

## CHAPTER 7

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# Mission Bay Campus Site – Setting, Impacts and Mitigation Measures

## 7.0 Introduction

This chapter considers the existing conditions and describes the potential impacts of 2014 LRDP activities proposed at the Mission Bay campus site. Functional zones, space program, population at LRDP horizon and proposed LRDP development activities that would occur at the Mission Bay campus site were described in detail in Section 3.8.2 of Chapter 3, *Project Description*, and are summarized briefly below. The remaining 15 major sections of this chapter present the site settings and impacts for each of the 15 environmental topics.

### 7.0.1 Functional Zones

The proposed functional zoning diagram for the Mission Bay campus site is shown in **Figure 3-11**, in Chapter 3, *Project Description*. Functional zones on the North Campus of the Mission Bay campus site reflect the organizational structure of the original *Mission Bay Master Plan and Design Guidelines*. A second Housing functional zone is proposed on the northern edge of the North Campus on Block 15, identified for future housing use because of its proximity to off-site residential development under construction north of the Mission Bay campus site, and proximity to on- and off-site open space and a potential public school site on Block 14.

The majority of clinical uses are expected to be located on the South Campus in the Clinical functional zone, in support of the UCSF Medical Center at Mission Bay. However, several clinics have been developed as a secondary use within the Research functional zone in cases where there is a close functional relationship between clinical and research programs, and this is likely to continue in the future.

Parking functional zones are located near the periphery of the campus site so as to minimize vehicular traffic within the campus site. The two parking zones on Owens Street provide for parking expansion when it is needed to support future program growth.

The East Campus (Blocks 33 and 34) is functionally zoned for research and parking use, shown as a striped pattern on Figure 3-11 because the exact footprints for those uses have not yet been determined. When the locations of specific uses on the parcel are identified, the functional zones for the East Campus will be updated accordingly.

## 7.0.2 Space Program

The LRDP proposes an additional 2.40 million gsf in owned and leased buildings across all of UCSF's sites through 2035. The allocation of this growth at the Mission Bay campus site at LRDP horizon in 2035 is shown in **Table 7.0-1**, below. As noted previously, for the purposes of the EIR analysis, growth at the Mission Bay campus site at the LRDP horizon includes the Phase 2 Medical Center at Mission Bay. The total space in 2035 also includes Mission Hall and the Phase 1 Medical Center, both of which are under construction and expected to open in late 2014 and 2015, respectively the cancer outpatient building and development of Blocks 33 and 34 (East Campus).

**TABLE 7.0-1  
MISSION BAY EXISTING AND LRDP HORIZON GSF**

Type of Space	Existing 2013 Total gsf	LRDP Horizon 2035 Total gsf
Instruction	102,000	249,000
Research	891,600	1,908,800
Clinical	30,600	1,795,300
Support		
Academic Support	102,400	222,300
Academic/Campus Admin	174,000	478,100
Campus Community	187,300	266,500
Logistics	32,200	187,900
<i>Support Subtotal</i>	495,900	1,154,800
Housing	387,400	786,100
Vacant/Alteration	19,200	34,900
<b>Total</b>	<b>1,926,700</b>	<b>5,928,900</b>

## 7.0.3 Population

The total projected UCSF population across all campus sites (including population associated with the Phase 2 Medical Center at Mission Bay) would increase by approximately 17,000 at the LRDP horizon. As shown in **Table 7.0-2**, below, the projected increase in population at the Mission Bay campus site would be approximately 17,000 in 2035.

**TABLE 7.0-2  
MISSION BAY EXISTING AND PROJECTED POPULATION**

	Existing (2013)	Projected Population at LRDP Horizon (2035)	Change
Students	489	586	97
Faculty and Staff	3,851	15,393	11,542
Patients	153	2,407	2,254
Visitors	324	3,462	3,138
<b>Total</b>	<b>4,817</b>	<b>21,848</b>	<b>17,031</b>

## 7.0.4 Mission Bay – 2014 LRDP Proposals

As described in Chapter 5, the 2014 LRDP proposals at the four campus sites consist of three general activities: 1) demolition, 2) renovation, 3) construction of new facilities, and 4) circulation, open space, and utilities/infrastructure proposals. The 2014 LRDP proposals at the Mission Bay campus site are listed below:

### Construction Proposals

- New Housing on Block 15
- Develop Additional Research Capacity on Blocks 16, 18A, 23A, 25B, 33 and 34
- Phase 1 Medical Center – Cancer outpatient building
- Phase 2 Medical Center<sup>1</sup>
- New parking structures on Blocks 18, 33/34, and 38

### Circulation, Open Space, and Utilities/Infrastructure Proposals

- Block 15 pump station upgrade

## Mission Bay – 2014 LRDP Proposal Construction Time Frames

Activities at the Mission Bay campus site to implement the 2014 LRDP proposals would occur between the year 2015 and the LRDP horizon in 2035. These are presented in **Table 7.0-3**, below.

**TABLE 7.0-3  
PROPOSAL CONSTRUCTION TIME FRAMES AT MISSION BAY**

Proposal Title	Land Use	Gross Square Feet / Number of Residential Units
<b>2015-2019</b>		
Block 15	Housing	418,200 gsf / 523 units
Block 33	Research Building	275,000 gsf
Block 33/34	Parking Garage	167,500 gsf
Cancer Outpatient	Medical Building	124,500 gsf
Block P15 pump station	--	--
<b>2020-2025</b>		
Block 23A	Research Building	232,200 gsf
Block 34	Research Building	225,000 gsf
Block 18	Parking Garage-Phase 1	271,000 gsf
<b>2025-2030</b>		
Block 25B	Research Building	323,000 gsf
Block 16	Research Building	377,400 gsf
<b>2030-2035</b>		
Block 18A	Research Building and Parking Garage	193,000 gsf
Phase 2 Medical Center	Hospital and Parking Garage	793,500 gsf

<sup>1</sup> The Phase 2 Medical Center at Mission Bay is anticipated to be constructed after the LRDP horizon year of 2035; however, the impacts associated with its construction and operation are evaluated in this EIR in order to provide a conservative analysis of future development of the entire Mission Bay campus site.

## 7.0.5 LRDP Variant

As discussed in Section 3.8.2.3 of Chapter 3, *Project Description*, the East Campus (Blocks 33 and 34) is proposed to be developed with up to 500,000 gsf and 500 parking spaces, and would be functionally zoned for research and parking use. UCSF is also considering a variant that would develop Blocks 33 and 34 with clinical uses for a portion of the proposed 500,000 gsf. Although the amount of clinical space that may be developed has not yet been determined, up to about 250,000 gsf could be developed, with the remainder 250,000 gsf as research/office use. Similar to the 2014 LRDP proposal for Blocks 33 and 34, no specific UCSF programs have been identified yet to relocate to the site, and no specific building design is proposed. Proposed development would follow the *Mission Bay South Redevelopment Area Plan “Design for Development”* regarding building height, bulk, setbacks, maximum tower floorplate and other design matters. As with the Blocks 33/34 proposal under the LRDP, up to 500 parking spaces would be developed under this variant.

The LRDP Variant would have the same or similar effects as the proposed 2014 LRDP development for most of the environmental topics analyzed in the EIR. Those topics that would have different effects are discussed in the following sections of this chapter: Section 7.2, *Air Quality*; Section 7.6, *Greenhouse Gas Emissions*; Section 7.9, *Land Use and Planning*; Section 7.10, *Noise*; and Section 7.15, *Transportation and Traffic*.



## 7.1 Aesthetics

This section considers the setting and aesthetics impacts at the Mission Bay campus site. The Regional Setting, Regulatory Considerations, Significance Standards and Analysis Methodology for analysis of potential Aesthetics effects are contained in Section 4.1 of this EIR. The CEQA Significance Standards presented in Section 4.1.3 are used to evaluate the potential aesthetics impacts of all proposed 2014 LRDP activities.

### 7.1.1 Aesthetics Issues Adequately Addressed in the Initial Study

After evaluation of the 2014 LRDP activities proposed at the Mission Bay campus site, the Initial Study concluded that:

- **Scenic resources.** No activities would result in an adverse impact to scenic resources within a state scenic highway. Therefore, no additional analysis of this issue is required.

### 7.1.2 Aesthetics – Mission Bay Setting

The Mission Bay campus site is located within the 303-acre Mission Bay Redevelopment Area in the Mission Bay neighborhood, north of the Potrero Hill and Dogpatch neighborhoods. The campus site is generally bounded by Mission Bay Boulevard South to the north, Owens Street to the west, Mariposa Street to the south and Third Street to the east. It is a relatively flat area characterized primarily by man-made visual landmarks, including the elevated Interstate 280 highway to the west. The campus site includes 42.2 acres north of Sixteenth Street (North Campus) and 14.4 acres south of Sixteenth Street (South Campus). Sixteenth Street serves as the primary gateway from the west into the Mission Bay area. The North Campus is bifurcated by Fourth Street; through the South Campus, Fourth Street transitions into a large pedestrian plaza and bicycle route, which serve the Medical Center.

Natural features in the vicinity include Potrero Hill, located southwest and elevated above the campus site, and San Francisco Bay, which serves as the major visual boundary to the east. Development in the immediate vicinity of the campus site consists largely of new research and office buildings of similar size and character to UCSF, as well as multi-family residential buildings. Beyond Interstate 280, to the west and south of the campus site, are the Showplace Square, Dogpatch and Potrero Hill neighborhoods, which consist of residential areas, commercial buildings and some industrial uses. Non-residential buildings in these neighborhoods are generally bulky, two- to three story warehouse or former light industrial structures.

The visual environment on the campus site is dominated largely by campus buildings as well as Koret Quad. Genentech Hall, the adjoining Byers Hall, Sandler Neurosciences Center, Arthur and Toni Rembe Rock Hall and the Rutter Center all surround Koret Quad. The roughly three-acre quad is a grassy, landscaped open space immediately north of Genentech Hall that serves as a gathering place for the public as well as the campus community. A housing complex consisting of four separate buildings ranging from 7 to 15 stories with a total of 430 units is located northwest

of Koret Quad. The Smith Cardiovascular Research building and Diller Cancer Research building are located north of the housing complex. Campus buildings generally have large rectangular footprints, an 85-foot height to the cornice line, a light-colored material palette of two-toned travertine and concrete for the skin, light green tinted glazing, arcades at the ground level and sculptural treatment of the rooftop mechanical equipment and exhaust stacks. The Rutter Center serves as a contrast to other campus buildings with its reddish color and 144-foot tower. The campus site includes three parking structures: Third Street, Community Center Garage (adjoining the Rutter Center) and Owens Street (on south campus).

Mission Hall, a faculty office building, is currently under construction at the northeast corner of Fourth and 16th Streets. Phase 1 of the Medical Center at Mission Bay is currently under construction on the South Campus and will open in early 2015. Phase 1 includes three specialty hospitals, a medical outpatient building, an energy center, and structured and surface parking.

### **7.1.2.1 Mission Bay South Redevelopment Area Plan “Design for Development”**

The San Francisco Office of Community Investment and Infrastructure’s (OCII) *Mission Bay South Redevelopment Area Plan “Design for Development”* contains objectives and policies that serve as design guidelines for future development in the plan area surrounding the UCSF campus site at Mission Bay. These guidelines support the creation of a pattern of streets, parks and buildings that yields a high-density, urban streetscape while preserving and maximizing views to and from the area. The *Mission Bay South Plan* intends for new development to recognize the physical transition from the higher elevations of Potrero Hill to the lower elevations of the shoreline, thus allowing taller buildings closer to Potrero Hill and stepping down to lower building heights closer to the shoreline. The plan establishes major public open space corridors and uses, building height limits, view corridors and other design guidelines throughout the plan area to ensure access to sunlight, to reduce wind effects and to create a diverse and pleasant urban environment.

### **7.1.2.2 UCSF Mission Bay Design Guidelines**

Design guidelines were developed by UCSF for the Mission Bay campus site that address such features as building mass, scale, height, floor size, proportion and setbacks. The *Mission Bay Campus Master Plan and Design Guidelines* (CMPDG) is an internal UCSF planning tool to provide an overall framework for the physical development of the Mission Bay campus site. It sets forth basic principles to guide the design of individual buildings and landscaping projects with the understanding that buildout of the campus site would include designs by many different architects over time. The CMPDG is intended to be compatible with the design standards and guidelines of the *Mission Bay South Redevelopment Area Plan “Design for Development.”*

### **7.1.2.3 UCSF Physical Design Framework**

As discussed in Section 4.1.2.2, development at UCSF is also guided by the *Physical Design Framework*, which sets forth a vision for the physical development of all UCSF campus sites. It

serves as the foundation for UCSF to plan and design future projects according to a clear and consistent set of planning and design principles, guidelines and strategies. The *Physical Design Framework* contains six planning principles that are universally applicable to UCSF campus sites. They express key thematic concepts of Context, Connectivity, Cohesiveness, Collegiality, Community and Conservation. The *Physical Design Framework* also includes six planning and design strategies for the Mission Bay campus site: 1) Strengthen UCSF's Identity and Wayfinding, 2) Enhance the Pedestrian Spine, 3) Complete the Open Space Network, 4) Enhance the Campus Core, 5) Develop Opportunity Areas, and 6) Develop Transportation Facilities.

### 7.1.3 Aesthetics – Mission Bay Impacts and Mitigation Measures

**Impact AES-MB-1: Implementation of the 2014 LRDP at the Mission Bay campus site would not have a substantial adverse effect on a scenic vista. (Less than Significant)**

The *Mission Bay South Redevelopment Area Plan “Design for Development”* guidelines designated view corridors along street alignments to preserve the orientation and visual linkages to the Bay and Mission Creek, to nearby hills, the Bay Bridge and the downtown skyline; and to preserve orientation and visual linkages that provide a sense of place within Mission Bay. Buildings proposed for the Mission Bay campus site under the 2014 LRDP on Blocks 15, 16, 18, 23, and 25; the cancer outpatient building; or the Phase 2 Medical Center would not intrude on views of the Bay, downtown or nearby hills as viewed from public streets or pedestrian corridors. Proposed development on Blocks 33 and 34 would similarly comply with the *Mission Bay South Redevelopment Area Plan “Design for Development”* guidelines regarding view corridors. Therefore, the impact would be less than significant.

**Mitigation:** None required.

**Impact AES-MB-2: Implementation of the 2014 LRDP at the Mission Bay campus site would not substantially degrade the existing visual character or quality of the site and its surroundings. (Less than Significant)**

The 2014 LRDP includes proposed development of remaining and increased entitlement on Blocks 16, 18, 23, and 25; a new housing complex on Block 15; the cancer outpatient building; and the Phase 2 Medical Center. Although these buildings have not yet been designed, preliminary designs provide basic parameters for development on each block. As summarized from Chapter 3, *Project Description*, Block 15 would include a housing complex comprised of four or fewer buildings with an internal courtyard. Building heights would range from 55 feet along Mission Bay Commons to 120 feet along Fifth Street. On Block 16, one research and/or office building and a central utility plant, or alternatively, two research buildings may be built. The height of the proposed buildings on Block 16 would be similar in height to other research buildings on the campus site (85 feet), but would have setbacks of 30 feet at the 55-foot height along Mission Bay Boulevard South in accordance with the CMPDG. Block 18 is proposed to include one office and/or research building up to 160 feet tall. A separate or attached parking garage up to 110 feet tall could be built east of the

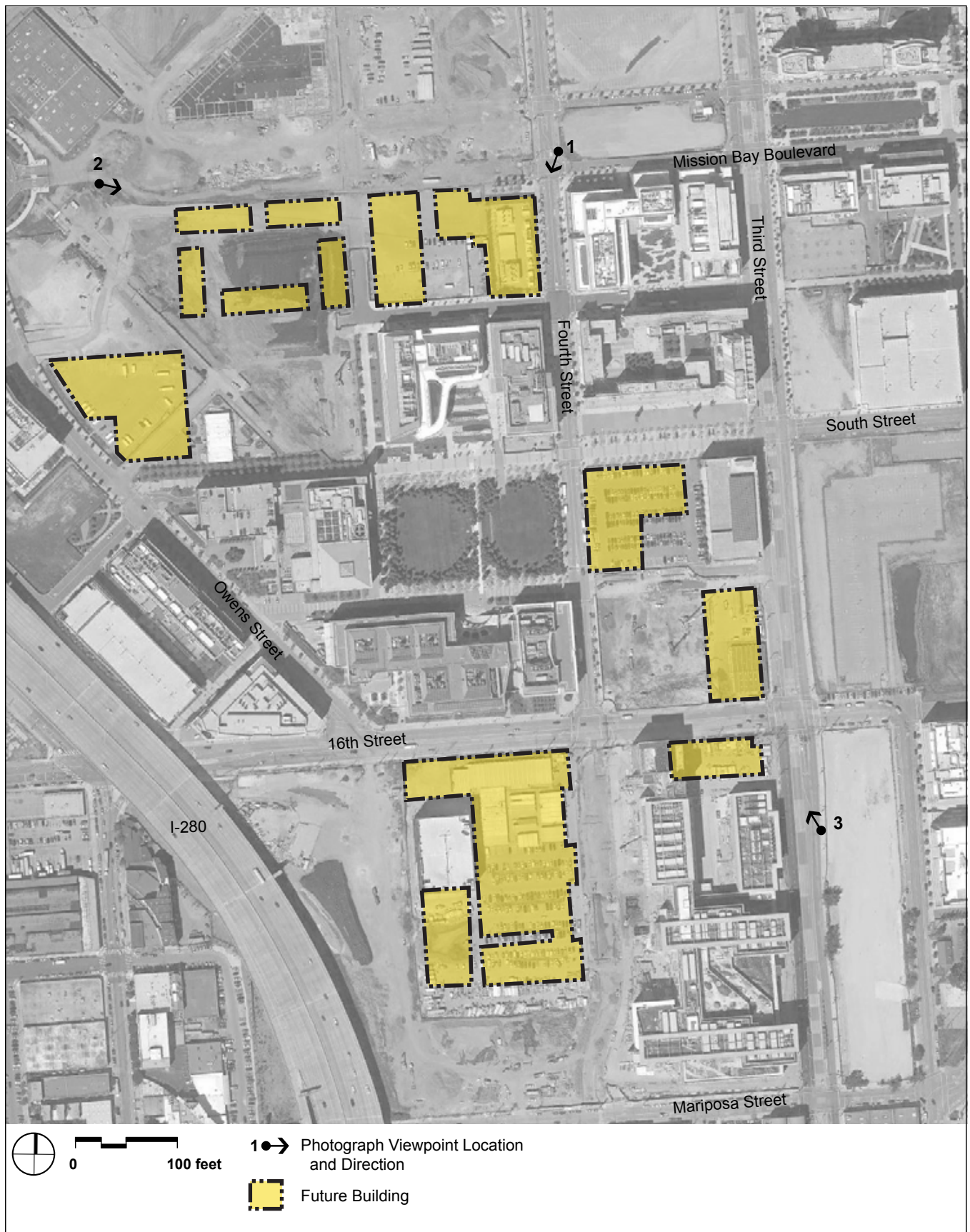
proposed building on Block 18. A full-size, multi-purpose sports field would be developed on the eastern portion of the block. An 85-foot tall research building is proposed for the western side of Block 23. Block 25 is proposed to include a research/office building on the eastern side of the block with all or a portion of the building constructed up to 160 feet in height. The cancer outpatient building would be approximately 105 feet tall, with an additional 20 feet to the top of the mechanical screen. Phase 2 of the Medical Center would include multiple buildings that would be consistent with the design features of the Phase 1 Medical Center. Two enclosed pedestrian bridges are proposed at the third and fourth floors across Fourth Street that would connect Phase 1 on the east side of Fourth Street to Phase 2 on the west side of the street.

Three visual simulations showing basic height and bulk of the proposed buildings from viewpoints shown on **Figure 7.1-1** are provided below. **Figure 7.1-2** shows proposed development on Block 16 looking southwest along Fourth Street. The similarity in building height for proposed development on Block 16 with other existing buildings along Fourth Street is evident in this view.

**Figure 7.1-3** shows the proposed residential complex on Block 15 as viewed from the planned Mission Bay Commons (not part of UCSF). Development on Block 16 is also visible in the background. The proposed office/research building on Block 25 is depicted in **Figure 7.1-4**. This view also includes a simulation of the cancer outpatient building, which is anticipated to be constructed prior to 2035 as part of the Phase 1 entitlement for the Medical Center at Mission Bay. Mission Hall, which is currently under construction on the western portion of Block 25 as shown in the existing view, would not be visible from this viewpoint upon completion of the LRDP-proposed building and the cancer outpatient building. Proposed development on Blocks 33 and 34 would follow the *Mission Bay South Redevelopment Area Plan “Design for Development”* guidelines regarding building height, bulk, setbacks, maximum tower floorplate and other design matters.

Although changes in appearance at the Mission Bay campus site would be noticeable, new buildings would be built in accordance with UCSF’s CMPDG, *Physical Design Framework* and *Facilities Design Guidelines* and would be consistent with the 2014 LRDP’s Community Planning Principles regarding Building and Public Realm Design. As buildings on the Mission Bay campus site are proposed during the LRDP horizon, consideration will be given to the development of open space, landscape improvements in the adjacent streets and pedestrian connections per the *Physical Design Framework*. Courtyards may be included as part of project design to provide additional open space. Proposed buildings would be sited appropriately in the Research, Housing, or Parking functional zone, as delineated by the 2014 LRDP. The design guidelines would ensure that final building designs respond to the form of adjacent buildings (e.g., in terms of massing and height) and the overall context of the Mission Bay campus site and vicinity. Because the proposed buildings would be visually similar to existing buildings on the campus site, they would not substantially degrade the visual character of the site and its surroundings. Therefore, effects to visual quality and character regarding implementation of the 2014 LRDP at the Mission Bay campus site are less than significant.

**Mitigation:** None required.



SOURCE: Environmental Vision

UCSF Long Range Development Plan Environmental Impact Report

**Figure 7.1-1**  
Viewpoint Locations-Mission Bay





Existing view from Fourth Street at Mission Bay Boulevard looking southwest (VP 1)



Visual Simulation of Proposed Project

*Note: Visual simulation depicts potential building envelope, not proposed design.*

SOURCE: Environmental Vision

UCSF Long Range Development Plan Environmental Impact Report

**Figure 7.1-2**  
Visual Simulation-Mission Bay





Existing view from Mission Bay Boulevard (future) near Sixth Street looking east (VP 2)



Visual Simulation of Proposed Project

*Note: Visual simulation depicts potential building envelope, not proposed design.*

SOURCE: Environmental Vision

UCSF Long Range Development Plan Environmental Impact Report

**Figure 7.1-3**  
Visual Simulation-Mission Bay





Existing view from Third Street near 16th Street looking northwest (VP 3)



Visual Simulation of Proposed Project

*Note: Visual simulation depicts potential building envelope, not proposed design.*

SOURCE: Environmental Vision

UCSF Long Range Development Plan Environmental Impact Report

**Figure 7.1-4**  
Visual Simulation-Mission Bay



**Impact AES-MB-3: Implementation of the 2014 LRDP at the Mission Bay campus site could create new sources of substantial light or glare which would adversely affect day or nighttime views in the area. (Potentially Significant)**

Development at the Mission Bay campus site could increase ambient light levels due to light dispersion from the new buildings. Increases in night lighting could affect nighttime views in this area of the campus site or in the surrounding neighborhood. New light sources could include street lights, illuminated signage, exterior safety lighting and light emitted from building windows. Glare could be generated from reflective building materials. Because specific architectural features and building materials of the new buildings have yet to be determined, the proposed improvements have the potential to include reflective surfaces, such as metal and glass. The resultant glare could affect nearby residents, pedestrians and passing motorists. **Mitigation Measure AES-LRDP-1** would be implemented to reduce the impact to a less than significant level. By employing appropriate design standards and minimizing the quantity of reflective material used in new construction, light and glare impacts and impacts to views related to lighting could be reduced to less-than-significant levels.

**Mitigation Measure:** Implement Mitigation Measure AES-LRDP-1

**Significance after Mitigation:** Less than Significant

**Impact AES-MB-4: Implementation of the 2014 LRDP at the Mission Bay campus site could result in flood lighting during nighttime construction activities. (Potentially Significant)**

Although construction operations are generally expected to take place during the day, some activities could be conducted at night to reduce noise, vibration or other effects on daytime office or research uses. To enable construction at night, flood lighting would be required. The use of night lighting would have the potential to disturb residents in neighborhoods near the campus site, and potentially also affect nighttime views. Night lighting of construction sites would be temporary and would cease upon completion of construction. **Mitigation Measure AES-LRDP-2** would be implemented to reduce the impact of nighttime work lighting to a less than significant level.

**Mitigation Measure:** Implement Mitigation Measure AES-LRDP-2

**Significance after Mitigation:** Less than Significant

**Impact AES-MB-5: Implementation of the 2014 LRDP at the Mission Bay campus site could create street-level winds that could be hazardous to pedestrians in the area. (Potentially Significant)**

Prior wind tunnel tests for proposed UCSF Mission Bay buildings have demonstrated that existing wind conditions within the Mission Bay campus site have improved over time as planned buildings have been constructed in accordance with the *Mission Bay South Redevelopment Area*

*Plan “Design for Development.”* This general trend is expected to continue as more buildings are constructed in the Mission Bay Redevelopment Area and on the Mission Bay campus site.

The existing pedestrian wind conditions on the remaining large vacant parcels of land in the south Mission Bay Redevelopment Plan Area can be characterized as windy to very windy. Prior wind testing clearly demonstrates that “equivalent” wind speeds<sup>2</sup> in open areas within the south Mission Bay Redevelopment Area typically reach 16 to 22 mph. In large parcels without buildings to slow the wind, typically as many as half to three-quarters of the open area might experience wind speeds that exceed the wind hazard criterion of Section 148 of the Planning Code. The duration of each such wind hazard is typically less than 10 hours per year. However, in locations near to or in the wakes of buildings, it is possible that wind accelerations and turbulence created by buildings could result in wind hazards with longer durations.

However, as more buildings are built and fill in vacant sites in the south Mission Bay Redevelopment Plan Area and on the campus site, wind speeds in pedestrian areas near buildings will generally continue to decrease. Groups of buildings such as those at the UCSF campus site or similar structures built according to the “*Design for Development Guidelines*” substantially slow the winds. Winds in the downwind reach of such buildings, although much slowed, tend to be much more variable in speed. Typically, the range of wind speeds expected in locations on and around those sites would be 2 to 3 mph lower, namely in the range of 13 to 19 mph.

Exceptions occur along wide streets and on blocks fronting open spaces, such as the Commons, where the wind can regain speed before reaching a building – there, the higher speed wind striking a building can be deflected to cause adverse winds around the base of that building. Similarly, if a building or tower is much taller than nearby buildings, it can deflect winds to ground level to cause adverse winds there.

Prior wind testing conducted for the UCSF Mission Bay campus site included testing in 2001 for Block 20 Housing, the UCSF Medical Center at Mission Bay in 2008, and for Mission Hall, Building 25A, in 2012. These tests provide sufficient information to characterize wind conditions on the campus site. Because wind testing requires models, basic building masses and shapes such as described in the LRDP or in the *Mission Bay South Redevelopment Area Plan “Design for Development”* were used to model program buildings or upwind buildings in the Redevelopment Area whenever such buildings had not yet been designed. Using bulk shapes for such buildings yields the best possible approximation of the future wind conditions with the building design being wind tested. If that project design changes or if the other future building designs substantially differ from those bulk building shapes used, the wind test results may not correctly simulate the wind effects of those actual designs; further, major changes in the basic shape, dimensions, or the orientation of a building can substantially alter its wind effects and can compromise prior test results. On the other hand, experience indicates that simply articulating the basic building masses, as often done in the design process, will improve the performance of each building with respect to wind effects, making the results conservative.

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<sup>2</sup> Throughout this discussion, “wind speed” refers to equivalent wind speed (a metric defined in the San Francisco Planning Code Section 148 protocol that includes the effects of turbulence) that is exceeded 10% of the time.

Wind testing in 2001 for UCSF Block 20 housing included the few existing buildings and the project as designed, while most of the surrounding planned campus site structures were represented as simple bulk shapes, because no designs existed.

