2.0 ALTERNATIVES

The Council on Environmental Quality (CEQ) states that an environmental impact statement (EIS) describes a proposed action and the alternatives considered. Agencies are directed to use the National Environmental Policy Act (NEPA) process "to identify and assess the reasonable alternatives to proposed actions that will avoid or minimize adverse effects of these actions upon the quality of the environment" (40 Code of Federal Regulations 1500.2[e]). Alternatives found to be unreasonable need not be evaluated in an EIS.

The Proposed Action assessed in this Final EIS is a Long Range Development Plan (LRDP) that supports the mission of San Francisco Veterans Affairs Medical Center (SFVAMC) to provide for the health care needs of Bay Area and North Coast Veterans, enhance education, and perform research by providing for the renovation, expansion, and operation of SFVAMC Fort Miley Campus. This chapter describes the alternatives development process, the potential alternatives considered but eliminated from further review and the proposed Alternatives selected for analysis in this EIS.

2.1 ALTERNATIVES DEVELOPMENT PROCESS

This section discusses the process followed to identify possible alternatives leading to the Proposed Action that is ultimately subject to evaluation in this EIS.

The U.S. Department of Veterans Affairs (VA) has developed and implemented an internal planning process to which the agency must adhere. This process considers planning and programming for services and necessary accompanying facilities, depending on the size, scale, and timing of the need. These processes can range from completing a simple funding request to meet a smaller immediate need to implementing long-range, facility-wide planning processes. Any individual facility project request is incorporated into the Veteran Integrated Service Network (region)–level Strategic Capital Investment Program (SCIP). SCIP is a data and capital planning system used by VA to determine infrastructure and facility needs, which in turn determines VA projects.

As part of this process, SFVAMC undertook the first Campus-wide planning process with completion of the Draft Institutional Master Plan (IMP), which considered the concept that all current and future needs should be addressed solely within the confines of the existing SFVAMC Fort Miley Campus. The Draft IMP (released in October 2010) demonstrated that it may be physically possible to fully build out the SFVAMC Fort Miley Campus with 924,200 gross square feet (gsf). After considering input from the public and other agencies, VA determined that an LRDP would provide VA and the public with a forecasted depiction of the short- and long-term master plan for the Campus. The result was the LRDP released in 2012, which outlines the facilities on the SFVAMC Fort Miley Campus divided into planned phases of implementation for short-term (Phase 1) and long-term (Phase 2) periods.[1]

To carry out strategic health-planning initiatives, VA develops options as part of the master-planning process. VA uses a variety of tools that analyze influential development factors: reviews of staffing, patient-centered care, Veteran feedback, patient flow, and service capacity and demand; assessments of existing physical inventory and infrastructure; and process improvements that may involve reengineering a facility. VA uses the data and capital

[1] LRDP short-term (Phase 1) projects span the 2012 through mid-2020 time frame, and long-term (Phase 2) projects span the late 2020 through 2027 time frame.

planning system to establish a market-level demand analysis and workload reallocation modeling to align capital planning with the projected needs of Veterans.

The LRDP is a living, dynamic document and was recently revised to reflect input from the public and agencies and direction from VA's Central Office (VA, 2014). The LRDP outlines a sequence of steps for implementation in both short- and long-term projects (Phase 1 and Phase 2) while also offering the institution the flexibility to shift priorities as needed. The LRDP was prepared and published on SFVAMC's Web site (http://www.sanfrancisco.va.gov/planning/LRDP.asp) in August 2012, and was updated in January 2014. Some minor clarifications and modifications were added to the revised LRDP later in 2014. The most recent iteration of the SFVAMC LRDP is published on SFVAMC's Web site.

2.2 ALTERNATIVES CONSIDERED BUT ELIMINATED FROM FURTHER REVIEW

VA explored and objectively considered a range of potentially reasonable alternatives to meet the purpose and need throughout the development of the current LRDP. Through this process, some alternatives were eliminated from further consideration (listed below) and the remaining alternatives were studied in detail and are included in this Final EIS.

