those environments and effects are addressed in Sections 3.5 and 4.5, Biological Resources, respectively.

3.8.1 Noise Concepts and Terminology

Sound is mechanical energy transmitted by pressure waves through a medium such as air. Noise is defined as unwanted sound. Sound is characterized by various parameters that include the rate of oscillation of sound waves (frequency), the speed of propagation, and the pressure level or energy content (amplitude). In particular, the sound pressure level has become the most common descriptor used to characterize the loudness of an ambient sound level. Sound pressure level is measured in decibels (dB), a logarithmic loudness scale with 0 dB corresponding roughly to the threshold of human hearing and 120 to 140 dB corresponding to the threshold of pain. Because sound pressure can vary by over one trillion times within the range of human hearing, the logarithmic loudness scale is used to calculate and manage sound intensity numbers conveniently.

The typical human ear is not equally sensitive to all frequencies of the audible sound spectrum. As a consequence, when assessing potential noise impacts, sound is measured using an electronic filter that deemphasizes the frequencies below 1,000 Hertz (Hz) and above 5,000 Hz in a manner corresponding to the human ear's decreased sensitivity to low and extremely high frequencies instead of the frequency mid-range. This method of frequency weighting is referred to as A-weighting and is expressed in units of A-weighted decibels (dBA). Frequency A-weighting follows an international standard methodology of frequency deemphasis and is typically applied to community noise measurements.

Given the variation of community noise level from instant to instant, community noise levels must be measured over an extended period of time to characterize a community noise environment and evaluate cumulative sound impacts. This time varying characteristic of environmental noise is described using statistical noise descriptors. The most frequently used noise descriptors are as follows:

- L_{eq} : The equivalent sound level is used to describe noise over a specified period of time, typically one hour, in terms of a single numerical value. The L_{eq} is the constant sound level 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).
- L_{max} : The L_{max} is the instantaneous maximum noise level measured during the measurement period of interest.
- L_x : The L_x is the sound level that is equaled or exceeded x percent of a specified time period. The L_{50} represents the median sound level (i.e., the noise level exceeded 50 percent of the time).

DNL: The day-night average sound level (DNL, also written as L_{dn}) is the energy average of the A-weighted sound levels occurring during a 24-hour period, accounting for the greater sensitivity of most people to nighttime noise by weighting (“penalizing”) nighttime noise levels by adding 10 dBA to noise between 10:00 p.m. and 7:00 a.m.

CNEL: Similar to the DNL, the Community Noise Equivalent Level (CNEL) adds a 5-dBA “penalty” for the evening hours between 7:00 p.m. and 10:00 p.m. in addition to the 10-dBA penalty between the hours of 10:00 p.m. and 7:00 a.m.

3.8.2 Vibration Concepts and Terminology

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. The peak particle velocity (PPV) is usually used to describe vibration amplitudes. PPV is defined as the maximum instantaneous peak of the vibration signal. Since ground-shaking speeds are generally quite low, it is measured in inches per second (in/s). Typically, groundborne vibration generated by man-made activities attenuates rapidly with distance from the source of the vibration. Man-made vibration issues are therefore usually confined to short distances (i.e., 500 feet or less) from the source. Standard industry damage criteria and “safe levels” of ground motion are generally based on particle velocity and frequency of motion. The response of humans to ground motion is primarily influenced by ground motion velocity and duration of the motion.

Persons not familiar with vibration science often confuse particle velocity values with ground displacement. For instance, if a measured peak or maximum particle velocity is 0.25 inch per second, the ground has *not* moved a quarter of an inch. The actual temporary particle movement or displacement would be much less because in one second of time, ground particles disturbed by vibration waves will oscillate back and forth many times in a second, which collectively add up to the total inches per second. Another useful vibration descriptor is known as vibration decibels or VdBs. VdBs are generally used when evaluating human response to vibrations, as opposed to structural damage, where PPV is the more commonly used descriptor. Vibration decibels are established relative to a reference quantity, typically 1×10^{-6} inches per second.

3.8.3 Soundscapes

“Soundscape” is a term used by the NPS to describe the ambient sound setting for a given parkland area. AC34 events would occur on or adjacent to national parklands, and therefore a discussion of the soundscape is provided. In a park setting, a natural soundscape is an area characterized by certain characteristic sound sources at detectable sound levels that typically occur without the intrusion of sounds caused by humans or human technology. Park natural soundscape resources encompass all the natural sounds that occur in parks, including the physical capacity for transmitting those natural sounds and the interrelationships among park natural sounds of different frequencies and volumes. Natural sounds occur within and beyond the range of sounds that humans can perceive, and they can be transmitted through air, water, or solid materials (NPS 2006).

The natural soundscape is viewed as a resource and as a value to be appreciated by visitors. Many park visitors have an expectation of seeing, hearing, and experiencing phenomena associated with a specific natural environment. While national parklands in the project area, which include Fort Mason, Crissy Field, Cavallo Point, Alcatraz Island, and Aquatic Park, are located in an urbanized area of San Francisco and Marin County, natural soundscape elements such as sea birds and waves on the bay can be heard during quieter periods along these shoreline areas.

3.8.4 Ambient Noise Environment

For the purposes of this EA, ambient long-term (24-hour) and short-term (10-minute) noise measurement data were collected in the spring and fall of 2011 in the project area to further characterize noise conditions at locations near AC34 event areas. To characterize ambient noise in the project area, measurement data were collected or compiled for six locations where sensitive land uses exist near primary project elements on federal lands, as shown in **Table NOI-1**. Residences, schools, rest homes, and hospitals are generally more sensitive to noise than commercial and industrial land uses and are therefore considered sensitive receptors for the purposes of noise analysis. **Table NOI-2** presents a range of noise levels and associates them with some common representative noise sources.

TABLE NOI-1: SHORT- AND LONG-TERM AMBIENT NOISE LEVELS IN THE PROJECT AREA

Measurement Location	Time	Noise Levels in dBA	
		Hourly Leq	Lmax
1. Ghirardelli Square (residential units on the upper floors) Nearest residential receptor to Aquatic Park	12:40 p.m.	65.0	83.8
2. Laguna Condominiums (residential units between North Point and Bay streets) Nearest residential receptor to Fort Mason	12:40 p.m.	69.0	83.0
3. Marina Boulevard Residences (residential units on Marina Boulevard between Lyon and Baker streets) Nearest residential receptor to Crissy Field East	1:00 p.m.	67.1	78.6
4. Armistead Road Residences Nearest residential receptor to Crissy Field West	24-hour	62.3	82.8
5. Crissy Field Center Educational receptor within Crissy Field	12:45 p.m.	57.0	68.1
6. Crissy Field Marsh	Multiple day median	57.0	73.2
7. Cavallo Point Lodge Nearest residential receptor to Cavallo Point areas	10:48 a.m.	49.0	ND
8. Alcatraz West	Multiple day median	59.0	76.5
<p>NOTES: dBA = A-weighted decibels; ND = Data not available. Leq represents the constant sound level; Lmax is the maximum noise level. SOURCES: Environmental Science Associates, 2010 and 2011; Wilson Ihrig & Associates, <i>Noise and Vibration Setting Report, San Francisco Muni Historic Streetcar Service to Fort Mason</i>, Revised Report, April 2009; NPS, GOGA Acoustical Monitoring 2007/2008, 2011.</p>			

TABLE NOI-2: 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	
SOURCE: U.S. Department of Housing and Urban Development, <i>The Noise Guidebook</i> , 1985.		

3.8.4.1 America’s Cup Spectator Venues

Fort Baker Pier, 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 the 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 NPS. Currently, Alcatraz is a major museum exhibit attraction accessible only by ferry operators. There are no sensitive human noise receptors on or within 1 mile of Alcatraz, but sensitive wildlife may be present at various times of the year.

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 1 mile west of Marina Green. The noise environment in this area is dominated by distant roadway traffic on Doyle Drive and occasional aircraft and helicopter overflights. Crissy Field is expansive and is generally divided between Crissy Field West and Crissy Field East. Noise measurements taken at Crissy Field West indicate daytime L_{eq} noise levels of 57 dBA at Crissy Field. The closest sensitive receptors to Crissy Field West are residences on Armistead Road, 1,000 feet to the west of the venue location, where noise measurements indicate peak daytime hourly L_{eq} noise levels of 62 dBA, due primarily to the presence of vehicle traffic on Doyle Drive. The closest sensitive receptors to Crissy Field East are residences on Marina Boulevard as well as Crissy Field Center, which is an educational facility at the easternmost end of Crissy Field. Noise measurements indicate peak daytime hourly L_{eq} noise levels of 57 dBA, due primarily to the presence of vehicle traffic on Bay Street.

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.

3.8.4.2 America's Cup Secondary Viewing Areas and Vicinity

Spectators might watch the AC34 races from public areas for which no infrastructure or other project component is proposed by the project. These secondary viewing areas could include, but would not be

limited to, other public areas along the San Francisco waterfront, other GGNRA lands within the Presidio or Marin Headlands, Angel Island, and Treasure Island/Yerba Buena Island.

Golden Gate National Recreation Area, Southern Marin County

This area is under the jurisdiction of the NPS 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 and with marine activity affecting the noise environment at the Bay and ocean shorelines.

Angel Island

Angel Island is under the jurisdiction of California State Parks but includes a small area of federal lands. 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 and aircraft operations affecting the noise environment, particularly along the shoreline.

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, a multiuse trail that runs the length of Crissy Field and could include portions of Marine Drive. 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, distant vehicle traffic on the Golden Gate Bridge, and occasional aircraft overflights.

3.8.5 Existing Vibration Conditions

Sources of vibration in the San Francisco peninsula portion of 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. Refer to p. 5.7-12 of the Draft EIR for more information on vibration.

A survey of groundborne vibration levels from streetcar operations along the Muni F-line was conducted in 2006 (Wilson Ihrig & Associates 2009) 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.

3.8.6 Noise- and Vibration-Sensitive Land Uses

3.8.6.1 *Aquatic Park*

Existing buildings and facilities that would be located adjacent to the America's Cup spectator venue at Aquatic Park include:

- Ghirardelli Square at 900 North Point Street, which has residences.
- San Francisco Senior Center at 890 Beach Street in the Aquatic Park National Historic Landmark (NHL) District bathhouse building (San Francisco Maritime Museum).
- The Aquatic Park National Historic Landmark (NHL) District bathhouse building (San Francisco Maritime Museum) at 900 Beach Street.

The only existing residential units located immediately adjacent to Aquatic Park are residential units on the upper floors of Ghirardelli Square at 900 North Point Street (with frontage on Beach Street). There are other residential buildings farther south (for example, the residential towers [Fontana Towers] located on North Point Street between Polk Street and Van Ness Avenue), but these buildings are considerably more distant (about 250 feet) from Aquatic Park.

3.8.6.2 *Fort Mason*

Existing buildings and facilities that would be located adjacent to the America's Cup spectator venue at Fort Mason include:

- Offices
- Conference areas
- Theaters
- Meeting/activity spaces
- Library
- Educational facilities (including a school of music)

Residential land uses nearest the Fort Mason venue are condominiums on Laguna Street and residences on the south side of Bay Street between Laguna Street and Van Ness Avenue. There are also upper-story residential and transient lodging land uses in the Upper Fort Mason area.

3.8.6.3 *Crissy Field*

Existing buildings and facilities that would be located adjacent to the America's Cup spectator venue at Crissy Field include the educational facilities at Crissy Field Center. Residential land uses nearest the Crissy Field venue are single-family residences on Bay Street between Lyon Street and Baker Street at the eastern end of Crissy Field and military housing on Armistead Road approximately 1,000 feet from

the western end of Crissy Field West. Other land uses in and around Crissy Field include office space, San Francisco State University educational facilities, and recreational facilities.

3.8.6.4 Fort Baker Pier, Marin County

Existing buildings and facilities that would be located adjacent to the America's Cup spectator venue at Fort Baker Pier include transient lodging at Cavallo Point. There are no residential receptors within 1 mile of Fort Baker Pier.

3.8.7 References

Federal Transit Administration

- 2006 Transit Noise and Vibration Impact Assessment.

National Park Service (NPS)

- 2000 Director's Order #47: Soundscape Preservation and Noise Management, approved by Robert Stanton, Director, December 2000. Available on the Internet at <<http://www.nps.gov/policy/DOrders/DOrder47.html>>. Viewed on December 2 2011.
- 2006 National Park Service Management Policies, 2006, page 56. Available on the Internet at <<http://www.nps.gov/policy/mp2006.pdf>>. Viewed on December 2, 2011.
- 2011 Golden Gate National Recreation Area. *Acoustical Monitoring 2007-2008*.

Wilson Ihrig & Associates

- 2009 *Noise and Vibration Setting Report, San Francisco Muni Historic Streetcar Service to Fort Mason*, Revised Report, April 2009.

3.9 VISUAL RESOURCES

This section addresses the visual resources surrounding the proposed America's Cup (AC34) project. Visual resources, also sometimes referred to as aesthetic resources, are defined as the visible natural and built landscape features within or surrounding a project site. This section describes the affected environment, or setting, that includes federal facilities along San Francisco's northern and eastern waterfronts in relation to the proposed federal actions on the scenic resources of San Francisco and San Francisco Bay. Scenic resources of particular interest are affected park landscapes, viewsheds, and lightscapes.

3.9.1 Definitions

Visual character is the unique combination of landscape features that combine to make up views, including native landforms, water, and vegetation patterns as well as built features such as buildings, roads, and other structures. Landscape and built features combine to form unique perspectives with varying degrees of visual quality.

Viewsheds are the set of views available from a particular setting or venue. Particular views include foreground, middleground, and background components that align from a specific perspective or point to form a unique combination of landscape and built features. Components of viewsheds include native landforms, water, and vegetation patterns as well as built features such as buildings, roads, and other structures. Landscape and built features combine in a viewshed to form unique perspectives with varying degrees of visual quality.

Visual quality is the intrinsic appeal of a landscape or scene due to the combination of natural and built features in the landscape. The waterfront landscapes of San Francisco are urban edges that have been designed to maximize visual quality. Large numbers of people are attracted to the waterfront as relief to the density of the city. The attraction of the water, the openness of the Bay, and the natural qualities of the surrounding hills all contribute to a consistently high visual quality.

Visual sensitivity is the level of interest or concern that the public has for maintaining the visual quality of a particular aesthetic resource. Visual sensitivity is a measure of how noticeable proposed changes might be in a particular scene and is determined based on the overall clarity, distance, and relative dominance of the proposed changes in the view, as well as the duration that a particular view could be seen. Visual sensitivity to change along the San Francisco waterfront is consistently high because so many people have access to waterfront views, and planning objectives are in place to protect them. Visual sensitivity to temporary modifications, however, is consistently lower than sensitivity to permanent modifications because (1) the overall time available (duration) to view the temporary modifications is less than for permanent changes, and (2) the resource would ultimately return to the original visual quality.

The NPS is committed to "preserving, to the greatest extent possible, the natural lightscapes of parks, which are natural resources that exist in the absence of human-caused light" (NPS 2006). As such, the NPS:

- Restricts the use of artificial lighting in parks to those areas where security, basic human safety, and specific cultural resource requirements must be met;
- Use[s] minimal-impact lighting techniques; and
- Shield[s] the use of artificial lighting where necessary to prevent the disruption of the night sky.