Wind testing in 2008 for the UCSF Medical Center at Mission Bay included more actual existing buildings and fewer bulk shapes. This test found that both the “*LRDP Phase*” and the “*Future Phase*” of the Medical Center would substantially improve wind conditions in the vicinity by reducing the number and duration of previously occurring wind hazards. The Medical Center *Future Phase* scenario would still result in a single remaining wind hazard at one location at the corner of Mariposa and Third Streets. As a result, continued actions under UCSF Mitigation Measure 4.1-7 from the *UCSF Medical Center at Mission Bay EIR*<sup>3</sup> and its predecessor City Mitigation Measure D.7 from the *Mission Bay Subsequent EIR*<sup>4</sup>, or under **Mitigation Measure AES-LRDP-3**, which is the functional equivalent of these two mitigation measures, would be required to eliminate this hazard during the on-going design process for the Medical Center *Future Phase*.

UCSF Mitigation Measure 4.1-7 was based on Mitigation Measure D.7 7, which derives from City *Planning Code* Section 148, and simply applies that hazardous wind criterion to proposed projects within the Mission Bay Redevelopment Area. However, under the 2014 LRDP, these two measures are superseded by the **Mitigation Measure AES-LRDP-3**, which is functionally equivalent to these two measures, and which will apply to new UCSF buildings over 100 feet in height. Therefore, compliance with **Mitigation Measure AES-LRDP-3** will also insure compliance with the hazardous wind criterion of City *Planning Code* Section 148.

Subsequent wind testing in 2012 for Mission Hall, Building 25A, found that the final design of Mission Hall would result in generally lower wind speeds on and around Block 25 than were measured in the 2008 wind tests. The major difference was that bulk models were used in the 2008 wind tests to represent nearby Buildings 25A and 25B, but these building shapes were substantially changed in developing the Mission Hall design that was wind tested in 2012. Overall, the results of the 2012 wind testing showed that wind conditions would be sufficiently improved to eliminate three nearby wind hazards found in the 2008 test; note that the wind hazard location at Mariposa and Third Streets was not tested in 2012 because Mission Hall could have no effect on winds at Mariposa and Third Streets.

Blocks 33 and 34 are vacant, and existing wind speeds on Blocks 33 and 34 should be substantially higher than occur on the Mission Bay campus site west of Third Street. However, development of these blocks in accordance with the “*Design for Development Guidelines*” should improve wind conditions in the same way as Mission Bay campus site development has improved wind conditions on the campus site to date.

<sup>3</sup> UCSF Medical Center at Mission Bay Environmental Impact Report, Certified by The Regents of the University of California, September 17, 2008, State Clearinghouse No. 2008012075.

<sup>4</sup> City and County of San Francisco, *Final Mission Bay Subsequent Environmental Impact Report*, September 17, 1998, certified October 14, 1998, Notice of Determination filed November 3, 1998 (State Clearinghouse Number 1997092068).

Increasing the Mission Bay campus site's development capacity north of Sixteenth Street will increase the density of UCSF development there. The increased density of buildings designed in accordance with the "*Design for Development Guidelines*" would be expected to further reduce general wind speeds downwind, in the same way as discussed above and as demonstrated by improved wind conditions on the UCSF Mission Bay campus site.

In addition to buildings, landscaping that includes street trees and street furniture is planned to accompany development of the Mission Bay campus site. It is well-known that the presence of large street trees, plantings, and street furniture would improve wind conditions on sidewalks on the campus site, and further reduce wind speeds measured in the wind tests by varying amounts, with reductions expected to be in the range of 1 mph to 3 mph.

With respect to the Wind Hazard Criterion, the 2014 LRDP proposals within the 85-foot height of the *Mission Bay South Redevelopment Area Plan "Design for Development"* should improve general wind conditions on the Mission Bay campus site from the current setting by reducing the overall number of wind hazards and the overall duration of exceedences.

Although most buildings would be 85 feet or less in height, the "*Design for Development*" also allows for buildings greater than 100 feet in height. Given the current understanding of wind conditions at the Mission Bay campus site due to actual development in accordance with the "*Design for Development*," as discussed above, wind testing of every building or any portion greater than 100 feet in height is not necessary. However, with implementation of **Mitigation Measure AES-LRDP-3** the proposed design for a building over 100 feet shall be evaluated by an expert to determine the potential to cause a wind hazard, and if such a hazard cannot be judged unlikely, the design shall be wind tunnel tested.

**Mitigation Measure:** Implement Mitigation Measure AES-LRDP-3

**Significance after Mitigation:** Less than Significant

**Impact AES-MB-6: Implementation of the 2014 LRDP at the Mission Bay campus site could substantially reduce sunlight or significantly increase shadows in public open space areas or could shadow the potential school site on Block 14. (Less than Significant)**

Development proposed under the 2014 LRDP could cast shadows on nearby public open spaces in Mission Bay, namely the Mission Bay Commons and Bayfront Park. These open spaces are not under the control of the San Francisco Recreation and Park Department and therefore are not subject to the provisions of *Planning Code* Section 295. However, development under the 2014 LRDP would be designed to comply with the *Mission Bay South Redevelopment Area Plan "Design for Development,"* which prescribes building height limits and other design guidelines that protect the parks from shadow. The *Design for Development* states that "Shadow studies have determined that development complying with the Design Standards will reasonably limit areas of shadow on public open spaces during the active months of the year and during the most active times of the day." No further shadow analysis is required unless a variance is sought from the Design Standards such as height, bulk, setbacks, and streetwall heights. UCSF development

would be consistent with the *Design for Development* Design Standards, so impacts of shading on public open space areas would be less than significant.

UCSF does not intend to seek a variance from the Design Standards, but if a variance were sought, the following criteria are discussed in the *Design for Development*:

“... To reasonably limit areas of open space in continuous shadow for extended periods of time, the area of public open space in continuous shadow for a period of one hour from March to September between 10 am and 4 pm should not exceed the following percentages:

Mission Creek Park	13%
Bayfront Park	20%
Triangle Square	17%
Mission Bay Commons	11%

The Mission Bay Commons is defined as that one-block portion of the commons east of Third Street; shadow from development under the 2014 LRDP would not reach that open space during the criteria times quoted above.

However, the proposed structures on Blocks 15 and 16 (and the existing buildings on Block 17) would cast some shadow on the other portions of the Commons that lie north of these sites and west of Third Street. The maximum area of shadow cast on those other portions of the Commons at any of these criteria times would be less than 9% of the open space area.

Development on the East Campus is close to, and could cast shadows on the southern-most portion of Bayfront Park. However, shadowing of that part of Bayfront Park would occur only in the latter half of the last hour of these criteria times, and the largest area of shadow at that time would be roughly a few percent of the total area of the park.

Therefore, project shadow would not reach the Mission Bay Commons (the protected one-block portion of the commons east of Third Street). Project shadowing on the other portions of the Commons open spaces would be less than the 11% criterion for the Commons. Project shadowing of Bayfront Park would occur in the last hour of the criteria times, and the largest area of shadow would be an order of magnitude less than the park’s criterion of 20% shadow coverage. By conforming to these design standards, the development proposed under the 2014 LRDP would remain well within the shadowing criteria established by the “*Design for Development*” and therefore would have a less than significant impact on shadowing of public open space.

Development proposed under the 2014 LRDP also would cast shadows on the potential public school site on Block 14. The “*Design for Development*” provides no guidance as to the shadow protection for the school site, but shadow that would occur during the school day would be important to the school. Shadows from development proposed on Blocks 18 and 15 under the 2014 LRDP would reach onto Block 14. Because development on Block 18 would be south of Block 14, that shadow would reach the site generally from mid-morning to early afternoon; these are the times of day when the Block 18 shadow would be relatively short, and would cover only a portion of the school site. Development of housing on Block 15, to the east of Block 14, would

cast shadow on portions of the adjacent school site beginning in early morning throughout the year, with Block 15 shadow leaving Block 14 by 9:30 am in December, by 11:00 am in March, and by 10:30 am in June.

The potential use of the site as a school would require a school building and the building itself would occupy space and cast its own shadows on the site as well, in a configuration that is not now known. Determining the effect of shadow from future development under the 2014 LRDP on a potential school is speculative given that the school site configuration is unknown.

**Mitigation:** None required.

## 7.2 Air Quality

This section considers the setting and air quality impacts of implementing the 2014 LRDP at the Mission Bay campus site. The Regional Setting, Regulatory Considerations, Significance Standards and Analysis Methodology for analysis of potential effects of Air Quality are contained in Section 4.2 of this EIR, while the plan-level Air Quality impacts of the 2014 LRDP are described in Section 5.2. The CEQA Significance Standards presented in Section 4.2.3 are used to evaluate the potential Air Quality impacts of all proposed 2014 LRDP activities.

### 7.2.1 Air Quality Issues Adequately Addressed in the Initial Study

After evaluation of the 2014 LRDP activities proposed at the Mission Bay campus site, the Initial Study concluded that:

- **Objectionable odors.** No activities would result in objectionable odors affecting a substantial number of people. Therefore, no additional analysis of this issue is required.

### 7.2.2 Air Quality – Mission Bay Setting

#### 7.2.2.1 Sensitive Receptors

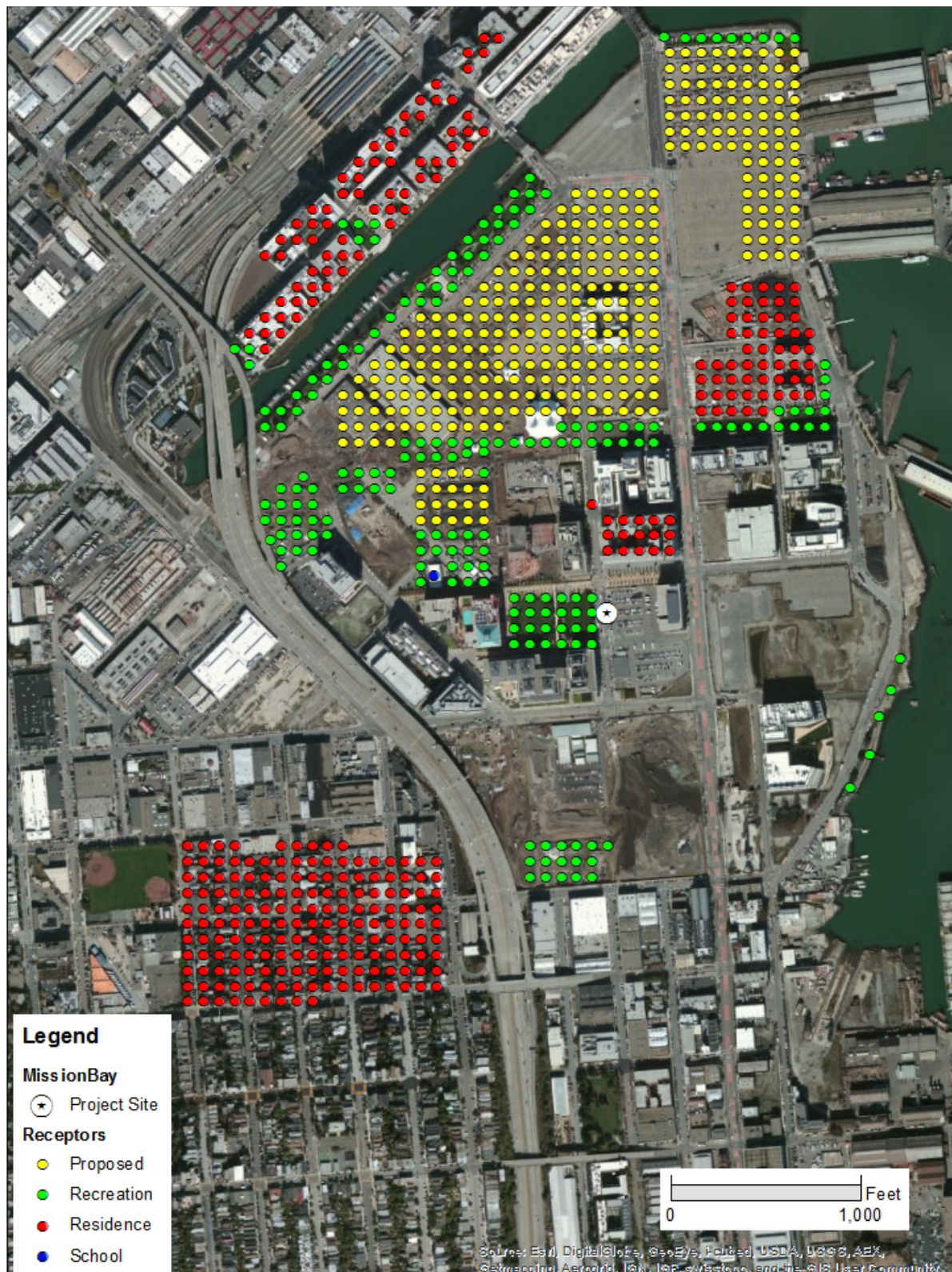
The sensitive receptors closest to the Mission Bay campus site are identified in **Figure 7.2-1**. On that campus site, existing sensitive receptors consist of the Mission Bay housing building on Block 20, a child care facility located on Block 18 and Koret Quad, which could be considered a recreational receptor. The hospital under construction will be a sensitive receptor when opened. Off-campus receptors consist of residential land uses approximately 300 feet northeast of the campus site, residential land uses approximately 650 feet northwest of the campus site (across Mission Creek) and residential land uses in Potrero Hill over 1,000 feet southwest of the campus site (on the west side of I-280 and south of Sixteenth Street). Additionally, there are recreational receptors (parks) located north west and northeast of the campus site.

#### 7.2.2.2 Existing Stationary Sources of Air Pollution

The BAAQMD's inventory of permitted stationary sources of emissions identifies 18 permitted stationary emission sources present within or near the 1,000-foot zone of influence of the campus site. These permitted facilities are inventoried in **Table 7.2-1** and are primarily made up of stationary diesel engines for back-up power generators or fire water pump engines.

The Mission Bay campus site also operates fume hoods which emit TACs. These fume hood emissions do not require a permit from BAAQMD based on the operating throughput and therefore have not been assigned an existing risk value in BAAQMD databases like permitted sources. However, UCSF maintains an inventory of chemical throughput for each campus site and has prepared health risk assessments relative to fume hood emissions and other stationary source emissions on the Mission Bay campus site. A 2009 health risk assessment performed for





SOURCE: KB Environmental Sciences

UCSF Long Range Development Plan Environmental Impact Report

**Figure 7.2-1**  
Sensitive Receptors – Mission Bay Campus Site



**TABLE 7.2-1  
PERMITTED STATIONARY SOURCES WITHIN THE MISSION BAY CAMPUS SITE AREA**

Source #	Facility Type	Address
13160	UCSF	600 16th Street
17357	Alexandria Real Estate	1700 Owens Street
15874	J. David Gladstone Institute	1650 Owens Street
19073	Alexandria Real Estate	1500 Owens Street
19601 (now 21816)	Mission Bay Development Group	505 Mission Bay Blvd North
19906	ARE San Francisco	405 Mission Bay Blvd South
19626	Radiance HOA	325 China Basin Street
19322	SP4 Mission bay LP	500 Terry Francois Boulevard
17782	Gap Incorporated	550 Terry Francois Boulevard
14232	Channel Pump Station	455 Berry Street
18971	UCSF CPEM	654 Minnesota Street
12323	Western Printing Inc.	777 Tennessee Street
G2187	SF Petroleum Company	2840 Broadway
8253	SF Boatworks	835 China Basin Street
15335	Gianni's Auto Body	625 Mariposa Street
3239	Cemex (Plant removed)	
18749	Shorenstein Realty Svcs	409 Illinois Street
19268	Fibrogen	409 Illinois Street

Highest Source Impact

SOURCE: BAAQMD, 2012c and ESA.

the Mission Bay campus site identified health risks from boilers, fume hoods, emergency generators, microturbines and a future cogeneration turbine proposed for the campus. Risks associated with all of these sources were estimated at 8 in one million at the maximally exposed off-site receptor and 2 in one million for the individual maximally exposed on-site receptor (ENVIRON, 2009). An assessment of existing fume hood emissions at Genentech Hall alone prepared in 2011 indicated an increased cancer risk from fume hoods to be 0.0217 in one million at the nearest off-site receptor (UCSF, 2011).

### 7.2.2.3 Major Roadways and Railways Contributing to Air Pollution

Third Street, Sixteenth Street and Mariposa Street are arterial streets in the existing local roadway system within the 1,000-foot zone of influence that have at least 10,000 vehicles in annual average daily traffic based on the City's SF CHAMP roadway model.<sup>5</sup> This traffic contributes to elevated concentrations of PM<sub>2.5</sub>, DPM, and other contaminants emitted from motor vehicles near

<sup>5</sup> San Francisco Metropolitan Transportation Agency, Chained Activity Modeling Process version 4.3.0, Average Daily Traffic Volumes, provided to ESA August 2, 2012.

the street level. Interstate 280 Bridge extends in a northerly alignment in the vicinity of the Mission Bay campus site, and is approximately 400 horizontal feet west of the campus site, with the lanes at an elevation of approximately 20 feet above ground level. Aside from the surrounding major roadways, the only other areas of mobile-source activity or otherwise “non-permitted” sources (e.g., railyards, trucking distribution facilities, and high-volume fueling stations) located within 1,000 feet of the campus site would be Recology (formerly Golden Gate Disposal Company), which operates a storage yard for its collection trucks on Seventh Street approximately 900 feet west of the Mission Bay campus site. Additionally, Caltrain operates 96 daily diesel locomotive trips on its tracks approximately 400 feet west of the campus site, below I-280.

### 7.2.3 Air Quality – Mission Bay Impacts and Mitigation Measures

**Impact AIR-MB-1: Implementation of the 2014 LRDP at the Mission Bay campus site would result in increased emissions of criteria air pollutants during construction activities. (Potentially Significant)**

Construction activities under the 2014 LRDP at the campus site would result in emissions of criteria pollutants from the use of heavy-duty construction equipment, haul truck trips, and vehicle trips generated from construction workers traveling to and from the campus site. In addition, fugitive dust or PM<sub>10</sub> emissions would result from excavation, trenching, and other construction activities.

Construction-related emissions from 2014 LRDP proposals were calculated using the California Emissions Estimator Model (CalEEMod), assuming four discrete construction windows in five year increments. These windows are presented in **Table 7.0-3**, Proposal Construction Time Frames at Mission Bay, located in Section 7.0.4 of this chapter.

Modeling assumed construction phasing lengths based on CalEEMod default estimates, which are based on square footage for hospitals and research/office uses. All model inputs and outputs are provided in Appendix E. Emissions for the 2015-2020 construction window included equipment operations and export of 9,000 cubic yards of soil for surcharging of building pads of Blocks 15 and 18.

**Table 7.2-2** presents the average annual daily construction emissions generated by the development under the 2014 LRDP at the Mission Bay campus site. As can be seen in Table 7.2-2, estimated average daily construction-related exhaust emissions would not exceed the thresholds for ROG, NOx, or particulate matter.

The BAAQMD approach to analysis of construction-related particulate impacts (other than exhaust PM) emphasizes implementation of effective and comprehensive dust control measures rather than detailed quantification of emissions. As indicated under Impact AIR-LRDP-4 in Section 5.2 of this EIR, the BAAQMD considers construction-related fugitive dust impacts of projects to be less than significant if a suite of recommended dust-control measures are

**TABLE 7.2-2  
AVERAGE DAILY CONSTRUCTION-RELATED POLLUTANT EMISSIONS  
WITHOUT MITIGATION - MISSION BAY**

Years	Estimated Emissions (lbs/day)			
	ROG	NO <sub>x</sub>	Exhaust PM <sub>10</sub>	Exhaust PM <sub>2.5</sub>
2015-2019	16.42	38.92	1.86	1.74
2020-2024	8.65	19.70	0.86	0.81
2025-2030	7.75	14.67	0.55	0.51
2031-2035	15.72	15.76	0.36	0.35
<i>BAAQMD Considered Construction Threshold</i>	54	54	82	54
Potential Significant Impact?	No	No	No	No

SOURCE: ESA (Appendix E)

implemented. Therefore, BAAQMD-identified Best Management Practices for control of fugitive dust are adopted Campus-wide in Section 5.2 as **Mitigation Measure AIR-LRDP-1: Best Management Practices for Controlling Particulate Emissions**. With this measure in place the construction-related fugitive dust impacts would be less than significant.

**Mitigation Measure:** Implement Mitigation Measure AIR-LRDP-1

Although the criteria air pollutant emissions from demolition and construction proposals at the Mission Bay campus site would be below BAAQMD significance thresholds, **Impact AIR-LRDP-4** in Section 5.2 identifies a significant and unavoidable LRDP construction-related air quality impact resulting from emissions of criteria air pollutants when the combined construction at all campus sites is considered. In response, **Mitigation Measure AIR-LRDP-2: Architectural Coatings** and **Mitigation Measure AIR-LRDP-3: Off-Road Equipment Control Measures** were adopted Campus-wide and therefore would also apply to construction projects at the Mission Bay campus site.

**Mitigation Measures:** Implement Mitigation Measure AIR-LRDP-2 and AIR-LRDP-3

**Significance after Mitigation:** Less than Significant

**Impact AIR-MB-2: Construction activities at the Mission Bay campus site under the 2014 LRDP would increase emissions of toxic air contaminants (TACs) and increase health risks for nearby residents. (Potentially Significant)**

Construction activities under the 2014 LRDP at the Mission Bay campus site would produce DPM and PM<sub>2.5</sub> emissions due to combustion equipment such as loaders, backhoes, and cranes, as well as haul truck trips. These emissions result in elevated concentrations of DPM and PM<sub>2.5</sub> at nearby receptors (both new and existing residences and schools) near the campus site. These elevated concentrations could lead to an increase in the risk of cancer or other health impacts.

Consequently, a health risk assessment was performed to determine the extent of increased cancer risks and hazard indices at the maximally exposed receptors. The health risk assessment was based on recommended methodology of the state Office of Environmental Health Hazard Assessment and adopted by BAAQMD. Detailed assumptions and methodology for the health risk assessment are included in Appendix E. For the Mission Bay campus site, the closest new residences (a total of approximately 330 receptors) would be located at Mission Bay housing within Block 15 along Mission Bay Boulevard North. Additional existing residences are located at Mission Bay housing within Block 20. One daycare is located in the immediate vicinity and approximately 200 recreational receptors (Campus Sport Field, Koret Quad, and Mission Creek Park) were included in the analysis. Nearly 840 receptors were included in the analysis, which used the annual mass construction emissions as predicted by CalEEMod and determined annual average concentrations of DPM and PM<sub>2.5</sub> which were then used to calculate risk values.

A summary of the health impacts related to construction under the 2014 LRDP at the Mission Bay campus site is presented in **Table 7.2-3**.

**TABLE 7.2-3  
CONSTRUCTION-RELATED HEALTH IMPACTS – MISSION BAY**

Receptor Type	Cancer Risk (cases per million Persons)	Chronic Impact	Acute Impact	PM2.5 Concentration (µg/m <sup>3</sup> )
New Residence (adult / child)	0.63 / 7.11	0.01	0.08	0.07
School Children	0.35	0.01	0.01	0.03
Existing Residence (adult / child)	0.73 / 8.21	0.01	0.17	0.05
<i>BAAQMD Significance Criteria</i>	10	1	1	0.3
Significant Impact?	No	No	No	No

SOURCE: KB Environmental Sciences, Inc., 2014.

Subsequent to the preparation of the health risk assessment, development of Blocks 33 and 34 were added to the long-term projects under the 2014 LRDP Project Description. Construction on these blocks would add incrementally to the risk values in Table 7.2-3. However, CEQA review for development of these blocks assuming a research and development land use was addressed in the *Mission Bay Subsequent EIR*. That document identified a significant impact with regard to operational TAC emissions and identified Mitigation Measure F.03 with regard to TAC emissions to reduce the impact to less than significant. Because the analysis of Blocks 33 and 34 has already undergone CEQA review, implementation of Mitigation Measure F.03 would be required of future development. This mitigation measure has been identified for development of Blocks 33 and 34 as **Mitigation Measure AIR-MB-1**.

As shown in Table 7.2-3, the maximum cancer risk for a new residence-adult and residence-child associated with the project (Mission Bay housing within Block 15) would be 0.6 and 7.1 cancer cases per million persons, respectively. The maximum cancer risk for an existing residence-adult

and residence-child (Mission Bay housing within Block 20) would be 0.7 and 8.2 cancer cases per million persons, respectively. Thus, the cancer risk due to construction activities alone is below the BAAQMD threshold of 10 cancer cases per million persons and would be less than significant. No school children receptors are located within the campus site, but a potential San Francisco Unified School District school site is located at Block 14, the northwestern most parcel of the campus site. Potential impacts to future school children receptors at this site are considered in Section 10.2, *Cumulative Impacts*.

The chronic HI would be less than 0.01 at all receptors. The chronic HI would be below the BAAQMD threshold of 1 and the impact of 2014 LRDP activities would be less than significant. The acute HI would be less than 0.2 at all receptors including recreational receptors within the Campus Sport Field, Koret Quad, and Mission Creek Park. The acute HI would be below the BAAQMD threshold of 1 and the impact of 2014 LRDP activities would be less than significant.

The maximum annual  $PM_{2.5}$  concentrations would be less than  $0.1 \mu g/m^3$  for the new residences associated with the 2014 LRDP, any future school on Block 14, and the existing residences. The construction-related annual  $PM_{2.5}$  concentration resulting from 2014 LRDP activities is below the BAAQMD threshold of  $0.3 \mu g/m^3$ , and hence is considered less than significant.

**Mitigation Measure AIR-MB-1:** Obtain written verification from BAAQMD that the facility has been issued a permit from BAAQMD, if required by law, or that permit requirements do not apply to the facility. (Modified from *Mission Bay Subsequent EIR Mitigation Measure F.03*)

**Significance after Mitigation:** Less than Significant

**Impact AIR-MB-3: Operations at the Mission Bay campus site under the 2014 LRDP would result in increased emissions of criteria air pollutants. (Potentially Significant)**

Development under the 2014 LRDP would result in an increase in criteria air pollutant and precursor emissions, including ROG, NO<sub>x</sub>, PM<sub>10</sub> and PM<sub>2.5</sub> from a variety of emissions sources, including onsite area sources (e.g., natural gas combustion for space and water heating, landscape maintenance, use of consumer products such as hairsprays, deodorants, cleaning products, etc.) and mobile on-road sources. Operational emissions of criteria pollutants were estimated using the CalEEMod version 2013.2.2 emissions inventory model. All model inputs and outputs are provided in Appendix E.

One of the sources of operational emissions at the campus site would be increased vehicle emissions from additional staff, patients, visitors and residents. Traffic volumes used to estimate vehicle-related emissions were derived from the Transportation Demand Analysis prepared for the LRDP (Adavant, 2014). 2014 LRDP activities at the campus site would generate an estimated 12,175 additional daily vehicle trips during the weekday. In addition to exhaust emissions, vehicles would also generate PM<sub>10</sub> and PM<sub>2.5</sub> from entrained road dust and tire and brake wear.

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

**Table 7.2-4** presents estimated operational emissions from development under the 2014 LRDP at the Mission Bay campus site in 2035. As shown in the table, without mitigation, operational emissions of NO<sub>x</sub>, ROG, and PM<sub>10</sub> would exceed the threshold levels, resulting in a significant impact. The primary contributing sources to ROG emissions would be the use of consumer products associated with over 2 million square feet of development, while for NO<sub>x</sub> emissions, the primary sources are vehicle emissions and natural gas combustion. PM<sub>10</sub> emissions are primarily associated with vehicle trips.

**TABLE 7.2-4  
UNMITIGATED OPERATIONAL CRITERIA POLLUTANT EMISSIONS - MISSION BAY**

Air Pollutant	Estimated Emissions (lbs/day)			
	ROG	NO <sub>x</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>
Mobile Sources <sup>a</sup>	23.14	39.20	65.38	18.32
Area Sources <sup>a</sup>	103.4	0.50	0.24	0.24
Natural gas combustion	3.82	34.69	2.64	2.64
<b>Total</b>	<b>130.4</b>	<b>74.39</b>	<b>68.26</b>	<b>21.20</b>
Regional Significance Threshold	54	54	82	54
Significant Impact?	Yes	Yes	Yes	No

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

SOURCE: ESA, 2014 (see Appendix E).

Impact AIR-LRDP-5 identifies a significant operational air quality impact resulting from emissions of criteria air pollutants when operation at all campus sites is considered. In response, **Mitigation Measure AIR-LRDP-4: BAAQMD-Suggested Operational Measures** was adopted Campus-wide and therefore would also apply to operation of projects at the Mission Bay campus site.