- Location within the City and County of San Francisco
- Location on 20 to 30 contiguous acres
- Avoidance of locations under an airport flight path due to aircraft noise issues
- Ability of VA to own property
- Access to public transit services
- Ability to continue to provide combined clinical, research, and educational services for Veterans
- Improved functional relationships between facilities and programs, with the right balance of building density and space allocation for programs requiring interaction so that facilities and personnel can function more efficiently into the future

Furthermore, an important synergetic relationship exists between clinicians who treat diseases and educators who teach about diseases. Fostering this relationship leads to better, more effective research, particularly when it happens at the same campus. SFVAMC's world-renowned achievements in the medical profession make it critical to integrate clinical, educational, and research functions at one campus location to serve Veterans through the LRDP's horizon year of 2027 and beyond.

Given the LRDP's goals and objectives and the above screening criteria, the following potential alternatives were considered but eliminated from further review in this EIS. The reasons for the elimination of these alternatives are described briefly below.

- **Full Buildout of Existing Campus as Proposed in the 2010 Draft IMP**—A potential alternative proposed in the 2010 Draft IMP to develop 924,200 gsf of new building space at the existing SFVAMC Fort Miley Campus to meet space deficiencies is no longer under consideration. Under this alternative, some space would have to be leased off-site. Off-site leasing would reduce the proposed future density of the SFVAMC Fort Miley Campus, as requested by the public and other agencies. Unfortunately, off-site leasing also would

reduce the opportunity for collaboration and interaction at the SFVAMC Fort Miley Campus. Nonetheless, VA considered this alternative at the public's request, as long as the off-site space was adjacent to related academic medical research facilities such as the University of California, San Francisco Campus at Mission Bay. The 2012 LRDP revised and replaced the IMP, and it reduced the number of gross square feet and the level of on-site density. Thus, this alternative was eliminated from further consideration.

- **Expansion of Existing Campus into East and West Fort Miley**—A potential alternative for expanding the SFVAMC Fort Miley Campus into the adjacent National Park Service East and West Fort Miley areas by up to 24 acres was considered, because this land is undeveloped and directly next to the existing Campus. Additionally, expanding the existing Campus by 24 acres would result in a lower density arrangement, which the public favors. However, this land is part of the Golden Gate National Recreation Area and is used by the public. Therefore, expansion into land in East and West Fort Miley was considered not feasible, and this potential alternative was eliminated from further consideration.

- **Relocation of Entire Campus Elsewhere in San Francisco**—A potential alternative to relocate all SFVAMC facilities to another site in San Francisco was considered not feasible for a variety of reasons. Based on recent projects for new, similar VA medical centers, the estimated cost to construct a new facility, including land purchase, equipping, and commissioning approaches exceeds $2 billion. Commissioning a new facility, including furnishing all the necessary equipment, would require several hundred million dollars more. Besides these facility/equipment costs, additional logistical factors associated with the staging and actual relocation of all the services and patients would create challenges. Moving away from the existing SFVAMC Fort Miley Campus would require a transitional period lasting many years, and it is critical that the SFVAMC Fort Miley Campus remains in operation to serve the Veteran population. Land in San Francisco is difficult to acquire because of its high cost and lack of availability. As a result, it would be difficult, if not impossible, to find a contiguous parcel that could accommodate a new campus of that size. VA does not own another parcel of land in San Francisco that is available for development of an entire replacement campus. Finally, this potential alternative would be even more costly given the need for ongoing maintenance and stewardship of the historic district contributing structures at the SFVAMC Fort Miley Campus that would be required if the property remained under VA ownership. As a result, this potential alternative was eliminated from further consideration.