3.9.2 Federal Action in the Regional Setting

San Francisco and San Francisco Bay provide the regional setting for the AC34 project. The San Francisco waterfront is a highly developed urban waterfront with considerable density, variation of landform, and land uses that provide numerous scenic vistas and viewing opportunities for AC34 activities on San Francisco Bay. Within this diverse setting are the federal lands that are the subject of the federal actions described in Chapter 2 – Alternatives and this visual evaluation. The potential viewing locations addressed in the federal action include San Francisco Maritime National Historical Park (SAFR); and Crissy Field, Fort Mason, Alcatraz Island, Fort Baker Pier in the Marin Headlands, and Fort Point National Historic Site, each of which is within the Golden Gate National Recreation Area (GGNRA). The upland portion of the Presidio of San Francisco, managed by the Presidio Trust, provides considerable opportunities to view the Bay. Within the Bay are Alcatraz Island, Angel Island, Treasure Island, and Yerba Buena Island, all offering viewing opportunities of the proposed racing area. Alcatraz is the only island under federal jurisdiction.

3.9.3 Viewsheds

All AC34 races would occur in Central San Francisco Bay. The surrounding areas offer multiple and widespread locations for viewing the AC34 races, including areas along the northern waterfront of San Francisco and across the Bay at the southern tip of Marin County.

The project sites on federal lands with views of AC34 races are described below and fall into two major categories: primary and secondary viewing areas. Primary viewing areas are locations where the project sponsor has proposed visitor-serving facilities such as bleacher seating, food service and restrooms, viewing areas, television monitors, and merchandizing. Secondary viewing areas are locations where races could be viewed without any additional facilities. The discussion below describes the viewsheds toward the race course, beginning with primary viewing areas and then continuing to secondary viewing areas within federal properties along San Francisco and Marin County waterfronts. All Bayside locations are connected by the San Francisco Bay Trail, which is incorporated into many of the federal facilities surrounding San Francisco Bay. **Table VIS-1** summarizes visual resources in the primary viewing areas.

TABLE VIS-1: SUMMARY OF VISUAL RESOURCES AT PRIMARY VIEWING AREAS

Facility or Venue	Existing Viewshed and Lightscape Characteristics
Aquatic Park/SAFR	<p><i>Foreground:</i> The rounded lines of the two-story Maritime Museum, grassy park areas, unoccupied amphitheater, steps to the sandy beach and waterfront.</p> <p><i>Middleground:</i> The circular Aquatic Park Cove enclosed by park area trees, Municipal Pier, and the Hyde Street Pier with historic ship displays on the right.</p> <p><i>Background:</i> Distant hills of Angel Island, Alcatraz Island, and Tiburon. Open water of the Bay visible only from elevated perspectives.</p> <p><i>Lightscape:</i> Tourist destinations near the cable car, Ghirardelli Square, and Fisherman’s Wharf surround the park area and create a busy well-lit nighttime setting until about midnight. Urban lighting on two sides with street lights on Lombard. The Bay and backside of Fort Mason are dark.</p>
Crissy Field	<p><i>Foreground:</i> Very large open lawn at edge of the Bay with pedestrians, runners, and bicyclists on the Bay Trail in front of Bay waters.</p> <p><i>Middleground:</i> Coast Guard station structures, long shoreline edge and beach, nearby portions of the Bay. The Golden Gate Bridge dominates western views.</p> <p><i>Background:</i> Distant portions of the Bay, the Marin Headlands, Tiburon, Angel Island, Alcatraz Island, distant East Bay hills, and the city skyline.</p> <p><i>Lightscape:</i> Very dark; few headlights from limited traffic on Mason Street. Amber lights delineate outline of the Golden Gate Bridge, highlighting towers.</p>
Fort Mason	<p><i>Foreground:</i> Parking lots surrounding large historic warehouses on piers.</p> <p><i>Middleground:</i> Warehouse structures on piers framing views of the Bay.</p> <p><i>Background:</i> The hills of the Marin Headlands, along with Tiburon, Angel Island, and Alcatraz Island.</p> <p><i>Lightscape:</i> The renovated warehouses of Fort Mason Center have an active nightlife, with a restaurant and clubs surrounded by well-lit parking lots. Upper Fort Mason is dark.</p>
Alcatraz Island	<p><i>Foreground:</i> Historic lighthouse, fortifications, and prison structures.</p> <p><i>Middleground:</i> Edges of the island and the near-Bay waters in 360 degrees.</p> <p><i>Background:</i> The waters of the Bay and distant shorelines of the city, Golden Gate Bridge, Marin Headlands, Angel Island, East Bay hills, and Yerba Buena Island.</p> <p><i>Lightscape:</i> Dark; illuminated city skyline and Golden Gate Bridge in distance.</p>
Fort Baker Pier	<p><i>Foreground:</i> Pier deck and railings surrounded by nearby waters.</p> <p><i>Middleground:</i> 120-degree view of Bay, Horseshoe Bay with historic fortifications along shoreline, steep slopes, and underside of Golden Gate Bridge.</p> <p><i>Background:</i> Cavallo Point, the waters of the Bay, and city skyline.</p> <p><i>Lightscape:</i> Dark; illuminated city skyline and Golden Gate Bridge.</p>

3.9.3.1 Primary Viewing Areas

San Francisco Maritime National Historical Park /Aquatic Park

SAFR is located between Fisherman’s Wharf and Fort Mason on San Francisco’s northern shoreline. SAFR includes Aquatic Park and is shown in **Figure VIS-1**. The NPS Pacific West Information Center is located in the SAFR visitor center, across from the park at the corner of Hyde and Jefferson streets. The Hyde Street cable car turntable is within the park area and draws numerous tourists. The Aquatic Park Historic District is a National Historic Landmark and is listed on the National Register of Historic Places.



Steps tie distant beach and amphitheater to the Bay Trail in front of the Maritime Museum



Elevated view across Municipal Pier to Alcatraz, Angel Island, and Tiburon



Historic ships docked at Hyde Street Pier form the eastern edge of the enclosed water basin

The park encompasses about 35 acres on San Francisco's northern waterfront in what was once an industrial and food packing section of the city. It includes a fleet of historic vessels (on the Hyde Street Pier); a collection of approximately 100 watercraft; the Maritime Museum, with an artifact collection of historic documents, photography, and manuscripts; the maritime library of an estimated 37,000 titles; the Aquatic Park Bathhouse; the Tubbs Cordage Company office building; and the Haslett Warehouse, a.k.a. the Argonaut Hotel.

The landside focal point is the Aquatic Park bathhouse building, an Art Deco structure on the waterfront that houses the Maritime Museum and the San Francisco Senior Center. The building includes concrete amphitheater structures facing the water to the east and west of the main block. The Hyde Street Pier and Municipal Pier create a protected cove around the enclosed water basin of Aquatic Park. To the west and east are sloped grassy lawn areas that look across the basin to the horseshoe-shaped Municipal Pier extending into the Bay. Views across the cove include historic ships docked at the Hyde Street Pier.

The viewshed consists of three primary elements. Foreground elements of the viewshed are typically the park facilities themselves and the concrete steps that outline the edge of the water. Middleground elements consist of the circular Aquatic Park Cove enclosed by park area trees, Municipal Pier, and the Hyde Street Pier with historic ship displays on the right. Background elements include views across Municipal Pier to Alcatraz Island, Angel Island, and Tiburon. Only when the viewer is elevated and away from the water do views of San Francisco Bay become evident.

Crissy Field

Crissy Field, shown in **Figure VIS-2**, is located on San Francisco's northern shoreline near the Golden Gate Bridge. The western portion of this area contains the open grassy "field," which is a large open flat lawn area set back and away from a shoreline beach. Within the beach area and on the waterfront is the Gulf of the Farallones Marine Sanctuary Visitor Center (in the former Coast Guard station). Other uses at Crissy Field include the Crissy Field Center, cafés, gift shops, and related recreational facilities. The Bay Trail, also known as the Crissy Field Promenade, separates the waterfront beach from the grassy lawn while providing a lateral connection from the Golden Gate Bridge to Marina Green and points farther east. The Presidio Trust manages the inland area of the Presidio that includes a portion of Crissy Field. The GGNRA converted the eastern end of the former airfield into 22 acres of tidal marsh habitat with interpretive paths and over 1,000 paved and unpaved parking spaces (although only approximately 400 to 500 of those parking spaces are currently available, as the rest are within the construction easement for the Doyle Drive replacement project).

The primary foreground element within the Crissy Field viewshed is a flat, expansive, green grassy field, bordered on the south by large historic hangar buildings. Located along Mason Street, most of the buildings feature historical architectural elements and visually contrasting colors (e.g., white walls with red roofs) that draw visual attention. On the water side, the Bay Trail, with the activity of walkers, joggers, and cyclists, runs parallel to the beach, defining the edge of the field and also acting to protect sensitive habitats immediately along the San Francisco Bay shoreline. The former Coast Guard station, located on the shoreline, features prominently in middleground views from certain perspectives and attracts visual attention due to its highly contrasting white and red walls and red roofs. The panoramic views beyond the grassy field and shoreline beaches are dominated by the waters of San Francisco Bay



Crissy Field (left), looking West, is separated by the Bay Trail from sensitive dune habitat on the shoreline



Views of the Bay and City skyline from Crissy Field (far right), looking East, behind the Farallon Visitor Center



Dramatic views of the Golden Gate Bridge (and Bay to the right) from Crissy Field

and punctuated by visual landmarks such as the Golden Gate Bridge and Alcatraz Island. Background views include the Marin Headlands, the distant hills of Tiburon, and other lands in the North Bay that recede into the background. Farther east is Angel Island, looming large in the middle of the Bay. Alcatraz is smaller and more distant, though very recognizable with its block and water tower. Looking eastward and parallel to the shoreline of Crissy Field are views of the Bay shoreline, the new tidal marsh, and the city skyline in the background.

Fort Mason

Fort Mason, as seen in **Figure VIS-3**, is a former U.S. Army post and military port facility located directly on San Francisco Bay and a National Register-listed historic district. Fort Mason includes Lower Fort Mason, also known as the San Francisco Port of Embarkation, and is part of the GGNRA. SAFR headquarters is located in Building E in Fort Mason Center and the GGNRA headquarters are located in Building 201 in Upper Fort Mason. Lower Fort Mason contains large three-story historic warehouses surrounded by surface parking. The piers on the waterfront extend into the Bay and provide views across the water. Within these buildings is Fort Mason Center, which leases space to a number of environmental, cultural, and arts organizations and a restaurant.

The viewshed includes many historic waterfront facilities, piers, and parking. Views of San Francisco Bay and beyond from Upper Fort Mason include the Golden Gate Bridge, Alcatraz Island, and Marin County. Immediate views around Lower Fort Mason are of boats docked nearby and the hillside leading up to Upper Fort Mason.

Alcatraz

Alcatraz is a 22-acre island located approximately 1.5 miles offshore from San Francisco. Alcatraz is a former Civil War outpost that later served as a federal prison until 1963. Alcatraz is part of the GGNRA and is operated by the NPS. Currently, Alcatraz is a major museum exhibit attraction accessible only by ferry operators under contract with the NPS.

Alcatraz Island offers visitors a 360-degree panoramic view of San Francisco Bay. East Bay cities that can be seen from Alcatraz Island include Oakland, Berkeley, and Richmond. Views to the north include Angel Island, Tiburon, and Sausalito. The Marin Headlands, the Golden Gate Bridge, and San Francisco can all be seen from Alcatraz Island.

Fort Baker Pier, Waterfront, and Bluffs

Fort Baker Pier is located at the base of the north end of the Golden Gate Bridge in the Marin Headlands of the GGNRA. The pier is approximately 360 feet long and 115 feet wide at its widest point. Views from Fort Baker Pier include the Golden Gate Bridge and waters below. Views across the Bay include the San Francisco skyline and Crissy Field. Port Baker Pier also offers views of the Marin Headlands from the water. The viewshed also includes immediate views of Horseshoe Bay and the Fort Baker area.



Lower Fort Mason provides historic waterfront facilities and views of the Bay



View of Fort Mason from the Bay Trail connection to Aquatic Park



Views of the Bay and Marin County from Upper Fort Mason



Alcatraz Island is only accessible by boat



Fort Baker Pier with Fleet Week's 'Parade of Boats' spectators



View of San Francisco skyline from Fort Baker Pier

3.9.3.2 Secondary Viewing Areas

Secondary viewing areas are areas with views of the Bay, and specifically the primary race area, where people could go to observe the races without any AC34 programming or added attractions. People may already be in these locations doing other things, or they may intentionally go because they know about particular locations with good views. Many of these areas are small, some with tourists, others remote and sometimes not equipped to handle crowds. Depending on the location of the race course within San Francisco Bay, spectators may seek out different secondary viewing areas in order to maximize their proximity to and view of the race vessels.

Photos of selected secondary viewing areas are shown in **Figure VIS-4** through **Figure VIS-6**. The following discussion addresses secondary viewing areas within the GGNRA on both the north and south ends of the Golden Gate Bridge.

The Presidio of San Francisco

The Presidio of San Francisco, or the Presidio, is a former U. S. Army base converted to a national park site and is located at the south end of the Golden Gate Bridge. The 1,168-acre inland area of the Presidio, known as Area B, is managed by the Presidio Trust. The 323-acre shoreline area, or Area A, is under the jurisdiction of the NPS. Both Area A and Area B include significant natural, historic, scenic, and recreational resources.

Area B has multiple locations from which to view the Bay from a distance. The Coastal Trail now passes along the top of the Presidio bluffs, and with recent tree removal provides views toward the Golden Gate Bridge and portions of the Bay. The Parade Grounds are oriented toward the Bay waters, but views are constrained by buildings and vegetation and are interrupted by Doyle Drive. Excellent views of the Bay and the race area can be seen from two small overlooks on Lincoln Boulevard just above Crissy Field. These stops are popular among cyclists and pedestrians on the Presidio Trail, though very little space is available to accommodate a crowd.

Views from Area B of the Presidio are available from the following locations, which offer easier access for visitors (see photos from these locations in Figure VIS-4):

- 1) ***Inspiration Point.*** Located nearly a mile inland from the Crissy Field shoreline and near the Arguello Gate, Inspiration Point is essentially at the top of the hill. With the recent removal of older trees in the area, the elevated panoramic views include large portions of the primary race course from a distance of 1 to 1.5 miles. Foreground views include elements of the designated overlook, decorative paving, a seatwall around the perimeter, an information kiosk, and parking for approximately 30 cars around the circle pullout. Middleground views of the surrounding forest fall away quickly. The panoramic view is the distant background revealing the Central Bay from Sausalito to Angel Island, Alcatraz Island, and the East Bay hills.
- 2) ***Presidio Parade Grounds and Transit Center.*** The Main Post is built around the very large open green grassy lawn of the Parade Grounds. It slopes gently upward as it moves away from the Bay to Pershing Square, where the flagpole is located. It is oriented toward Angel Island and Alcatraz Island and offers consistent but filtered views of the Bay and the center portions of the race course. Buildings and trees block views to the shoreline and the nearest portions of the Bay.