#### **Mitigation Measure: Implement Mitigation Measure AIR-LRDP-4**

**Significance after Mitigation: Significant and Unavoidable.** Mitigation Measure AIR-LRDP-4 would not result in the 59% reduction necessary (for ROG) or 27% (for NO<sub>x</sub>) to reduce the impact to a less-than-significant level. This amount of traffic reduction exceeds the best reduction estimates for TDM programs (BAAQMD, 2012b). Assuming a conservative 12% reduction in vehicle miles travelled associated with TDM measures (CAPCOA, 2010), operational emissions of ROG at the Mission Bay campus site would be reduced to 126.8 pounds per day and emissions of NO<sub>x</sub> would be reduced to 62.68 pounds per day. Consequently, 2014 LRDP development at the campus site with implementation of feasible mitigations would still result in significant environmental effects on air quality and contribute substantially to an existing air quality violation (ozone precursors and particulate matter). Therefore, even with implementation of Mitigation Measure AIR-MB-4, this impact would remain significant and unavoidable for emissions of ROG, NO<sub>x</sub> and PM<sub>10</sub>.

NO<sub>x</sub> and ROG emissions are a concern as ozone precursors. The health implications of this significant impact would result from the potential to contribute to increased violations of the air quality standards for ozone. As indicated in Table 4.2-1, state and federal standards for ozone have not been exceeded in the past five years of monitoring in San Francisco, so the degree to which project would substantially contribute to a future violation of the ozone standard would be expected to be minimal. Further, the extent to which these significant ozone precursor emissions would result in adverse health effects is not readily quantifiable on a local scale because “by its very nature, air pollution is largely a cumulative impact. No single project is sufficient in size to, by itself, result in nonattainment of ambient air quality standards” (BAAQMD, 2011).

**Impact AIR-MB-4: Operations at the Mission Bay campus site under the 2014 LRDP would expose persons (new receptors) to substantial levels of TACs, which may lead to adverse health effects. (Potentially Significant)**

The BAAQMD’s *CEQA Air Quality Guidelines* include standards and methods for determining the significance of health risk impacts for new receptors resulting from the 2014 LRDP. The method for determining health risk requires the review of health risk from permitted sources and major roadways in the vicinity of a project (i.e., within a 1,000-foot radius of the source), then adding the project impacts to determine whether the health risk thresholds for new receptors are exceeded.

BAAQMD has developed a geo-referenced database of permitted emissions sources throughout the San Francisco Bay Area, and has developed the Stationary Source Risk & Hazard Analysis Tool (dated May 2011) for estimating cumulative health risks from permitted sources. Eight permitted sources are located within 1,000 feet of new residences associated with the 2014 LRDP and included in the cumulative analysis.

BAAQMD has also developed a geo-referenced database of major roadways throughout the San Francisco Bay Area and has developed the *Highway Screening Analysis Tool* (dated May 2011) for estimating cumulative health risks from roadways.

Fume hood emissions also contribute to exposure to TACs. As discussed in the setting section, these fume hood emissions do not require a permit from BAAQMD based on the operating throughput and therefore have not been assigned an existing risk value in BAAQMD databases like permitted sources. An assessment of existing fume hood emissions at Genentech Hall prepared in 2011 indicated an increased cancer risk from fume hoods to be 0.0217 in one million at the nearest off-site receptor (UCSF, 2011).

A summary of the cumulative health impacts for the new residences under the 2014 LRDP Mission Bay campus site is found in **Table 7.2-5**.

The health impacts from nearby sources in the area would have an impact on new receptors associated with the 2014 LRDP at the Mission Bay campus site, including new housing on Block 15 and relocated child care facilities. The highest cancer risk from any of the nearby sources would

**TABLE 7.2-5  
HEALTH IMPACTS FOR MAXIMALLY EXPOSED NEW RECEPTORS - MISSION BAY**

Site #	Facility Type	Address/Source	Cancer Risk (persons per million)	Hazard Index	PM <sub>2.5</sub> Concentration (µg/m <sup>3</sup> )
13160	UCSF/Mission Bay <sup>a</sup>	600 16th Street	2.89	<0.01	0.01
17357	Alexandrea Real Estate	1700 Owens Street	3.26	<0.01	<0.01
15874	David Gladstone	1650 Owens Street	0.54	<0.01	0.02
19073	Alexandrea Real Estate	1500 Owens Street	1.11	0.01	<0.01
		Fume Hood Emissions	0.02	<0.01	<0.01
		Caltrain	14.3	0.01	0.02
		I-280	5.32	0.01	0.05
		4th Street	0.34	<0.01	0.01
		7th Street	0.29	<0.01	0.01
		16th Street	0.39	<0.01	0.01
		Proposed LRDP construction and traffic (adult/child)	0.65/7.13	0.01	0.07
		Highest Single Source Impact	14.3	0.01	0.07
		<i>BAAQMD Significance Criteria (new receptor)</i>	10	1	0.3
		Potentially Significant Impact?	Yes	No	No

<sup>a</sup> UCSF risks presented here were calculated using data provided by BAAQMD in response to a stationary source inquiry form request and their risk and hazard emission screening calculator at an approximated 800 foot distance of Genentech Hall from Block 15.

SOURCE: KB Environmental Sciences, Inc., 2014; BAAQMD, 2014.

be 14.3 persons per million from operations of Caltrain. This cancer risk value declines negligibly with receptor height (14.0 in one million at 20 feet and 13.6 in one million at 30 feet). Thus, the cancer risk for new receptors exceed the BAAQMD threshold of 10 per million and would be significant. Diesel locomotives used by Caltrain are predicted to be transitioned to electric-powered locomotives by 2025, at which point the increased cancer risk values would drop to zero. Notwithstanding this predicted improvement, **Mitigation Measure AIR-MB-4** is identified to reduce DPM exposure at the proposed housing and child care at Block 15 to a less than significant level.

The highest hazard index from other nearby sources would be less than 0.1; well below the BAAQMD threshold of 1 and the impact of the proposed residences at the campus site would be less than significant. The highest annual PM<sub>2.5</sub> concentrations would be 0.1 µg/m<sup>3</sup>. This PM<sub>2.5</sub> concentration at new residences would be below the BAAQMD threshold of 0.3 µg/m<sup>3</sup>, and hence is considered less than significant.

#### **Mitigation Measure AIR-MB-4: Particulate Filtration Systems for Block 15 Housing and Child Care.**

***Air Filtration and Ventilation Requirements for Sensitive Land Uses.*** As part of the building design, UCSF shall include a ventilation plan for the proposed housing and day care building. The ventilation plan shall show that the building ventilation system removes at least 80% of the outdoor PM<sub>2.5</sub> concentrations from habitable areas and be designed by



an engineer certified by ASHRAE, who shall provide a written report documenting that the system meets the 80% performance standard and offers the best available technology to minimize outdoor to indoor transmission of PM<sub>2.5</sub>.

**Maintenance Plan.** UCSF shall prepare a plan that ensures ongoing maintenance for the ventilation and filtration systems.

**Significance after Mitigation:** Less than Significant

**Impact AIR-MB-5: Operations at the Mission Bay campus site under the 2014 LRDP would cumulatively expose persons (existing and new receptors) to substantial levels of TACs, which may lead to adverse health effects. (Less than Significant)**

The BAAQMD's *CEQA Air Quality Guidelines* include standards and methods for determining the significance of cumulative health risk impacts for new projects. The method for determining health risk requires reviewing health risks from permitted sources and major roadways in the vicinity of a project (i.e., within a 1,000-foot radius of the source), then adding the project impacts to determine whether the cumulative health risk thresholds are exceeded.

Development under the 2014 LRDP would also result in an increase in TACs from boilers, fume hoods, emergency generators, microturbines and a future cogeneration turbine proposed for the campus. A health risk assessment performed for the Mission Bay campus site identified health risks associated with all of these sources which were estimated at 8 in one million at the maximally exposed off-site receptor and 2 in one million for the individual maximally exposed on-site receptor (ENVIRON, 2009).

A summary of the cumulative health impacts for the existing residences for the Mission Bay campus site are found in **Table 7.2-6**.

The health impacts from the 2014 LRDP construction and operations plus other sources (permitted sources and roadways) in the campus site would have a cumulative impact on nearby receptors. The maximum cumulative cancer risk for existing residence would be 14.9 and 22.4 persons per million for residence-adult and residence child, respectively. Non-residential receptors such as the recreational users of the proposed sports fields would have a lesser impact due to reduced exposure durations compared to residential receptors, which conservatively assume a 70 year exposure. Thus, the cumulative cancer risk is below the BAAQMD threshold of 100 per million and would be less than significant.

The cumulative HI would be less than 0.1. The HI would be well below the BAAQMD threshold of 10 and the impact of the 2014 LRDP would be less than significant. The maximum cumulative annual PM<sub>2.5</sub> concentrations would be 0.2 µg/m<sup>3</sup>. The cumulative annual PM<sub>2.5</sub> concentration is below the BAAQMD threshold of 0.8 µg/m<sup>3</sup>, and hence is considered less than significant.

**Mitigation:** None required.

**TABLE 7.2-6  
CUMULATIVE HEALTH IMPACTS - MISSION BAY**

Site #	Facility Type	Address/Source	Cancer Risk (persons per million)	Chronic Hazard Index	PM2.5 Concentration (µg/m <sup>3</sup> )
13160	UCSF/Mission Bay	600 16th Street	**	**	**
17357	Alexandria Real Estate	1700 Owens Street	3.26	<0.01	<0.01
15874	David Gladstone	1650 Owens Street	0.54	<0.01	0.02
19073	Alexandria Real Estate	1500 Owens Street	1.11	0.01	<0.01
		Caltrain	14.3	0.01	0.02
		I-280	5.32	0.01	0.05
		4th Street	0.34	<0.01	0.01
		7th Street	0.29	<0.01	0.01
		16th Street	0.39	<0.01	0.01
	UCSF Generators, Fume Hoods, turbines and boilers under the LRDP		8/2	0.01	0.01
	Proposed LRDP Construction and Vehicle Trips (adult / child)		0.73 / 8.21	0.01	0.07
	<b>Grand Total (adult / child)</b>		<b>34.3 / 35.8</b>	<b>0.05</b>	<b>0.2</b>
	<i>BAAQMD Cumulative Significance Criteria</i>		100	10	0.8
	Significant Cumulative Impact?		No	No	No

SOURCE: KB Environmental Sciences, Inc., 2014; ENVIRON 2009.

\*\* These existing sources are included in the 2009 HRA values that analyzed all campus wide stationary source emissions under the 2008 LRDP Update.

## LRDP Variant Conditions

Under the LRDP Variant, the Mission Bay campus site would generate slightly more vehicle trips than under the 2014 LRDP. Approximately 2,950 new vehicle trips would be generated during the AM peak hour and approximately 2,450 additional vehicles at the campus site during the PM peak hour. These represent increases of approximately 2% in the total number of vehicles compared to the 2014 LRDP during both the AM and PM peak hours.

With an overall 2% increase in daily trip generation, this Variant would increase operational mobile criteria air pollutant emissions by approximately 2% (0.4 pounds per day of ROG, 0.78 pounds per day of NO<sub>x</sub>, 1.31 pounds per day of PM<sub>10</sub> and 0.37 pounds per day of PM<sub>2.5</sub>). Daily emissions of ROG and NO<sub>x</sub> from operations at Mission Bay would still exceed significance thresholds and daily emissions of PM<sub>10</sub> and PM<sub>2.5</sub> would remain below significance thresholds which would be the same impact conclusion as under the 2014 LRDP. Consequently, the LRDP Variant would have the similar operational air quality impacts as Mission Bay under the 2014 LRDP. Emissions from the LRDP Variant would also marginally increase cancer risk and hazard levels presented in Table 7.2-5 and 7.2-6. However, similar to criteria pollutant impacts, this variant would have the similar operational cancer risk and hazard impacts as Mission Bay under the 2014 LRDP.

Considering the additional contributions of the LRDP Variant in the context of the LRDP as a whole (Chapter 5), the additional emissions from the LRDP Variant would result in marginal increases of pollutants to those presented in Table 5-4. Daily emissions of ROG and NO<sub>x</sub> from operations at Mission Bay would still exceed significance thresholds and daily emissions of PM<sub>10</sub> and PM<sub>2.5</sub> would remain below significance thresholds and would be the same impact as under the 2014 LRDP.

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## 7.2.4 References

- Adavant Consulting, Travel Demand Analysis Four Campus Summary: Existing & 2035, February, 2014.
- Bay Area Air Quality Management District (BAAQMD), 2009. Revised Draft Options and Justification Report, CEQA Thresholds of Significance Air Quality Guidelines, October 2009. Available at [www.baaqmd.gov](http://www.baaqmd.gov).
- BAAQMD, 2010. Bay Area 2010 Clean Air Plan, September 15, 2010.
- BAAQMD, 2012. CEQA Air Quality Guidelines. Adopted June 2011, updated May 2012. Available at [www.baaqmd.gov](http://www.baaqmd.gov).
- California Air Resources Board (CARB), 2005. Air Quality and Land Use Handbook: A Community Health Perspective. April 2005.

## 7.3 Biological Resources

The Regional Setting, Regulatory Considerations, Significance Standards and Analysis Methodology for analysis of potential effects of Biological Resources are contained in Section 4.3 of this EIR. The CEQA Significance Standards presented in Section 4.3.3 are used to evaluate the potential impacts to biological resources of all proposed 2014 LRDP activities.

After evaluation of the 2014 LRDP proposals at the Mission Bay campus site, the Initial Study concluded that all activities would result in no impact or less-than-significant impacts regarding biological resources issues. Therefore, no additional analysis is required.

## 7.4 Cultural Resources

This section considers the setting and cultural resources impacts of implementation of the 2014 LRDP at the Mission Bay campus site. The Regional Setting, Regulatory Considerations, Significance Standards and Analysis Methodology for analysis of potential effects of Cultural Resources are contained in Section 4.4 of this EIR. The CEQA Significance Standards presented in Section 4.4.3 are used to evaluate the potential impacts to cultural resources of all proposed 2014 LRDP activities.

### 7.4.1 Cultural Resources Issues Adequately Addressed in the Initial Study

After evaluation of the 2014 LRDP activities proposed at the Mission Bay campus site, the Initial Study concluded that:

- **Historical resources.** No activities would result in an adverse effect on historical resources. Therefore, no additional analysis of this issue is required.

### 7.4.2 Cultural Resources – Mission Bay Setting

The Mission Bay area of San Francisco (approximately 300 acres on the east side of the City) once consisted of open bay and tidal marshes. Mission Bay was filled in the late 19th and early 20th centuries to provide additional land area to be used primarily for industrial expansion. Most of the area was owned by the Southern Pacific Railroad and is currently being redeveloped into a mixed-used community. The area once consisted of industrial and commercial buildings, warehouses, construction sites, and vacant parcels, but it is undergoing transition to a mixed-used community, which includes the UCSF Mission Bay campus site. A cultural resource evaluation prepared for the *Mission Bay Final EIR* (1990), the *Subsequent EIR* (1998), and the *UCSF LRDP Amendment #2* (2005) identifies three historic structures within Mission Bay: Fire Station 30, the Lefty O'Doul Bridge, and the Peter Maloney Bridge. None of these resources is within or near the campus site.

No recorded archaeological sites dating from the Prehistoric (2500 BC to AD 1500) or Protohistoric (1500s to 1700s) periods are located within the area potentially affected by construction proposed under the 2014 LRDP. The nearest recorded resources are about 1,500 feet away and have been identified as the southern tip of Steamboat Point, just south of Townsend and Third Streets, and the northern point of San Quentin, north of Mariposa Street, between Pennsylvania Avenue and Terry A. Francis Blvd. The Wing Lee Laundry Site, located on King Street between Third and Fourth Streets, is also about a half mile north of the Mission Bay campus site. There is no archival evidence that cultural resources are present at the Mission Bay campus site, and the potential for discovery is low.

### 7.4.3 Cultural Resources – Mission Bay Impacts and Mitigation Measures

**Impact CUL-MB-1: Construction of 2014 LRDP proposals at the Mission Bay campus site could cause substantial adverse changes to archaeological resources. (Potentially Significant)**

Development proposals under the 2014 LRDP would occur on Blocks 15, 16, 18, 23, 25, 33, 34 and on the site of the Medical Center at Mission Bay (cancer outpatient building and Phase 2). These blocks are either undeveloped or contain existing development completed within the last 10 years. Due to the relatively recent age of the buildings on the subject blocks and surrounding areas, no historic resources exist on these development sites or in the immediate vicinity.

Previous studies and archival research conducted for the Mission Bay campus site has not identified archaeological resources at the campus site (UCSF, 2005). Development to date on the UCSF Mission Bay North and South campuses has not resulted in the discovery of any significant archaeological resources. Archaeological sites are generally located near watercourses or water bodies. However, the Mission Bay area has been substantially altered over time, including the large amount of fill added along the shoreline; therefore, the likelihood of discovering archaeological resources is low.

In the unlikely event that archaeological artifacts are discovered during construction (including grading, excavation and other earthmoving activities), **Mitigation Measure CUL-LRDP-3** would be implemented to reduce the impact to a less than significant level.

**Mitigation Measure:** Implement Mitigation Measure CUL-LRDP-3

**Significance after Mitigation:** Less than Significant

**Impact CUL-MB-2: Construction of 2014 LRDP proposals at the Mission Bay campus site could cause substantial adverse changes to paleontological resources. (Potentially Significant)**

Paleontology is a multidisciplinary science that combines elements of geology, biology, chemistry, and physics in an effort to understand the history of life on earth. Paleontological resources, or fossils, are the remains, imprints, or traces of once-living organisms preserved in rocks and sediments. The fossil yielding potential of a particular area is highly dependent on the geologic age and origin of the underlying rocks. In general, older sedimentary rocks (more than 10,000 years old) are considered most likely to yield vertebrate fossils of scientific interest. Review of geological maps and previous analysis suggests that there no unique paleontological resources or unique geologic features at the Mission Bay campus site, which is underlain by dune sands. In the event that paleontological resources are uncovered during the course of construction, implementation of **Mitigation Measure CUL-LRDP-4** would reduce impacts to a less than significant level.

**Mitigation Measure:** Implement Mitigation Measure CUL-LRDP-4

**Significance after Mitigation:** Less than Significant

**Impact CUL-MB-3: Construction of 2014 LRDP proposals at the Mission Bay campus site could cause substantial adverse changes to human remains. (Potentially Significant)**

There are no known human remains, including those interred outside of formal cemeteries located at the Mission Bay campus site. In the event of an accidental discovery or recognition of human remains during project excavation and construction, **Mitigation Measure CUL-LRDP-5** would be implemented to reduce the impact to a less than significant level.

**Mitigation Measure:** Implement Mitigation Measure CUL-LRDP-5

**Significance after Mitigation:** Less than Significant

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## 7.4.4 References

UCSF, *Long Range Development Plan Amendment #2 – Hospital Replacement*, March 17, 2005.

## 7.5 Geology, Soils and Seismicity

This section considers the setting and geology, soils and seismicity impacts of implementation of the 2014 LRDP at the Mission Bay campus site. The Regional Setting, Regulatory Considerations, Significance Standards and Analysis Methodology for analysis of potential effects of Geology, Soils and Seismicity are contained in Section 4.5 of this EIR. The CEQA Significance Standards presented in Section 4.5.3 are used to evaluate the potential Geology, Soils and Seismicity impacts of all proposed 2014 LRDP activities.

Those impacts that are specific to the implementation of the 2014 LRDP at the Mission Bay campus site are discussed below.

### 7.5.1 Geology, Soils and Seismicity Issues Adequately Addressed in the Initial Study

After evaluation of the 2014 LRDP activities proposed at the Mission Bay campus site, the Initial Study concluded that:

- **Landslides.** No activities would result in adverse effect from landslides. Therefore, no additional analysis of this issue is required.
- **Expansive soils.** No activities would be located on expansive soils. Therefore, no additional analysis of this issue is required.
- **Soils and wastewater disposal.** No activities would result in the installation of septic tanks or alternative wastewater disposal systems. Therefore, no additional analysis of this issue is required.
- **Structural hazards.** No activities would result in exposure to structural hazards in an existing building. Therefore, no additional analysis of this issue is required.

### 7.5.2 Geology, Soils and Seismicity – Mission Bay Setting

The Mission Bay campus site is relatively flat with a ground elevation of approximately 10 to 25 feet above mean sea level. The Mission Bay campus site is an artificially filled former tidal inlet containing varying thicknesses of non-engineered fill, Bay Mud, clay, and sand overlying sandstone bedrock. The fill is irregularly distributed across the campus site and is widely variable in its density, compaction, and corrosivity characteristics. Several feet of total and differential settlement have occurred in the 150 years since filling began. Depending on the season, groundwater is encountered at depths ranging from 5 to 9 feet below ground surface (Harding, 2001).

Numerous geotechnical investigations have been completed in the Mission Bay area, and have identified potential seismic hazards, including ground shaking, ground failure due to liquefaction, ground lurching or lateral spreading, and seismically induced settlement. The investigations found little settlement in Mission Bay immediately after the 1989 Loma Prieta earthquake. The



investigations concluded that these hazards would be reduced to “low” with the use of appropriate foundation and structural design elements (e.g., deep foundation systems such as pile supported foundations) in accordance with building code requirements (Harding, 2001).

A program to surcharge the land to compact the underlying fill was also recommended from earlier geotechnical investigations and has been underway for the past 10 years. The Mission Bay campus site is within a California Geologic Survey (CGS) Seismic Hazard Zone and the City of San Francisco’s Special Geologic Study Area for potential ground failure hazards caused by liquefaction and would therefore be subject to Special Publication 117A (CGS, 2003). Special Publication 117A includes protocols for the identification of potentially liquefiable materials as well as appropriate requirements to minimize potential damage from liquefaction (e.g., use of edge containment structures, removal of liquefiable soils, dynamic consolidation, injection grouting, etc.).

### 7.5.3 Geology, Soils and Seismicity – Mission Bay Impacts and Mitigation Measures

2014 LRDP proposals at the Mission Bay campus consist of construction of new facilities, including housing on Block 15, research, office, and clinical uses on the remaining blocks.

As discussed in Section 5.5, the general Geology, Soils and Seismicity impacts that could occur as a result of implementing the 2014 LRDP, are:

**Impact GEO-LRDP-1: Implementation of the 2014 LRDP could result in adverse effects to people and structures resulting from geologic hazards.**

**Impact GEO-LRDP-2: Implementation of the 2014 LRDP could result in substantial soil erosion or loss of topsoil.**

The campus site is located in a seismically active region that could experience at least one major earthquake (Richter magnitude (M) 6.7 or higher) over the next 30 years. Strong ground shaking at the campus site could occur during a moderate to severe earthquake occurring on one of the active Bay Area faults near to the campus site. In general, the Mission Bay campus site contains conditions that present a number of potential geologic hazards including groundshaking, liquefaction, settlement, and differential settlement. If not addressed appropriately in site preparation and design, the presence of heterogeneous fill materials including building debris, soft compressible Bay Mud, and loose saturated soils would make new structures susceptible to damage from dynamic (earthquake) or static (slow compression of Bay Muds) forces. However, these hazards are commonplace in areas throughout the Bay margins and, as stated above, current code requirements and design practices such as the use of deep foundation systems are effective in reducing potential impacts. Therefore, with construction and design in accordance with the most recent version of the California Building Code, CGS Special Publication 117A, and the *UC Seismic Safety Policy* would reduce potential geotechnical hazards to less than significant levels.

Construction activities could also include disturbance to underlying soils. If not managed appropriately, these soils could be susceptible to the effects of wind and water erosion. However, all construction activities would be required to adhere to best management practices that include erosion control measures.

All new construction would be required to adhere to the most recent version of the California Building Code or local code if more stringent and CGS Special Publication 117A, which require structures to include measures to minimize potential damage from seismic hazards. During construction, implementation of best management practices would reduce potential for erosion.

Housing is also subject to building code requirements to address the potential geotechnical and seismic hazards that are present at the Mission Bay campus site. As noted above, the Mission Bay campus site includes underlying materials that present a number of geotechnical challenges which can be overcome through site preparation (e.g., replacement of unengineered fill with engineered fill, compaction of soft soils through surcharging, dynamic compaction etc.) and building foundation design (e.g., deep foundation systems) in accordance with the most stringent of current state or local building code requirements. During construction, implementation of best management practices would reduce potential for erosion.

**Mitigation:** None required.

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## 7.5.4 References

Harding ESE, *Geotechnical evaluation : land acquisition due diligence review : proposed UCSF Mission Bay South Hospital : San Francisco, California*, December 17, 2001.

University of California, *Seismic Safety Policy*, available at <http://ucop.edu/real-estate-services/resources/seismic-safety-policy/index.html>.

## 7.6 Greenhouse Gas Emissions

This section considers the setting and greenhouse gas emissions impacts of implementing the 2014 LRDP at the Mission Bay campus site. The Regional Setting, Regulatory Considerations, Significance Standards and Analysis Methodology for analysis of potential effects of greenhouse gas emissions are contained in Section 4.6 of this EIR. The CEQA Significance Standards presented in Section 4.6.3 are used to evaluate the potential greenhouse gas emissions impacts of all proposed 2014 LRDP activities.

### 7.6.1 Greenhouse Gas Emissions Issues Adequately Addressed in the Initial Study

The Initial Study concluded that proposed 2014 LRDP activities at the Mission Bay campus site and their potential effects on greenhouse gas emissions would be evaluated in the EIR.

### 7.6.2 Greenhouse Gas Emissions – Mission Bay Setting

Greenhouse gas (GHG) emissions are generated at the Mission Bay campus site from a variety of sources. These include motor vehicle trips generated by uses on the campus site, electrical and natural gas usage including, water and wastewater transport (the energy used to pump water and wastewater to and from the campus site), and solid waste generation.

### 7.6.3 Greenhouse Gas Emissions – Mission Bay Impacts and Mitigation Measures

**Impact GHG-MB-1: Development at the Mission Bay campus site under the 2014 LRDP would result in an increase in construction-related GHG emissions. (Potentially Significant)**

Construction-related GHG emissions from 2014 LRDP proposals at the Mission Bay campus site were calculated using the California Emissions Estimator Model (CalEEMod), assuming four discrete construction windows in five- to six-year increments. These windows are presented in **Table 7.0-3**, Proposal Construction Time Frames at Mission Bay, located in Section 7.0.4 of this chapter.

Modeling assumed construction phasing lengths based on CalEEMod default estimates which are based on square footage for hospitals and research/office uses. All model inputs and outputs are provided in Appendix E.

Construction-related GHG emissions for the peak year of each window of the anticipated construction period are presented in **Table 7.6-1**. Estimated peak emissions are 1,429 metric tons of carbon dioxide equivalent greenhouse gases<sup>6</sup> (CO<sub>2</sub>e) in 2016, 862 metric tons CO<sub>2</sub>e in 2021, 804 metric tons CO<sub>2</sub>e in 2026 and 1,496 metric tons CO<sub>2</sub>e in 2032. As discussed earlier, BAAQMD has

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<sup>6</sup> CO<sub>2</sub>e in all calculations of project impact includes CO<sub>2</sub>, CH<sub>4</sub> and N<sub>2</sub>O.

**TABLE 7.6-1  
PEAK ANNUAL CONSTRUCTION-RELATED GHG EMISSIONS  
WITHOUT MITIGATION - MISSION BAY**

Construction Window	Emissions (metric tons/year)			
	CO <sub>2</sub>	CH <sub>4</sub>	N <sub>2</sub> O	Total CO <sub>2</sub> e
2015-2020	1,426	<1	<1	1,429
2020-2025	860	<1	<1	862
2025-2030	802	<1	<1	804
2030-2035	1,495	<1	<1	1,496

Project CO<sub>2</sub> emissions estimates were made using CalEEMod v.2013.2.

not established a quantitative threshold relative to construction-related emissions. In lieu of any proposed or adopted thresholds relative to construction-related emissions, these emissions are considered significant unless best management practices are implemented to reduce GHG emissions during construction, as feasible. Consequently, **Mitigation Measure GHG-LRDP-1** is identified to ensure implementation of best management practices during construction.

**Mitigation Measure:** Implement Mitigation Measure GHG-LRDP-1

**Significance after Mitigation: Less than Significant.** Implementation of Mitigation Measure GHG-LRDP-1 would ensure that UCSF and its contractors employ feasible, effective measures to reduce GHG emissions during construction activities. This mitigation measure would therefore reduce this potential impact to less than significant.