- **Further Reduced Development at the Existing Campus**—A potential alternative to develop fewer facilities at the existing SFVAMC Fort Miley Campus than proposed under the current (2014) LRDP was considered, and VA took public and agency comments into consideration. VA made some reductions to square footage relative to that in the proposed IMP and revised its LRDP in 2012 in response to some of these comments, while refining the functional relationship between facilities. This required that VA lease some space off-site, which would result in less opportunity for collaboration and interaction between programs at the SFVAMC Fort Miley Campus. The VA planning process determined that SFVAMC needs an additional 589,000 gsf of space to provide services to Veterans; therefore, it is not feasible to further reduce the facilities' density and achieve a more efficient interactive setting at the existing SFVAMC Fort Miley Campus, because a further reduction would not allow VA to close its space deficit and meet program needs. This potential alternative would not fulfill the objective of meeting SFVAMC's identified current and future space deficiencies, and VA would not be able to adequately conduct needed clinical, educational, and research programs; therefore, this alternative was eliminated from further consideration.

2.3 DESCRIPTION OF EIS ALTERNATIVES

After VA considered the variety of potential alternatives through the planning process described above and eliminated those that were deemed infeasible, four Alternatives remained for further evaluation in this EIS, as discussed below. Note that the terms "Scenario A" and "Scenario B" as used in the LRDP are renamed "Alternative 1" and "Alternative 2," respectively, throughout this EIS. In addition, "Phase 1" and "Phase 2" as used in the LRDP are referred to in this EIS as the short-term and long-term projects, respectively.

- **Alternative 1: SFVAMC Fort Miley Campus Buildout Alternative 1 (Preferred Alternative)**—Alternative 1 is based on the LRDP, which proposes a reduced variation of the layout originally proposed in the October 2010 Draft IMP. Rather than the Draft IMP's proposed 924,200 additional gsf at the SFVAMC Fort Miley Campus, Alternative 1 proposes 322,200 net new gsf of facilities space and 232,252 new gsf of parking garage space, for a total of 554,452 gsf of additional space. This Alternative also proposes seismic upgrades to various existing structures on the Campus. Construction would occur in one short-term phase (Phase 1) and one long-term phase (Phase 2). This Alternative allows VA to achieve 94 percent of its determined need of 589,000 net new gsf to serve Veterans through roughly 2030, at a single campus. VA understands that this is 6 percent short of the determined space need.

- **Alternative 2: SFVAMC Fort Miley Campus Buildout Alternative 2**—Alternative 2 also is based on the LRDP, which proposes a reduced variation of the layout originally proposed in the October 2010 Draft IMP. Rather than the Draft IMP's proposed 924,200 additional gsf at the SFVAMC Fort Miley Campus, Alternative 2 proposes 322,200 net new gsf of facilities space and 232,252 new gsf of parking garage space, for a total of 554,452 gsf of additional space. This Alternative also proposes seismic upgrades to various existing structures on the Campus. Construction would occur in one short-term phase (Phase 1) and one long-term phase (Phase 2). A different, longer construction schedule than under Alternative 1 would occur, in the form of different phasing and implementation schedules for individual projects; however, the total amount and type of operational space required under Alternative 2 would be the same as required under Alternative 1. Like Alternative 1, Alternative 2 allows VA to achieve 94 percent of its determined space need of 589,000 net new gsf to serve Veterans through roughly 2030, at a single campus. VA understands that this is 6 percent short of the determined space need.

- **Alternative 3: SFVAMC Fort Miley Campus Plus Mission Bay Campus Alternative—**Alternative 3 would include all of the short-term (Phase 1) projects included in Alternative 1. However, the long-term (Phase 2) projects would be located off-site. The particular site is unknown at this time; it would be determined and purchased by VA at a later date, and presumably would be located in the Mission Bay area of San Francisco. This Alternative would entail adding a total of approximately 170,000 gsf in net new space at a Mission Bay location. This Alternative allows VA to achieve 94 percent of its determined need of 589,000 net new gsf to serve Veterans through roughly 2030, at two campuses. VA understands that this is 6 percent short of the determined space need.

  Alternative 4: No Action Alternative—Under the No Action Alternative (Alternative 4), the LRDP would not be implemented. With this Alternative, VA would be 100 percent short of the determined space need. The purpose of analyzing the No Action Alternative is to allow decision-makers to compare the impacts of the action Alternatives (Alternatives 1, 2, and 3) against the impacts of no action in the future. Although this

Alternative does not meet the purpose and need, it is included to allow decision-makers to compare the impacts of the action alternatives against the impacts of no action in the future.