Inspiration Point, near Arguello Gate, is elevated and views are distant



The Parade Ground has filtered views of the Bay and Angel Island



The Transit Center has distant views of the Bay partially blocked by Doyle Drive



The National Cemetery of San Francisco has views but cannot accommodate crowds



The Golden Gate Club also has views of the Bay and limited capacity

At the transit center, views are closer to the Bay and the race course is immediately visible, but the foreground views of the shoreline are blocked by the elevated viaducts of Doyle Drive.

- 3) ***San Francisco National Cemetery and Golden Gate Club.*** The Golden Gate Club and the San Francisco National Cemetery, maintained by the Department of Veterans Affairs, are located on a knoll facing Angel Island and the AC34 primary race course. Large cypress trees are part of the setting and sometimes filter views toward the water. The conference center in the Golden Gate Club has large picture windows out to the Bay, though the grounds are lower so that views of the nearest portions of the Bay and shoreline are currently blocked by Doyle Drive. Views from the upper elevations in the cemetery are not encumbered by Doyle Drive. While the cemetery is open to the public and has good views of the Bay, the cemetery setting is not well suited to accommodating sports spectators.
- 4) ***Fort Scott Ball Fields.*** Fort Scott affords views of San Francisco Bay, though ground-level views are currently filtered or blocked by vegetation near homes along Storey Avenue, as seen in **Figure VIS-5**. From the ball field, vegetation occasionally drops away to reveal views of the Bay and Alcatraz Island where the AC34 primary race course would be approximately 2 miles distant. The nearest point of the race course is about 0.5 mile away and most views to this portion of the race course are blocked.

The **Area A** shoreline near the race events extends east from Marina Green to the Golden Gate Bridge in the west. Area A includes East Beach near Marina Green, Crissy Field Promenade, Crissy Field itself, and Fort Point National Historic Site including Battery East, which abuts the lands of the Golden Gate Bridge toll plaza. China Beach and Baker Beach, located west of the Golden Gate Bridge, are oriented toward the Pacific Ocean and the Marin Headlands, so views of the AC34 races course from these areas would be limited to only a narrow wedge of the viewshed back under the Golden Gate Bridge. Typical views from these sites, as portrayed in Figure VIS-5, are as follows:

- 1) ***East Beach and the Crissy Field Promenade*** follow the shoreline and provide panoramic waterfront views of the Bay and surrounding hills, including the Marin Headlands, Angel Island, Alcatraz Island, and the Golden Gate Bridge. The wide promenade is heavily used and doubles as the Bay Trail, linking pedestrians and bicyclists east to downtown San Francisco and west to GGNRA lands in Marin County and beyond. East Beach has large areas for parking, restrooms, and showers and serves as a nationally renowned launch site for extensive sail boarding and kite boarding activities in the Bay. The views and beach activities draw visitors and spectators to East Beach, while strollers and runners often set their sights on Fort Point as a destination.
- 2) ***Fort Point National Historic Site*** includes lands adjacent to the Golden Gate Bridge facing San Francisco Bay. The historic brick structure of Fort Point was built on the point that defined the San Francisco side of the Golden Gate, from which panoramic waterfront views of the ocean, gate, and Bay were afforded. The Golden Gate Bridge was built over Fort Point and now dominates views from the fort. Views of the Bay from this location are dramatic, extending from the nearby Marin Headlands to Angel Island, Alcatraz Island, and the East Bay hills. Views from Fort Point to the San Francisco skyline align with the proposed AC34 primary race course such that turning maneuvers would be clearly visible, within 0.5 mile, over open water.
- 3) ***The Golden Gate Bridge toll plaza and scenic overlook*** are directly above and west of the Fort Point National Historic Site. The Golden Gate Bridge scenic overlook, in the toll plaza area, includes portions of Battery Lancaster. The Golden Gate Bridge overlook is very small, the toll plaza is extremely congested, and pedestrian/bicycle conflicts abound. Improvements



Areas between East Beach and Crissy Field have open waterfront views of the central Bay



Fort Point National Historic Site has waterfront views of the central Bay and limited access



Battery East has open and partially filtered views (to right) of the Bay



The Golden Gate Bridge south access area has open views, is limited in size and very congested



Fort Winfield Scott ball fields are elevated with filtered views of the Bay and East Bay hills

for the bridge's 75th anniversary celebration are under way, but distant views from the area will not be affected by these improvements. The Bay Trail now connects the Golden Gate Bridge with nearby Battery East and associated parking, which are part of the Fort Point National Historic Site. Views from the Golden Gate Bridge scenic overlook include the bridge and the Bay to the east. The elevated panoramic view of the Bay is interrupted on the right by large cypress and eucalyptus trees that block views of the Crissy Field shoreline and the city skyline. Large areas of the AC34 primary race course would be visible with minor interruptions from nearby vegetation. The elevated perspective would provide a viewing advantage in identifying relative boat positions during a race.

- 4) **Battery East** is adjacent to the Golden Gate Bridge scenic overlook. Trails from the overlook lead to historic batteries built into the hillsides, often with dramatic views of the Bay. The Battery East parking area, which is large and sometimes serves as an overflow for the scenic overlook at the bridge, is also linked to a short segment of the Bay Trail. From the parking area, views to the Bay, Crissy Field, and the city skyline are limited by eucalyptus and cypress trees to the east. A small point juts out to the west over the slopes below to offer some high-quality panoramic views of the Bay and the Golden Gate Bridge, though pedestrian capacity is limited in this area in part by the slopes and the close proximity of the historic batteries.

Golden Gate Bridge

The Golden Gate Bridge, operated by the Golden Gate Bridge, Highway and Transportation District, offers extraordinary views of San Francisco Bay from approximately 200 feet above the water and approximately half a mile away from the primary race course. The bridge walkways are part of the San Francisco Bay Trail providing pedestrian and bicycle access between Marin County and San Francisco. The Bicycle Safety Study for the Golden Gate Bridge (Alta 2011) confirms that bicyclists most often use the west side of the bridge, where as many as 1,000 bicyclists an hour may cross during peak weekend use. Pedestrians typically use the eastern walkway (with views of the race course and the city), where an average of approximately 1,400 pedestrians congregate on a Sunday afternoon from 2:00 to 3:00 p.m. Large volumes of pedestrians enter the bridge around 10:00 a.m. and volumes remain high until 7:30 p.m. Both pedestrian and bicycle volumes are highest during the afternoon, typically at the south end. The narrow width of the walkway and combined use with cyclists limit pedestrian traffic flows at the south end near the toll plaza.

The two other primary viewing areas operated by the Golden Gate Bridge, Highway and Transportation District are:

- **Golden Gate Bridge Toll Plaza.** At the south end of the Golden Gate Bridge are facilities for transit, parking, cycling, trails, and tourists. This area is often crowded with visitors. Short trails are available to an overlook that provides views of the bridge and the northern Bay. Much of the area surrounding the overlook is sensitive habitat.
- **Vista Point in Marin County.** At the northern end of the Golden Gate Bridge is Vista Point. Parking is available, though often the large scenic overlook is completely occupied by tourists, especially on sunny summer days. Vista Point offers extraordinary views of San Francisco Bay and the city from bridge level.

Golden Gate National Recreation Area, Southern Marin County

The NPS manages the Marin Headlands, located at the north end of the Golden Gate Bridge. Secondary viewing areas, shown in photos in **Figure VIS-6**, are as follows:

- Conzleman Road, Battery Spencer, Battery Kirby, and Hawk Hill.** Upper portions of the Marin Headlands are accessible by Conzelman Road, a very curvy two-lane scenic road overlooking the Golden Gate Bridge, the gate, San Francisco Bay, and the city. Battery Spencer, a historic site just above the Golden Gate Bridge with views of the AC34 primary race course from 1 to 3 miles away, is the closest elevated vantage point in this area. Battery Kirby is near the water at Kirby Cove, with low-level views under the Golden Gate Bridge to the Bay; the primary race course would range from 1.5 to 3.5 miles away. Hawk Hill is the high point above the Bay in the Marin Headlands and has panoramic views of the entire Golden Gate and most of San Francisco Bay. The near point of the primary race course would be approximately 2 miles away from Hawk Hill, though the closest portion of the race course would be obscured by the Golden Gate Bridge. There also are numerous trails in the Marin Headlands, though topography limits many trails from actually overlooking the Bay. One notable exception is the Coastal Trail, which offers close-up elevated views of the Bay and Golden Gate Bridge from the short section that faces the Bay. Parking is very limited. The historic site includes gun placements.
- Fort Baker and Cavallo Point.** East of the Golden Gate Bridge and near water level, Fort Baker occupies a small valley with views directly toward San Francisco. Views of the Bay waters are available from the bluff and East Road. A portion of Fort Baker was recently converted from an early-1900s Army post to the Cavallo Point lodge. The Children's Discovery Museum is near the shoreline, and the Bay Trail passes through on East Road. The United States Coast Guard station and the Travis Sailing Center are located at Fort Baker's Horseshoe Bay. Fort Baker Pier, located on the western edge of Horseshoe Bay, is at the base of the Golden Gate Bridge and is proposed as an official AC34 viewing venue for private events.
- East Road Pullouts.** East Road is a scenic road with views of Angel Island and San Francisco. The road connects Fort Baker to Sausalito. It has recently been renovated by the NPS and provides a designated paved (Class II) pathway for the Bay Trail. Pullouts have been paved, park benches and picnic tables installed, and vegetation restored. Occasional trail access is provided to non-auto-oriented lookouts such as Cavallo Point.

3.9.4 References

National Park Service, U.S. Department of the Interior

2006 *National Park Service Management Policies.*

Alta Planning and Design

2011 *Bicycle Safety Study for the Golden Gate Bridge.*



Battery Spencer is just above the Golden Gate Bridge and has extensive views of the Bay



Hawk Hill at the top of Conzleman Drive has views of the Bay and the Pacific Ocean



Battery Kirby, on Kirby Cove has waterfront views to the Bay under the Golden Gate Bridge



Battery Yates in Fort Baker has expansive waterfront views from the Bridge to Angel Island



Views from the navigation marker from Tiburon to the Golden Gate Bridge



Battery Cavallo is closed but has views across the Bay to San Francisco

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3.10 TRANSPORTATION AND CIRCULATION

This section describes the existing transportation network, including roadways and transit service, providing access to and within federally owned and managed facilities that would be affected by the proposed action. Supporting detailed technical information is included in Appendix I.

3.10.1 Transportation Setting

The transportation study area includes all aspects of the transportation network that may be measurably affected by the proposed action. The transportation study area is defined by travel corridors and by facilities such as bus stops and parking lots or garages. It includes the existing street intersections and transit lines that AC34 spectators, other visitors, and employees would use to travel to and from the project sites.

A total of 28 existing study intersections (22 in San Francisco and 6 in Marin County) were identified as the key locations that would likely be affected by the AC34 events. Muni and regional transit routes were grouped into five screenlines to assess the impact of AC34 spectators traveling to and from the waterfront to view the events.

Analysis of AC34 weekday events was conducted for the peak hour of the typical p.m. peak period (4:00 to 6:00 p.m.), which also coincides with spectators departing the event venues following the end of the races. Analysis of Saturday events was conducted for the peak hour of the Saturday midday peak period (11:00 a.m. to 1:00 p.m.), which coincides with spectators arriving to the venue sites. The peak periods are consistent with most transportation analyses conducted in San Francisco and were selected because they represent the times during typical days that routinely experience the highest traffic volumes and greatest congestion.

The 28 study intersections were selected for analysis because they are key intersections along routes to and from the spectator venues on federal lands for the AC34 events, and are the most likely to be affected by AC34 events. The analysis hours were selected to reflect the times during which the proposed project would be expected to have the most effect on the transportation network. The transit analysis includes an assessment of the transit lines within the transportation study area that would serve the proposed spectator venues and secondary viewing areas.

3.10.1.1 Regional and Local Roads

Regional Access

Interstate 80 (I-80), U.S. Highway 101 (U.S. 101) and Interstate 280 (I-280) are the three primary facilities that provide regional access to downtown San Francisco and The Embarcadero waterfront. U.S. 101 serves San Francisco and the Peninsula/South Bay, and extends north via the Golden Gate Bridge to the North Bay. Within San Francisco, Lombard Street and Van Ness Avenue are designated as U.S. 101. U.S. 101 is an access-controlled freeway south of South Van Ness and 13th Street. I-80 connects San Francisco to the East Bay and points further east via the Bay Bridge, while I 280 provides regional access to southern San Francisco, the Peninsula, and South Bay.

U.S. 101 near the Presidio is composed of the southern Golden Gate Bridge approach, Presidio Parkway, Richardson Avenue, and Lombard Street (from Richardson Avenue to Van Ness Avenue). Presidio Parkway is a combined at-grade, viaduct and tunnel facility currently under construction (to be completed in 2015) that generally has two or three lanes each way and runs east-west from the south end of the Golden Gate Bridge to Richardson Avenue through the northern portion of the Presidio before touching down near the Main Post area of the Presidio. Richardson Avenue has two or three lanes each way and runs diagonally (northwest – southeast) from the Presidio Parkway until it merges with Lombard Street at Broderick Street, about two blocks east of the Presidio's eastern boundary. Although U.S. 101 connects with most intersecting streets in the City, the only two connections to Presidio roadways within the park are at the Golden Gate viewing area next to the Golden Gate Bridge and at Gorgas Avenue near the eastern boundary of the Presidio. North of the Golden Gate Bridge, U.S. 101 is an eight-lane north-south freeway. U.S. 101 connects Marin County and parts of the East Bay (via the Richmond-San Rafael Bridge) with Fort Baker and the Marin Headlands.

I-80 and U.S. 101 merge south of the project area on an elevated structure. The closest ramps providing access to and from downtown San Francisco are at the intersections of Fourth Street/Harrison Street, First Street/Harrison Street, Essex Street/Harrison Street and Sterling Street/Bryant Street (High Occupancy Vehicle-only between 3:30 and 7:00 p.m.) and the off-ramps at the intersections of Fremont Street/Harrison Street and Fourth Street/Bryant Street.

Interstate 280 has an interchange with U.S. 101 approximately four miles south of downtown San Francisco (south of the project area). The closest on- and off-ramps providing access to and from downtown San Francisco are at the intersections of Sixth Street/Harrison Street and Fifth Street/King Street.

Local Access

Bay Street is a two-way east-west roadway that runs between The Embarcadero and Fillmore Street, with two travel lanes in each direction. On-street parking is permitted on both sides of the street, except weekdays between 4:00 and 7:00 p.m., when parking is prohibited on the north side of the street to create a third westbound travel lane. Bay Street functions as an arterial street for through traffic and provides access to the Golden Gate Bridge.

Chestnut Street is an east-west two-way roadway that runs discontinuously, due to grade, between The Embarcadero and Lyon Street (near the Presidio). In the vicinity of Piers 27-29, Chestnut Street is a two-lane westbound roadway between The Embarcadero and Montgomery Street, and a two-way one-lane each way roadway between Montgomery and Kearny Streets. On street parking is provided on both sides of the street.