**Impact GHG-MB-2: Development at the Mission Bay campus site under the 2014 LRDP would result in an increase in operational GHG emissions. (Less than Significant)**

#### **Area, Energy, and Indirect Sources**

Operational GHG emissions associated with development at the Mission Bay campus site under the 2014 LRDP would result from electrical and natural gas usage, water and wastewater transport (the energy used to pump water and wastewater to and from the campus site), and solid waste generation. GHG emissions from electrical usage are generated when energy consumed on the campus site is generated by the electrical supplier, PG&E. GHG emissions from natural gas are direct emissions resulting from on-site combustion for heating and other purposes. GHG emissions from water and wastewater transport are indirect emissions resulting from the energy required to transport water from its source, and the energy required to treat wastewater and transport it to its treated discharge point. Solid waste-related emissions are generated when the increased waste generated by new development is disposed in a landfill where it decomposes, producing methane gas.<sup>7</sup>

<sup>7</sup> Methane (CH<sub>4</sub>) from decomposition of municipal solid waste deposited in landfills is counted as an anthropogenic (human-produced) GHG. (USEPA, 2006).

GHG emissions from electrical usage, natural gas combustion, mobile transportation, water and wastewater conveyance, and solid waste were estimated using the CalEEMod model, and are presented in **Table 7.6-2**. A default GHG emissions factor for PG&E was adjusted to reflect future reductions envisioned by PG&E (PG&E, 2013) GHG emission factor of 290 pounds per megawatt hour was assumed. Electrical and natural gas emissions also assume compliance with UCSF policy to achieve a 20% energy reduction beyond Title 24 requirements for all new buildings. Energy use (electrical and natural gas) represents approximately 41% of estimated operational GHG emissions and solid waste generation represents approximately 19%. The relatively high percentage of emissions from energy is partially the result of the annual electrical energy use factor assumed by CalEEMod for hospital land uses (6.78 kWh/yr per square foot for Title 24 electricity and 5.52 kWh/yr per square foot for non-Title 24 electricity).

**TABLE 7.6-2  
ANNUAL OPERATIONAL GHG EMISSIONS  
WITHOUT MITIGATION - MISSION BAY**

Emission Source	Emissions (metric tons/year)			
	CO <sub>2</sub>	CH <sub>4</sub>	N <sub>2</sub> O	Total CO <sub>2</sub> e
Area Sources	6	<1	<1	7
Energy Sources	10,055	<1	<1	10,127
Mobile Sources	8,158	<1	<1	8,163
Solid Waste	2,091	124	<1	4,687
Water and Wastewater	999	31	<1	1,881
<b>Total</b>	<b>2,392</b>	<b>155</b>	<b>&lt;1</b>	<b>24,865</b>

NOTE: Columns may not total precisely due to rounding. Rows may not total precisely due to differences in global warming potential.

### Mobile Emission Sources

One of the sources of operational emissions would be increased vehicle emissions from travel by additional staff, patients, visitors and residents. Traffic volumes used to estimate vehicle-related emissions were derived from the Transportation Demand Analysis prepared for the LRDP (Adavant, 2014). Development under the 2014 LRDP at the campus site would generate an estimated 12,175 additional daily vehicle trips. GHG emissions from motor vehicle sources were calculated using the CalEEMod. Table 7.6-2 presents the incremental mobile source GHG emissions associated with the development under the 2014 LRDP at the Mission Bay campus site, which represents approximately 33% of the total operational GHG emissions.

As shown in Table 7.6-2, the sum of both direct and indirect GHG emissions resulting from operations under the 2014 LRDP would result in an estimated 24,865 metric tons per year of CO<sub>2</sub>e. Applying a service population of 5,633 (new faculty and staff) results in emissions of approximately 4.4 metric tons per year of CO<sub>2</sub>e/SP. This is below the service population threshold of 4.6 metric tons per year of CO<sub>2</sub>e/SP and operational GHG emissions associated with development under the 2014 LRDP at the Mission Bay campus site would therefore be a less than significant impact.

**Mitigation:** None required.

### **LRDP Variant Conditions**

Under the LRDP Variant, the Mission Bay campus site would generate slightly more vehicle trips than under the 2014 LRDP. Approximately 2,950 new vehicle trips would be generated during the AM peak hour and approximately 2,450 additional vehicles at the campus site during the PM peak hour. These represent increases of approximately 2% in the total number of vehicles compared to the 2014 LRDP during both the AM and PM peak hours.

With an overall 2% increase in daily trip generation, this Variant would increase operational mobile GHG emissions by approximately 2% (approximately 163 metric tons of CO<sub>2</sub>e per year). Annual GHG emissions from operations at Mission Bay would still be 4.4 metric tons of CO<sub>2</sub>e per service population as it would be under the 2014 LRDP and would be the same impact as under the 2014 LRDP. Consequently, the LRDP Variant would have similar operational GHG impacts at the Mission Bay campus site under the 2014 LRDP.

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## **7.6.4 References**

- Adavant Consulting, Travel Demand Analysis Four Campus Summary: Existing & 2035, February, 2014.
- Bay Area Air Quality Management District (BAAQMD), 2009. Revised Draft Options and Justification Report, CEQA Thresholds of Significance Air Quality Guidelines, October 2009. Available at [www.baaqmd.gov](http://www.baaqmd.gov).
- BAAQMD, 2012. CEQA Air Quality Guidelines. Adopted June 2011, updated May 2012. Available at [www.baaqmd.gov](http://www.baaqmd.gov).
- Pacific Gas & Electric Company (PG&E), Greenhouse Gas Emission Factors: Guidance for PG&E Customers, April, 2013.

## 7.7 Hazards and Hazardous Materials

This section considers the setting and hazards and hazardous materials impacts at the Mission Bay campus site. The Regional Setting, Regulatory Considerations, Significance Standards and Analysis Methodology for analysis of potential effects of Hazards and Hazardous Materials are contained in Section 4.7 of this EIR. The CEQA Significance Standards presented in Section 4.7.3 are used to evaluate the potential hazards and hazardous materials impacts of all proposed 2014 LRDP activities.

### 7.7.1 Hazards and Hazardous Materials Issues Adequately Addressed in the Initial Study

After evaluation of the 2014 LRDP activities proposed at the Mission Bay campus site, the Initial Study concluded that:

- **Safety hazards from airport operations.** No activities would result in safety hazards resulting from proximity to public airports. Therefore, no additional analysis of this issue is required.
- **Wildland fires.** No activities would result in exposure to wildland fires. Therefore, no additional analysis of this issue is required.

### 7.7.2 Hazards and Hazardous Materials – Mission Bay Setting

The Mission Bay campus site is located in a large parcel that has been subject to various periods of infill, debris disposal, and a long history of various industrial activities. The periphery of the parcel was filled by 1892 and the central region of the parcel, was filled between 1906 and 1913 which likely consisted of building rubble and debris from the 1906 San Francisco earthquake (Iris Environmental, 2009). Parts of the parcel to the west of Fifth Street were used as a former city dump between 1869 and 1895. Since 1916, land uses at Mission Bay have included a pipe yard, hay yard, garbage dock, several lumber yards, an icing platform, a City and County boiler house, a number of warehouses, a metal salvage company, and a variety of rail-related activities. There were also a variety of rail-related buildings including an incinerator, scales, material platform, carpenter shop, storehouse, blacksmith shop, electrical shop, and dryer shed.

According to a *Hazards Mitigation Program* (HMP) report that was prepared for earlier stages of development at Mission Bay, five underground storage tanks (USTs) were present at the site including one 10,000-gallon tank, one 8,000-gallon tank, two 1,000-gallon tanks, and one 550-gallon tank (Iris Environmental, 2009). The USTs were primarily used for the storage of gasoline or diesel. Another investigation report indicated that sixteen USTs were present and all were listed as “former” USTs (ENVIRON, 1998 as referenced in Iris Environmental, 2009).

According to a search of available databases from Department of Toxic Substances Control (DTSC) (Envirostor) and the State Water Resources Control Board (SWRCB) (Geotracker), there are a number of cases listed for the Mission Bay campus site and immediate surrounding area

(DTSC, 2014 and SWRCB, 2014). All of these cases located on the Mission Bay campus site have been closed indicating that no further risks to human health or the environment remain.

In 1999, as part of the preparation for the initial development of UCSF facilities at the Mission Bay campus site, an environmental Risk Management Plan (RMP) was developed under the direction of the Regional Water Quality Control Board to provide a decision framework and protocols for managing contaminants in the subsurface soil and groundwater in a manner that is protective of human health and the environment. The RMP was developed to be consistent with existing and planned future land uses including long-term phased development (Environ, 1999).

### 7.7.3 Hazards and Hazardous Materials – Mission Bay Impacts and Mitigation Measures

**Impact HAZ-MB-1: Implementation of the 2014 LRDP at the Mission Bay campus site could create a significant hazard to the public or the environment through the routine transport, use or disposal of hazardous materials, or through reasonably foreseeable upset and accident conditions. (Potentially Significant)**

Additional use of hazardous materials associated with implementation of the 2014 LRDP at the Mission Bay campus site would require adherence to regulatory requirements and existing UCSF policies that address the storage, use, and disposal of hazardous materials in a manner that limit health risks and upset and accident conditions. However, earthwork activities could also potentially encounter naturally occurring asbestos if not managed appropriately. With implementation of **Mitigation Measure HAZ-LRDP-1**, incorporation of best management practices, if warranted, would reduce potential impacts from exposure to naturally occurring asbestos to less than significant level.

Considering the past industrial uses of Mission Bay, it is also possible for volatile components of subsurface contaminants, if present, to migrate through building foundations exposing residents and visitors to potential soil vapor contamination. Previous studies have identified methane as an issue of concern at the Mission Bay campus site. Working with the RWQCB, BAAQMD, and the San Francisco Department of Public Health on a project by project basis, UCSF installs subsurface engineered control systems to address venting of volatile components of subsurface contaminants, protect public health, and ensure that maximum exposure levels for building occupants are not exceeded. Characterization and risk analysis of any subsurface contaminants would be addressed either through remediation prior to commencement of construction or through design elements such as vapor barriers that would protect future occupants from adverse health effects.

**Mitigation Measure:** Implement Mitigation Measures HAZ-LRDP-1

**Significance after Mitigation:** Less than Significant



**Impact HAZ-MB-2: Implementation of the 2014 LRDP at the Mission Bay campus site could result in hazardous emissions or the handling of hazardous or acutely hazardous materials, substances or waste within one-quarter mile of existing or proposed schools. (Less than Significant)**

There are no schools located within a quarter mile of the Mission Bay campus site although Live Oak School is located approximately 0.4 miles from the campus site. In addition, Block 14 on the Mission Bay campus site is currently reserved for a school site by the San Francisco Unified School District. In general, existing hazardous materials use for administrative support services or even research laboratory purposes at UCSF does not involve large enough quantities of hazardous materials or result in emissions that would represent potential health hazards to schools near UCSF campus sites. Regardless, the proposed plan would not result in substantive emissions and all handling of hazardous materials would occur under a continued practice of adherence to federal, state, local and UCSF policies and regulatory requirements.

**Mitigation:** None required.

**Impact HAZ-MB-3: 2014 LRDP proposals at the Mission Bay campus sites that are included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 could create a significant hazard to the public. (Less than Significant)**

As noted above, the entire Mission Bay campus site has a long history of industrial use and a number of environmental investigations, cleanup, and removal of USTs have occurred many of which are included in the Geotracker database. Although many of these cases have been closed indicating that no further action was required, there is still a potential to encounter previously unidentified contaminants. A Risk Management Plan (RMP) was developed for all of the *Mission Bay Redevelopment Plan* area for previous construction efforts and has been effective in reducing potential impacts as a result of past releases of hazardous materials. This document has been periodically amended by the RWQCB. As called for in the RMP, at the onset of each project, UCSF hires a qualified geotechnical/environmental consultant to do soil testing (including for sulfate and chloride content) and prepare a site-specific report identifying any necessary remediation. The RMP provides construction protocols and notification procedures that would protect workers, the public, and the environment from any legacy contaminants that may be discovered during groundwater breaking activities.

**Mitigation:** None required.

**Impact HAZ-MB-4: Implementation of the 2014 LRDP at the Mission Bay campus site would not result in a safety hazard for people residing or working in the vicinity of a private airstrip. (Less than Significant)**

The existing facilities at the Mission Bay campus site will include a helicopter landing pad (helipad) which would be used for inter-facility transfers after Phase 1 of the Medical Center at Mission Bay opens in 2015. New facilities under the 2014 LRDP could potentially place new residents, visitors, or employees in proximity to safety hazards associated with this helipad.

The accident rate for medical helicopters averages approximately 1.8 fatal accidents per 100,000 flights. Using a 20 minute estimate for an average helicopter flight, this equals to approximately one fatal accident per 180,000 flights. This risk is increased where the landing site is unfamiliar to the pilot, which is more common during scene calls and would not be the case for the Mission Bay campus site. Of the 56 fatal accidents in US that involved medical helicopters (1991-2007), four occurred while landing or taking off from a hospital helipad. This rate equals approximately 1 in 2.5 million and is considered a measurable yet very small risk. None of the four fatal helicopter events caused any ground deaths to third parties, although in one accident, a hospital security guard who was helping service the helicopter was fatally injured. Moreover, based on the statistics associated with medical helicopter operations since 1991 in the United States, the observed risk to third parties has been negligible.

Statistics also reveal that helicopter accidents that cause serious injuries to third parties or substantial property damage are also extremely rare. Out of 132 incidents involving medical helicopters from 1991 to 2005,<sup>8</sup> none caused serious injury to a third party and one caused modest damage to a hospital building (Barnet, 2008).<sup>9</sup>

Based on information documenting national helicopter safety patterns provided above, it can be assumed that, while the risk of death or injury to third parties, and risk of property damage to structures near the project site is not zero, this risk is very small. The twelve million medical helicopter flights in the US since 1991 have caused no deaths to third parties in the vicinity of hospitals. Based on this and other statistics noted above, the likelihood of a third party death resulting from the operation of the proposed inter-facility transfer operation is also extremely small.

**Mitigation:** None required.

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<sup>8</sup> This statistical record was achieved in the course of approximately twelve million medical helicopter flights.

<sup>9</sup> One medical flight hit a home after losing visibility en route, causing serious injury to three occupants. But this accident was not close to the hospital.

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## 7.8 Hydrology and Water Quality

This section considers the setting and hydrology and water quality impacts of implementation of the 2014 LRDP at the Mission Bay campus site. The Regional Setting, Regulatory Considerations, Significance Standards and Analysis Methodology for analysis of potential effects of Hydrology and Water Quality are contained in Section 4.8 of this EIR. The CEQA Significance Standards presented in Section 4.8.3 are used to evaluate the potential Hydrology and Water Quality impacts of all proposed 2014 LRDP activities.

Those impacts that are specific to implementation of the 2014 LRDP at the Mission Bay campus site are discussed below.

### 7.8.1 Hydrology and Water Quality Issues Adequately Addressed in the Initial Study

After evaluation of the 2014 LRDP activities proposed at the Mission Bay campus site, the Initial Study concluded that:

- **Groundwater supplies.** No activities would result in substantial depletion of groundwater supplies or interfere substantially with groundwater recharge. Therefore, no additional analysis of this issue is required.

### 7.8.2 Hydrology and Water Quality – Mission Bay Setting

#### 7.8.2.1 Fluvial Hydrology and Stormwater Management

Historically, the Mission Bay area was part of San Francisco Bay, with the bay waters at ordinary high tide roughly being bounded by Townsend Street on the north, Eighth Street on the west, and Sixteenth Street on the south. Marshes, with intersecting sloughs, penetrated as far north as Mission Street between Seventh and Eighth streets, and Folsom Street between Fourth and Eighth streets (Sharpsteen, 1941). Mission Creek once was a navigable body of water that flowed from Mission Dolores to San Francisco Bay. In 1854 the California Legislature declared Mission Creek to be a navigable stream; although it has been filled in, it retains the designation today (Sharpsteen, 1941). The only remaining portion of Mission Creek above ground is the Mission Creek Channel that drains into China Basin.

The Mission Bay campus site does not drain to the City's combined sewer system (CSS); instead, the area has its own Small Municipal Separate Storm Sewer System (MS4). As discussed in Section 4.8, since this MS4 does not drain into one of the City's Water Treatment Plants, its Phase II NPDES General Permit requires development and adoption of a Storm Water Management Plan/Program (SWMP). When complete, the Mission Bay SWMP will minimize the discharge of pollutants into receiving waters, identify appropriate stormwater treatment practices with measurable performance criteria, and include six minimum measures to promote pollutant load reduction.

### 7.8.2.2 Flooding

The Federal Emergency Management Agency (FEMA) is preparing Flood Insurance Rate Maps (FIRMs) for the City and County of San Francisco (CCSF). FIRMs identify areas that are subject to inundation during a flood having a 1-percent chance of occurrence in a given year (also known as a “base flood,” “100-year flood,” or “1 percent annual chance flood”). FEMA refers to the floodplain as an area that is at risk from a flood of this magnitude as a Special Flood Hazard Area (SFHA). Communities use FIRMs to define planning and construction standards in flood-prone areas, and insurance companies use them to rate flood insurance policies. The Base Flood Elevations (BFEs) mapped on the FIRMs are based on the 100-year (1%) stillwater elevation (e.g. extreme high tide), as well as wave run-up processes due to locally-generated wind waves and longer-period swells from outside the Golden Gate. In the preliminary FIRM released in June 2013, portions of the Mission Bay campus site, including areas proposed for housing, are designated within the special flood hazard area (see **Figure 7.8-1**). However, this mapping does not consider UCSF’s current activities that are raising ground elevations across the entire Mission Bay campus site<sup>10</sup> above the BFE (+10 ft NAVD88<sup>11</sup>) and anticipated future sea levels (see below). UCSF’s ground surcharge and engineered fill placement programs at the Mission Bay campus site are raising ground elevations in areas proposed for entitlement/housing to a range of approximately +10.3 to +26.3 ft NAVD88 (Catellus, 1998). The final FIRM is scheduled to be released sometime in 2015 (FEMA, 2013B); by that time, UCSF expects that its work to raise elevations at the Mission Bay campus site will be complete, and that no areas of the campus site will be within a Special Flood Hazard Area.

### 7.8.2.3 Sea Level Rise

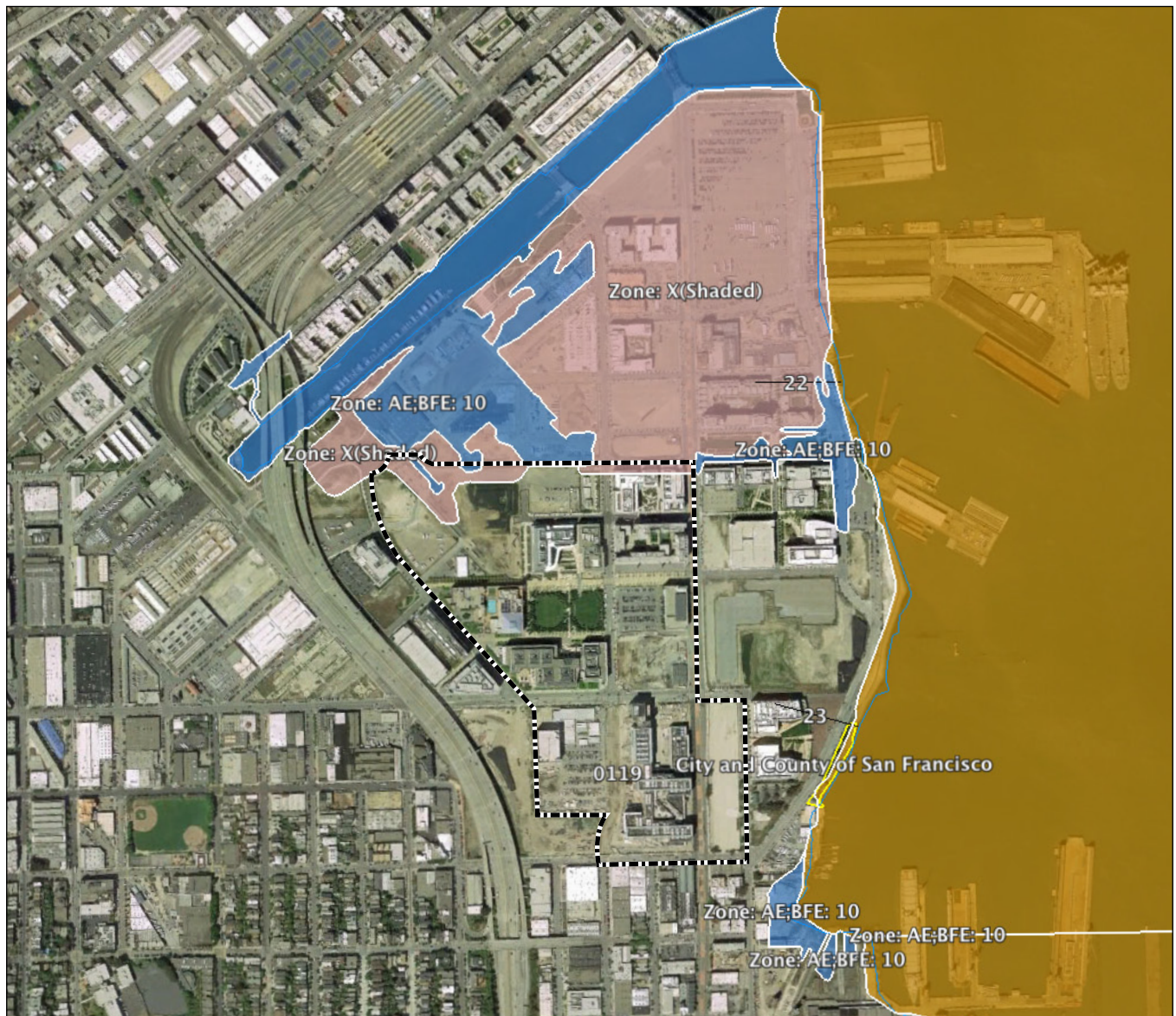
Increases in global air temperatures are causing the oceans to warm and expand and land ice to melt and run into the sea, resulting in sea level rise (SLR). The rate of SLR is projected to increase over the next hundred years, with acceleration in the rate expected to occur around mid-century. California Executive Order S-13-08, signed on November 14, 2008, specified that prior to the release of the then-in-progress Sea Level Rise Assessment Report from the National Academy of Sciences (NAS)/National Research Council (NRC), all state agencies planning construction projects in areas that are vulnerable to future sea level rise must consider a range of scenarios for 2050 and 2100 to assess project vulnerability, and, to the extent feasible, must reduce expected risks and increase resiliency with respect to sea level rise.

The NRC report, which was released in 2012, described a range of potential sea level rise values given various global CO<sub>2</sub> emission scenarios. The NRC report is consistent with assumptions used by the City<sup>12</sup>. For San Francisco Bay, the report describes an increase in the rate of sea level rise from around 0.7 mm/year measured at Alameda from 1939-2008 to an order of magnitude faster by 2100. Sea level rise rates at the Golden Gate ranged from 1.8 to 1.9 mm/year from

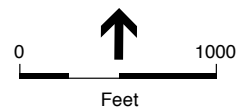
<sup>10</sup> Except Blocks 33 and 34; see below.

<sup>11</sup> North American Vertical Datum of 1988

<sup>12</sup> San Francisco Public Utilities Commission, Capital Planning Committee, “Incorporating Sea Level Rise into Capital Planning, Overview of Draft Guidance,” May 12, 2014, <http://onesanfrancisco.org/wp-content/uploads/Agenda-Item-8-Sea-Level-Rise-Planning-Presentation.pdf>



- Mission Bay Campus Site
- Zone AE, within the 100-year flood zone\*
- Zone X, within the 500-year flood zone
- Zone VE, within the Coastal High Hazard Zone\*\*



\* The Base Flood Elevation (BFE, or 100-year flood) for Zone AE in this area is +10 ft NAVD.

\*\* Where wave heights of over 3 ft are possible.

Note: Map does not reflect increase in site elevations on the Mission Bay campus site.  
Updated maps from FEMA are in progress

1930 to 1980. **Table 7.8-1** below presents a range of sea level rise projections<sup>13</sup> for the San Francisco region from the NRC report:

**TABLE 7.8-1  
REGIONAL SEA LEVEL RISE PROJECTIONS FOR SAN FRANCISCO FROM NRC (2012)**

Year	Sea Level Rise Projection – Emissions Scenario A1B	Sea Level Rise – Range of Emissions Scenarios B1 and A1F1
2030	14.4 cm (5.7 in)	4.3 - 29.7 cm (1.7 - 11.7 in)
2050	28 cm (11.0 in)	12.3 - 60.8 cm (4.8 - 23.9 in)
2100	91.9 cm (36.2 in)	42.4 - 166.4 cm (16.7 - 65.5 in)

UCSF is utilizing surcharging and engineered fill to raise ground elevations at the Mission Bay campus site such that they will be higher than the projected mid-range and high-range (A1B) 2050 sea levels (existing sea levels + 11.0 and 23.9 inches sea level rise, respectively). The final ground elevations<sup>14</sup> on the Mission Bay campus site will range from approximately +10.3 to +26.3 ft NAVD88 (Catellus, 1998). The existing Mean Higher High Water (MHHW) at the campus site is approximately +5.9 ft NAVD88; 23.9 inches of sea level rise by 2100 would raise the MHHW to approximately +7.9 ft NAVD88.

#### 7.8.2.4 Seiches and Tsunamis

Tsunamis (seismic sea waves) are long period waves that are typically caused by underwater seismic disturbances, volcanic eruptions, or submerged landslides. Tsunamis, which travel at speeds up to 700 miles per hour, are typically only 1 to 3 feet high in open ocean water but may increase in height to up to 90 feet as they reach coastal areas, so can cause potentially large amounts of damage when they reach land (URS, 2008). Low-lying coastal areas such as tidal flats, marshlands, and former Bay margins that have been artificially filled but are still at or near sea level are generally the most susceptible to tsunami inundation.

A seiche is caused by oscillation of the surface of an enclosed body of water such as the San Francisco Bay due to an earthquake or large wind event. Seiches can result in long-period waves that cause run-up or overtopping of adjacent lands, similar to tsunami run-up.

Since 1850, more than 50 tsunamis have been recorded or observed in San Francisco Bay. Nine of these tsunamis originated in Alaska and were caused by an earthquake, earthquake and landslide, or volcano and earthquake. Only one tsunami has been recorded as originating along

<sup>13</sup> Emissions scenario A1B assumes high economic growth, low population growth that peaks mid-century, the rapid introduction of more efficient technologies, and a balance between fossil and alternative fuels. A1F1 has the same assumptions as A1B except it is more fossil fuel-intensive. Scenario B1 assumes the same low population growth as the A1 scenarios, but a shift toward a lower-emission service and information economy and cleaner technologies. The A1FI scenario yields the highest carbon dioxide (CO<sub>2</sub>) emissions by 2100, and the B1 scenario yields the lowest CO<sub>2</sub> emissions.

<sup>14</sup> NAVD88 is a reference datum for ground elevations. For readers more familiar with San Francisco Datum, the elevation reference often used within San Francisco, 0.0 ft NAVD88 is -11.322 ft SF Datum. Therefore a ground elevation of +10.3 ft NAVD88 would be -1.022 ft SF Datum.



the Central California coast: a 4-inch run-up that was recorded at the Presidio gauge station shortly after the 1906 earthquake. In March 2011, a tsunami originating in Japan caused a swell of approximately two feet in San Francisco Bay (TWC, 2011).

In 2009, the California Geological Survey, California Emergency Management Agency, and the Tsunami Research Center at the University of California completed the State's official tsunami inundation maps. Based on this mapping, portions of the Mission Bay campus site are located in an area identified for potential inundation in the event of a tsunami or seiche (see **Figure 7.8-2**) of up to approximately 6 feet (CCSF, 2011). The earthquake that hit Japan in March 2011 initiated a tsunami that traveled for 10 hours before reaching the California coast (TWC, 2011). When the tsunami warning was issued, coastal county offices of emergency services were able to use the state's official tsunami inundation maps to focus their response.