2.3.1 Alternative 1: SFVAMC Fort Miley Campus Buildout Alternative 1 (Preferred Alternative)

Alternative 1 Short-Term (Phase 1) Projects

Land Uses

Alternative 1 short-term (Phase 1) projects would involve new development and/or retrofitting of patient care, research, administrative, hoptel, and parking structures on the existing 29-acre SFVAMC Fort Miley Campus through 2020. See Table 2-1 for detailed square footage and phasing related to implementation of the Alternative 1 short-term (Phase 1) projects. Figure 2-1 presents the Footprint and Concept Plan for Alternative 1 short-term (Phase 1) projects through 2020. Note that the development footprint for Alternative 1 short-term (Phase 1) projects would occupy approximately 0.69 acre in the previously developed areas of the existing 29-acre Campus.

All new short-term (Phase 1) development under Alternative 1 would be designed to achieve Leadership in Energy and Environmental Design (LEED®) Silver certification and would implement the VA Strategic Sustainability Performance Plan (VA SSPP), which identifies VA's sustainability goals and defines VA's policy and strategy for achieving these goals.

In addition to new development and associated demolition, buildings would be retrofitted according to VA seismic design requirements (VA Directive H-18-8), in compliance with Executive Order 12941. Table 2-1 identifies the buildings that would be seismically retrofitted.

Furthermore, there would be a need to add a total of approximately 60,000 square feet of modular building swing space in the areas west of Building 10, south of Building 200, east of Building 6, as well as the area within Parking Area B in April 2016 to provide temporary facility space during building construction or retrofitting. This modular swing space would be temporary; it would be removed after approximately 35 months.

Construction

Implementing the Alternative 1 short-term (Phase 1) projects would involve 17 development and retrofitting projects occurring over approximately 7 years, with completion anticipated by August 2020. See Table 2-1 for a detailed schedule and phasing for construction of the Alternative 1 short-term (Phase 1) projects.

All construction staging would occur on the SFVAMC Fort Miley Campus, in previously disturbed areas. Demolition would generate a maximum of 127,500 cubic yards of construction waste,[2] at least 50 percent of which would be reused or recycled and diverted from landfills in accordance with the VA SSPP. In addition, temporary modular swing space totaling approximately 60,000 gsf would be spread over four locations on Campus to serve as temporary facility space during building construction or retrofitting. The general locations of the swing space

[2] The volume of demolition waste generated was calculated based on the volume of all buildings proposed for demolition and seismic retrofit (in cubic feet), converted to cubic yards, and multiplied by a factor of 0.25 to obtain the demolition debris volume.

Table 2-1: Area, Massing, and Construction Schedule for Alternative 1 and Alternative 3 Short-Term (Phase 1) Projects at the SFVAMC Fort Miley Campus (2013–2020)[1,2]

Phase	Project	Gross Square Feet	Net New Gross Square Feet	Number of Stories	Construction Duration[3]	Approximate Completion Date[4]
1.1	Bldg 211—Emergency Operations Center and Parking Garage (377 spaces)[5]	155,000 (of which 2,000 is EOC and 3,000 is storage space)	155,000	4	12 months	July 2014
1.2	Bldg 41—Research (includes removal of Trailer 17)	14,200 (of which 4,600 is mechanical penthouse)	12,500	2	15 months	May 2015
1.3	Seismic Retrofit of Bldgs 5 and 7	27,393	0	2 and 3	14 months	May 2015
1.4	Bldg 22 Hoptel and Seismic Retrofit of Bldgs 9 and 10	18,200	8,700	2, 2, and 2	13 months	May 2015
1.5	Bldgs 209 and 211 Parking Garage Extensions (250 spaces)	82,252	82,252	5 and 4	12 months	March 2016
1.6	Bldg 203 C-Wing Extension (Ground-Floor Patient Welcome Center) and Drop-off Area with Canopy Structure	7,100	7,100	1	13 months	August 2016
1.7	Bldg 200 Expansion (Operating Room D-Wing)	5,300	5,300	1	12 months	June 2016
1.8	Bldg 24 Mental Health Clinic Expansion (includes demolition of Bldg 20)	15,600	13,300	3	14 months	October 2016
1.9	Bldg 40—Research (includes demolition of Bldgs 14, 18, and 21; removal of Trailer 23; and undergrounding of water tower)	110,000	91,300	4 (+ basement and mechanical penthouse)	39 months	December 2018
1.10	Bldg 207 Expansion (IT Support Space)	7,000	7,000	2	14 months	January 2017
1.11	Bldg 43—Research/ Administration (includes removal of Trailer 31)	15,000	13,500	2	15 months	February 2017
1.12	Trailer 36 (New Modular)	2,200	2,200	1	3 months	September 2016
1.13	Bldg 23—Mental Health Research Expansion	15,000	15,000	3 (+ basement)	14 months	December 2017
1.14	Bldg 203 Extension—Psychiatric Intensive Care Unit	1,200	1,200	1	18 months	June 2018
1.15	Bldg 208 Extension—Community Living Center and National Cardiac Device Surveillance Center (includes removal of Trailer 24)	10,000	9,000	3	18 months	August 2018