Lombard Street is an east-west roadway that runs discontinuously due to grade between The Embarcadero and Presidio Boulevard, near the Letterman Digital Arts Center within the Presidio; it serves as the primary gateway to the eastern portion of the Presidio. Outside the Presidio, Lombard Street has one travel lane with parking on both sides of the street between Lyon Street and Richardson Avenue; between Richardson Avenue and Van Ness Avenue, Lombard Street becomes U.S. 101 and

has three lanes each way with parking on both sides. Eastbound and westbound left turns from Lombard Avenue are prohibited on weekdays, from 7:00 to 10:00 a.m., and from 3:00 to 7:00 p.m. Inside the Presidio, Lombard Street has one lane and a striped bicycle lane each way.

Van Ness Avenue is a north-south street that runs between North Point Street and Market Street. Van Ness Avenue generally has three lanes each way with parking on both sides of the street. South of Lombard Street, Van Ness Avenue is designated as being part of U.S. 101.

Fillmore Street is a north-south street that runs from Duboce Avenue to Marina Boulevard. In the vicinity of Lombard Street, Fillmore Street operates as a two-way road with one lane each way, parking on both sides of the street, and 15-foot wide sidewalks. Trucks over 6,000 pounds are restricted on Fillmore Street between Union Street and Broadway.

Divisadero Street is a north-south street running from Marina Boulevard to Waller Street. In the vicinity of Lombard Street, Divisadero Street operates as a two-way street with one travel lane each way and parking on both sides of the street.

Laguna Street is a north-south street that runs discontinuously between Beach Street and Market Street. In the vicinity of Lombard Street, Laguna Street has one travel lane each way and on-street parking on both sides of the street. North of Bay Street, Laguna Street has two travel lanes each way with no parking allowed on either side of the street. Trucks with a gross weight in excess of 6,000 pounds and tour buses or vans carrying eight or more passengers are prohibited from traveling on Laguna Street, north of Bay Street.¹

Marina Boulevard is an east-west street that runs between Bay Street and the Doyle Drive approach to the Golden Gate Bridge. It is a four-lane roadway (two travel lanes each way) with regulated non-metered parking on the south side of the street. Trucks with a gross weight in excess of 6,000 pounds and tour buses or vans carrying eight or more passengers are prohibited from traveling on Marina Boulevard. The Marina Green, a seven-acre public park originally constructed in 1915 for the Panama-Pacific International Exposition, is adjacent to Marina Boulevard.

In addition to the previously-described Lombard Street, the following roadways are located within the Presidio, where all of the intersections are unsignalized.

Lincoln Boulevard runs generally east-west in the eastern portion of the Presidio and north-south in its western portion, and serves as the primary thoroughfare in the Presidio. It begins at the intersection of Presidio Boulevard/Letterman Drive and ends at the intersection of 25th Avenue/El Camino del Mar. Lincoln Boulevard has one lane and a striped bicycle lane each way between Torney Avenue and Graham Street. It operates one-way westbound between Montgomery Street and Sheridan Avenue.

Presidio Boulevard contains one lane each way, and begins at Funston Avenue in the Main Post, connects to Lincoln Boulevard/Letterman Drive near the Letterman Digital Arts Center, and continues north-south in the eastern portion of the park to the southern boundary of the park, where it becomes Presidio Avenue in San Francisco.

¹ Local streets within the Russian Hill and North Beach neighborhoods also have restrictions prohibiting tour buses with eight or more passengers.

Mason Street provides east-west access through the Crissy Field area along the Presidio's north coast. Mason Street connects to Marina Boulevard and Doyle Drive at the Presidio's northeast gate. At its western terminus, Mason Street indirectly connects to Lincoln Boulevard by way of two minor roadways (Crissy Field Avenue and McDowell Avenue). Mason Street has one lane and a striped bicycle lane each way.

Gorgas Avenue provides east-west access on the northwest side of the Presidio. It connects with U.S. Highway 101 and Lyon Street at its eastern gateway on Richardson Avenue and provides access to the Presidio Transit Center at its western terminus. It has one lane each way, and the eastbound lane into two lanes when approaching Richardson Avenue.

Arguello Boulevard has one lane each way, and runs north-south from its intersection with Moraga Avenue in the Main Post, extending south through the Presidio's southern boundary. It serves as a gateway to the Richmond district of San Francisco.

McDowell Avenue runs north-south and connects Lincoln Boulevard near the National Cemetery with Crissy Field Avenue under the Doyle Drive (U.S. 101) viaduct; it has one lane each way.

Crissy Field Avenue runs southeast to northwest and connects McDowell Avenue with Mason Street at the west end of the Crissy Field Area, and also provides access from Crissy Field to Lincoln Boulevard. Crissy Field Avenue has one lane each way between McDowell Avenue and Mason Street, and one westbound (away from the Crissy Field Area) lane with wide shoulder between Mason Street and Lincoln Boulevard.

Long Avenue runs northwest to southeast and connects Lincoln Boulevard with Marine Drive, which in turn provides access to Fort Pint, under the Golden Gate Bridge. Long Avenue has one lane each way.

Merchant Road is a short north-south roadway that connects southbound U.S. 101 at the Golden Gate Bridge with Lincoln Boulevard; it has one lane each way. East of Lincoln Boulevard, Merchant Road becomes Storey Avenue.

Bowley Street runs north south and provides access to Baker Beach (via Gibson Road) at the southwest end of the Presidio, near 25th Avenue. It connects with Lincoln Boulevard at two locations, near Pershing Drive at the north and Howard Road at the south. From the north end to Gibson Road, Bowley Street has one lane each way with striped parallel parking provided on the west side; from Gibson Road to the south end, Bowley Street operates one-way southbound, with striped diagonal parking provide on the west side.

Located just north of the Golden Gate Bridge, the Marin Headlands and Fort Baker study area spans former military sites on both sides of U.S. 101 in Marin County. The study area is within a reasonable travel distance from San Francisco and most communities in Marin County. Access to the Marin Headlands is provided from Alexander Avenue at two locations — Conzelman Road off of Alexander Avenue, just north of the U.S. 101 southbound on-ramp to the Golden Gate Bridge, and the eastern terminus of the Barry-Baker tunnel on Danes Drive. Access to Fort Baker is also provided at two locations off of Alexander Avenue — Bunker Road via Danes Drive and East Road on the east side of

the park. From downtown Sausalito the most direct access to Fort Baker is by traveling south on Bridgeway Road to East Road.

The Marin Headlands and Fort Baker are connected to one another by Bunker Road, Alexander Avenue, and Lower Conzelman Road. However, vehicular access on Lower Conzelman Road has been restricted as a result of construction related to the Golden Gate Bridge seismic retrofit project, as well as post-September 11, 2001, security concerns. This road is expected to remain closed to vehicular traffic with the exception of use as an “overflow” route for traffic exiting Fort Baker under peak conditions and during some special events, and for service and emergency vehicles.

Conzelman Road is a narrow, winding east-west road that runs along the southern edge of the Marin Headlands. Visitors may enter the Marin Headlands at the Conzelman Road/Alexander Avenue intersection and the U.S. 101 southbound on-ramps. The road is used extensively by bicyclists and the shoulder by pedestrians. Conzelman Road becomes one-way west of Hawk Hill. Lower Conzelman Road connects the trailhead lot in the Marin Headlands with Fort Baker, passing under the Golden Gate Bridge. However, the road is closed to vehicular traffic.

Alexander Avenue is a two-lane roadway that connects U.S. 101 and Sausalito. Alexander Avenue provides access to Fort Baker via Bunker Road/Danes Drive and East Road. Because it is an approach road to the Golden Gate Bridge, Alexander Avenue is under the joint jurisdiction and control of Golden Gate National Recreation Area (GGNRA), the California State Department of Transportation (Caltrans), and the Golden Gate Bridge Highway and Transportation District (GGBHTD).

East Road is a two-lane, two-way north-south roadway under the jurisdiction and control of the National Park Service (NPS) that runs between Alexander Avenue and the Fort Baker parade ground.

Bunker Road is a two-lane road under the jurisdiction and control of the NPS between Fort Cronkhite, Fort Barry, Rodeo Valley in the Marin Headlands and Fort Baker. To the north, it provides access to the Marin Headlands through the one-lane Barry-Baker tunnel between Fort Baker and the Fort Barry area. Motor vehicle travel through the tunnel alternates between eastbound and westbound traffic and is controlled by traffic signals on each end of the tunnel. Four-foot-wide, striped bicycle lanes are provided for several hundred feet on both sides of the tunnel.

3.10.1.2 Intersection Operations

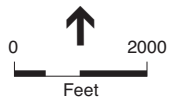
Existing conditions at 28 study intersections were analyzed for the weekday p.m. (5:00 to 6:00 p.m.) peak hour (which coincides with the existing evening commute), and the Saturday midday peak hour (12:00 to 1:00 p.m.) (generally the peak hour of travel on weekends). Intersection turning movement counts were collected at the study intersections on multiple midweek days (Tuesday, Wednesday, or Thursday) and on Saturdays in September, October, and November 2011. **Figures TRA-1A and TRA-1B** present the locations of the 28 study intersections. Existing turning movement volume summaries and figures presenting the existing lane geometries at the study intersections are included in **Appendix I**.

Traffic volumes at the study intersections are generally lower on Saturdays than on weekdays at intersections along the major arterials, including Bay Street, Marina Boulevard, and Lombard Street,



AC34 / Environmental Assessment (210317)
Figure TRA-1A
 Analysis Intersections
 San Francisco

SOURCE: San Francisco Planning Department



SOURCE: Adavant Consulting/LCW Consulting

AC34 / Environmental Assessment (210317)

Figure TRA-1B
 Analysis Intersections
 Marin County

reflecting the higher-volume commuter traffic patterns during the weekday p.m. peak hour. Saturday midday peak hour traffic volumes are greater than the weekday p.m. conditions at intersections within the Presidio, at intersections along Mason Street, and at the six study intersections in Marin County.

Traffic conditions at the study intersections were evaluated using level of service (LOS). LOS is a qualitative description of operating conditions ranging from LOS A (i.e., free-flow conditions with little or no delay) to LOS F (i.e., jammed conditions with excessive delays). Section 4.14, Transportation and Circulation, under “Analysis Methodology,” presents the analysis methodology and the LOS definitions for signalized and unsignalized intersections; it defines each of the levels of service and shows the correlation between average control delay and LOS.

Existing levels of service at the study intersections are presented in **Table TRA-1** for the weekday p.m. and the Saturday midday peak hours. As indicated in Table TRA-1, during the weekday p.m. peak hour, all study intersections currently operate at LOS D or better; during the Saturday midday peak hour, almost all study intersections currently operate at LOS D or better, with the following two exceptions:

- During the Saturday midday peak hour the signalized intersection of Marina Boulevard/ Lyon Street/ Mason Street in San Francisco operates at LOS F.
- During the Saturday midday peak hour, the unsignalized intersections of Alexander Avenue and the U.S. 101 northbound off-ramp in Marin County operates at LOS F.

Weekend traffic volumes near the waterfront can fluctuate substantially depending on the weather and time of year. The turning movement volumes used in this analysis were collected between late February and early March and between mid-September and early November under good weather conditions and represent typical visitation conditions.

3.10.2 Transit Service

This section describes the transit network in San Francisco, and in the vicinity of Presidio and NPS spectator venues and secondary viewing areas in San Francisco and Marin. Generally, San Francisco is well-served by public transit; however, there are isolated areas within the waterfront study area without nearby transit service, and/or with infrequent service. Due to topography constraints and discontinuity of the street network, portions of the waterfront can be isolated from convenient transit.

Local service within San Francisco is provided by the San Francisco Municipal Railway (Muni), the transit division of the San Francisco Municipal Transportation Agency (SFMTA). Muni bus, historic streetcars, cable car and light rail lines can be used to access regional transit operators. Service to and from the East Bay is provided by BART, AC Transit and ferries; service to and from the North Bay is provided by Golden Gate Transit buses and ferries; and service to and from the Peninsula and the South Bay is provided by Caltrain, SamTrans and BART. **Figure TRA-2** presents the Muni transit network in the northwest portion of San Francisco.

TABLE TRA-1: INTERSECTION LEVEL OF SERVICE – EXISTING CONDITIONS – WEEKDAY PM AND SATURDAY MIDDAY PEAK HOURS

#	Intersection		Control	Weekday PM		Saturday PM	
				Delay	LOS	Delay	LOS
1	Mason St	Yacht Rd	STOP-sign	17.0 (wb)	C	18.0 (eb)	C
2	Marina Blvd	Lyon St/ Mason St	Signal	30.8	C	>80	F
3	Mason St	Enter Crissy Field Parking	STOP-sign	14.0 (eb)	B	23.8 (eb)	C
4	Mason St	Exit Crissy Field Parking	STOP-sign	12.9 (sb)	B	15.7 (nb)	C
5	Mason St	Crissy Field Ave East	STOP-sign	17.9 (wb)	C	27.1 (wb)	D
6	Mason St	Crissy Field Ave West	STOP-sign	10.7 (sb)	B	11.5 (wb)	B
7	Lincoln Ave	Long Ave (Ft. Pt. Rd)	STOP-sign	12.3 (sb)	B	14.4 (nb)	B
8	Lincoln Ave	25th Ave	STOP-sign	14.2 (wb)	B	18.6 (nb)	C
9	Lincoln Blvd	Merchant Rd	STOP-sign	19.4 (sb)	C	31.3 (nb)	D
10	Lincoln Blvd	McDowell Ave	STOP-sign	8.8 (eb)	A	10.9 (eb)	B
11	Lincoln Blvd	Bowley St – North	STOP-sign	23.0 (wb)	C	27.9 (eb)	D
12	Lincoln Blvd	Bowley St – South	STOP-sign	16.9 (wb)	C	18.2 (wb)	C
13	Jackson St	Arguello Blvd	STOP-sign	28.1 (sb)	D	13.6 (nb)	B
14	Pacific Ave	Presidio Blvd	STOP-sign	20.3 (sb)	C	12.5 (sb)	B
15	Lombard St	Lyon St	STOP-sign	33.6 (eb)	D	19.4 (eb)	C
16	Lombard St	Divisadero St	Signal	36.4	D	14.6	B
17	Bay St	Laguna St	Signal	19.7	B	13.4	B
18	Bay St	Franklin St	Signal	10.8	B	9.5	A
19	Bay St	Van Ness Ave	Signal	16.4	B	20.7	C
20	Bay St	Hyde St	Signal	6.3	A	7.3	A
21	Marina Blvd	Buchanan St	Signal	11.2	B	12.1	B
22	Marina Blvd	Cervantes Blvd/Scott St	Signal	11.8	B	11.6	B
23	Alexander Ave	U.S. 101 NB ramps (Marin)	STOP-sign	12.3 (wb)	B	>50 (wb)	F
24	Alexander Ave	Danes Dry (Marin)	STOP-sign	12.0 (eb)	B	21.3 (eb)	C
25	Alexander Ave	Ft. Baker (East) Rd (Marin)	STOP-sign	10.1 (wb)	B	13.9 (wb)	B
26	Conzelman Rd	U.S. 101 entrance (Marin)	STOP-sign	12.9 (eb)	B	17.4 (eb)	C
27	Conzelman Rd	McCullough Rd (Marin)	STOP-sign	9.0 (sb)	A	8.9 (sb)	A
28	Bunker Rd	Danes Dry (Marin)	STOP-sign	10.1 (sb)	B	10.9 (sb)	B

^a Delay presented in seconds per vehicle. For unsignalized intersections, delay and LOS presented for worst approach. Worst approach indicated in ().