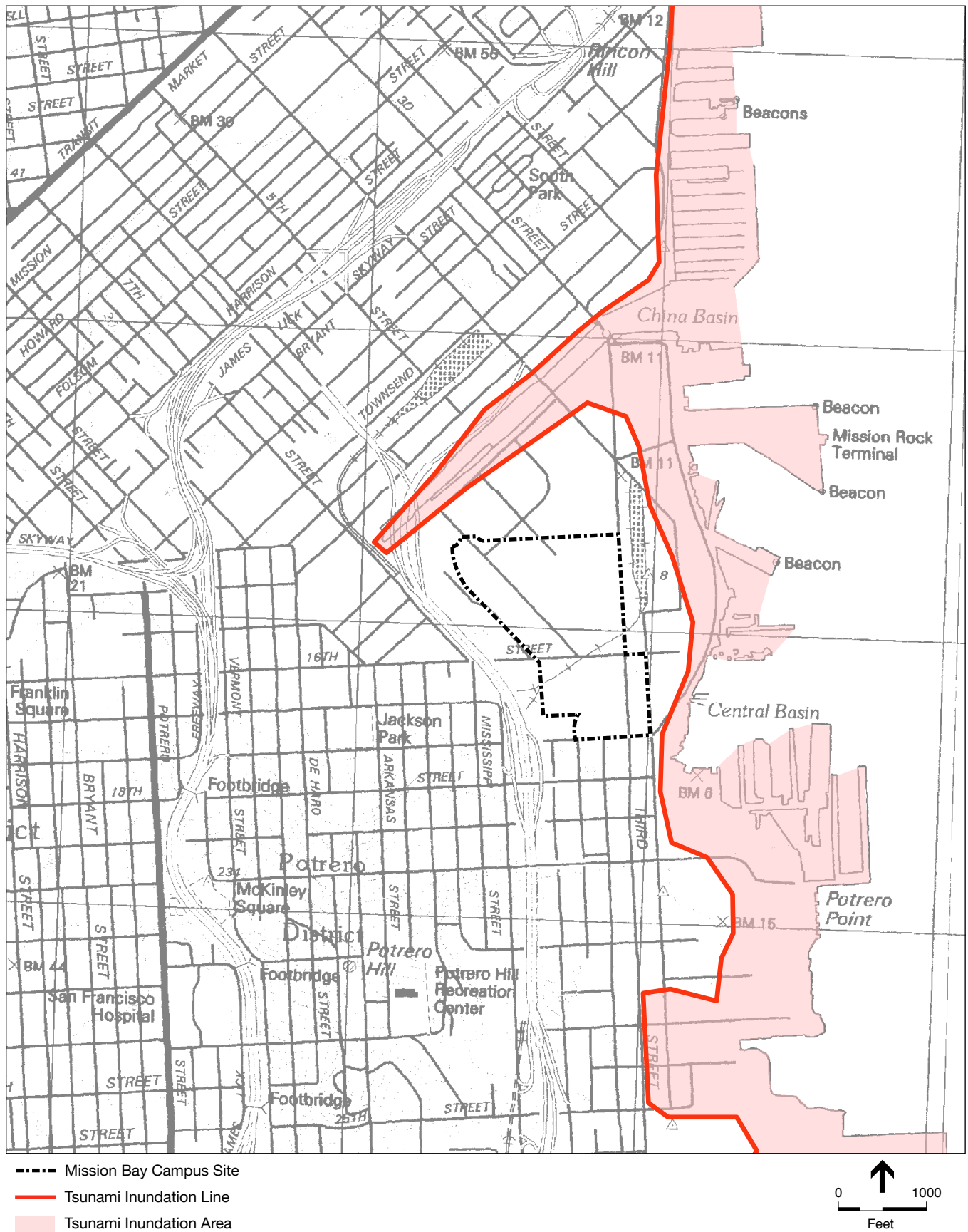
The National Oceanic and Atmospheric Administration operates the Tsunami Warning System with centers located in Hawaii and Alaska. The state National Warning System provides warnings to the West Coast (including California) and Alaska. Based on the level of threat, a Tsunami Advisory, Watch, or Warning would be issued. In San Francisco, occupants would be notified via the Outdoor Public Warning System, notification of the local media, public address systems, and the Alert San Francisco public notification system.

### 7.8.3 Hydrology and Water Quality – Mission Bay Impacts and Mitigation Measures

**Impact HYD-MB-1: Implementation of the 2014 LRDP at the Mission Bay campus site could violate water quality standards or waste discharge requirements or otherwise substantially degrade water quality. (Potentially Significant)**

The 2014 LRDP proposals at the Mission Bay campus site consist of construction of new facilities, including housing on Block 15, research, office, and clinical uses buildings on the remaining blocks.

Proposed LRDP development at the Mission Bay campus site (including on-site staging) would include demolition, excavation, grading, and construction activities that would require temporary disturbance of surface soils and removal of existing pavement and sub-surface structures (if present). These activities would expose soil to water runoff as well as entrainment of sediment in the runoff. If dewatering would be necessary during construction, the water would likely contain suspended sediments and would require settling before being discharged to the local MS4. Sediment in runoff and deposits of soil and related debris from haul truck tires on local streets could increase the amount of sediment entering the storm drains, which could potentially clog drain inlets and reduce the flow capacity of the storm drains. The accumulation of this material could potentially result in increased localized ponding or flooding, particularly after large storms.



SOURCE: City and County of San Francisco

UCSF Long Range Development Plan Environmental Impact Report

**Figure 7.8-2**  
 Tsunami Inundation Map  
 For Emergency Planning

The use of construction equipment as well as the delivery, handling, and storage of construction materials and waste could contaminate stormwater that could adversely affect water quality. Potential contaminants include, but are not limited to (CSW/Stuber-Stroeh, 2011):

- Petroleum hydrocarbons and metals from stockpiled soils excavated from the site
- Fuel from storage drums
- Diesel from refueling trucks
- Oils and grease from miscellaneous heavy equipment
- Sewage from portable sanitary facilities
- Sediment from construction generated waste—piles of concrete, rock and debris
- Sediment from rock crushing activities
- Hazardous materials storage-hydraulic oil, motor oil, and lubricating fluid
- Spills and releases of hydrocarbons and related pollutants from routine light maintenance activities such as fluid topping off, and welding and repairing belts and gears of heavy equipment

Polluted stormwater runoff could violate water quality standards and/or waste discharge requirements established in the MS4 Permit as well as the NPDES General Permit for Construction.

In accordance with the Construction General Stormwater Permit, UCSF would be required to prepare and implement a SWPPP for each LRDP construction project to minimize water quality impacts during construction activities on the campus site. The SWPPPs will be consistent with previous SWPPPs that have been developed for past development of the Mission Bay campus site (e.g. UCSF Medical Center at Mission Bay, CSW/Stuber-Stroeh, 2011) as well as similar water quality protection measures in the campus site's Risk Management Plan (ENVIRON, 1999).

The SWPPPs will identify pollutant sources within the construction area and recommend site-specific BMPs regarding control of sediments in runoff and storage and use of hazardous materials to prevent discharge of pollutants into stormwater. Likely BMPs are listed in Section 5.8.

In addition, each 2014 LRDP construction project will need to obtain a water quality certification from the RWQCB for the construction activities, which would also require implementation of BMPs and specific measures for the protection of water quality during construction.

Proposed 2014 LRDP development at the Mission Bay campus site will not increase the proportion of the site that is covered in impermeable surfaces (Mission Bay Campus Master Plan, UCSF 1999). Under the MS4 Phase II General Permit (above), projects that build or replace a minimum of 2,500 square feet must drain no more water off the site after construction than before construction. According to an analysis by Freyer & Laureta (2013), the existing storm drain system at the Mission Bay campus site is adequately sized to collect and transmit runoff from a planned 5-year storm, and that the proposed increases in entitlement/housing square footage will

not increase anticipated drainage volumes from developed areas. The analysis found that the existing storm water infrastructure at the campus site was adequate and that there is no need to replace or increase the existing conveyance piping system. Therefore, the proposed LRDP actions at the Mission Bay campus site will comply with the MS4 regulations, and the resulting impacts to on-site and off-site erosion, siltation, and flooding would be less than significant.

As discussed above, new LRDP development must drain no more water off the campus site after construction than before. The Freyer & Laureta (2013) analysis found that the existing storm drain system is adequately sized to collect and transmit runoff from a 5-year storm, the proposed developments will not increase anticipated drainage volumes from developed areas, and there is no need to replace or increase the existing conveyance piping system.

Implementation of SWPPPs and associated BMPs, part of the regulatory requirements discussed in Sections 4.8 and 5.8, as well as implementation of mitigation measures previously identified in the *Mission Bay Subsequent EIR*, would reduce erosion and water quality impacts during demolition and construction activities under the 2014 LRDP at the Mission Bay campus site to less than significant.

**Mitigation Measure HYD-MB-1a:** Participate in the City's existing Water Pollution Prevention Program. UCSF shall facilitate implementation of the City's Water Pollution Prevention Program by providing and installing wastewater sampling ports in any building anticipated to have a potentially significant discharge of pollutants to the sanitary sewer, as determined by the Water Pollution Prevention Program of the San Francisco Public Utilities Commission's Bureau of Environmental Regulation and Management, and in locations as determined by the Water Pollution Prevention Program. (*Mission Bay Subsequent EIR Mitigation Measure K.02*).

**Mitigation Measure HYD-MB-1b:** UCSF shall design and construct sewer improvements such that potential flows to the City's combined sewer system from the project do not contribute to an increase in the annual overflow volume as projected by the Bayside Planning Model by providing increased storage in oversized pipes, centralized storage facilities, smaller dispersed storage facilities, or detention basins, or through other means to reduce or delay stormwater discharges to the City system. (*Mission Bay Subsequent EIR Mitigation Measure K.03*).

**Mitigation Measure HYD-MB-1c:** Implement alternative technologies or use other means to reduce settleable solids and floatable materials in stormwater discharges to China Basin Channel to levels equivalent to, or better than, City-treated combined sewer overflows. Such alternative technologies could include one or more of the following: biofilter system, vortex sediment system, catch basin filters, and/or additional source control measures to remove particulates from streets and parking lots. (Modified from *Mission Bay Subsequent EIR Mitigation Measure K.04*).

**Significance after Mitigation:** Less than Significant

**Impact HYD-MB-1: Development of proposed housing on Block 15 at the Mission Bay campus site would place housing within a 100-year flood hazard area as mapped on the preliminary (2013) FIRM map for San Francisco, potentially impede flood flows, and potentially expose people to a significant risk of loss, injury, or death associated with flooding. (Less than Significant)**

As previously discussed, portions of the Mission Bay campus site that are currently proposed for housing and other types of development are designated within the preliminary 100-year Special Flood Hazard Zone and 500-year floodplain due to their low-lying elevations and proximity to a tidal flood source in Mission Creek. Ground elevations in these areas are currently being raised above Base Flood Elevation of +10 ft NAVD via surcharging and engineered fill placement. The San Francisco FIRM is in the process of being refined and updated, and UCSF expects that the final FIRM will reflect these efforts and not map any portions of the campus site within an Special Flood Hazard Area. Therefore, this impact would be less than significant.

**Mitigation:** None required.

**Impact HYD-MB-2: Development of 2014 LRDP proposals on the Mission Bay campus site would expose people or structures to a significant risk of loss, injury or death due to inundation by seiches or tsunamis. (Less than Significant)**

As previously discussed, portions of the Mission Bay campus site are within an area that could potentially be inundated by a tsunami or seiche in a “worst case [tsunami] scenario.”<sup>15</sup> Impacts to structures would be less than significant with incorporation of specific design features such as seismic structural elements that would increase the resilience of structures to tsunamis or seiches. Impacts to people would be less than significant with implementation of the San Francisco outdoor warning system, which would notify people of an impending tsunami or seiche. In the event that an earthquake occurred that would be capable of producing a tsunami that could affect San Francisco, the National Warning System would provide warning to the City. The San Francisco Outdoor Public Warning System facility (sirens and loudspeakers, tested each Tuesday at 12:00 noon) at UCSF in Mission Bay, would be initiated that would sound an alarm alerting the public to tune into local TV, cable TV, or radio stations, which would carry instructions for appropriate actions to be taken as part of the Emergency Alert System. Police would also canvas the neighborhoods sounding sirens and bullhorns, as well as knocking on doors as needed, to provide emergency instructions. Evacuation centers would be set up if required. The advance warning system would allow for evacuation of people prior to a tsunami or seiche and would provide a high level of protection to public safety.

**Mitigation:** None required

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<sup>15</sup> As defined by the San Francisco Modeling of Tsunami Effects at Marine Oil Terminals (SF MOT) study developed by Borrero et al. in 2006.

**Impact HYD-MB-3: Development of 2014 LRDP proposals on the Mission Bay campus site would expose people or structures to an increased risk of loss, injury or death due to flooding from sea level rise. (Less than Significant)**

As previously discussed, portions of the Mission Bay area are potentially vulnerable to inundation from sea level rise, even if higher estimates of sea level rise (e.g. the higher range 2050 estimates by the NRC) are validated over time.

While various state and local guidelines exist for planning for and anticipating sea level rise, there are currently no legally enforceable engineering or design standards that can be applied to proposed development in vulnerable areas aside from those that are based on existing (i.e., without sea level rise) conditions (e.g. the City's Floodplain Management Ordinance). In addition, there exists considerable uncertainty among planners and engineers about how to reconcile uncertainty in anticipated rates of sea level rise with the typical horizons for capital improvement projects and long-range development plans such as the 2014 LRDP.

The University uses science to guide decisions, and accordingly, it has decided to address this uncertainty by raising ground elevations in undeveloped/under construction portions of the campus site such that post-grading elevations across the campus site will range from approximately +10.3 to +26.3 ft NAVD88. This will raise ground elevations at the campus site above the projected MHHW in 2050, assuming that future sea levels are consistent with the mid-range projections described in the 2012 NRC report (and established as the most recent sea level rise guidance by the state).

Low-lying areas of the campus site, or areas adjacent to the campus site, could still be vulnerable to flooding due to storm surge, king tides, and other forcing factors that could raise water levels well above MHHW. In addition, higher than expected sea level rise could drive increases in local groundwater elevations, which could affect the performance of flood-management infrastructure such as storm drains.

UCSF will continue to monitor the situation, and if future sea levels are higher than expected such that the Mission Bay campus site is vulnerable to sea level rise-induced flooding, it will propose projects to protect people or structures from sea level rise at the Mission Bay campus site.

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## 7.8.4 References

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## 7.9 Land Use and Planning

This section considers the setting and land use and planning impacts of implementation of the 2014 LRDP at the Mission Bay campus site. The Regional Setting, Regulatory Considerations, Significance Standards and Analysis Methodology for analysis of potential effects of Land Use are contained in Section 4.9 of this EIR. The CEQA Significance Standards presented in Section 4.9.3 are used to evaluate the potential land use impacts of all proposed 2014 LRDP activities.

### 7.9.1 Land Use and Planning Issues Adequately Addressed in the Initial Study

After evaluation of the 2014 LRDP activities proposed at the Mission Bay campus site, the Initial Study concluded that:

- **Physically divide an established community.** No activities would physically divide an established community. Therefore, no additional analysis of this issue is required.
- **Habitat conservation plan.** No activities would result in a conflict with any applicable habitat conservation plan. Therefore, no additional analysis of this issue is required.

### 7.9.2 Land Use and Planning – Mission Bay Setting

The Mission Bay campus site is generally bounded by Mission Bay Boulevard South to the north, Owens Street to the west, Mariposa Street to the south and Third Street to the east. The campus site is within the 303-acre Mission Bay Redevelopment Area in the Mission Bay neighborhood north of the Potrero Hill and Dogpatch neighborhoods. The campus site includes the original 42 acres north of Sixteenth Street (North Campus) and 14.4 acres south of Sixteenth Street (South Campus) subsequently acquired for the Medical Center at Mission Bay. The North Campus includes six research buildings, a campus community center and 430 units of housing in four separate buildings. Mission Hall, a faculty office building, is currently under construction at the northeast corner of Fourth and Sixteenth Streets. Phase 1 of the Medical Center at Mission Bay is currently under construction on the South Campus and will open in 2015. Phase 1 includes 289-bed hospital, medical building and energy center. Over 1,000 parking spaces will be provided in a surface lot and existing garage. UCSF is in advanced discussions to acquire Mission Bay Blocks 33 and 34, a 3.83-acre parcel directly across Third Street from the South Campus. UCSF hopes to complete the acquisition in the summer of 2014. Under the 2014 LRDP, the Mission Bay campus site boundaries would be expanded to include Blocks 33 and 34, which would be known as the East Campus.

#### 7.9.2.1 UCSF Functional Zones

Most of the North Campus is located with the Instruction and Research functional zone, with other large areas classified as Housing, Open Space and Campus Community. The South Campus is classified entirely as Clinical (see Figure 3-10 in Chapter 3, *Project Description*).

### 7.9.2.2 City of San Francisco Zoning

The entire campus site is zoned as Mission Bay Redevelopment Area (MB-RA), and the Height and Bulk District is also MB-RA. Buildings on the Mission Bay campus site are limited to heights ranging from 85 to 160 feet (exclusive of rooftop mechanical equipment) by the *Mission Bay South Redevelopment Plan* (see discussion below under *Existing Planning Agreements*).

### 7.9.2.3 UCSF Mission Bay Design Guidelines

Design guidelines were developed by UCSF for the Mission Bay campus site that address such features as building mass, scale, height, floor size, proportion and setbacks. The *Mission Bay Campus Master Plan and Design Guidelines* (CMPDG) is an internal UCSF planning tool to provide an overall framework for the physical development of the Mission Bay campus site. It sets forth basic principles to guide the design of individual buildings and landscaping projects with the understanding that buildout of the campus site would include designs by many different architects over time. The CMPDG is intended to be compatible with the design standards and guidelines for the Mission Bay Redevelopment Area adopted by the City and the former San Francisco Redevelopment Agency (now known as the Office of Community Investment and Infrastructure [OCII]).

As indicated in UCSF's *Mission Bay Phase Two Study*, overall base building heights on the North Campus are set by the CMPDG at 85 feet, exclusive of rooftop mechanical equipment. Buildings occupying up to twenty percent (20% or 5.2 acres) of developable area on the North Campus may be built to a height of 110 feet. Buildings occupying up to ten percent (10% or 2.6 acres) of developable area on the North Campus may be built to a height of 160 feet. Currently, only 1.1% and 0.6% (0.3 and 0.16 acres), respectively, of the North Campus have been built within the 110 foot and 160 foot height categories. This occurs in the housing complex on Block 20, where buildings reach heights of 85 to 155 feet, and with the tower of Rutter Center on Block 21B, which is 144 feet high. The CMPDG also includes building height parameters for certain areas of the campus site. In order to ensure that the Mission Bay Commons has good exposure to sunlight, buildings exceeding 55 feet along the Commons (adjacent to UCSF Blocks 14 through 17) must step back their facades 30 feet from the building edge above 55 feet. On other sites, building heights should be designed to avoid shading existing and planned open spaces and outdoor recreation areas to the extent possible. Further, the tallest buildings should be located on sites adjoining major urban corridors such as Third, Owens or Sixteenth Streets where they can act as landmarks.

### 7.9.2.4 Existing Planning Agreements

At Mission Bay, UCSF development is subject to agreements that were negotiated by UCSF with the City and the developer of Mission Bay in connection with the Mission Bay Redevelopment Plan Area.

### ***Mission Bay Redevelopment Plan Area***

The *Mission Bay Redevelopment Area North and South Plans* was prepared by the City and County of San Francisco and approved by the San Francisco Board of Supervisors in November 1998. The plans call for over 6,000 residential units (including affordable housing), commercial, retail, and entertainment uses, a large hotel, and over 40 acres of publicly accessible open space in the 303-acre area consisting of Mission Bay Area North and Mission Bay Area South on either side of the China Basin Channel. The overall objective of the plan is to remove industrial blight and stimulate development, employment, and economic growth. A key objective is to retain and promote UCSF academic and research activities within the City by providing a major new campus site large enough to accommodate a critical mass of scientific programs into the initial decades of the 21st century. A site within the Mission Bay Area South was identified in the plan that now consists of the Mission Bay campus site.

### ***Agreements Related to the North Campus***

With the transfer of 30 acres from Catellus to UCSF for the North Campus, a Contribution Agreement was prepared outlining the conditions associated with this transfer of property. The Contribution Agreement describes UCSF's financial obligations including contributions towards the construction of public infrastructure (streets and utilities), maintenance of the open space system throughout the Mission Bay Redevelopment Plan area and the development of a public fire station (currently under construction). Also included are UCSF's obligations to provide a minimum of eight acres of publicly accessible open space on the North Campus (which UCSF has already completed), and to donate Block 14 to the San Francisco Unified School District should the district request the property for a public school by 2027. A Donation Agreement was also prepared between UCSF and San Francisco for the City's donation of 13 additional acres for the North Campus, consisting of rights-of-way of previously planned public streets that had not been developed.

### ***Agreements Related to the South Campus***

As part of the acquisition of property for the South Campus, UCSF entered into a ground lease for Blocks 36-39 with Catellus and a Memorandum of Understanding (MOU) with OCII to establish UCSF's obligations including contributions towards the construction of public infrastructure, affordable housing, maintenance of the open space system throughout the Mission Bay Redevelopment Plan area, and limitations on building heights, massing and signage for development of the South Campus. UCSF subsequently acquired Block X3 to complete assembly of the South Campus, and the MOU with the City was then amended to cover that property as well.

### ***Agreements Related to the East Campus***

In connection with the pending acquisition of Blocks 33 and 34 (which will be referred to as the East Campus), UCSF anticipates entering into a MOU with OCII regarding UCSF's financial obligations, including contributions towards the construction of public infrastructure; affordable housing; maintenance of the open space system throughout Mission Bay; and agreement to follow the *Mission Bay South Redevelopment Area Plan "Design for Development"* regarding building

height, bulk, setbacks, maximum tower floorplate areas, and other design matters for buildings on the East Campus. UCSF also anticipates entering into an Agreement with the infrastructure developer for Mission Bay (FOCIL-MB, LLC) regarding UCSF's contribution towards public infrastructure.

## **Mission Bay Planning Principles**

In response to community concern regarding UCSF's acquisition of land for the Medical Center at Mission Bay and 654 Minnesota Street, UCSF partnered with its Community Advisory Group (CAG) to convene the UCSF Mission Bay Community Task Force (Task Force). The purpose of the Task Force was to identify community issues related to UCSF's development in the Mission Bay Redevelopment Plan area and to produce planning principles to address these issues. These Planning Principles, which were incorporated into the *LRDP Amendment #3*, have since been expanded to address community concerns across all UCSF sites.

### **7.9.3 Land Use and Planning – Mission Bay Impacts and Mitigation Measures**

**Impact LU-MB-1: Implementation of the 2014 LRDP at the Mission Bay campus site would be consistent with applicable land use plans, policies and regulations adopted for the purpose of avoiding or mitigating an environmental effect. (Less than Significant)**

Upon adoption by the Regents, the proposed 2014 LRDP will replace the 1996 LRDP, as amended, and become the applicable campus land use plan for UCSF. Pursuant to the University of California's constitutional autonomy, development and uses on property owned or leased by the University that are in furtherance of the University's educational purposes are not subject to local land use regulation. The University is the only agency with land use jurisdiction over programs and projects proposed at UCSF campus sites by the 2014 LRDP. Therefore, all proposed activities that would be in general conformity with the 2014 LRDP would have no significant land use impacts. However, UCSF considers the land use policies and zoning regulations of the City when analyzing potential land use impacts under CEQA. The 2014 LRDP is not expected to conflict with City plans and policies adopted for the purpose of avoiding or mitigating an environmental effect.

The 2014 LRDP proposed functional zones are generally consistent with the existing zones on the Mission Bay campus site. Functional zone changes are proposed for Blocks 15 and 18. Block 15 is currently classified as Instruction and Research and would be reclassified as Housing under the 2014 LRDP. The western, triangular portion of Block 18 would be reclassified from Support and Parking to Research as its shape is not conducive to an efficient parking garage layout. Only minor classification label changes are proposed elsewhere on the Mission Bay campus site. Blocks 33 and 34, proposed as the new East Campus at the Mission Bay campus site, have not been designated with functional zones by UCSF. As part of the approval of the 2014 LRDP, the Regents also would designate these blocks for Research and Parking. UCSF is also considering a variant for Blocks 33 and 34 that would designate a portion of these blocks for Clinical use, with

the remainder as Research and Parking. Clinical uses are considered a “secondary use” under the *Mission Bay South Redevelopment Plan* and would require a finding of consistency with the plan by OCII.

The functional zone changes proposed by the 2014 LRDP do not present land use conflicts with adjacent existing land uses on the campus site. Compatibility between adjacent existing and proposed functional zones was taken into consideration in developing the proposed zones in the 2014 LRDP. Existing land use patterns reflect campus site development guided by the planning principles embodied in the previous LRDPs. Therefore, implementation of the 2014 LRDP would have a less-than-significant impact regarding consistency with land use plans and policies adopted for the purpose of avoiding or mitigating an environmental effect.

**Mitigation:** None required.

**Impact LU-MB-2: Implementation of the 2014 LRDP at the Mission Bay campus site would be compatible with adjacent land uses. (Less than Significant)**

The 2014 LRDP includes proposed development on Blocks 15, 16, 18, 23, and 25, and acquisition and development of Blocks 33 and 34. In addition, it is assumed that the last building of Phase 1 of the Medical Center at Mission Bay (cancer outpatient building) as well as Phase 2 of the Medical Center would be constructed by 2035. On Block 16, one research and/or office building and a central utility plant totaling approximately 289,000 gsf, or alternatively two research buildings totaling up to 377,400 gsf may be built. The height of the proposed buildings on Block 16 would be similar in height to other research buildings on the campus site, but would have setbacks of 30 feet at the 55-foot height along Mission Bay Boulevard South in accordance with the CMPDG. Block 18 is proposed to include one office and/or research building with up to 193,000 gsf and up to 160 feet tall. A separate or attached parking garage up to 110 feet tall could be built east of the proposed building on Block 18. A full-size, multi-purpose sports field would be developed on the eastern portion of the block. An 85-foot tall, 232,200 gsf research building is proposed for the western side of Block 23. Block 25 is proposed to include a 323,300 gsf research/office building on the eastern side of the block with all or a portion of the building constructed up to 160 feet in height.

A new housing complex consisting of 523 units and totaling 398,700 is proposed for Block 15. The complex would be comprised of four or fewer buildings with an internal courtyard. The buildings would range from 55 feet in height along Mission Bay Boulevard South, 85 feet along Sixth Street and Nelson Rising Lane and up to 120 feet along Fifth Street. The complex could include a 20,000 gsf child care center. If the child care center is developed on this block, approximately 15,000 square feet of the courtyard would be dedicated as an outdoor play yard. If child care is located elsewhere, approximately 12 additional units could be added to the housing program on Block 15. In addition, approximately 1,500 assignable square feet could be considered on this block (or Block 23) for UCSF police.

As described in the Setting in Section 7.9.2.3, above, buildings occupying up to twenty percent (20% or 5.2 acres) of developable campus site area may be built to a height of 110 feet. Buildings

occupying up to ten percent (10% or 2.6 acres) of developable campus site area may be built to a height of 160 feet. Currently, 1.1% and 0.6%, respectively, of the campus site have been built within the 110 foot and 160 foot height categories. Under the 2014 LRDP, the area on the campus site occupied by buildings up to 110 feet in height would increase to 5% (1.4 acres) of developable campus site area. The area occupied by buildings up to 160 feet in height would increase to 6% (1.7 acres) of developable campus site area. Proposed buildings under the 2014 LRDP would therefore be consistent with the height restrictions for the campus site as determined in the CMPDG. New buildings proposed for Blocks 15, 16, 18, 23, and 25 would be designed to be consistent with other parameters of the CMPDG, including such items as mass, floor size, proportion and setbacks.

Blocks 33 and 34 (to be known as the East Campus) would be developed with up to 500,000 gsf and 500 parking spaces. No specific UCSF programs have been identified yet to relocate to the site, and no specific building design is proposed. Proposed development on the East Campus would follow the *Mission Bay South Redevelopment Area Plan “Design for Development”* regarding building height, bulk, setbacks, maximum tower floorplate and other design matters.

The cancer outpatient building and the Phase 2 Medical Center would be consistent with the MOU with OCII regarding height, bulk and setback requirements as determined in the *UCSF Medical Center at Mission Bay EIR* (UCSF, 2008).

As discussed above, proposed development on the Mission Bay campus site would be consistent with the CMPDG, the *Mission Bay South Redevelopment Area Plan “Design for Development,”* and other agreements with the City and OCII. New buildings would be constructed in an area containing existing UCSF facilities and near other similar development projects adjacent to the campus site. Proposed UCSF development on the northern portion of the campus site would be separated from residential areas to the north by the Mission Bay Commons. Development proposed for the Mission Bay campus site under the 2014 LRDP would be compatible with adjacent land uses and the impact would be less than significant.

**Mitigation:** None required.

## 7.10 Noise

This section considers the setting and noise impacts of implementation of the 2014 LRDP at the Mission Bay campus site. The Regional Setting, Regulatory Considerations, Significance Standards and Analysis Methodology for analysis of potential effects of Noise are contained in Section 4.10 of this EIR. The CEQA Significance Standards presented in Section 4.10.3 are used to evaluate the potential noise impacts of all proposed 2014 LRDP activities.

### 7.10.1 Noise Issues Adequately Addressed in the Initial Study

After evaluation of the 2014 LRDP activities proposed at the Mission Bay campus site, the Initial Study concluded that:

- **Airport noise.** No activities would be located within the vicinity of a public airport. Therefore, no additional analysis of this issue is required.

### 7.10.2 Noise – Mission Bay Setting

#### 7.10.2.1 Existing Noise Environment

Long-term environmental noise in urbanized areas is primarily dependent on vehicle traffic volumes and the mix of vehicle types. The existing ambient noise environment within the Mission Bay campus site area is dominated by vehicular traffic on Third Street, Sixteenth Street and Mariposa Street as well as from the elevated section of Interstate 280 (I-280) to the west of the campus site.

The San Francisco Department of Public Health (DPH) has mapped transportation noise throughout the City and County of San Francisco, based on modeled baseline traffic volumes derived from the San Francisco County Transportation Authority travel demand model<sup>16</sup>. DPH maps indicate the areas subject to noise levels over 60 dBA ( $L_{dn}$ ) and the range of  $L_{dn}$  noise levels that occur on every street in San Francisco. The portions of these maps that cover the campus site area indicate that areas along Third Street are generally between 65 and 70 dBA ( $L_{dn}$ ) south of Sixteenth Street but exceed 70 dBA north of Sixteenth Street.

#### ***Ambient Noise Measurements***

Ambient long-term (24-hour) and short-term (10-minute) noise measurement data were collected in January and March of 2014 to characterize noise conditions in the campus site area and its environs. Noise measurement locations are shown in **Figure 7.10-1**. To characterize ambient noise in the campus site area, short-term measurement data were compiled for two locations where residential land uses exist near primary 2014 LRDP development proposals, as shown in **Table 7.10-1**. Long-term noise data was collected adjacent to proposed residential land uses on the campus site. These data are presented in **Table 7.10-2**.

<sup>16</sup> San Francisco Department of Public Health (DPH), San Francisco City-wide Noise Map, August 2006, Available online at <http://www.sfdph.org/dph/files/EHSdocs/ehsPublsdocs/Noise/noisemap2.pdf> Accessed April 30, 2013.





SOURCE: ESA; Google Earth

UCSF Long Range Development Plan Environmental Impact Report

**Figure 7.10-1**  
Noise Measurements Locations – Mission Bay



**TABLE 7.10-1**  
**SHORT- TERM AMBIENT NOISE LEVEL DATA IN THE MISSION BAY CAMPUS SITE AREA**

Measurement Location	Time	Noise Levels in dBA	
		Hourly $L_{eq}$	$L_{max}$
MB-ST1: UCSF Mission Bay Block 18 Existing Child Care Facility	4:15	67.8	83.6
MB-ST2: UCSF Mission Bay Block 20 Existing Residential Uses	4:30	68.0	76.8
MB-ST-3: UCSF Future Mariposa City Park	4:56	70.9	79.4

NOTE: See Figure 7.10-1 for noise measurement locations.  $L_{eq}$  represents the constant sound level;  $L_{max}$  is the maximum noise level.

SOURCE: Environmental Science Associates, 2014.

**TABLE 7.10-2**  
**LONG- TERM AMBIENT NOISE LEVEL DATA IN THE MISSION BAY CAMPUS SITE AREA**

Measurement Location	Day-Night Noise level (DNL)	Noise Levels in dBA	
		Daytime hourly average $L_{eq}$	Nighttime hourly average $L_{eq}$
MB-LT1. UCSF Mission Bay Block 15	64	60	57

NOTE: See Figure 7.10-1 for noise measurement locations.

SOURCE: Environmental Science Associates, 2014.

Long-term monitoring location MB-LT1 is located north of the existing terminus of Nelson Rising Lane at the southeast corner of Block 15. The noise environment at this location is dominated by distant vehicle traffic on Third Street and I-280. This location experiences noise levels of 64 DNL, which, for residential land uses, the General Plan suggests that new construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features included in the design.

### 7.10.2.2 Sensitive Receptors

Sensitive receptors for noise are generally considered to include nursing homes, senior citizen centers, schools, churches, libraries, residences, and hospitals. Land uses in the campus site area are described in detail in Section 7.9, *Land Use*. On the Mission Bay campus site, existing sensitive receptors consist of the Mission Bay housing building on Block 20, and a child care facility located on Block 18. Off-campus receptors consist of residential land uses approximately 300 feet northeast of the campus site, residential land uses approximately 650 feet northwest of the campus site (across Mission Creek) and residential land uses in Potrero Hill over 1,000 feet southwest of the campus site.

## 7.10.3 Noise – Mission Bay Impacts and Mitigation Measures

**Impact NOI-MB-1: Construction activities proposed under the 2014 LRDP at the Mission Bay campus site would result in increases in ambient noise levels over the term of the exterior construction activities. (Potentially Significant)**

As noted in the Regional Setting section, the hours that construction activity noise can occur is restricted by Section 2908 of the Police Code. Although UCSF is not subject to the noise ordinance, it strives to be consistent with it. Section 2908 prohibits any person, between the hours of 8:00 p.m. of any day and 7:00 a.m. of the following day, from erecting, constructing, demolishing, excavating for, altering, or repairing any building or structure if the noise level created is in excess of the ambient noise level by 5 dBA at the nearest property line.

**Table 7.10-3** presents an estimate of the sequence of proposed building construction and the proximity of sensitive receptor to each construction site. As can be seen from the table, most construction would occur sequentially with only construction of the Block 23 research building, the cancer outpatient building and the Block 18 sports field potentially occurring concurrently. Table 7.10-3 also presents an estimate of noise levels during construction. These estimated noise levels assume simultaneous operation of an excavator, a loader and a bulldozer common to grading work for foundations as calculated using the Roadway Construction Noise Model of the FHWA.

**TABLE 7.10-3  
NOISE LEVELS FOR CONSTRUCTION AT THE MISSION BAY CAMPUS SITE**

<b>Building</b>	<b>Estimated Construction Schedule</b>	<b>Distance to Nearest Sensitive Receptor (feet)</b>	<b>Shielding Assumption</b>	<b>Estimated Noise Level at Receptor (dBA, Leq)</b>	<b>Noise Increase over Existing Daytime Conditions (dBA, Leq)</b>
Block 15 Housing	2015 to 2016	250 (Block 18 Child Care)	None	67.4	7.4
Block 23 Research Building	January 2018 to January 2020	175 (Block 20 Housing)	None	70.5	2.5
Cancer Outpatient Building	January 2018 to January 2020	800 (Block 20 Housing)	None	57.6	-10.4
Block 18 Sports Field	July 2018 to July 2019	100 (Block 15 Housing)		75.4	<b>15.4</b>
Block 25 Research Building	January 2023 to January 2025	450 (Block 20 Housing)	None	62.3	-5.3
Block 16 Research Building & CUP	January 2028 to January 2030	100 (Block 15 Housing)	None	75.4	<b>15.4</b>
Block 18 Parking Phase I	July 2021 to July 2022	100 (Block 15 Housing)	None	75.4	<b>15.4</b>
Block 18 Research Building	January 2033 to January 2034	200 (Block 15 Housing)		69.4	9.4
Block 18 Parking Phase II	July 2034 to July 2035	200 (Block 15 Housing)	None	69.4	9.4
Phase 2 Medical Center	2035	840 (Pennsylvania Avenue residences)	None	56.9	-14.1

**TABLE 7.10-4  
TYPICAL NOISE LEVELS FROM CONSTRUCTION EQUIPMENT**

<b>Construction Equipment</b>	<b>Noise Level (dBA, Leq at 50 Feet)</b>	<b>Noise Level (dBA, Leq at 100 Feet)</b>
Dump truck	76	70
Portable air compressor	78	72
Concrete mixer (truck)	79	73
Crane	81	75
Excavator	81	75
Dozer	82	76
Paver	77	71
Generator	81	75
Backhoe	78	72
Pile driver	101	95
Auger Drill Rig	84	78

SOURCE: FHWA, 2006.

The nearest sensitive residential receptors on the Mission Bay campus site currently experience existing daytime noise levels of 60 dBA (Future Block 15) and 69 dBA (Existing Block 20 housing and day care center on Block 18). Noise from standard construction equipment could exceed these existing noise levels by as much as 15 dBA. Implementation of **Mitigation Measure NOI-LRDP-1** will reduce the impacts from standard construction equipment by as much as 5 to 10 dBA, which would be less than significant for most locations, depending on the existing ambient noise level.

**Mitigation Measure:** Implement Mitigation Measure NOI-LRDP-1

**Significance after Mitigation:** Less than Significant

**Impact NOI-MB-2: Construction activities proposed under the 2014 LRDP at the Mission Bay campus site would result in increases in ambient noise levels during pile-driving activities. (Potentially Significant)**

It is likely that most of the buildings developed at the Mission Bay campus site would require pile-driving, given the soil conditions in the area and the development history of the Mission Bay campus site and surrounding area. An impact pile driver, if required, could result in an increase of up to 35 dBA over existing noise levels at the nearest receptor, 100 feet away in many cases, resulting in a significant noise increase over existing conditions. Consequently, mitigation measures to reduce pile-driving noise are identified in **Mitigation Measure NOI-LRDP-2**.

**Mitigation Measure:** Implement Mitigation Measure NOI-LRDP-2

**Significance After Mitigation: Significant and Unavoidable.** Mitigation Measure NOI-LRDP-2 would reduce the severity of noise generated by pile-driving activities and reduce the potential annoyance to nearby residents and others who could be disturbed by pile-

driving to the extent feasible. If piles can be installed through drilling and cast in place measures then this mitigation measure would result in a less than significant impact.

However, if geotechnical conditions exist such that impact or vibratory pile-driving is required, then construction noise would be significant. Although pile-driving noise would be intermittent and would occur over a short duration, even after mitigation the noise level would likely exceed 20 dBA during pile-driving activities, resulting in a significant and unavoidable impact.

**Impact NOI-MB-3: Construction activities proposed under the 2014 LRDP at the Mission Bay campus site could generate ground-borne vibration. (Less than Significant)**

The types of construction activities associated with propagation of ground-borne vibration include pile driving, use of hoe-rams for demolishing large concrete structures and caisson drilling. It is possible that pile driving and drilling could occur during hospital construction. Pile driving, if required could take one or more months, and would occur during daytime hours, consistent with the City's Police Code.

Of the construction equipment likely to be used for construction, pile driving has the potential to result in the highest levels of groundborne vibration. Pile driving can result in peak particle velocities (PPV) of up to 1.5 inches per second (in/sec) at a distance of 25 feet (FTA, 2006), but typically results in an average of about 0.644 PPV at that distance. The Caltrans measure of the threshold of architectural damage for conventional sensitive structures is 0.5 in/sec PPV for new residential structures and modern commercial buildings and 0.25 in/sec PPV for historic and older buildings.

The nearest existing structure is approximately 50 feet away from the site of the proposed buildings, where pile driving may occur and 100 feet away from the nearest residential building. At the 50-foot distance, vibration from pile driving would be expected to be reduced to 0.23 inches per second. Therefore, vibration from pile driving would not exceed the criterion published by Caltrans of 0.5 in/sec PPV for new residential structures and modern commercial buildings. At the 100-foot distance, vibration from pile driving would be expected to be reduced to 0.08 inches per second where vibration levels could be perceptible at the nearest residential receptors but would be below the thresholds considered strongly perceptible or severe, 0.1 in/sec PPV and 0.4 in/sec PPV, respectively.

Consequently, the development at Mission Bay under the 2014 LRDP would have a less-than-significant impact with regard to groundborne vibration.

**Mitigation:** None required.

**Impact NOI-MB-4: Operational noise generated by development under the 2014 LRDP at the Mission Bay campus site could cause a long-term increase in ambient noise levels in the campus vicinity. (Less than Significant)**

Long-term noise sources associated with operation of the new buildings and hospital would primarily consist of marginal increases in roadway traffic resulting from new and repurposed land uses. There will likely be some new mechanical equipment (e.g. heating ventilation and air conditioning, back up generator testing) associated with operation of these new buildings. The potential location of such equipment is not known but such equipment would be operated in such a manner as to conform to the requirements of the City of San Francisco Noise Ordinance. Noise from maintenance testing of backup generators would occur briefly once a week during daytime hours and would be roughly equivalent to that generated by a single truck engine, which would not be expected to represent a substantial increase in noise levels in an urban environment.

A project would be considered to generate a significant impact if it resulted in a permanent increase in ambient noise levels greater than 3 dBA in the project vicinity above levels existing without the project for areas already impacted by noise.

Increased traffic would primarily be on the local roadway network, including Third Street and Mission Bay Boulevard South. Noise levels were determined for this analysis using the Federal Highway Administration (FHWA) Traffic Noise Prediction Model and the turning movements in the traffic section for Existing (2014), Existing Plus LRDP, and Cumulative Plus LRDP conditions. Peak hour intersection turning data from the traffic study were analyzed to evaluate increases and resulting traffic-generated noise increases on roadway links most affected by 2014 LRDP-related traffic. The roadway segments analyzed and the results of the noise increases resulting from modeling are shown in **Table 7.10-5**, below.

**TABLE 7.10-5  
PEAK-HOUR TRAFFIC NOISE LEVELS IN THE VICINITY OF THE MISSION BAY CAMPUS SITE**

Roadway Segment <sup>a,b</sup>	(A) Existing	(B) Existing Plus LRDP	(B-A) Difference between Existing Plus LRDP and Existing <sup>c</sup>	(D) Cumulative Plus LRDP (2040)	(D-A) Difference between Cumulative Plus LRDP and Existing
3rd Street between Mission Bay Boulevard and 16th Street	68.9	69.3	0.4	71.3	2.4
3rd Street between Mariposa Street and 20th Street	68.4	68.9	0.5	70.8	2.4
3rd Street between Channel Street and Mission Bay Boulevard	69.2	69.6	0.4	71.1	1.9
Mission Bay Boulevard South between 3rd Street and 6th Street	50.3	51.1	0.8	55.5	5.2

<sup>a</sup> Road center to receptor distance is 15 meters (approximately 50 feet) for all roadway segments. Noise levels were determined using the Federal Highway Administration (FHWA) Traffic Noise Prediction Model.

<sup>b</sup> The analysis considered the vehicle mix based on – cars 95%, medium trucks 3%, and heavy trucks 2% on 3rd Street. Traffic speeds for all vehicle classes were set at 35 mph for 3<sup>rd</sup> Street. Mission Bay Boulevard had a more standard non-arterial assumption of 97% cars, 2% medium trucks, and 1% heavy trucks on 3rd Street and a traffic speeds for all vehicle classes of 25 mph

SOURCE: ESA, 2014.

As shown in Table 7.10-5, the increase in traffic noise from the Existing Plus LRDP scenario compared to the Existing scenario would increase peak hour noise levels by less than 3 dBA at all roadway segments. Overall, operational and traffic noise impacts associated with development under the 2014 LRDP at all analyzed roadway segments in the vicinity of the Mission Bay campus site would be less than significant.

**Mitigation:** None required.

**Impact NOI-MB-5: Operations under the 2014 LRDP at the Mission Bay campus site would result in exposure of persons (new residents) to noise levels in excess of standards established in the general plan. (Less than Significant)**

The proposed Block 15 housing project would result in a new residential use and child care facility that would be considered a sensitive receptor. Long-term noise monitoring conducted at Block 15 indicates an existing exterior noise level of 64 DNL. As shown in Table 7.10-5, future roadway traffic on South Mission Bay Boulevard on the northern boundary of Block 15 would contribute 55 dBA to this existing measures value, resulting in a future (2040) condition of 64.5 dBA. This noise level is within the “conditionally acceptable” noise exposure category as defined by the City of San Francisco General Plan Noise Element (greater than 60 DNL).

The Phase 1 Medical Center will operate a helipad that will have occasional helicopter operations. Noise modeling for helicopter operations at the UCSF Medical Center at Mission Bay was conducted as part of the *Final SEIR, UCSF Medical Center at Mission Bay—Residential Sound Reduction Program for Helicopter Operations*. This modeling indicates that “busy day” helicopter operations at the hospital would contribute a CNEL of 54 dBA at Block 20. Block 15 is further away from the helipad and would be expected to experience a lesser noise contribution. Adding this contribution to the existing ambient noise levels at Block 15 as well as future traffic noise contributions results in a cumulative future noise level of 64.9 dBA<sup>17</sup>.

A conditionally acceptable noise exposure is defined as one in which new construction or development should be undertaken only after a detailed analysis of noise reduction requirements is made and needed noise insulation features included in the design. Conventional construction combined with closed windows and fresh air supply systems or air conditioning will normally suffice. The proposed housing units on Block 15 would have air handling systems. Additionally, Section 1207 of the California Building Code (Title 24 of the California Code of Regulations) establishes material requirements in terms of sound transmission class (STC)<sup>18</sup> of 50 for all common interior walls and floor/ceiling assemblies between adjacent dwelling units or between dwelling units and adjacent public area. This requirement would be sufficient to achieve the additional 4.9 dBA of sound reduction necessary to achieve the noise exposure goals of the San Francisco General Plan.

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<sup>17</sup> CNEL is roughly equivalent to DNL, usually within 1 dBA

<sup>18</sup> The STC is used as a measure of a materials ability to reduce sound. The STC is equal to the number of decibels a sound is reduced as it passes through a material.

**Mitigation:** None required.

### **LRDP Variant Conditions**

Under the LRDP Variant, the Mission Bay campus site would generate slightly more vehicle trips than under the 2014 LRDP. Approximately 2,950 new vehicle trips would be generated during the AM peak hour and approximately 2,450 additional vehicles at the campus site during the PM peak hour. These represent increases of approximately 2% in the total number of vehicles compared to the 2014 LRDP during both the AM and PM peak hours. This additional traffic would increase roadway noise by less than 0.1 dBA for all roadways analyzed in Table 7.10-5 and would have the same less than significant impact as identified for the 2014 LRDP.

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## **7.10.4 References**

- California Department of Transportation (Caltrans), 2013. *Transportation- and Construction-Vibration Guidance Manual*, September 2013.
- Caltrans, *Technical Noise Supplement to the Traffic Noise Analysis Protocol*, September 2013.
- City and County of San Francisco (CCSF), *San Francisco General Plan*, adopted on June 27, 1996, [http://www.sf-planning.org/ftp/General\\_Plan/index.htm](http://www.sf-planning.org/ftp/General_Plan/index.htm), accessed February 20, 2014.
- Federal Highway Administration (FHWA) Roadway Noise Construction Model, 2006.
- Federal Transit Administration, *Transit Noise and Vibration Impact Assessment*, 2006.
- United States Environmental Protection Agency, *Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety*, March 1974, [http://www.fican.org/pdf/EPA\\_Noise\\_Levels\\_Safety\\_1974.pdf](http://www.fican.org/pdf/EPA_Noise_Levels_Safety_1974.pdf), accessed February 20, 2014.
- UCSF, *UCSF Medical Center at Mission Bay—Residential Sound Reduction Program for Helicopter Operations, Final Supplemental Environmental Impact Report*, 2009.

## 7.11 Population and Housing

The Regional Setting, Regulatory Considerations, Significance Standards and Analysis Methodology for analysis of potential effects of Population and Housing are contained in Section 4.11 of this EIR. The CEQA Significance Standards presented in Section 4.11.3 are used to evaluate the potential population and housing impacts of all proposed 2014 LRDP activities.

The 2014 LRDP would result in population growth in San Francisco or the wider Bay Area through increased employment and student enrollment. The 2014 LRDP would accommodate an increase in employment and students at all campus sites from the current approximately 30,840 to approximately 42,270 by 2035. This anticipated population increase could result in an increased demand for housing in the Bay Area. This overall increase and its potential effect on housing were evaluated in Chapter 5, *2014 LRDP – Impacts and Mitigation Measures*.

The 2014 LRDP development proposals would result in changes in daily population at this campus site. The projected increase in population at the Mission Bay campus site would be approximately 17,000 people by 2035 with implementation of the 2014 LRDP (including the Phase 2 Medical Center at Mission Bay). A new housing complex with approximately 774 beds in 523 units is proposed on Block 15 by the 2014 LRDP. The direct and indirect physical environmental effects that result from these changes are fully considered in each of the appropriate topical sections of this Chapter.



## 7.12 Public Services

The Regional Setting, Regulatory Considerations, Significance Standards and Analysis Methodology for analysis of potential effects of Public Services are contained in Section 4.12 of this EIR. The CEQA Significance Standards presented in Section 4.12.3 are used to evaluate the potential public services impacts of all proposed 2014 LRDP activities.

In 2013, the estimated daily UCSF population across all campus sites, including patients and visitors, was approximately 39,420. At LRDP horizon in 2035, total population is projected to reach approximately 56,420, an increase of about 17,000, the majority of which would be associated with growth proposed by the 2014 LRDP. The projected increase in population at the Mission Bay campus site would be approximately 17,000 people by 2035.

This anticipated population increase could result in an increased demand for public services in San Francisco, including fire protection, law enforcement, and public education. This overall increase and its potential effect on public services were evaluated in Chapter 5, *2014 LRDP – Impacts and Mitigation Measures*. The anticipated increase in population at this campus site under the LRDP would not cause substantial increased demand for public services specific to this campus site, and all impacts are found to be less than significant.

## 7.13 Recreation

The Regional Setting, Regulatory Considerations, Significance Standards and Analysis Methodology for analysis of potential effects of Recreation are contained in Section 4.13 of this EIR. The CEQA Significance Standards presented in Section 4.13.3 are used to evaluate the potential recreation impacts of all proposed 2014 LRDP activities.

In 2013, the estimated daily UCSF population across all campus sites, including patients and visitors, was approximately 39,420. At LRDP horizon in 2035, total population is projected to reach approximately 56,420, an increase of about 17,000, the majority of which would be associated with growth proposed by the 2014 LRDP. The projected increase in population at the Mission Bay campus site would be approximately 17,000 people by 2035.

This anticipated population increase could result in an increased use of recreational facilities on and near UCSF campus sites. This overall increase and its potential effect on recreational facilities, as well as effects resulting from 2014 LRDP proposals, were evaluated in Chapter 5, *2014 LRDP – Impacts and Mitigation Measures*. The anticipated increase in population at this campus site under the LRDP would not cause substantial increased demand for recreation facilities specific to this campus site, and all impacts are found to be less than significant.

## 7.14 Transportation and Traffic

This section considers the setting and the potential transportation and traffic impacts of implementation of the 2014 LRDP at the Mission Bay campus site. The Regional Setting, Regulatory Considerations, Significance Standards and Analysis Methodology for analysis of potential effects of Transportation and Traffic are contained in Section 4.14 of this EIR. The CEQA Significance Standards presented in Section 4.14.3 are used to evaluate the potential transportation and traffic impacts of all proposed 2014 LRDP activities.

### 7.14.1 Transportation and Traffic Issues Adequately Addressed in the Initial Study

After evaluation of the 2014 LRDP activities proposed at the Mission Bay campus site, the Initial Study concluded that:

- **Air traffic patterns.** No activities would result in a change in air traffic patterns. Therefore, no additional analysis of this issue is required.

### 7.14.2 Transportation and Traffic – Mission Bay Setting

A more-detailed description of current transportation and traffic characteristics in the Mission Bay campus site area is provided in Appendix G, the Transportation Impact Study (TIS) for the UCSF LRDP.

#### 7.14.2.1 Roadway Facilities

The network of regional roadways that serve the Mission Bay campus site is described in Section 4.18.

The campus site sits within the Mission Bay Redevelopment Area and is bordered by the South of Market (SoMa) neighborhood to the north, Potrero Hill to the south and west, and Dogpatch to the south. The primary north-south corridors are Third Street, Fourth Street, and Seventh Street and the primary east-west corridors are Sixteenth Street and Mariposa Street. Local access to the Mission Bay campus site is provided by an urban street grid network. Key local roadways through the campus site are discussed below.

The local road network serving the Mission Bay campus site includes several two-lane roadways with on-street parking provided on both sides of the streets in most areas, as follows:

- **Berry Street** runs from Third Street to Owens Street, operating as an eastbound one-way street between Third and Fourth streets.
- **Mission Rock Street** runs from Terry A. François Boulevard to Fourth Street.
- **Fourth Street** is a Primary Transit Important roadway that runs from Market Street to Sixteenth Street. It is designated as a Class III bicycle route as it crosses Mission Creek,

after which it transitions into Class II bicycle lanes between Channel Street and Sixteenth Street. The T Third Street light rail line operates on Fourth Street between King Street and Channel Street.

- **Owens Street** runs from Sixteenth Street to the Mission Bay Circle. On-street parking is prohibited on both sides of the street.
- **Seventh Street** is a Secondary Arterial roadway that runs from Market Street to Sixteenth Street. Seventh Street has Class II bicycle lanes between Brannan and Sixteenth streets.

Other roadways providing access to the Mission Bay campus site are as follows:

- **Mission Bay Boulevard North** is a one to two-lane Local Street that extends from Terry A. François Boulevard to Fourth Street. Mission Bay Boulevard North is the westbound component of the Mission Bay Boulevard one-way couplet.
- **Mission Bay Boulevard South** is a one to two-lane Local Street that extends from Fourth Street to Terry A. François Boulevard. Mission Bay Boulevard South is the eastbound component of the Mission Bay Boulevard one-way couplet.
- **Channel Street** is a four-lane east-west Local Street that extends from west of Fourth Street to Third Street. The T Third Street rail line operates on Channel Street between Third and Fourth streets within a physically separated median in the roadway.
- **Sixteenth Street** is a four-lane east-west Secondary Arterial roadway with left-turn pockets that extends from Third Street to Castro Street. Sixteenth Street has Class II bicycle lanes in both directions between Third Street and Kansas Street.
- **Mariposa Street** is a four-lane east-west Local Street that extends from Illinois Street to Harrison Street that is located at the southern edge of the UCSF campus site. The I-280 on- and off-ramps (southbound and northbound, respectively) are located immediately east of the intersection of Pennsylvania and Mariposa streets. Mariposa Street is a designated Class III bicycle route with shared-lane markings (“sharrows”) between Illinois Street and Mississippi Street.
- **Third Street** is a four-lane north-south Primary Transit Important roadway that extends from Market Street to Bayshore Boulevard. Third Street is designated as a Class III bicycle route with “sharrows” between King Street and Terry A. François Boulevard in the northbound direction only. The T Third Street light rail line operates along Third Street between Channel Street and Bayshore Boulevard along a physically separated median in the roadway.
- **King Street** is a five to six-lane east-west Primary Transit Important roadway that extends from Second Street to Fifth Street and the I-280 freeway. The N Judah and T Third Street light rail lines operate along the entirety of King Street within a physically separated median in the roadway.
- **Mission Bay Drive** is a four-lane Local Street that extends from the Mission Bay Circle to Seventh Street under the I-280 freeway and across the Caltrain railroad tracks; the eastbound and westbound travel lanes are separated by a landscaped median, and Class II bicycle lanes are provided on both sides of the street.

- **Mississippi Street** is a north-south roadway that runs discontinuously between Sixteenth/Seventh and César Chávez streets. In the vicinity of the Mission Bay campus site, Mississippi Street has one traffic lane each way, and Class II bicycle lanes are provided on both sides of the street between Sixteenth and Mariposa streets.