^b Intersections operating at LOS E or LOS F conditions highlighted in bold.

SOURCE: Advant Consulting/LCW Consulting, 2012



SOURCE: San Francisco Municipal Transportation Agency

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Figure TRA-2
Existing SFMTA Transit Network

3.10.2.1 Local Muni Service

Table TRA-2 presents the existing Muni routes that serve the Presidio and NPS sites and with stops located within a ½-mile radius, while Table TRA-3 summarize the weekday p.m. and Saturday midday peak period service frequencies (in minutes between buses) for those lines.

TABLE TRA-2: MUNI LINES SERVING STUDY AREA – EXISTING CONDITIONS

Muni Routes	Crissy Field/Presidio		Fort Mason	Aquatic Park
	West	East		
19-Polk			X	X
22-Fillmore			X	
28-19th Avenue	X	X	X	X
30-Stockton		X	X	X
30X-Marina Express		X	X	X
41-Union		X		
43-Masonic		X	X	
45-Union/Stockton		X		
47-Van Ness			X	X
49-Van Ness/Mission			X	X
F-Market & Wharves Historic Streetcar			X	X
PH-Powell-Hyde Cable Car			X	X

SOURCES: SFMTA, Advant Consulting/LCW Consulting, 2012

TABLE TRA-3: WEEKDAY AND WEEKEND FREQUENCIES OF MUNI LINES SERVING STUDY AREA – EXISTING CONDITIONS

Muni Routes	Approximate Service Frequency (minutes)	
	Weekday 4:00 to 6:00 p.m.	Saturday 10:00 a.m. to 6:00 p.m.
19-Polk	15	15
22-Fillmore	8	10
28-19th Avenue	10	12
30-Stockton	12	10
30X-Marina Express ^a	8	---
41-Union ^b	8	---
43-Masonic	12	15
45-Union/Stockton	12	10
47-Van Ness	10	10
49-Van Ness/Mission	8	10
F-Market & Wharves Historic Streetcar	6	6
PH-Powell-Hyde Cable Car	8	7

^a Operates peak commute direction on weekdays only.

^b Does not operate on weekends.

SOURCES: SFMTA, Advant Consulting/LCW Consulting, 2012

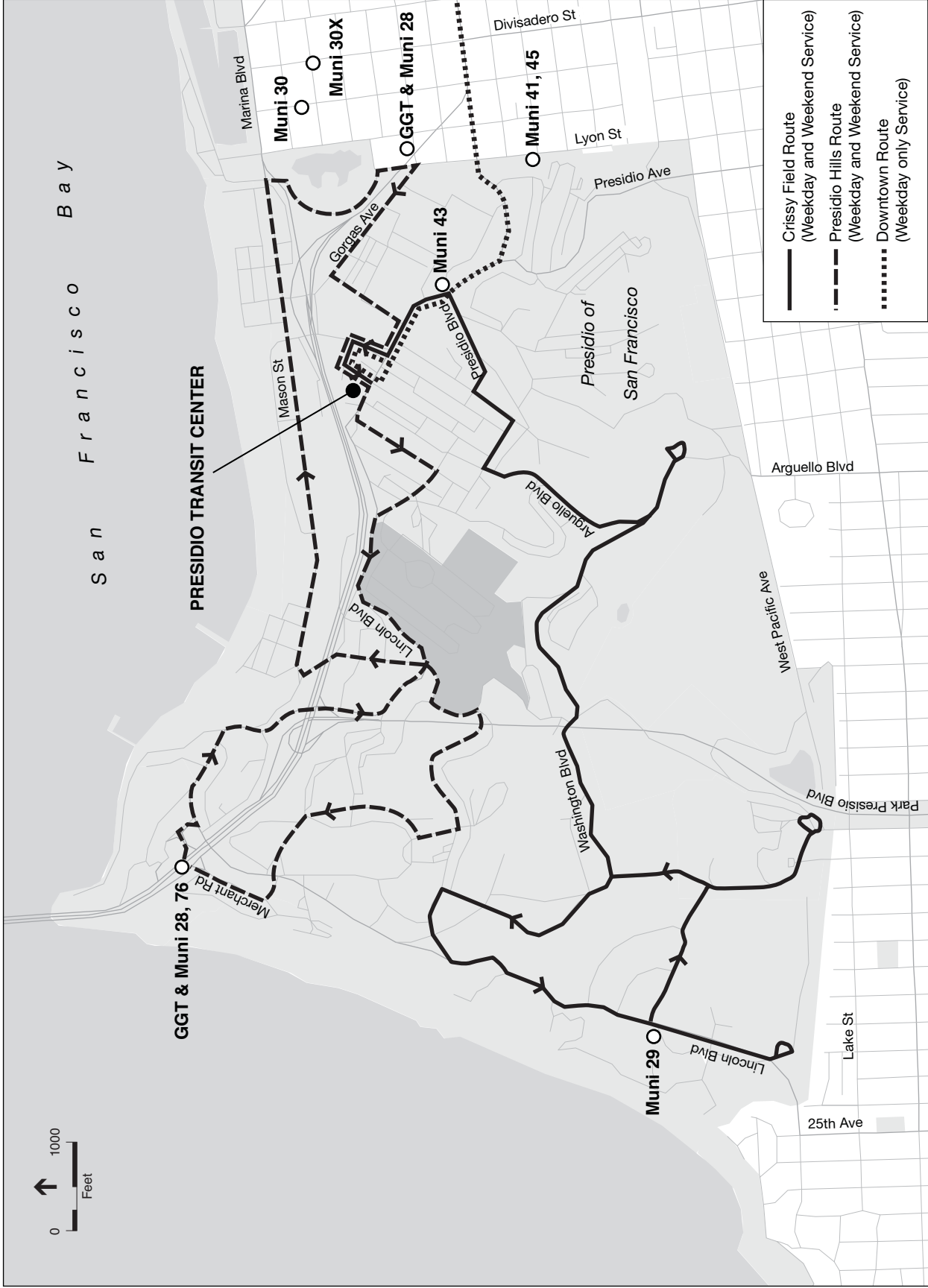
Nearby Muni service in the vicinity of the Presidio and Crissy Field includes the 28-19th Avenue bus line along Doyle Drive and Lombard Street, and the 30-Stockton and 30X-Marina Express bus lines along Chestnut, Divisadero and Broderick Streets. The 41-Union, 43-Masonic and 45-Union/Stockton connect to the eastern side of the Presidio.

Fort Mason is served by the 19-Polk, the 22-Fillmore, the 47-Van Ness, the 49-Van Ness/ Mission bus lines, in addition to the 28-19th Avenue, 30-Stockton, 30X-Marina Express and 43-Mason routes, previously described. The F-Market & Wharves historic streetcar and Powell-Hyde cable car lines also serve Fort Mason. Aquatic Park is served by the same Muni lines as Fort Mason, with the exception of the 22-Fillmore and 43-Masonic, which terminate in the Marina.

3.10.2.2 Presidio Trust Shuttle Service (PresidiGo)

The Presidio Trust currently operates three shuttle routes serving residents, employees and visitors to the Presidio: the PresidiGo Downtown (between the Presidio and the temporary Transbay Terminal), the PresidiGo Crissy Field (a clockwise loop serving the northern area of the Presidio), and the PresidiGo Presidio Hills (a clockwise loop serving the southern area of the Presidio). The PresidiGo Downtown service is interlined with the two PresidiGo routes inside the Park near the Main Post and allows many Presidio riders to travel downtown without transferring to another bus, while other riders would have to make at most one transfer (from one of the around the Park routes to the Downtown route). During peak commute hours, the Downtown Shuttle is available to Presidio residents and employees with an appropriate boarding pass as well as to members of the general public with a Muni Passport. It is available to all between 10:00 a.m. and 3:00 p.m. without a passport or boarding pass. Riders can board the Downtown shuttle service at the temporary Transbay Terminal, the Embarcadero BART/Muni Metro Station or at the intersection of Union Street and Van Ness Avenue. The shuttle provides direct drop-off to several sites within the park such as the Lombard Gate, the Letterman Digital Arts center, the YMCA and the Main Post Transit Center. PresidiGo downtown shuttle service is provided on weekdays from 5:45 a.m. to 9:00 p.m. Downtown service operates with 15 minutes between shuttles during the two-hour morning and afternoon peak periods, 30 minutes between shuttles during the shoulder periods, and one hour between shuttles during the midday. There is no PresidiGo Downtown shuttle service on weekends and holidays.

The PresidiGo Crissy Field and Presidio Hills routes are a free bus service available to all that runs on two continuous one-way, clockwise loops within the northern and southern areas of the Presidio, as shown in **Figure TRA-3**. They connect residential areas, commercial areas and visitor destinations in the park, as well as key transfer points to Muni and Golden Gate Transit buses, such as the Golden Gate Bridge, Main Post Transit Center, Presidio Visitor Center, and the Lombard Gate. These two routes operate at 30-minute frequencies on weekdays between 6:30 a.m. and 8:30 p.m., and on weekends between 11:00 a.m. and 7:00 p.m.; they operate on a limited weekend service schedule on federal holidays. PresidiGo shuttle ridership has been steadily increasing, and the Presidio Trust has been adding runs, extending service hours, and using larger vehicles in order to keep pace with the rising demand.



SOURCE: Adavant Consulting/LCW Consulting

AC34 / Environmental Assessment (210317)

Figure TRA-3

Existing PresidiGo Shuttle Network

3.10.2.3 Transit Service to Fort Baker and the Marin Headlands

Transit service to Fort Baker and the Marin Headlands in Marin is extremely limited. On Sundays and holidays only Muni's 76-Marin Headlands line operates hourly between 9:30 a.m. 6:30 p.m. from the Fourth Street and King Caltrain Station in San Francisco, to destinations in the Marin Headlands, via the temporary Transbay Terminal, Sutter/Post, Van Ness and Lombard. Buses exit U.S. 101 at Alexander Avenue immediately north of the Golden Gate Bridge before crossing under U.S. 101 to serve the majority of destinations in the southern Marin Headlands; the line does not serve Fort Baker.

Golden Gate Transit Commuter Routes 2, 4 and 92, and Basic Route 10 and 70/80 operate along Alexander Avenue, adjacent to Fort Baker. Commuter routes operate at 10- to 30-minute intervals, but only on weekdays during peak commute periods, while basic routes operate approximately hourly for the most part of the day on weekdays and weekends. GGT bus stops are located near the U.S. 101 interchange (northbound only), at the Danes Drive intersection (southbound only), and at the East Road intersection (northbound and southbound). Neither of these stops serves popular destinations in the Marin Headlands or Fort Baker, nor do they provide connections to Muni's 76-Marin Headlands bus service.

3.10.2.4 Golden Gate Transit Service to NPS Sites in San Francisco

In addition to providing transit service in the North Bay, Golden Gate Transit also provides bus service between Marin and Sonoma Counties and San Francisco. Golden Gate Transit operates 17 commuter and 4 basic bus routes into San Francisco, several of which are near several NPS sites. Basic bus routes operate at regular intervals of 15 to 90 minutes depending on the time and day of week. Commute bus routes operate at more frequent intervals in the mornings and evening periods only. **Table TRA-4** summarizes the existing Golden Gate Transit service to the NPS sites. Due to existing operational agreements, Golden Gate Transit buses are not allowed to pick up inbound passengers or drop off outbound passengers in San Francisco, except at the Golden Gate Bridge Toll Plaza.

Golden Gate Transit also operates ferry service between the North Bay and San Francisco. During the morning and evening commute periods, ferries are operated between Larkspur and the San Francisco Ferry Building, and between Sausalito and the San Francisco Ferry Building.

3.10.2.5 Additional Ferry Service to NPS Sites

Blue and Gold Fleet provides ferry service from Sausalito and Tiburon to San Francisco's Pier 41, located between Aquatic Park and the Alcatraz Ferry Landing at Pier 31½. Service is provided approximately every two hours from about 10:00 a.m. to 5:00 p.m. on weekdays, and from 10:00 a.m. to 7:00 p.m. on weekends.

Alcatraz Cruises serving Alcatraz Island, Angel Island, and some Bay excursions throughout the year operate from at Pier 31½. During the low season, generally from November through March, there are typically ten daily vessels to Alcatraz Island, plus one night tour service from Thursday through Monday.

TABLE TRA-4: GOLDEN GATE TRANSIT LINES SERVING STUDY AREA – EXISTING CONDITIONS

GGT Routes		Bus Stop Locations by NPS Site			
		Crissy Field/Presidio		Fort Mason	Fort Mason & Aquatic Park
Number/Name	Type ^a	West Golden Gate Bridge Toll Plaza ^b	East Richardson Ave. at Francisco St. ^c	Lombard St. at Fillmore St. ^d	North Point St. at Van Ness Ave. ^e
2 - SF - Marin Headlands	Commute	X	X	X	X
4 - SF - Mill Valley	Commute	X	X	X	X
8 - SF - Tiburon	Commute	X	X	X	X
10 - SF - Strawberry	Basic	X	X	X	
18 - SF - College of Marin	Commute	X	X	X	X
24 - SF – S. Anselmo/Fairfax	Commute	X	X	X	X
27 - SF – S. Anselmo	Commute	X	X	X	X
38 - SF - Terra Linda	Commute	X	X	X	X
44 - SF - Lucas Valley	Commute	X	X	X	X
54 - SF - San Marin	Commute	X	X	X	X
56 - SF - San Marin/Novato	Commute	X	X	X	X
58 - SF - Hamilton/Ignacio	Commute	X	X	X	X
70/71/80 - SF - Santa Rosa	Basic	X	X	X	
72 - SF - Santa Rosa	Commute	X	X	X	X
74 - SF – Petaluma/Sta. Rosa	Commute	X	X	X	X
76 - SF - East Petaluma	Commute	X	X	X	X
92 - SF - Marin City	Commute	X			
93 - SF - GGB Toll Plaza	Commute	X	X	X	
97 - SF - Larkspur	Commute	X	X	X	
101 - SF - Santa Rosa	Basic	X	X	X	

^a Commute routes operate on weekdays only, during the a.m. and p.m. peak periods.
^b Approximately ½ mile from West Crissy Field.
^c Approximately 1/3 mile from East Crissy Field.
^d Approximately ½ mile from Marina Green.
^e Less than ¼ mile from Fort Mason and Aquatic Park.

SOURCES: Golden Gate Transit, Adavant Consulting/LCW Consulting, 2012

During the high season, generally from April through the end of October, Alcatraz Cruises provides 14 daily vessel runs to Alcatraz Island, including two night tour services. One combination ferry service to and from Angel Island, with an intermittent stop at Alcatraz Island, is also provided.