### ***Proposed Local Roadway Changes***

The 1998 *Mission Bay South Area Plan* proposed substantial changes to the roadway infrastructure in the vicinity of the Mission Bay campus site that are to be constructed as the area develops. Of all of these, the following infrastructure improvements are to be implemented as part of the opening of Phase 1 of the Medical Center at Mission Bay in February 2015:

- Owens Street will be extended from Sixteenth Street to Mariposa Street, to connect with the I-280 on- and off-ramps and to create a new intersection at Mariposa Street. The existing signal at the intersection of Mariposa Street and the I-280 northbound off-ramp will be upgraded to accommodate the new Owens Street approach.
- Mariposa Street will be widened on the north side from Owens Street to Illinois Street by approximately 15 feet, and left turn lanes will be provided at major intersections. The Mariposa Street Bridge over the Caltrain tracks will be restriped to provide two exclusive left turn lanes in the westbound direction for a total of three lanes, and create a new signalized intersection with Owens Street.
- The northbound I-280 off-ramp will be widened to the east to provide an additional lane and better align with Owens Street. Mariposa Street between the I-280 southbound on-ramp and Pennsylvania Avenue will be re-striped to accommodate the lane configurations described above.
- The existing STOP-sign controlled intersection of Mariposa Street and the I-280 southbound on-ramp will be signalized; the new signal will be interconnected with the existing signal at the off-ramp.

### **7.14.2.2 Intersection Operating Conditions**

Intersection operating conditions at 21 intersections were evaluated during the weekday peak hours of the AM (7:00-9:00AM) and PM (4:00-6:00PM) peak periods. Intersections usually form the critical capacity constraints on roadways. Therefore, most transportation analyses examine intersection operations as a measure of overall roadway conditions.

The operating characteristics of intersections are evaluated using the concept of Level of Service (“LOS”). LOS is a qualitative description of driver comfort and convenience. Intersection levels of service range from LOS A, which indicates free flow or excellent vehicle flow conditions with short delays, to LOS F, which indicates congested or overloaded vehicle flow conditions with extremely long delays. In San Francisco, LOS A through D is considered acceptable, and LOS E and LOS F are considered unsatisfactory service levels. The intersections were evaluated using the 2000 Highway Capacity Manual (HCM) methodology. Tables summarizing the relationship between average delay per vehicle and LOS for signalized and unsignalized intersections according to the 2000 HCM method can be found in the appendices of the Transportation Impact Study (TIS) for the UCSF Long Range Development Plan (Appendix G).

For signalized intersections, this methodology determines the capacity for each lane group approaching the intersection. The LOS is based on average delay (in seconds per vehicle) for the various movements within the intersection. A combined weighted average delay and LOS is presented for the intersection. For unsignalized intersections, operations are defined by the average control delay per vehicle (in seconds per vehicle) for each stop-controlled movement or movement that must yield the right-of-way, and the LOS is determined by the worst (highest average delay) approach. Generally, the delay ranges for each LOS are lower than for signalized intersections because drivers expect less delay at unsignalized intersections.

As shown in **Table 7.14-1**, 19 of the 21 study intersections operate at an acceptable level of service, which is LOS D or better, during the AM peak hour, and 19 study intersections operate at an acceptable LOS during the PM peak hour. The following intersections operate unacceptably during the AM or PM peak hours:

- King Street and Third Street (Intersection #24) operates at LOS E during the PM peak hour due to the high conflicting traffic volumes on the westbound through and eastbound left turning movements on King Street.
- Mariposa Street and the I-280 Northbound Off-ramp (Intersection #43) operates at LOS F during the AM peak hour due to the volume of traffic exiting I-280 via the off-ramp.
- Mariposa Street and the I-280 Southbound On-ramp (Intersection #44) operates at LOS E and LOS F during the AM and PM peak hours, respectively, due to the high conflicting volumes on east- and westbound Mariposa Street attempting to access I-280 via the Southbound On-ramp.

### 7.14.2.3 Transit Network

The Mission Bay campus site is well-served by public transit, both local and regional. Local service is provided by the Muni bus and light rail lines. Regional service is provided by BART, AC Transit, Golden Gate Transit, SamTrans, and Caltrain. In addition, there are two shuttle systems that provide service to the Mission Bay campus site: the UCSF shuttle system, and two shuttle lines operated by the Mission Bay Transportation Management Association (MBTMA). These shuttles supplement Muni transit service and provide direct connections to UCSF-operated facilities throughout San Francisco and the Powell Street BART station. According to the most recent transportation commute survey, approximately 20% of those traveling to and from the campus site use public transit, while another approximately 30% rely on UCSF shuttles to get to and from the campus site.

#### ***Local Transit***

**San Francisco Muni.** San Francisco Municipal Railway (Muni) provides transit service within the City and County of San Francisco, including bus (both diesel and electric trolley), light rail (Muni Metro), cable car and electric streetcar lines. Muni operates three bus and rail lines in the Mission Bay campus site (see the Transportation Impact Study (TIS) in Appendix G for details about these transit lines).

**TABLE 7.14-1  
EXISTING PEAK-HOUR INTERSECTION LEVEL OF SERVICE (LOS) – MISSION BAY**

<b>Intersection</b>	<b>Traffic Control<sup>a</sup></b>	<b>Peak Hour</b>	<b>Delay (seconds)<sup>b</sup></b>	<b>LOS<sup>c</sup></b>
24. King Street / Third Street	Signal	AM PM	46 <b>70</b>	D <b>E</b>
25. King Street / Fourth Street	Signal	AM PM	43 53	D D
26. Brannan Street / Seventh Street	Signal	AM PM	14 25	B C
27. Channel Street / Third Street	Signal	AM PM	40 30	D C
28. Channel Street / Fourth Street	Signal	AM PM	15 16	B B
29. Mission Rock Street / Third Street	Signal	AM PM	37 29	D C
30. Mission Bay Boulevard North / Third Street	Signal	AM PM	17 16	B B
31. Mission Bay Boulevard South / Third Street	Signal	AM PM	23 20	C B
32. Mission Bay Drive / Owens Street	Roundabout	AM PM	<10 <10	A A
33. Mission Bay Drive / Seventh Street	Signal	AM PM	20 22	C B
34. 16th Street / Third Street	Signal	AM PM	36 31	D C
35. 16th Street / Fourth Street	Signal	AM PM	26 27	C C
36. 16th Street / Owens Street	Signal	AM PM	32 30	C C
37. 16th Street / Seventh Street	Signal	AM PM	43 44	D D
38. 16th Street / Rhode Island Street	Signal	AM PM	15 13	B B
39. 16th Street / Vermont Street	Signal	AM PM	19 15	B B
40. 16th Street / Potrero Avenue	Signal	AM PM	27 35	C C
41. Mariposa Street / Third Street	Signal	AM PM	<b>52</b> 28	<b>D</b> C
42. Mariposa Street / Fourth Street	Signal	AM PM	<10 11	A B
43. Mariposa Street / I-280 Northbound Ramps	Signal	AM PM	<b>73</b> 31	<b>E</b> C
44. Mariposa Street / I-280 Southbound Ramps	SSS	AM PM	<b>&gt;50</b> <b>&gt;50</b>	<b>F</b> <b>F</b>

<sup>a</sup> AWS = All-way stop controlled; SSS = Side Street stop controlled; Signal = Signal controlled

<sup>b</sup> Delay reported as seconds per vehicle. For signalized intersections, a combined weighted average delay for the various movements within the intersection is reported. For SSS intersections, the highest average delay for an approach is reported. For AWS intersections, the combined weighted average delay of the intersection is reported, followed by the highest average delay for an approach (indicated in parentheses).

<sup>c</sup> For signalized intersections, LOS based on average intersection delay, based on the methodology in the Highway Capacity Manual, 2000. For unsignalized intersections, LOS is based on the worst approach, which for AWS is indicated in parentheses.

<sup>d</sup> **Bold** indicates unacceptable operations per UCSF LOS standards

SOURCE: Fehr & Peers, 2014.

The Transit Effectiveness Project (TEP) serves as both a thorough review of and repositioning of San Francisco's public transit system, initiated by SFMTA in collaboration with the City Controller's Office. The TEP is aimed at improving reliability, reducing travel times, providing more frequent service and updating Muni bus routes and rail lines to better match current travel patterns. TEP recommendations include new routes and route realignments, more service on busy routes, and elimination or consolidation of certain routes or route segments with low ridership. The TEP recommendations were unanimously endorsed by the SFMTA Board of Directors in October 2008, for environmental impact review. The initial TEP recommendations were revised based on public feedback on the draft TEP environmental impact report (TEP EIR). The TEP EIR was certified on March 27, 2014, and the SFMTA Board of Directors approved most of the Service Improvements and portions of the Transit Travel Time Reduction Proposals on March 28, 2014.<sup>19</sup> The TEP project will be implemented based on funding and resource availability. The TEP Implementation Strategy anticipates that many of the improvements will be implemented sometime between Fiscal Year 2014 and Fiscal Year 2019, subject to funding sources and resource availability.<sup>20</sup> The changes proposed by the TEP for routes near the Mission Bay campus site are described in the TIS (Appendix G).

The Central Subway Project is the second phase of the Third Street light rail line (i.e., T Third), which opened in 2007. Construction of the underground segment from Bryant to Clay Street is currently underway, and the Central Subway will extend the T Third line northward from its current terminus at Fourth and King streets to a surface station south of Bryant Street and go underground at a portal under I-80. From there it will continue north to stations at Moscone Center, Union Square where it will provide passenger connections to the Powell Street Station and BART—and in Chinatown, where the line will terminate at Stockton and Clay streets. Construction of the Central Subway is scheduled to be completed in 2017, and revenue service is scheduled for 2019. This project would improve transit service between the Mission Bay campus site and Downtown.

### ***UCSF Shuttle System***

Shuttles to and from the Mission Bay campus site (Gold, Blue, Grey, Red, and Green) stop at loading zones along Fourth Street in front of the Koret Quad and in front of the parking lot located near Campus Way. These stops are designated by UCSF Transportation Services and reviewed/approved by SFMTA. A more-detailed description of the UCSF shuttle system serving the Mission Bay campus site area is provided in the TIS (Appendix G).

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<sup>19</sup> San Francisco Planning Department. 2014. TEP Final EIR, March 27, 2014, Available online at <http://tepeir.sfplanning.org>. Accessed April 3, 2014. Case No. 2011.0558E. The document and supporting information may also be viewed at the Planning Department, 1650 Mission Street, Suite 400, San Francisco, CA in case file 2011.0558E.

<sup>20</sup> San Francisco Municipal Transportation Agency. 2014. TEP Implementation Workbook, March 5, 2014, Available online at: [http://www.sfmta.com/sites/default/files/projects/TEP%20Implementation%20Plan%20-%20Section%201%20%282%29\\_1.pdf](http://www.sfmta.com/sites/default/files/projects/TEP%20Implementation%20Plan%20-%20Section%201%20%282%29_1.pdf). Accessed June 27, 2014.



### ***Mission Bay Shuttle System***

The Mission Bay Transportation Management Association (MBTMA), formed several years ago in conformance with mitigation measures identified in the *Mission Bay Subsequent EIR*, provides two shuttle bus route services (east and west) between Mission Bay and the Powell BART Station and the Fourth/King Caltrain Station; they are free of charge and open to all employees, residents, and visitors to the Mission Bay Redevelopment Area and the China Basin building (at 185 Berry Street). The west route serves Seventh and Owens streets, while the east route serves Third Street and Mission Bay Boulevard North and South; both operate at 15-minute intervals from 7:00 to 10:00 am and 3:45 to 8:15 pm.

#### **7.14.2.4 Pedestrian Circulation**

Based on the 2013 UCSF Transportation Commute Survey, approximately 6% of those traveling to and from the campus site walk and about 37% of all trips made by UCSF Mission Bay campus site employees and students to off-campus locations throughout the day are made by foot. Due to the developing nature of the Mission Bay neighborhood, pedestrian volumes are currently relatively low surrounding the campus site. Pedestrian activity is generally higher towards the center of the campus site along Fourth Street and the many pedestrian alleyways and plazas such as Gene Friend Way and Campus Way. Pedestrian activity is also higher around transit hubs such as the UCSF shuttle stop on Fourth Street south of Gene Friend Way and the T Third light rail stops on Third Street at Gene Friend Way.

Pedestrian facilities include sidewalks, crosswalks, curb ramps, and pedestrian signals. Within the campus site area, sidewalks generally exist on both sides of the street in most locations, and are generally 12 to 15 feet wide. There are sidewalk gaps along roadway frontages of the campus site that are currently under construction including the south side of Sixteenth Street between Seventh and Third Streets and the west side of Third Street between Sixteenth and Mariposa Streets. These sidewalk gaps will be closed upon completion of construction of the adjacent buildings. All intersections surrounding the campus site include standard painted crosswalks and directional curb ramps. Pedestrian median refuges are provided along Fourth Street to slow traffic and reduce the pedestrian exposure time while crossing the street. Pedestrian signals with count down timers are provided at all signalized intersections. In addition to the on-street pedestrian facilities, there are numerous public pedestrian alleyways and plazas that reduce the size of the city blocks for pedestrians. This provides a fine-grained pedestrian oriented network and reduces pedestrian walking distances throughout the campus site.

Field observations at the campus site indicate that pedestrians cross where Campus Way meets Owens Street into the Gladstone Institute building. This crossing is currently unmarked but is a popular route as this is the most direct path for pedestrians between the center of the campus site to the Starbucks adjacent to the Gladstone Institute building and destinations to the west along Sixteenth Street.

### 7.14.2.5 Bicycle Circulation

The topography within and around the Mission Bay campus site is flat, which facilitates easy bicycle travel. Based on the 2013 UCSF Transportation Commute Survey, approximately 7% of those traveling to and from the campus site bike. In addition, approximately 9% of trips made by UCSF Mission Bay employees and students to off-campus, non-UCSF locations throughout the day are made by bike. This is approximately three times greater than the bicycling mode share throughout San Francisco.

The following bicycle facilities are located within or near the Mission Bay campus site:

- **King Street** is part of San Francisco Bike Route 5 and is a short east-west bike route that travels in front of AT&T Park between Second and Third streets with Class II bicycle lanes. The bicycle lane ends mid-way between Second and Third streets, and turns into a Class III facility with shared-lane (“sharrow”) markings. The route ends at Third Street.
- **Sixteenth Street** is part of San Francisco Bike Route 40 and is an east-west bike route that extends from Terry A. François Boulevard to Kansas Street. Between Third Street and Kansas Street, 16th Street has Class II bicycle lanes in both directions. Between Terry A. François Boulevard and Third Street, Sixteenth Street is currently designated as a Class III bicycle facility, and will be upgraded to a Class II facility as a part of the Mission Bay South Infrastructure Plan.
- **Mariposa Street** is part of San Francisco Bike Routes 7 and 23 and is an east-west bike route that extends from Illinois Street to Mississippi Street as a Class III bicycle facility with “sharrow” markings. At its eastern terminus, Mariposa Street connects to the Class II bicycle lanes on Terry A. François Boulevard, while on its western terminus it connects to the Class II bicycle lanes that continue north on Mississippi Street.
- **Third Street** is San Francisco Bike Route 5 and is a short north-south bike route that extends from King Street to Terry A. François Boulevard and is designated as a Class III bicycle facility with “sharrows”. At its southern terminus, Third Street connects to the Class II bicycle lanes on Terry A. François Boulevard.
- **Fourth Street** is a north-south bike route that extends from Berry Street to Sixteenth Street. Fourth Street is designated as a Class III bicycle facility as it crosses Mission Creek until Channel Street, south of which it has Class II bicycle lanes. The Fourth Street bicycle lanes provide the primary bicycle access through the Mission Bay campus site.
- **Seventh Street** is part of San Francisco Bike Route 23 and is a north-south bicycle route that extends from Brannan Street to Sixteenth Street with Class II bicycle lanes.
- **Mississippi Street** is part of San Francisco Bike Route 23 and is a north-south bike route that extends from Sixteenth Street to Mariposa Street with Class II bicycle lanes.
- **Mission Bay Drive** is an east-west bike route that extends from the Mission Bay Circle to Seventh Street. It is designated as a Class II bicycle facility that provides bicycle access across the Caltrain tracks into the Mission Bay campus site.

The San Francisco Bike Plan (June 2009) (“Bike Plan”) includes a planned bikeway near/along Mission Creek between Fourth Street and Harrison Street, which is listed as a long-term project in the Bike Plan.

Bicycle counts indicate the most popular bicycling route through the campus site is Fourth Street, where between 40 and 50 bicyclists were observed during the AM and PM peak hours. Campus Way is also a popular connection into the campus site from Sixteenth Street, with 10-20 bicyclists observed crossing Owens Street at Campus Way during the AM and PM peak hours.

Bicycle racks are provided throughout the Mission Bay campus site in front of campus buildings, on-street, and within the Owens Street garage. Popular bicycle parking locations, such as the gym, were observed to be nearly fully occupied during a site visit in February 2014. In an effort to increase bike parking here at the Mission Bay campus site to meet the growing demand, while also taking into account the feedback received from bicyclists, UCSF has since redesigned and expanded the bike parking throughout the campus site. This included new racks that double the amount of bike parking available in each area of installation, while providing equal access to all bicycle frame shapes and sizes.

#### **7.14.2.6 Loading Conditions**

The Mission Bay campus site has both service vehicle and passenger loading. There are eight off-street service vehicle loading facilities serving the existing uses on the campus site. Passenger and service vehicles may also load on-street at marked zones on Fourth Street and Nelson Rising Lane.

Based on 2010 monthly data, the Helen Diller Cancer Research building receives approximately 100 deliveries each month, resulting in approximately three to four deliveries per day. The four loading spaces are sufficient for existing operations. The Rutter Center rarely expects deliveries for special events. On occasion, an event may require delivery of conference materials. Daily deliveries are typical for the Café and laundry services, resulting in a minimum of three deliveries per day. The two loading spaces are sufficient for existing operations.

The loading area at Genentech Hall, monitored by security guards, receives approximately 20 deliveries each day for Genentech Hall and the adjacent Byers Hall. The six loading spaces are comprised of four dock spaces and two small delivery van spaces. Based on the existing delivery operations, the six spaces are sufficient for current operations.

In general, existing loading areas provide a sufficient amount of space for passenger and vehicle loading based on feedback from UCSF Facilities Services. No delivery vehicles were observed double parking or using other facilities. Some passenger loading vehicles used empty metered parking spots for pick-up and/or drop-off because of their proximity.

Future loading areas may be provided at the Research CUP/EH&S Building. The Third Street Garage may include some loading spaces that are currently used for permit parking and UCPD emergency supplies. Mission Hall is not anticipated to include an off-street loading area. UCSF

Facility Services assume Campus Way, an adjacent private street, would be marked with loading areas similar to the on-street loading zones on Nelson Rising Lane.

### **7.14.2.7 Parking Conditions**

#### ***On-Street Parking***

Most on-street parking provided in the vicinity of the Mission Bay campus site is regulated with a combination of two-hour, four-hour and unlimited time meters; exceptions include portions of Terry François Boulevard, Mission Bay Boulevard North and South, Sixteenth Street, and Mariposa Street. Parking limits are generally in effect between 9:00 AM and 6:00 PM, with longer hours (until 10:00 PM). Parking is prohibited on Sixteenth Street, west of Third Street; in addition, portions of Mariposa and Illinois streets have baseball game-day-only tow-away parking prohibitions.

Mission Bay experiences a high parking utilization on most streets, including those with lower time limits. The streets that are surrounded by finished construction and occupied buildings have low parking availability, especially on weekday days. On other streets where parking demand is managed by two-hour time limits, very few of the parking spaces are used, which is an inefficient use of the existing parking supply. SFMTA, through its SFPark program, is implementing changes to the parking rates and time limits in the Mission Bay and Dogpatch neighborhoods to better manage and operate the existing on-street parking supply.

Overall on-street parking occupancy is 48% during the mid-morning period (10:00 AM – 12 Noon) and 89% during the midday period (12 Noon – 2:00 PM), while the late evening period (6:00 PM – 8:00 PM) occupancy is 61% during a baseball game, and 24% on a no-event day. Although, as expected, the street parking occupancy in the late evening is higher when a game takes place at AT&T Park, it is not as high as during the midday, which represents the peak parking demand period.

#### ***Off-Street Parking***

The Mission Bay campus site currently has almost 1,600 parking spaces located in the 1630 Third Street Garage, 1675 Owens Street Community Center Garage, and in three surface parking lots. They all offer a combination of public, patient and UCSF-only permitted parking spaces. Non-UCSF-owned off-street public parking also is available at the 1670 Owens Street Garage (approximately 800 spaces) and at the 450 South Street Garage (about 1,400 spaces).

Overall off-street parking occupancy is 19% during the morning period and 69% during the midday period, while the overall occupancy in the evening is 41%. The overall parking occupancy at the UCSF parking facilities is substantially higher than at the other garages, reaching 85% at midday, the peak parking demand period. An occupancy above 90 percent, such as at the Third Street garage, typically represents that the facility has reached its effective capacity. Similar to the on-street parking occupancy conditions described above, the off-street parking occupancy in the late evening when a game takes place at AT&T Park is not as high as during the midday period.

## 7.14.3 Transportation and Traffic – Mission Bay Campus Site Impacts and Mitigation Measures

### 7.14.3.1 Impact Methodology

#### ***Analysis Approach***

The transportation analysis in this EIR considers operations-related issues related to vehicular traffic, transit facilities, pedestrians, bicyclists, and parking, as well as construction-related impacts, associated with the 2014 LRDP at the Mission Bay campus site. To determine potential impacts on the transportation system, it was first necessary to establish the background transportation conditions for the horizon years. Future year background conditions for this project are based on the countywide travel demand model developed and maintained by the San Francisco County Transportation Authority (SFCTA).

Vehicle, pedestrian, bicycle, and transit travel demand associated with the 2014 LRDP was estimated based on factors developed from extensive surveys conducted at existing UCSF facilities over the past few years, and through the use of a four-step process: trip generation, mode split, trip distribution, and trip assignment. In the first step, the number of person trips generated by the 2014 LRDP was estimated on a daily, AM and PM peak hour basis. Next, the person trips were assigned to different modes of travel (automobile, transit, UCSF shuttle, bicycles, etc.). Then, the geographic distribution of the trip origins and destinations was predicted, and finally, project trips for each mode were assigned to specific streets, UCSF shuttle routes and transit lines along the transportation network.

#### ***Travel Demand Estimates***

The 2014 LRDP proposes various levels of growth at each campus site through the plan horizon year of 2035. Some known projects, such as Phase 2 of the Medical Center in Mission Bay, are currently projected to occur between 2035 and 2040, after the 2014 LRDP horizon year, but have been incorporated into the travel demand estimates presented in this document. As such, the transportation analysis represents a conservative approach as it includes development five years past the 2015 LRDP horizon, to the year 2040. Each campus site is expected to increase in population through the 2014 LRDP horizon year, with the highest growth expected at the Mission Bay site.

The Mission Bay campus site is estimated to generate a total of approximately 38,688 new daily person trips by 2040. That number of trips reflects the total number of additional person trips that would be generated by the increased campus site population, but it does not reflect trips associated with the internal trips expected to occur within the campus site. An internal trip is a trip with its origin and destination within the same campus site (e.g., a researcher at the Parnassus Heights campus site traveling from her office to the Millberry Union to eat lunch and returning back to her office afterwards). Taking those internal trips into account, the Mission Bay campus site is estimated to generate approximately 33,749 new external daily person trips by 2040. An interim trip generation assessment was also conducted at the Mission Bay campus site only for

the year 2015, when Phase 1 of the Medical Center project is expected to open. With the opening of Phase 1 of the Medical Center, there would be an increase of about 9,420 external daily person trips.

“Mode choice” is the designation of trips to the various means that people use to travel, such as automobile, transit, walking, bicycling, taxi, or other mode of transportation. The determination of the mode of transportation used in trips to and from the Mission Bay campus site would depend on many characteristics of the trip (e.g., the population group that is, faculty, staff, vendor, patient, visitor), the type of trip (work, visit), and the specific site. Travel mode split and average vehicle occupancy assumptions were based on information collected by UCSF and its consultants, with the estimates of the future modal share based on the current modal splits for each campus site by population type, which take into account the transit accessibility, UCSF shuttle service, parking availability, and TDM measures being provided at each campus site; this approach is consistent with the travel demand methodologies established by the SF Planning Department. The majority of Mission Bay campus site trips arrive/depart the campus site by driving and public transit. The above-cited external daily person trips generated by the Mission Bay campus site (by 2015 and 2040) are expected to use the following travel modes:

	<u>2015</u>	<u>2040</u>
Auto Drive Alone	3,757	12,872
Drop-Off/Taxi	282	988
Carpool/Vanpool	819	2,649
Public Transit	2,097	7,472
UCSF Shuttle	934	5,256
Bicycle/Motorcycle	557	1,856
Walk	974	2,656

The auto drive alone, drop-off/taxi, carpool/vanpool, and UCSF shuttle person trips would generate about 4,051 and 14,974 daily vehicle trips in 2015 and 2040, respectively.<sup>21</sup>

By 2015, approximately 680 new vehicle trips would occur during the AM peak hour, and about 490 new vehicle trips would occur during the PM peak hour. By 2040, approximately 2,880 new vehicle trips would occur during the AM peak hour, and about 2,410 new vehicle trips would occur during the PM peak hour.

Regarding increased transit ridership, with a majority of transit users using Muni, BART and the UCSF shuttle bus service, by 2015, there would be approximately 690 new transit riders in the AM peak hour and 560 new transit riders in the PM peak hour. By 2040, there would be approximately 3,180 new transit riders in the AM peak hour and 2,920 new transit riders in the PM peak hour.

The new trips associated with the Mission Bay campus site were assigned to San Francisco and regional origins/destinations, including the four San Francisco Superdistricts (northeast,

<sup>21</sup> Vehicle trips are calculated based on the following formula: Drive Alone trips + (Drop-off trips x 2) + (Carpool trips / 2) + (Vanpool trips / 10) + (UCSF Shuttle / 15).

northwest, southeast, and southwest quadrants of the City), the East Bay, the North Bay, and the South Bay, as well as areas outside the Bay Area region. Information collected by UCSF as part of its yearly commute surveys of employees, patients, visitors and residents was used in this analysis.

### 7.14.3.2 Construction Period Impacts

**Impact TRAF-MB-1: Implementation of the 2014 LRDP on the Mission Bay campus site could cause substantial adverse impacts to traffic flow, circulation and access as well as to transit, pedestrian, and parking conditions during construction activities. (Potentially Significant)**

Impacts associated with demolition and construction activities that would occur as the 2014 LRDP is implemented are addressed in Chapter 5 (Impact TRAF-LRDP-1). That 2014 LRDP Plan-Level analysis determined that although construction activities would be temporary, construction impacts would be considered potentially significant given the magnitude of LRDP development over the course of many years and need for on-going coordination and monitoring. The potentially significant determination would apply to the LRDP elements of the Mission Bay campus site. The implementation of LRDP **Mitigation Measure TRAF-LRDP-1: Construction Coordination and Monitoring Measures** would reduce construction-period impacts to less-than-significant levels.

**Mitigation Measure: Implement Mitigation Measure TRAF-LRDP-1**

**Significance after Mitigation:** Less than Significant

### 7.14.3.3 Operational Impacts

**Impact TRAF-MB-2: Implementation of the 2014 LRDP on the Mission Bay campus site would increase traffic at intersections on the adjacent roadway network. (Less than Significant)**

**Table 7.14-2** presents a summary comparison of Existing and Existing plus Plan intersection LOS for the weekday AM and PM peak hours. The Existing Plus LRDP conditions reflects modifications to the lane geometries and signal timing plans proposed by both the LRDP and foreseeable (funded) infrastructure improvements for several study intersections surrounding and within the Mission Bay Campus Site. In general, the addition of 2014 LRDP-generated traffic would result in small changes in the average delay per vehicle at most study intersections, with the exception of those that serve as major access points on Sixteenth Street. Most study intersections would continue to operate at the same service levels as under Existing conditions. The great majority of the study intersections operate at acceptable levels of service (LOS D or better) under both AM and PM peak hour conditions under Existing conditions, and would continue to operate acceptably under Existing Plus 2014 LRDP conditions.