3.10.2.6 Local and Regional Transit Screenline Analysis²

The impact of additional transit ridership generated by the proposed action was assessed by comparing the projected ridership to the existing transit capacity. Transit “capacity utilization” refers to transit riders as a percentage of the capacity of a transit line, or group of lines combined and analyzed as screenlines across which the transit lines travel.

For the proposed action, routes serving the AC34 sites and secondary viewing areas were grouped into two screenlines, and include the following Muni routes.

- **Presidio/Crissy Field/Marina Screenline:** 22-Fillmore, 28-19th Avenue, 30-Stockton (long line service), 43-Masonic, 45-Union-Stockton, 49-Van Ness-Mission.
- **Fisherman’s Wharf Screenline:** 8X-Bayshore Express, 8BX Bayshore “B” Express, 19-Polk, 30-Stockton (short-line service), 47-Van Ness, F-Market & Wharves, Powell-Hyde Cable Car, Powell-Mason Cable Car.

Transit capacity utilization calculations are included in Appendix I.

In addition to the Muni screenlines developed to assess ridership on routes serving the AC34 event sites and secondary viewing areas, regional transit was assessed at the San Francisco Planning Department regional screenline locations. The three regional screenlines were established around San Francisco to analyze potential impacts on the regional transit agencies, and include: East Bay (BART, AC Transit, ferries), North Bay (Golden Gate Transit buses and ferries), and the South Bay (BART, Caltrain, SamTrans).

The local and regional screenline analysis focuses on transit trips in the outbound direction, i.e., trips from Presidio/Crissy Field/Marina/Aquatic Park to other parts of the City and the region during the weekday p.m. peak hour, and inbound towards the waterfront during the Saturday midday peak hour. These directions coincide with forecasted peak AC34 spectator flows.

The transit analysis is conducted by calculating the existing capacity utilization (riders as a percentage of capacity) at the maximum load point (the point of greatest demand) along each route in a given screenline. Section 4.14, Transportation and Circulation, under “Analysis Methodology,” presents the analysis methodology for the transit capacity utilization and screenline analysis.

² The concept of screenlines is used to describe the magnitude of travel to or from the greater downtown area, and to compare estimated transit volumes to available capacities. Screenlines are hypothetical lines that would be crossed by persons traveling between the AC34 sites and their vicinity and other parts of San Francisco and the region.

Table TRA-5 presents the local transit screenlines for weekday p.m. peak hour (outbound, away from Presidio/Crissy Field/Marina/Aquatic Park) and Saturday midday peak hour (inbound, towards Presidio/Crissy Field/Marina/Aquatic Park) conditions. All San Francisco screenlines and regional operators operate within the capacity utilization standard³, and could accommodate additional passengers, during both the weekday p.m. and the Saturday midday peak hours.

TABLE TRA-5: MUNI AND REGIONAL TRANSIT SCREENLINES – EXISTING CONDITIONS WEEKDAY PM AND SATURDAY MIDDAY PEAK HOURS

Screenline / Transit Provider		PM Peak Hour (Outbound ^a)			Saturday Midday Peak Hour (Inbound ^b)		
		Ridership	Capacity	Capacity Utilization	Ridership	Capacity	Capacity Utilization
San Francisco Screenlines							
Presidio/Crissy/Marina		1,820	2,891	63%	1,827	2,738	67%
Fisherman’s Wharf		3,309	4,049	82%	2,339	3,119	75%
Regional Transit Screenlines							
East Bay	BART	20,067	24,150	83%	3,900	8,064	48%
	AC Transit	2,517	4,193	60%	117	200	59%
	Ferries	702	1,519	46%	560	688	81%
	Total	23,286	29,862	78%	4,577	8,952	51%
North Bay	Golden Gate Transit Buses	1,397	2,205	63%	62	205	30%
	Golden Gate Transit Ferries	906	1,700	53%	691	2,580	27%
	Total	2,303	3,905	59%	753	2,785	27%
South Bay	BART	10,202	16,800	61%	2,340	8,547	27%
	SamTrans	1,986	3,250	61%	543	650	84%
	Caltrain	575	940	61%	32	40	80%
	Total	12,763	20,990	61%	2,915	9,237	32%
<p>^a Away from Presidio/Crissy Field/Marina/Aquatic Park. ^b Towards Presidio/Crissy Field/Marina/Aquatic Park.</p> <p>SOURCES: SF Planning Department, AC Transit, BART, Caltrain, Golden Gate Transit, SamTrans, WETA, Blue & Gold, Advant Consulting/LCW Consulting, 2011</p>							

³ Muni has established a capacity utilization service standard which includes seated and standing capacity, with standees representing somewhere between 30 to 80 percent of seated passengers, depending upon the specific configuration of the transit vehicles. All of the regional transit operators except BART have a one-hour load factor standard of 100 percent, which would indicate that all seats are full. BART has a one-hour load factor standard of 135 percent, which indicates that all seats are full and an additional 35 percent of the train capacities are standees (i.e., 1.35 passengers per seat).

3.10.3 Pedestrians

3.10.3.1 Pedestrian Network

Crissy Field, including Fort Point, is a major pedestrian destination, particularly on weekends and on good weather days. The Marina Gate at Mason Street and the Golden Gate Promenade along the waterfront edge are the primary entrance to Crissy Field, supplemented by access from the Main Post along Halleck and Marshall Streets, and from the stables area along McDowell Avenue and Crissy Field Avenue. The area of Crissy Field encompassing Mason Street and south is under the jurisdiction of the Presidio Trust, while the area north of Mason Street is under the jurisdiction of the NPS. The Golden Gate Promenade along the waterfront edge, Marine Drive and Long Avenue are all part of the San Francisco Bay Trail. The Presidio Parkway project (Doyle Drive Reconstruction) currently under construction by Caltrans has affected pedestrian circulation to/from Crissy Field by closing Halleck and Marshall Streets. Once construction is completed new pedestrian connections over or under the Presidio Parkway will provide a direct connection between the Main Post and Crissy Field.

The Presidio has a well-established network of sidewalks and trails that provide pedestrians a safe connection between Presidio destinations and the entry/exit gates. Most intersections within the Main Post have marked pedestrian crosswalks, while sidewalks and marked pedestrian crossings are more sporadic in other areas of the Presidio. The Presidio Promenade running along the south side of Doyle Drive is a relatively wide, gently sloping trail with multiple connections to Crissy Field.

The San Francisco Bay Trail extends from Crissy Field, through the Marina Green, to the west entrance to Fort Mason at Laguna Street; the trail is pinched down to a narrow sidewalk at this location. The Bay Trail continues east through Fort Mason and onto the Aquatic Park Promenade. Sidewalks and crosswalks are generally provided throughout the Aquatic Park area. Sidewalks are about 12 to 15 feet wide, although tables and chairs, street furniture, signs, and street vendors regularly obstruct portions of the sidewalk at some locations. Crosswalks are provided at most intersections in the vicinity of Fort Mason and Aquatic Park, and signalized intersections generally include pedestrian signal heads with countdown timers.

The Marin Headlands can be accessed on foot from San Francisco by walking across the Golden Gate Bridge and following the pedestrian underpass from Vista Point to the trailhead lot. The pedestrian underpass is accessed by stairs; no ramp access is provided. Pedestrians are not allowed in the Barry-Baker tunnel. From Sausalito pedestrians can walk along the shoulders of Alexander Avenue to the Conzelman Road entrance to the Marin Headlands. However, the walk requires substantial time, and there are no sidewalks along Alexander Avenue. Pedestrians can access Fort Baker from San Francisco by walking across the Golden Gate Bridge and following the pedestrian trail past Vista Point to the multi-purpose trail along U.S. 101. Pedestrians can continue from the trail to the shoulders of Alexander Avenue and access the park via the shoulders of East Road. From Sausalito pedestrians can access Fort Baker by walking along the shoulders of East Road. Pedestrians reach Marin Headlands destinations either by using the trail network or sharing roads. In Fort Baker, pedestrians use the paved roadways, parking areas, and open spaces to access the various park sites. The San Francisco Bay Trail follows the southern and eastern coastlines of the Fort Baker area. Lower Conzelman Road connects Fort Baker with the trail-head lot in the Marin Headlands.

3.10.3.2 Pedestrian Volumes

Pedestrian movement data were collected for this EA at Aquatic Park, Fort Mason, Crissy Field, Fort Point, and the Golden Gate Bridge Overlook. Counts were conducted over a 10-day period, August 24-28, 2011 and September 7-11, 2011, from Wednesday through Sunday during three two-hour periods: 9:00 to 11:00 a.m., 1:00 to 3:00 p.m., and 4:30 to 6:30 p.m. Table TRA-6 summarizes the weekday and weekend pedestrian counts at some of the key locations where counts were conducted; more detailed information by specific count location is included in Appendix I. As shown in Table TRA-6, the NPS sites are very popular locations for pedestrians on weekends. There are two to three times as many pedestrians on a weekend days as they are on a weekday.

TABLE TRA-6: DAILY AND PEAK HOUR PEDESTRIAN COUNTS AT NPS SITES IN SAN FRANCISCO

Pedestrian Count Location	Weekday			Weekend			Weekend-to-Weekday Ratio	
	Daily ^a	Peak Hour ^b	% Peak Hour	Daily ^a	Peak Hour ^b	% Peak Hour	Daily ^a	Peak Hour ^b
Entering/Exiting Crissy Field								
- from Marina (Mason St & Promenade)	2,740	320	12%	6,530	830	13%	2.4	2.6
- from Crissy Field Avenue	1,540	190	12%	3,640	510	14%	2.4	2.7
- from Long Avenue	330	50	15%	700	100	14%	2.1	2.0
<i>Subtotal Crissy Field</i>	<i>4,610</i>	<i>560</i>	<i>12%</i>	<i>10,870</i>	<i>1,440</i>	<i>13%</i>	<i>2.4</i>	<i>2.6</i>
Entering/Exiting Ft. Point via Marine Dr	1,150	160	14%	2,740	380	14%	2.4	2.4
At the GG Bridge Toll Plaza Overlook (south side of the bridge)	2,830	430	15%	5,300	800	15%	1.9	1.9
Entering/Exiting Lower Ft Mason from Aquatic Park	2,630	350	13%	3,940	460	12%	1.5	1.3
At Ft. Mason’s Laguna St Pinch Point	1,870	220	12%	4,450	620	14%	2.4	2.8
At Aquatic Park Promenade	3,620	530	15%	5,460	620	11%	1.5	1.2
^a From 9:00 a.m. to 6:30 p.m. ^b Highest volume on a 60-minute interval during the 9:00 to 11:00 a.m., 1:00 to 3:00 p.m., or 4:30 to 6:30 p.m. periods. SOURCES: ORCA Consulting, Advant Consulting/LCW Consulting, 2012.								

The extensive data collection of pedestrian and bicycle flow volumes at key monitoring locations described above, along with “people at one time” (PAOT) counts at major public areas on weekdays and weekends were used to evaluate existing pedestrian conditions. The methodology uses the HCM level of service descriptions for LOS A to LOS F conditions; however, the analysis adjusts the flow rates and density levels to reflect higher impact of bicycles, presence of slower-moving spectators on pathways, and high-volume urban conditions. LOS A represents free-flowing pedestrian conditions, while LOS F indicates that there are substantial restrictions to pedestrian movement and speed. The walkway (based on pedestrian flows) and PAOT (based on pedestrian density) analyses were

conducted for the peak hour of the day for each analysis location, which may vary by location. Section 4.14, Transportation and Circulation, under “Analysis Methodology,” presents the pedestrian analysis methodology and defines each of the levels of service and shows the correlation between pedestrian conditions and LOS.

Figure TRA-4 presents the walkway and PAOT locations selected for analysis. The existing levels of service at the study areas are presented in **Table TRA-7** for the weekday p.m. and the Saturday midday peak hours; these are shown for pedestrian walkways and for people at one time (PAOT) levels. As indicated in **Table TRA-7**, during the weekday p.m. peak hour and weekend midday peak hour, all locations currently operate at LOS D or better.

3.10.4 Bicycles

3.10.4.1 Bicycle Network and Facilities

Bikeways are typically classified as Class I, Class II or Class III facilities. Class I bikeways are bike paths with exclusive right-of-way for use by bicyclists or pedestrians. Class II bikeways are bicycle lanes striped within the paved areas of roadways and established for the preferential use of bicycles, and Class III bikeways are signed bicycle routes where bicycles share the street with vehicles.

Figure TRA-5 shows the bicycle route network in the northern portion of San Francisco. There are several bicycle routes within the Presidio, although bicycles and vehicles share a standard-width roadway along most of these routes. As shown in **Figure TRA-5**, Lombard Street, Presidio Boulevard, Mason Street, Arguello Boulevard, 15th Avenue and El Camino del Mar are part of the designated San Francisco Citywide Bicycle Routes (Routes #4, #55, #2, #65, #69 and #95, respectively) that continue into the Presidio. Most of these routes are Class III facilities, although the travel lanes which vehicles and bicycles share are generally wider in the southwestern portion of the park. In Crissy Field, Mason Street has Class I and Class II facilities while the Golden Gate promenade along the waterfront edge, which is part of the San Francisco Bay Trail, is a Class I facility.

The San Francisco Bay Trail is a multi-purpose recreational trail administered by The Association of Bay Area Governments (ABAG) that, when complete, would encircle San Francisco Bay and San Pablo Bay with a continuous 500-mile network of bicycling and hiking trails; to date, 300 miles of the alignment have been completed (see Section 3.7, Visitor Use and Experience, for further description).

The Bay Trail serves an important function as an alternate commute corridor, and serves as the backbone for MTC’s Regional Bicycle Plan. In addition to the Golden Gate Promenade, the Bay Trail includes the Golden Gate Bridge, Marine Drive, Marina Boulevard, lower Fort Mason and the Aquatic Park Promenade. In Marin County, the Bay Trail includes Lower Conzelman Road under the Golden Gate Bridge and East Road through Fort Baker.

The City and County of San Francisco has recently developed the Marina Green Bicycle Trail Project to create a Class I, multi-use path for bicycles and pedestrians on the north sidewalk of Marina Boulevard between Laguna Street and Lyon Street, which is part of the Bay Trail. Improvements made by the City will include: bollard removal and upgrade, pathway and driveway intersection upgrades,

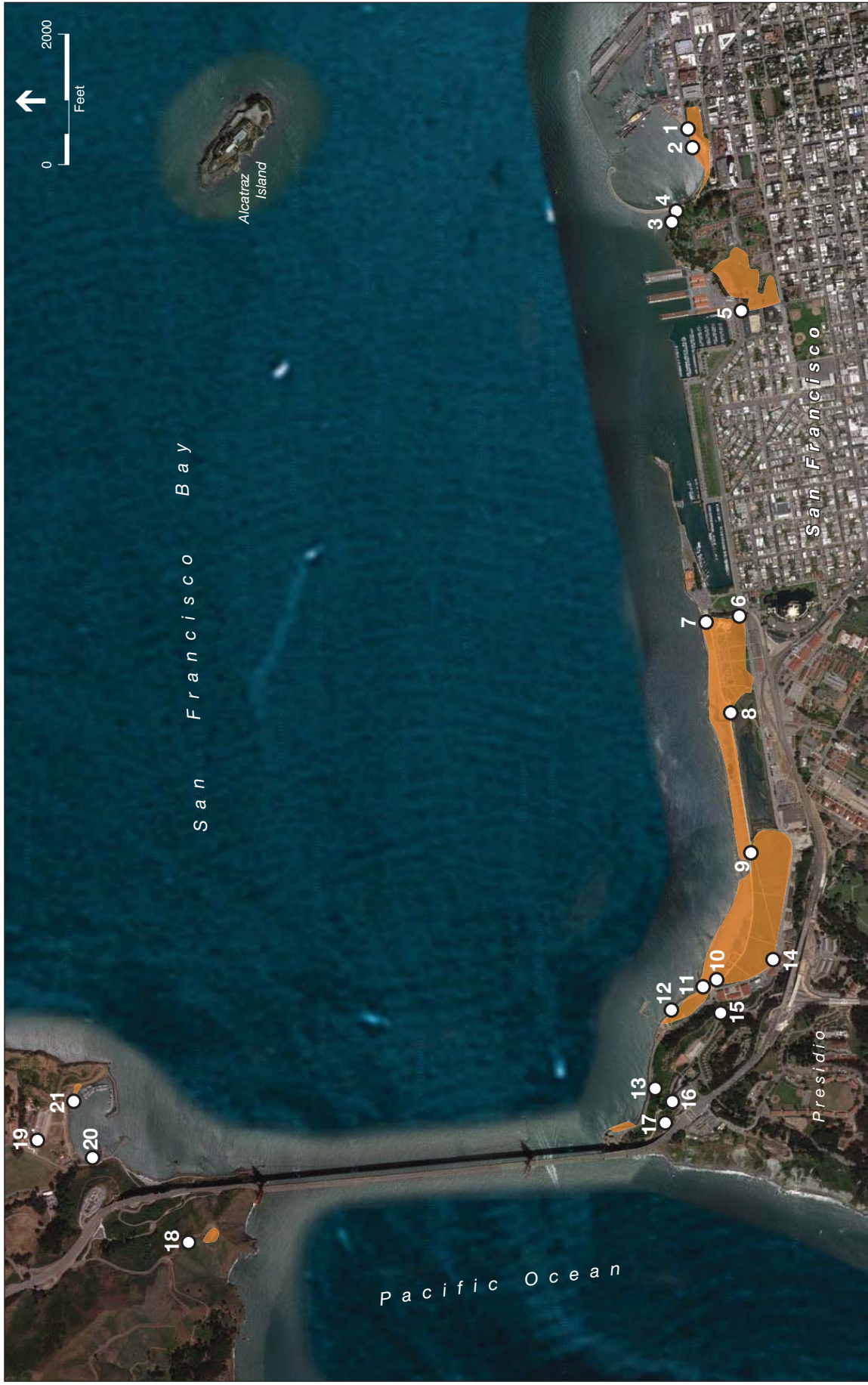


TABLE TRA-7: WALKWAY AND PAOT^a LEVEL OF SERVICE (LOS) – EXISTING CONDITIONS - WEEKDAY AND WEEKEND PEAK HOURS^b

Analysis Location		Weekday Peak Hour ^b	Weekend Peak Hour ^b
Walkway Analysis Locations			
1	Aquatic Park Jefferson St NE entry into Aquatic Park	B	B
2	Aquatic Park Promenade at Bath House	B	B
3	Aquatic Park Promenade at west end of Aquatic Park	B	C
4	Fort Mason Promenade at east end of Fort Mason	B	B
5	Fort Mason Fort Mason Pinch Point on Laguna St	C	D
6	Crissy Field East Class I Multi-use Trail	A	B
7	Crissy Field East Waterfront Entry	A	B
8	Crissy Field East Promenade at Wetlands	A	B
9	Crissy Field West East End of Airfield	A	B
10	Crissy Field West West End of Airfield	A	B
11	Crissy Field West Picnic Promenade - East of Picnic Area	A	B
12	Crissy Field West Picnic Promenade – near Warming Hut	A	B
13	Fort Point Marine Drive to Fort Point	B	C
14	Presidio - Other Mason/Crissy/McDowell Intersection	C	C
15	Presidio - Other Long Ave/Lincoln Blvd Intersection	B	B
16	Presidio - Other Coastal Trail on West Side of Bridge	B	B
17	Presidio - Other Coastal Trail on East Side of Bridge	B	C
18	Marin Headlands Battery Spenser Main Walkways	A	A
19	Fort Baker Center Road	B	B
20	Fort Baker Moore Road	B	B
21	Fort Baker Sommerville Road	A	B
PAOT Analysis Sites			
1	Aquatic Park	A	B
2	Fort Mason	B	C
3	Crissy Field East	A	A
4	Crissy Field West	A	A
5	Crissy Field West Picnic Area	A	B
6	Fort Point	A	C
7	Golden Gate Bridge Toll Plaza Overlook (south side of the bridge)	B	C
8	Marin Headlands - Battery Spencer	A	B
9	Fort Baker	A	C
^a PAOT – Pedestrians at one time ^b 60-minute interval with highest pedestrian volume during the 9:00 to 11:00 a.m., 1:00 to 3:00 p.m., or 4:30 to 6:30 p.m. periods. SOURCES: ORCA Consulting, Advant Consulting/LCW Consulting, 2012,			



Areas between East Beach and Crissy Field have open waterfront views of the central Bay



Fort Point National Historic Site has waterfront views of the central Bay and limited access



Battery East has open and partially filtered views (to right) of the Bay



The Golden Gate Bridge south access area has open views, is limited in size and very congested



Fort Winfield Scott ball fields are elevated with filtered views of the Bay and East Bay hills

pathway resurfacing, and signage and striping. These improvements are scheduled to begin in late 2012, and be completed in mid-2013.

Bicyclists can access the Marin Headlands and Fort Baker from either San Francisco or Sausalito. From San Francisco, on weekends, bicyclists must use the Golden Gate Bridge west sidewalk. Access to Fort Baker is through the Vista Point, requiring bicyclists to cross vehicular traffic twice (the Vista Point off- and on-ramps) before joining the pathway parallel to U.S. 101 and then following Alexander Avenue to Danes Drive or East Road. From Sausalito, bicyclists may ride along the southbound shoulder of Alexander Avenue to the Danes Drive or the East Road bicycle lane. The Danes Drive Class II bicycle lane, which is interrupted by a right-turn lane for cars destined down Bunker Road, feeds into the

Class II bicycle lanes of the Barry-Baker Tunnel. Except for the Barry-Baker Tunnel and several hundred feet on either side of its entrances on Bunker Road, bicycle lanes are not provided on the roadway network in the Marin Headlands; bicyclists must share the roadway with automobiles. Alexander Avenue is under the joint jurisdiction of GGNRA, Caltrans, and GGBHTD, all of whom have evaluated the possibility of improving bicycle conditions along Alexander Avenue. Given the geometric constraints of Alexander Avenue, the provision of a separate bicycle lane (Class II facility) has been deemed unfeasible. However, the NPS is currently studying the possibility of providing a northbound bicycle path from the north side of the Golden Gate Bridge to Sausalito through Fort Baker via Conzelman Road and East Road. NPS is planning to connect the Bay Trail directly to Fort Baker, with a proposed entrance from the Vista Point Overlook to an old alignment of Conzelman Road (now called Vista Point Road) as a multi-use trail to the Bay Area Discovery Museum campus. The recent repaving of East Road already provides a shared bicycle path to Alexander Avenue.⁴

Bicycles are allowed on Golden Gate Transit, WETA, and Blue & Gold ferries. In addition, bicycles are allowed in quantities limited by bicycle rack capacity on Muni buses (two per bus), AC Transit (two per bus), and Golden Gate Transit (three per bus, with additional capacity within the luggage compartment of certain vehicles). Muni Metro allows carrying of small, foldable bicycles only. Folding bicycles are allowed inside all Muni vehicles except cable cars, as long as they do not block seats or interfere with passenger or wheelchair movements.

A survey of public off-street bicycle parking provided at the NPS sites was conducted in December 2011; the survey included a description of the types of bicycle racks provided (U shape, wave, portable, etc.). The results are summarized in **Table TRA-8**; more detailed information is included in **Appendix I**.

3.10.4.2 Bicycle Volumes

Bicycle flow volume data were collected for this study at areas most likely to be adversely affected by the project, including at Aquatic Park, Fort Mason, Crissy Field, Fort Point, Golden Gate Bridge Overlook, the Marin Headlands, and Fort Baker/Cavallo Point. Counts were conducted over a ten-day period, August 24-28, 2011 and September 7-11, 2011, from Wednesday through Sunday to capture

⁴ Source: <http://www.parkconservancy.org/our-work/trails-forever/accomplishments/bay-trail-at-fort-baker.html>; accessed October 12, 2011.

TABLE TRA-8: APPROXIMATE NUMBER OF PUBLIC BICYCLE PARKING SPACES PROVIDED AT NPS SITES

Study Area	Number of Bicycle Parking Spaces
Crissy Field ^{a,b}	188
Fort Mason	125
Aquatic Park	41
Fort Point	40
Golden Gate Bridge Overlook	16
Fort Baker/Cavallo Point	180
Total	590
<p>^a There are an additional 450 bicycle parking spaces distributed throughout the remainder of the Presidio.</p> <p>^b Over 75 percent of all the bicycle parking spaces are located in Area B, adjacent to buildings under the jurisdiction of the Presidio Trust.</p> <p>SOURCES: Presidio Trust, NPS, Advant Consulting/LCW Consulting, 2012</p>	

both weekday and weekend conditions. For each study day, bi-directional counts were taken during three two-hour periods: 9:00 to 11:00 a.m., 1:00 to 3:00 p.m., and 4:30 to 6:30 p.m. Additional weekday and Saturday bicycle turning movement counts were conducted in September 2011 at the study intersections listed in Table TRA-1, during the weekday p.m. (4:00 to 6:00 p.m.) and Saturday midday (11:00 to 1:00 p.m.) peak periods.

In general, during both the weekday and weekend periods, bicycle conditions were observed to be operating acceptably, with only minor conflicts between bicyclist, pedestrians and vehicles. **Table TRA-9** summarizes the weekday and weekend counts at some of the key locations where counts were conducted; more detailed information by specific count location is included in Appendix I.

As shown in Table TRA-9, the NPS sites are popular locations for recreational bicycling, particularly on weekends. In San Francisco there are about 1.5 to twice as many bicyclists on a weekend day as they are in a weekday, while at Fort Baker the weekday bicycle volumes are relatively low, and therefore, the number of weekend bicyclists can be up to 4.5 times higher than on weekdays.

About 1,130 bicyclists entered or exited Crissy Field during the weekday p.m. peak hour, while 2,000 bicyclists did so on a weekend day; the Marina Boulevard gates accommodate the greatest percentage of bicycle traffic destined towards or coming from Crissy Field, accommodating over 40 percent of the total flow. There is a substantial directionality to the bicycle flows towards the Golden Gate Bridge (inbound into Crissy Field) whereas most bicyclists travel on a clockwise loop from the Marina towards Sausalito, returning to San Francisco via ferry. Bi-directional daily and peak hour bicycle volumes at Fort Point, Fort Mason and Aquatic Park are lower than at Crissy Field, ranging between 100 to 300 bicyclists during the peak hour.

TABLE TRA-9: DAILY AND PEAK HOUR BICYCLE COUNTS AT NPS SITES

Parking Study Area Subarea	Weekday			Weekend			Weekend-to-Weekday Ratio	
	Daily ^a	Peak Hour ^b	% Peak Hour	Daily ^a	Peak Hour ^b	% Peak Hour	Daily ^a	Peak Hour ^b
Entering/Exiting Crissy Field								
- from Marina (Mason St & Promenade)	3,850	440	11%	6,620	870	13%	1.7	2.0
- from Crissy Field Avenue	3,260	400	12%	5,470	770	14%	1.7	1.9
- from Long Avenue	2,040	290	14%	2,470	370	15%	1.2	1.3
<i>Subtotal Crissy Field</i>	<i>9,150</i>	<i>1,130</i>	<i>12%</i>	<i>14,560</i>	<i>2,010</i>	<i>14%</i>	<i>1.6</i>	<i>1.8</i>
Entering/Exiting Ft Point via Marine Dr.	710	90	13%	1,060	150	14%	1.5	1.7
Entering/Exiting Lower Ft Mason from Aquatic Park	1,750	230	13%	2,630	300	11%	1.5	1.3
At Aquatic Park Promenade	2,220	320	14%	2,690	300	11%	1.2	0.9
Entering/Exiting Fort Baker								
- from Danes Drive/Bunker Road		1			10			17.0
- from East Road		34			150			4.5
<i>Subtotal Fort Baker</i>		<i>35</i>			<i>160</i>			<i>4.7</i>
Entering/Exiting Conzelman Rd at Alexander Ave		n.a.			229			n.a.

^a Total bi-directional count from 9:00 a.m. to 6:30 p.m.
^b Highest bi-directional volume on a 60-minute interval during the 9:00 to 11:00 a.m., 1:00 to 3:00 p.m., or 4:30 to 6:30 p.m. periods.

SOURCES: ORCA Consulting, Advant Consulting/LCW Consulting, 2012.