**TABLE 7.14-2  
EXISTING AND EXISTING PLUS 2014 LRDP  
PEAK-HOUR INTERSECTION LEVEL OF SERVICE (LOS) – MISSION BAY**

Intersection	Traffic Control <sup>a</sup>	Peak Hour	Existing		Existing plus 2014 LRDP	
			Delay (sec.) <sup>b</sup>	LOS <sup>c</sup>	Delay (sec.) <sup>b</sup>	LOS <sup>c</sup>
24. King Street / Third Street	Signal	AM PM	46 <b>70</b>	D E	53 <b>73</b>	D E
25. King Street / Fourth Street	Signal	AM PM	43 53	D D	44 53	D D
26. Brannan Street / Seventh Street	Signal	AM PM	14 25	B C	26 53	C D
27. Channel Street / Third Street	Signal	AM PM	40 30	D C	44 48	D D
28. Channel Street / Fourth Street	Signal	AM PM	23 16	C B	26 17	C B
29. Mission Rock Street / Third Street	Signal	AM PM	37 29	D C	39 41	D D
30. Mission Bay Boulevard North / Third Street	Signal	AM PM	17 16	B B	19 17	B B
31. Mission Bay Boulevard South / Third Street	Signal	AM PM	23 20	C B	23 22	C C
32. Mission Bay Drive / Owens Street	Round-about	AM PM	<10 <10	A A	<10 <10	A A
33. Mission Bay Drive / Seventh Street	Signal	AM PM	20 22	C B	34 37	C D
34. 16th Street / Third Street	Signal	AM PM	36 31	D C	49 35	D D
35. 16th Street / Fourth Street	Signal	AM PM	26 27	C C	42 30	D C
36. 16th Street / Owens Street	Signal	AM PM	32 30	C C	23 32	C C
37. 16th Street / Seventh Street	Signal	AM PM	43 44	D D	53 46	D D
38. 16th Street / Rhode Island Street	Signal	AM PM	15 13	B B	33 13	C B
39. 16th Street / Vermont Street	Signal	AM PM	19 15	B B	42 16	D B
40. 16th Street / Potrero Avenue	Signal	AM PM	27 35	C C	43 53	D D
41. Mariposa Street / Third Street	Signal	AM PM	52 28	D C	51 40	D D
42. Mariposa Street / Fourth Street	Signal	AM PM	<10 11	A B	20 19	B B
43. Mariposa Street / I-280 Northbound Ramps	Signal	AM PM	<b>73</b> 31	<b>E</b> C	34 33	C C
44. Mariposa Street / I-280 Southbound Ramps	SSS	AM PM	<b>&gt;50</b> <b>&gt;50</b>	<b>F</b> <b>F</b>	<10 14	A B

<sup>a</sup> AWS = All-way stop controlled; SSS = Side Street stop controlled; Signal = Signal controlled

<sup>b</sup> Delay reported as seconds per vehicle. For signalized intersections, a combined weighted average delay for the various movements within the intersection is reported. For SSS intersections, the highest average delay for an approach is reported. For AWS intersections, the combined weighted average delay of the intersection is reported, followed by the highest average delay for an approach (indicated in parentheses).

<sup>c</sup> For signalized intersections, LOS based on average intersection delay, based on the methodology in the Highway Capacity Manual, 2000. For unsignalized intersections, LOS is based on the worst approach, which for AWS is indicated in parentheses.

<sup>d</sup> **Bold** indicates unacceptable operations per UCSF LOS standards

SOURCE: Fehr & Peers, 2014.



The following study intersections (listed by intersection number in Table 7.14-2) currently operate at unacceptable levels of service (LOS E or F):

- 24. King Street / Third Street (PM peak hour)
- 43. Mariposa Street / I-280 Northbound Ramp (AM peak hour)
- 44. Mariposa Street / I-280 Southbound Ramp (AM and PM peak hours)

The 2014 LRDP would add 36 vehicle trips to the critical eastbound left turn movement (LOS F) during the PM peak hour at the King Street/Third Street (Intersection #24) signalized intersection, which represents a four percent increase from Existing conditions. The 2014 LRDP would add two vehicle trips to the westbound through movement (LOS E), which is an increase of less than one percent. Those percent increases would be less than the threshold of significance, and the 2014 LRDP's contribution (and impact) would be considered less-than-significant.

The reconfiguration of Mariposa Street/I-280 Northbound Ramp (Intersection #43), and signalization and reconfiguration of Mariposa Street/I-280 Southbound Ramp (Intersection #44) would result in improved service levels at these intersections from unacceptable existing levels of service (LOS E or F) to acceptable levels of service (LOS D or better) under Existing Plus LRDP conditions. Therefore, the LRDP would have a less-than-significant impact at these three intersections.

**Mitigation:** None required.

**Impact TRAF-MB-3: Implementation of the 2014 LRDP on the Mission Bay campus site would increase transit ridership demand. (Less than Significant)**

As described in 7.14.3.1 above, by 2015, about 690 and 560 new transit trips are expected during the AM and PM peak hour, respectively, with a majority of transit users using Muni, BART and the UCSF shuttle bus service. By 2040, there would be approximately 3,180 new transit riders in the AM peak hour and 2,920 new transit riders in the PM peak hour.

**San Francisco Muni**

Existing Muni transit stops are located within a half-mile to the campus site and are accessible by walking. Major stop relocations adjacent to the campus site are not anticipated at this time. The TEP proposes to reduce headways for the T Third, and 10 Townsend (the latter to be renamed 10 Sansome). In addition, the TEP proposes to re-route the 22 Fillmore by continuing its route on Sixteenth Street between Kansas and Rhode Island streets to the Mission Bay campus site and reduce headways. Prior to this extension of the 22 Fillmore, the SFMTA proposes to implement a temporary motor coach service (preliminarily named the "55") between the campus site and the Sixteenth Street BART Station to coincide with the opening of Phase 1 of the Medical Center at Mission Bay. The route would follow Sixteenth Street between Mission Street to Third Street, and Third Street from Sixteenth Street to Mission Bay Boulevard North.

Once the estimated number of 2014 LRDP-generated Muni trips are added to the T Third and 10 Townsend, those Muni routes would continue to operate satisfactorily according to Muni

crowding standards.<sup>22</sup> The 22 Fillmore would operate at greater than 85% capacity utilization with the addition of 2014 LRDP-generated trips, but with the addition of the interim 55 Route, the combination of the 22 Fillmore and the 55 Route would operate at less than 85% capacity utilization during both the AM and PM peak hours.

The estimated number of 2014 LRDP-generated Muni trips traveling to and from the Mission Bay campus site would not require the expansion of transit service or facilities. Long-term funding for the 55 Route is uncertain, but if Muni were to discontinue the service, UCSF would replace the transit capacity with shuttle service adequate to fill the gap in transit service. Thus, this analysis includes the 55 Route as a de facto permanent service. Additionally, none of the specific proposals of the 2014 LRDP would reconfigure, or reduce access to, transit stops in a way that would degrade transit service to the campus site. Therefore, the 2014 LRDP's transit impact on Muni service would be considered less than significant.

### **Regional Transit**

In addition to Muni operations for travel within San Francisco, regional transit services such as BART, AC Transit, Caltrain, SamTrans, and Golden Gate Transit were considered for the analysis. Existing stations are located over a mile away and can access the Mission Bay campus site by Muni or UCSF and MBTMA shuttles. Major service changes are not anticipated in the near term.

The number of new 2014 LRDP-generated regional transit trips would not require the expansion of regional transit service or facilities. Therefore, the 2014 LRDP's transit impact on regional transit service would be considered less than significant.

### **UCSF and Mission Bay Transportation Management Association Shuttle**

The 2014 LRDP does not propose specific changes to shuttle service headways, although UCSF Transportation Services may change headways based on shifting shuttle demand as 2014 LRDP projects are constructed and occupied. With the opening of the Phase 1 of the Medical Center at Mission Bay, additional shuttle stops will be provided fronting the new hospital, but headways and service route changes are not anticipated at this time.

An additional estimated 540 AM peak-hour shuttle person trips and 520 PM peak-hour shuttle person trips, an approximately 90% and 185% increase in shuttle person trips during the AM and PM peak hours, respectively, are anticipated through the 2014 LRDP horizon year, and that increase would be accommodated by periodically expanded UCSF shuttle service as implemented by UCSF Transportation Services as part of the 2014 LRDP. Therefore, the 2014 LRDP's transit impact on UCSF Shuttle service would be considered less than significant.

**Mitigation:** None required.

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<sup>22</sup> Note that the 10 Inbound Townsend during the PM peak hour would operate at greater than 85% capacity utilization, both with and without the 2014 LRDP-generated trips, but the 2014 LRDP would not contribute to crowding on the line in a significant way.

**Impact TRAF-MB-4: Implementation of the 2014 LRDP on the Mission Bay campus site would not cause a substantial conflict with pedestrian facilities, or otherwise decrease the performance or safety of such facilities. (Less than Significant)**

The 2014 LRDP proposes the extension of several streets through the campus site including Nelson Rising Lane east of Fourth, Fifth, and Sixth streets south of Mission Bay Boulevard South, and Owens Street south of Sixteenth Street. These streets would be designed with sidewalks, curb cuts, and crosswalks that minimize conflicts between vehicles and pedestrians and meet San Francisco's *Better Streets Plan* standards. In addition to these street extensions, UCSF is upgrading existing sidewalks along Sixteenth Street and constructing a new public pedestrian plaza on Fourth Street between Sixteenth and Mariposa streets in coordination with on-going construction. Beyond the campus site, no improvements to the pedestrian facilities in the area are proposed.

The 2014 LRDP would add approximately 2,840 and 2,440 pedestrian trips (mostly transit-access trips) to the surrounding streets during the AM and PM peak hours, respectively. The new pedestrian trips would be distributed along the many roadways and pedestrian alleyways crossing through the campus site. Pedestrian trips leaving the campus site to residential and commercial destinations would primarily occur along Sixteenth and Mariposa streets to the west, along Third and Minnesota streets to the south, and along Third, Fourth, and Seventh streets to the north. Muni transit riders would walk along Third Street to the T Third light rail line stops on Third Street and Gene Friend Way or Mariposa Street, and along Sixteenth and Connecticut streets to the 22 Fillmore stop at Eighteenth and Connecticut streets. Caltrain riders would walk north along Fourth Street to the station at Fourth and King streets. UCSF and Mission Bay TMA shuttle riders would stay within the campus site and use shuttle stops located on Fourth or Owens streets.

The above-described TEP improvements would, among other things, shorten the walking distance for transit riders and reduce travel time to the transit stops for each of these routes. Although pedestrian volumes are currently relatively low due to the developing nature of the Mission Bay neighborhood, existing pedestrian facilities are designed to accommodate higher pedestrian volumes than the 2014 LRDP would generate in the future, including the 12- to 15-foot-wide sidewalks and crosswalks.

The immediate area surrounding the Mission Bay campus site includes existing or proposed pedestrian facilities that provide access to nearby neighborhoods, commercial uses, and transit stops. The 2014 LRDP would not create substantial conflicts between pedestrians and autos, bicyclists, or transit vehicles. Therefore, the 2014 LRDP's impact to pedestrian circulation and facilities at the Mission Bay campus site would be less than significant.

**Mitigation:** None required.

**Impact TRAF-MB-5: Implementation of the 2014 LRDP on the Mission Bay campus site would not cause a substantial conflict with bicycle facilities, or otherwise decrease the performance or safety of such facilities. (Less than Significant)**

The area around the Mission Bay campus site has a number of streets with bicycle lanes, and streets designated as bicycle routes, including King Street, Sixteenth Street, Mariposa Street,

Fourth Street, and Seventh Street. The Mission Bay campus site is within convenient bicycling distance of residential and commercial areas in surrounding neighborhoods. The 2014 LRDP does not propose changes to the bicycle circulation network surrounding the Mission Bay campus site. The San Francisco Bike Plan includes (as a long-term project) a planned bikeway near/along Mission Creek between Fourth and Harrison streets. In addition, an expansion of the Bay Area Bike Share program currently is being evaluated and could include a new station at Fourth Street near Rock Hall on the Mission Bay campus site. The proposed implementation of this expansion is the fall of 2014.

The 2014 LRDP is expected to increase bicycle demand in the area by approximately 276 and 214 new trips during both the AM and PM peak hours, respectively. These trips would primarily occur on designated bicycle facilities, which connect to surrounding neighborhoods through the San Francisco Bike Route network. The increased bicycle demand would be accommodated through the existing on-campus site parking supply in addition to new bicycle parking locations in future buildings and the potential Bay Area Bike Share station. In the near-term, UCSF plans to add one additional bicycle cage and 10 bicycle racks at the Mission Bay campus site, which would increase bicycle parking capacity and generally improve bicycle conditions on the campus site.

The expected increase in bicycle traffic would not represent a level that would adversely affect bicycle facilities on the campus site, nor would the 2014 LRDP create substantial conflicts between bicyclists and pedestrians, autos, or transit vehicles. Therefore, the 2014 LRDP's impact to bicycle circulation and facilities at the Mission Bay campus site would be less than significant.

**Mitigation:** None required.

**Impact TRAF-MB-6: Implementation of the 2014 LRDP on the Mission Bay campus site would increase loading demand. (Less than Significant)**

The San Francisco Planning Code requires that land uses, such as medical offices and hospitals, provide off-street loading spaces according to a prescribed schedule. The required loading supply was estimated based on that Code schedule, and the existing and proposed loading supply exceeds the Code requirement at the Mission Bay campus site.

The demand for loading spaces through the 2014 LRDP horizon year was calculated based on surveys from the Parnassus Heights campus site and methods described in the City's *Transportation Impact Analysis Guidelines for Environmental Review*. The existing peak hourly demand is estimated to be about 34 spaces on the Mission Bay campus site, and the 2014 LRDP horizon year peak hourly demand is estimated to be about 77 spaces.

It is expected that the estimated 2014 LRDP loading supply should be adequate for the estimated demand, but as mentioned above, the campus sites are unique and should be monitored over time. This is considered a less-than-significant impact if UCSF continues to monitor loading operations and provide appropriate supply with guidance from the San Francisco Planning Code and existing operations.

In addition to freight loading, there is a demand for passenger loading spaces, and in order to estimate passenger loading demand, the drop-off/taxi service mode split and a portion of the carpool mode split percentages presented in 7.14.3.1 above was applied to the peak AM and PM peak-hour person trips. The peak-hour passenger loading demand is estimated to increase by approximately 270% at the Mission Bay campus site. The major contributor of the increase in anticipated passenger loading demand is the opening of Phase 1 and 2 of the UCSF Medical Center at Mission Bay.

The existing passenger loading supply is sufficient for the estimated 2014 LRDP loading needs during the PM peak hour and in need of an additional five feet to be sufficient for the AM peak hour. As part of the LRDP, additional passenger loading supply will be implemented in the form of driveway loops in front of the Women's, Cancer, and Children's Hospital on the south side of campus. Visitors and patrons would access the new northern passenger loading loop from Sixteenth Street, and the new southern passenger loading loop from Mariposa Street.

The combination of the new passenger loading loops at the Women's, Cancer, and Children's Hospital and adequate existing supply will be sufficient to accommodate the estimated 2014 LRDP demand; therefore, the 2014 LRDP's impact to passenger loading is considered less than significant.

**Mitigation:** None required.

**Impact TRAF-MB-7: Implementation of the 2014 LRDP on the Mission Bay campus site would increase parking demand. (Less than Significant)**

Under the 2014 LRDP, additional parking would be provided on the Mission Bay campus site, as warranted by the proposed development (i.e., the number of any new parking spaces would be determined as projects are proposed). It is estimated that the number of parking spaces owned by UCSF at the Mission Bay campus site would increase by approximately 1,050 spaces by 2015, and by an additional 2,750 spaces (total of 3,800 spaces) by 2040. The following list describes the currently proposed changes in parking supply:

- The 621-space garage structure at Owens Street, south of Sixteenth Street, would open for service to the public in February 2015, as the Phase 1 Medical Center becomes operational.
- A new 429-space surface parking lot adjacent to the above-cited new Owens Street garage would be built, which also would open in conjunction with the Phase 1 Medical Center Project.
- Approximately 160 existing surface parking spaces, located in the North Campus, would be eliminated as the existing parking lots are replaced by new buildings.
- A new parking garage would be built on Block 18B in the North Campus containing approximately 1,540 parking spaces. The ground floor of the garage would be sized to accommodate about 60 UCSF shuttle buses.
- About 500 new spaces would be provided within Blocks 33 and 34, east of Third Street.

- An expansion of the Owens Street garage would be constructed as part of the second phase of the Medical Center, sometime after 2035, to replace the 429-space Phase 1 surface lot that would be replaced by new hospital buildings, and to accommodate the additional expected demand. The new structure would be built to the south of the Phase 1 garage and could have a capacity of up to 1,300 spaces.

As described previously, the available on-street parking is well-occupied at the Mission Bay campus site, and has therefore not been considered as a resource for the future parking utilization analysis, which has focused instead on the availability of off-street parking.

By 2015, with the opening of the Phase 1 Medical Center and the completion of the Mission Hall Building, parking utilization at the UCSF parking facilities would be below, but close to, its maximum capacity, with a potential campus site surplus of about 230 spaces.

Assessment of the growth of peak parking demand under the 2014 LRDP shows that by 2040 the future parking utilization at the Mission Bay campus site would be approximately 430 spaces above the future planned supply. However, as part of the implementation of the 2014 LRDP, UCSF would monitor parking demand at each phase of development and adjust parking supply as demand warrants. Should the demand for parking exceed on-site supply, priority for on-site parking would be given to patients and visitors, and if necessary, UCSF would look to secure off-site parking to satisfy staff demand. That additional parking supply could be on the site, if available, or elsewhere in the vicinity. As the sites develop, UCSF (through its Campus Transportation Services Offices) will make efforts to educate faculty, staff and students about transit options in order to reduce auto usage and parking demand. Thus, the parking impacts under the 2014 LRDP would be less than significant.

**Mitigation:** None required.

### **LRDP Variant Conditions**

As described in Section 3.8.2.3 of Chapter 3, *Project Description*, UCSF is considering the development of clinical uses for a portion of the Blocks 33 and 34 site. The amount of clinical space that may be developed has not yet been determined, but up to half of the site (about 250,000 gsf of clinical space) could be developed, with the remainder as research/office use.

Travel Demand. Under the LRDP Variant, the Mission Bay campus site would generate approximately 2% more vehicle trips during both the AM and PM peak hours when compared to the 2014 LRDP. The travel demand for other travel modes (walking, bicycling, and transit) for the Mission Bay campus site also would be about 2% higher compared to the 2014 LRDP. The estimated increase in loading demand (service and passenger) and parking demand at the Mission Bay campus site under the LRDP Variant would be similar, if not slightly more due to the introduction of clinical space, to that generated by the 2014 LRDP.

Existing Plus LRDP Variant Impacts. All the study intersections for the Mission Bay campus site would continue to operate at the same levels of service as under Existing Plus 2014 LRDP

conditions, and like for the 2014 LRDP, the LRDP Variant would have a less-than-significant traffic impact.

Transit service conditions (for Muni, regional transit, and UCSF and MBTMA shuttle buses) associated with the LRDP Variant would be similar to those for the 2014 LRDP, albeit with slightly (about 2%) higher ridership levels than under the 2014 LRDP. Like for the 2014 LRDP, the LRDP Variant would have a less-than-significant transit impact. The T Third would operate at greater than 85% capacity utilization with the addition of LRDP Variant-generated trips under the AM peak hour in the outbound direction (towards UCSF). While this is not considered a significant impact per UCSF transit standards, this would exceed Muni's crowding standards. Therefore, the following Improvement Measure has been identified:

Development of clinical uses on Blocks 33/34 is considered a “secondary use” under the *Mission Bay South Redevelopment Plan*, which requires findings by the Office of Community Investment and Infrastructure that the use is consistent with the *Mission Bay South Redevelopment Plan*. UCSF would continue to study the amount of clinical space proposed under the LRDP Variant, and would refine the proposal before bringing it forth to the City for approval. In refining the LRDP Variant, UCSF would consider reducing the size of the clinical facilities at Blocks 33/34 to a level that will reduce the transit ridership on the T Third to less than the Muni's capacity utilization of 85 percent.

Likewise, pedestrian, bicycle, loading (commercial and passenger), and parking impacts associated with the LRDP Variant, as for the 2014 LRDP, would be less than significant. Finally, similar to the 2014 LRDP, impacts associated with demolition and construction activities that would occur as the LRDP Variant is implemented at the Mission Bay campus site would be considered potentially significant. The implementation of LRDP **Mitigation Measure TRAF-LRDP-1: Construction Coordination and Monitoring Measures** would reduce construction-period impacts to less-than-significant levels.

## 7.15 Utilities and Service Systems

This section considers the setting and utilities and service system impacts of implementation of the 2014 LRDP at the Mission Bay campus site. The Regional Setting, Regulatory Considerations, Significance Standards and Analysis Methodology for analysis of potential effects of Utilities and Service Systems are contained in Section 4.15 of this EIR. The CEQA Significance Standards presented in Section 4.15.3 are used to evaluate the potential utilities and service systems impacts of all proposed 2014 LRDP activities.

The overall effects on water supply, wastewater treatment, storm drainage facilities, solid waste disposal and energy demand resulting from implementation of the 2014 LRDP were evaluated in Chapter 5, *2014 LRDP – Impacts and Mitigation Measures*. As discussed in Chapter 5, these overall effects would be less than significant. Impacts that are specific to the Mission Bay campus site are discussed below.

### 7.15.1 Utilities and Service Systems – Mission Bay Impacts and Mitigation Measures

**Impact UTIL-MB-1: There would be sufficient water supply infrastructure to serve 2014 LRDP development at the Mission Bay campus site. (Less than Significant)**

Engineering studies have determined that it is not necessary to replace and/or upsize City low pressure piping already constructed, as there is sufficient capacity in the pipe system to supply increased water demand in order to serve the proposed 2014 LRDP development at the Mission Bay campus site, including development on Blocks 33 and 34. However, in order to obtain required pressures within proposed buildings, water pumps may need to be installed. This would be determined at the time buildings are designed (Freyer & Laureta, Inc, 2013 and 2014). The impact would be less than significant.

There also is sufficient capacity in the Fire Protection Water Supply System to meet fire flow requirements for each proposed building, including development on Blocks 33 and 34 (Freyer & Laureta, 2013 and 2014). Additional campus fire protection water supply piping would need to be installed by UCSF per Exhibit 4, Low Pressure Water Exhibit, as described in the *UCSF Mission Bay Civil Master Plan*, adjacent to development blocks to serve future buildings (Freyer & Laureta, Inc, 2013). The impact would be less than significant.

**Mitigation:** None required.

**Impact UTIL-MB-2: There may be impacts related to wastewater infrastructure as a result of 2014 LRDP development at the Mission Bay campus site. (Potentially Significant)**

UCSF independent engineering studies based on pre-hospital sanitary sewer flows (original projects) have determined that it is not necessary to replace and/or upsize City and University sanitary sewer conveyance piping already constructed in order to serve the proposed growth at the



Mission Bay campus site, including development on Blocks 33 and 34. The City has not validated these studies and will still need to evaluate collection system capacities to ensure adequate capacity remains during detailed project design phase(s). However, sanitary sewer piping would need to be constructed to serve future development parcels. This does not deviate from the *UCSF Mission Bay Civil Master Plan* (Freyer & Laureta, Inc, 2013 and 2014).

The estimated peak flow increase to the pump station on Mission Bay Redevelopment Area Block P15 due to the University's proposed growth is 159 gallons per minute (0.23 million gallons per day), resulting in the need for pump station capacity of 6.63 million gallons per day. This is below the pumping capacity of the pump station. Based on engineering studies and original projections of demand at the UCSF campus to provide extra capacity for UCSF LRDP, the pump station can be modified without structural or piping modifications by replacing existing 25 horsepower (hp) pumps with 30 hp pumps. These more powerful pumps are physically the same size as the existing pumps and can be connected to the existing discharge piping. Replacement of existing pumps with 30 hp pumps would increase the pump station capacity to 5,100 gpm (7.34 million gallons per day) (Freyer & Laureta, Inc, 2013). However, these engineering studies' assumptions will need to be confirmed with the San Francisco Public Utilities Commission (SFPUC). The SFPUC has recently indicated that additional upgrades and modifications to the P15 pump station may include (1) replacement of existing pumps with larger pumps than those assumed above; (2) additional pumps and enlargement of the pump station wet well with associated controls; (3) modification of the force main; (4) odor control; (5) other modifications may be necessary for proper operations. (Michael Tran, SFPUC, August 7, 2014). However the University will only address pump capacity and not any pre-existing pump station deficiencies observed by the SFPUC.

The replacement of the P15 pumps proposed by UCSF would be subject to review and approval by the SFPUC. Because it is unknown at this time whether the SFPUC would approve this upgrade or require additional modifications to the P15 pump station, UCSF has conservatively concluded that potential improvements to the P15 pump station may be required that may also result in physical environmental effects.

The planned storm drain pump station on Block P23 (to be installed by FOCIL-MB, LLC/Mission Bay Development Group) would remove stormwater that is currently directed to the Mariposa Pump Station. Mariposa Pump Station is a combined sewer pump station, but it will be used to convey sanitary flows for the areas within Mission Bay, including the Phase 1 Medical Center at Mission Bay, when the storm drain pump station on Block P23 is complete. The new storm drain pump station on Block P23 would drastically reduce the volume of Mission Bay wet weather flow from entering the Mariposa Pump Station. Although Mission Bay wet weather flow would not be directed to the Mariposa Pump Station in the future (when the storm drain pump station on Block P23 is complete), the station must be operated with a clear distinction between wet and dry weather under strict State and Federal regulations, and thus not increase the actual dry weather capacity of the pump station.

However, the SFPUC has recently indicated to UCSF that average dry weather flows to the Mariposa Pump Station are exceeding previous projections and existing capacity for dry weather

flows, which in turn requires occasional use of the wet weather pumps to handle the increased dry weather flows. This flow increase is not a result of UCSF Mission Bay development since developed blocks in Mission Bay do not yet discharge the projected flow rate from blocks tributary to the Mariposa Pump Station, as defined in the *Mission Bay Sanitary Sewer Master Plan*. The SFPUC has further indicated to UCSF that the dry weather pump station may need to be upsized to handle increased demand in dry weather flows to the Mariposa Pump Station. The SFPUC is currently evaluating the adequacy of temporary measures such as pipe reconfiguration to handle existing and planned flows during the interim period between the opening of the Phase 1 Medical Center on February 1, 2015 and a permanent long term solution for Mariposa Pump Station and the associated growth in the pump station service area. (Michael Tran, SFPUC, August 1, 2014). It is not known at this time whether any pipe improvements downstream of the pump station has affected pump performance at this time.

Because it is unknown at this time whether the capacity of the Mariposa Pump Station and associated sanitary collection system are adequate to handle flows resulting from 2014 LRDP development at the Mission Bay campus site, UCSF has conservatively concluded that potential improvements to the pump station may be required that may also result in physical environmental effects.

**Mitigation Measure UTIL-MB-1:** UCSF will monitor sanitary sewer flows to the P15 pump station in congruence with on-going monitoring conducted by the SFPUC. If the SFPUC determines that improvements are required to increase the capacity of the P15 pump station as a result of development within the pump station basin, including 2014 UCSF LRDP development at the Mission Bay campus site, UCSF will contribute its fair share to SFPUC for the potential required pump capacity improvements.

UCSF will monitor sanitary sewer flows to the Mariposa Pump Station in congruence with on-going monitoring conducted by the SFPUC. If the SFPUC determines that improvements are required to increase the capacity of the Mariposa Pump Station as a result of development within the pump station basin, including 2014 UCSF LRDP development at the Mission Bay campus site, UCSF will contribute its fair share to SFPUC for the potential required improvements.

**Significance after Mitigation: Significant and Unavoidable.** Because potential improvements are outside UCSF jurisdiction to implement, the impact is considered significant and unavoidable even with the incorporation of the above-noted mitigation measures.

**Impact UTIL-MB-3: There would be sufficient storm drainage infrastructure to serve 2014 LRDP development at the Mission Bay campus site. (Less than Significant)**

The storm drain piping in the public streets surrounding and traversing the Mission Bay campus site is of sufficient size to collect planned 5-year storm runoff from the campus site. The increase in growth proposed by the 2014 LRDP does not increase planned drainage volumes from development blocks. Based upon understanding of the *Mission Bay Storm Drainage Master Plan* and Campus Storm Drain Piping, engineering studies have determined there is no need to replace and/or upsize City and University storm drainage conveyance piping already constructed

(Freyer & Laureta, Inc, 2013). The planned storm drain pump on Block P23 should be constructed in order to serve development of Blocks 33 and 34 (Freyer & Laureta, 2014). The impact would be less than significant.

**Mitigation:** None required.

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## 7.15.2 References

Freyer & Laureta, Inc., *UCSF Long Range Development Plan Entitlement Increase Analyses*, May 17, 2013.

Freyer & Laureta, Inc., *Blocks 33/34 Infrastructure Analyses*, February 2014.

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