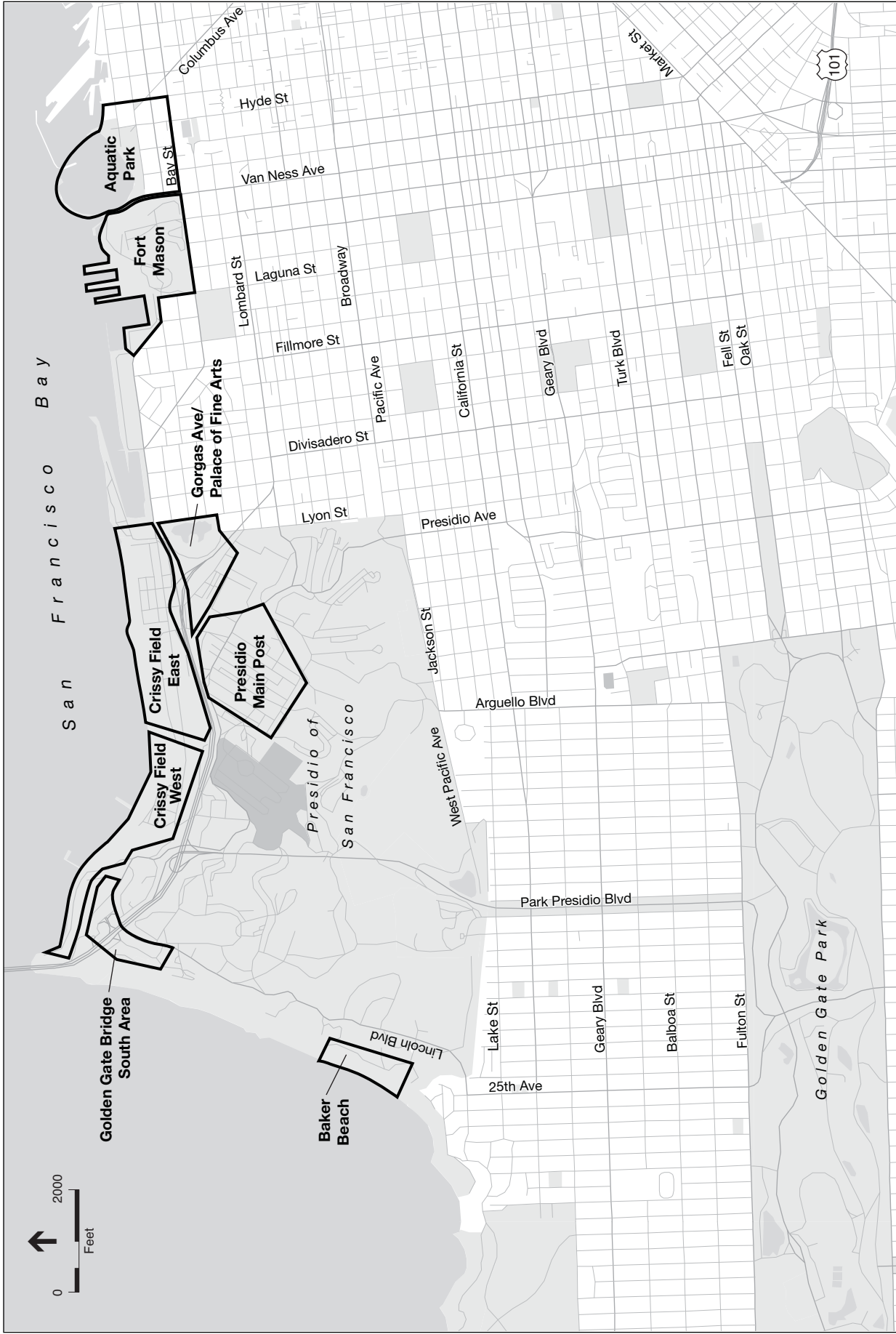
3.10.5 Parking

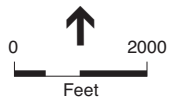
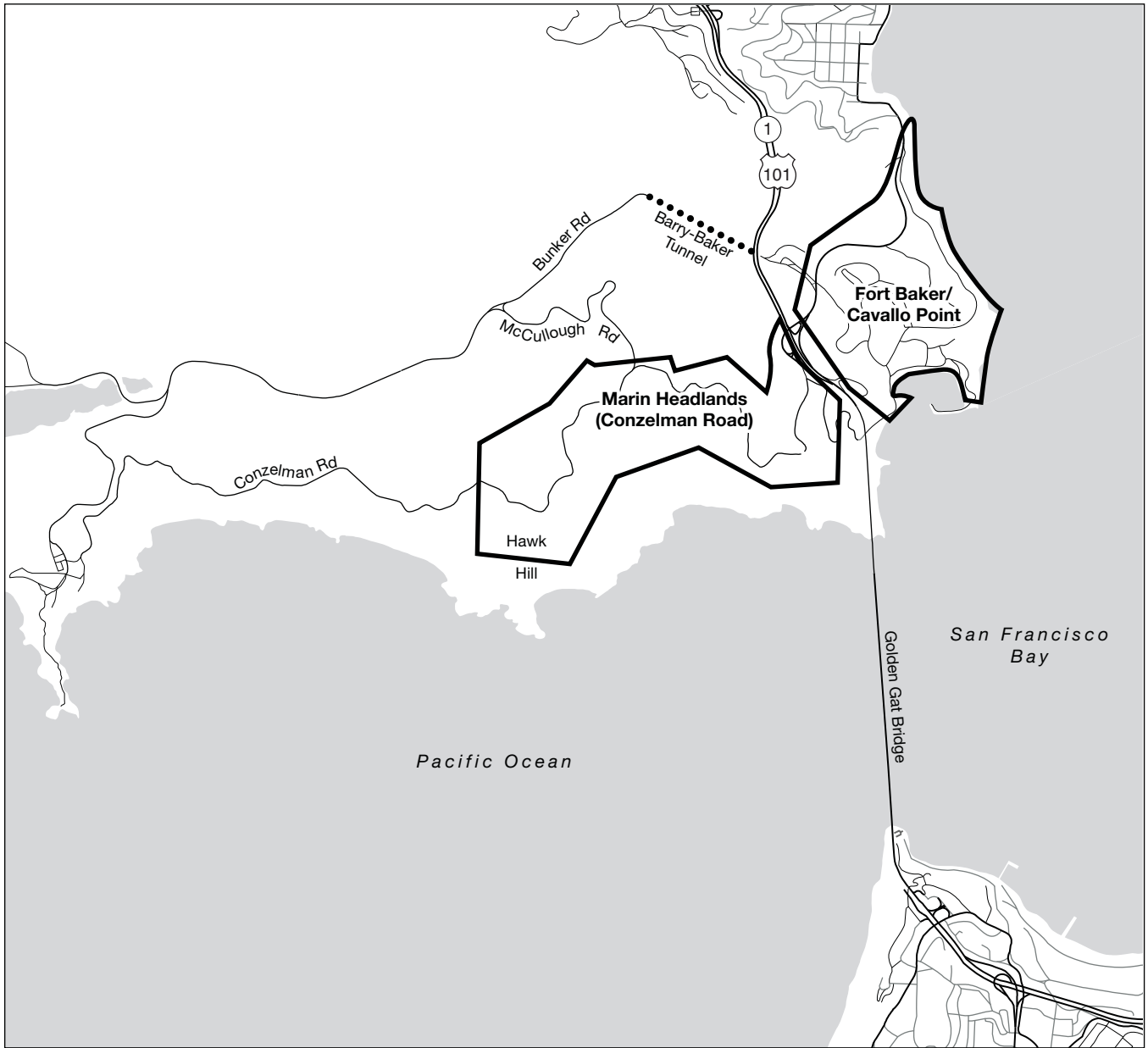
The existing parking conditions were examined within the parking study areas identified on **Figures TRA-6A and TRA-6B**, and were based on information collected specifically for this study, supplemented with information available from the NPS, the Presidio Trust, and the San Francisco Municipal Transportation Agency (SFMTA) GIS database developed as part of their *SFpark* project.

3.10.5.1 Off-Street Parking Supply

Table TRA-10 summarizes the off-street parking supply within each study area in San Francisco, as identified in **Figures TRA-6A and TRA-6B**.

Overall, approximately 3,980 off-street parking spaces are available for use by the general public within the San Francisco study areas, and 470 off-street parking spaces are available for use by the general public within the Marin Headlands/Fort Baker study areas.





SOURCE: Adavant Consulting/LCW Consulting

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Figure TRA-6B
 Parking Study Area in Marin County

TABLE TRA-10: ESTIMATED OFF-STREET PARKING SUPPLY NEAR NPS SITES

Parking Study Area	Approximate Number of Spaces Provided		
	Non-Public	Publicly Available	Total
Crissy Field			
- East end	400	170 ^a	570
- West end	290	220 ^a	510
Presidio			
- Gorgas Ave/Palace of Fine Arts	540 ^d	140 ^a	680
- Main Post	170 ^e	1,630 ^a	1,800
- Golden Gate Bridge South Area	160	150	310
- Baker Beach	0	260	260
Fort Mason	380	740 ^b	1,120
Aquatic Park	60	670	730
Marin Headlands (Conzelman Rd.) ^c	0	190	190
Fort Baker/Cavallo Point ^c	690	280	970
Total	2,690	4,450	7,140

^a Publicly available parking supply located along Crissy Field, Mason Street, the Presidio and the Palace of Fine Arts might not be available during AC34 events.
^b Includes Fort Mason overflow and Marina Green Triangle; might not be available during AC34 events.
^c From Alexander Av to McCullough Rd; includes parking on roadway shoulders.
^d ILM Lucas Arts and Exploratorium.
^e Designated for residential, customer, government, commercial or other reserved parking use.

SOURCE: SFMTA, Presidio Trust, National Park Service, Adavant Consulting/LCW Consulting, 2012

3.10.5.2 Off-Street Parking Demand

Parking occupancy varies throughout the study area, depending on the day of week, time of day, and location. As shown in Table TRA-11, parking occupancy in the coastal areas is greatest on weekends, while the Main Post Area of the Presidio is at capacity on weekdays. Crissy Field, the Golden Gate South Area and Aquatic Park are practically at capacity on Saturdays.

Table TRA-12 presents the number of parking spaces potentially available to the general public during AC34 events within the NPS study sites in San Francisco, as defined on Figures TRA-6A and TRA-6B; the table represents only those spaces not occupied on a typical day. In addition to these publicly-available parking spaces, there are a number of off-street facilities that provide customer parking or permit parking only that might also be available during peak event days to accommodate the AC34 parking demand. The availability of substantial off-street parking facilities, for example within the Presidio, is being assessed as part of the People Plan effort, and would contribute to further reductions in parking deficits, particularly on peak demand weekends as described in the following sections. Other informal arrangements would also likely occur, although it is not anticipated that they would accommodate a substantial amount of the parking demand. On the other hand, some of the existing parking closest to the water, such as Battery East, West Bluff, East Crissy, Fort Point, etc., will not be available on high visitation event days when those parking lots would be closed.

TABLE TRA-11: ESTIMATED OFF-STREET PARKING UTILIZATION NEAR NPS SITES

Parking Study Area	Weekday			Saturday		
	Non-Public	Publicly Available	Total	Non-Public	Publicly Available	Total
Crissy Field ^b	56%	48%	52%	88%	90%	89%
Presidio						
Main Post	n.a. ^a	n.a. ^a	98%	n.a. ^a	n.a. ^a	74%
Golden Gate Bridge South Area	---	34%	34%	---	95%	95%
Baker Beach	---	16%	16%	---	42%	42%
Fort Mason	n.a. ^a	n.a. ^a	n.a. ^a	n.a. ^a	n.a. ^a	n.a. ^a
Aquatic Park	n.a. ^a	n.a. ^a	83%	n.a. ^a	n.a. ^a	88%
Fort Baker/Conzelman Rd.	n.a. ^a	n.a. ^a	80% ^c	n.a. ^a	n.a. ^a	80% ^c
<p>^a n.a. = not available. ^b Non-public parking generally located in non-coastal area (Area B, Presidio Trust); publicly-available parking generally located in the coastal area (Area A, NPS). ^c Estimated.</p> <p>SOURCE: Presidio Trust, National Park Service, Adavant Consulting/LCW Consulting, 2012</p>						

TABLE TRA-12: ESTIMATED EXISTING OFF-STREET PUBLIC PARKING AVAILABILITY NEAR NPS SITES

Parking Study Area	Approximate Number of Unoccupied Spaces	
	Weekday	Saturday
Crissy Field	200 ^{a,e}	40 ^{a,e}
Presidio		
Main Post	30 ^b	350 ^b
Golden Gate Bridge South Area	100	10
Baker Beach	220	150
Fort Mason	n.a. ^{a,c}	n.a. ^{a,c}
Aquatic Park	110 ^{b,d}	80 ^{b,d}
Fort Baker/Conzelman Rd.	100 ^f	100 ^f
<p>^a This general parking assumed not available on AC34 event days ^b Based on overall parking occupancy data. ^c n.a. = not available. ^d Does not include parking spaces located in the median of Van Ness Avenue or at the Municipal Pier. ^e East Beach and West Bluff parking areas. ^f Estimated.</p> <p>SOURCE: Presidio Trust, National Park Service, Adavant Consulting/LCW Consulting, 2012</p>		

As shown in Table TRA-12, on a typical weekday there are approximately 200 unoccupied general parking spaces in Crissy Field, 350 spaces in the Presidio, and 110 in the vicinity of Aquatic Park. On a Saturday, there are about 40 general parking spaces available in Crissy Field, 510 spaces in the Presidio, and 80 spaces near Aquatic Park. The general parking spaces in Crissy Field and Fort Mason are assumed to be unavailable to the public on peak event days as they would likely be inaccessible due to roadway closures or assigned to permitted vehicles only.

Although the utilization of the approximately 470 public parking spaces in Conzelman Road and in Fort Baker is not known, previous analyses have shown that almost all locations in the area operating under-capacity even during a peak season weekend. For analysis purposes it is assumed that 20 percent of all the publicly available parking spaces, or about 100 spaces, would be available during AC34 events.

According to the NPS, there are approximately 190 public parking spaces on Conzelman Road east of McCullough Road, in the Marin Headlands, and another 280 public parking spaces in Fort Baker. An inventory of parking utilization conducted in July 2000 by the NPS showed that the majority of parking areas in the study area are not used to capacity even during a sunny summer weekend day. During special events at the Bay Area Discovery Museum and the Marin Headlands Center for the Arts, parking demand is high.

3.10.5.3 On-Street Parking

Within San Francisco, on-street parking in the area north of Bay Street is generally metered. In the Aquatic Park area, a number of on-street parking spaces are currently in the *SFpark* pilot program, an initiative which adjusts the price, hours of operation, and time limits of on-street parking spaces based on demand.

On-street parking within the Presidio is under the jurisdiction and management of NPS (coastal area) and the Presidio Trust (non-coastal area). Public parking in NPS-managed facilities in Crissy Field (East Beach, West Bluff, Fort Point, Battery East) is free, while visitor parking in the areas managed by the Presidio Trust (Hangar Complex) and rest of the Presidio generally requires payment. The fee is \$1 an hour Monday to Friday, 8 am to 6 pm, with a daily cap of \$6, and parking is free at night and on the weekends.

On-street parking in the vicinity of Crissy Field, Fort Mason and Aquatic Park are generally well-utilized, with very limited parking availability, particularly at night and on weekends. Parking spaces in commercial streets, such as portions of Chestnut Street, Lombard Street and Bay Street, are regulated by parking meters with 30-minute to 2-hours maximum duration limits. Residential streets are subject to Residential Parking Permit (RPP) regulations (areas “M”, “K” and “A”), with a 2-hour maximum parking duration for those vehicles not displaying the appropriate RPP sticker. RPP “M” encompasses the area between Lyon Street and Van Ness Avenue and north of Lombard Street; RPP “K” encompasses the area between Lyon Street and Van Ness Avenue that is south of Lombard Street and north of Broadway; and RPP “A” encompasses the area to the east of Van Ness Avenue and to the north of Broadway. Parking regulations in areas “M” and “K” are applicable on weekdays, between 8:00 a.m. and 6:00 p.m., while those in area “A” are applicable from 8:00 a.m. to 9:00 p.m. on weekdays and Saturdays.

3.10.6 References

Adavant Consulting/LCW Consulting

2012 *AC34 NEPA - Transportation Technical Appendix I.*

Golden Gate National Parks Conservancy

2011 Online description of the Bay Trail at Fort Baker. Available on the Internet at <http://www.parkconservancy.org/our-work/trails-forever/accomplishments/bay-trail-at-fort-baker.html>. Viewed on October 12, 2011.

ORCA

2012 *America's Cup 34 – Spectator Sites on NPS Properties Visitation Estimates and Level of Service Assessment Report.* January 10 (revised version provided June 5).