Table 2-1: Area, Massing, and Construction Schedule for Alternative 1 and Alternative 3 Short-Term (Phase 1) Projects at the SFVAMC Fort Miley Campus (2013–2020)[1,2]

Phase	Project	Gross Square Feet	Net New Gross Square Feet	Number of Stories	Construction Duration[3]	Approximate Completion Date[4]
1.16	Seismic Retrofit of Bldgs 1, 6, and 8	115,547	0	5, 4, and 3	20 months	March 2019
1.17	Demolition of Bldg 12	0	-38,900	N/A	11 months	August 2020
Total Phase 1 Area		**600,992**	**384,452**	**Total Phase 1 Duration**		**85 months**

Notes: Bldg = Building; EOC = Emergency Operations Center; IT = information technology; N/A = not applicable; SFVAMC = San Francisco Veterans Affairs Medical Center

1 This table reflects approximate construction schedules and completion dates.

2 In addition, a total of 321 parking spaces would be eliminated from a combination of surface parking lots D, E, H, J, K, and L.

3 Construction includes all demolition, grading, structure development, and painting activities associated with the Proposed Action.

4 Dates shown represent approximate time frames; funding has yet to be secured for some projects. Furthermore, because of space restrictions, the ability of the U.S. Department of Veterans Affairs to construct multiple projects simultaneously is limited.

5 The Emergency Operations Center and Building 211 Parking Garage square footage in this table reflects both the habitable (center and storage area) and the non-habitable (parking garage) space planned for construction. Although the San Francisco Veterans Affairs Medical Center Long Range Development Plan discusses habitable square footage, this Environmental Impact Statement must evaluate the impacts associated with construction of the entire square footage, including nonhabitable space.

Source: VA, 2014

would be west of Building 10, south of Building 200, east of Building 6, and within Parking Area B. The swing space would be in place from April 2016 to March 2019. The use of this modular swing space would not require any construction or demolition of buildings.

Landscaping and Open Space Areas

The LRDP has taken as a core design principle the full integration of open space and landscaping between buildings on the site as well as the surrounding parkland and pedestrian systems that connect to and from Campus.

A tree survey conducted on February 15, 2009, to assess fall and limb breakage hazards determined that there are 232 trees within the landscaped portions of the SFVAMC Fort Miley Campus. For tree-counting purposes, only trees on the existing Campus with diameters at breast height greater than 1 inch and heights of more than 10 feet were measured and examined for their failure potential. Under Alternative 1, 65 of these trees would be removed because of their fall and limb breakage potential. In some cases, the aesthetics-related effects of removing certain vulnerable trees slated for removal would be offset by replacing removed trees with trees that are more adapted to the windy conditions at the SFVAMC Fort Miley Campus. Specifically, trees would be planted along internal circulation roads, within surface parking lots, near the two Campus entrances, and potentially along the eastern Campus boundary adjacent to Golden Gate National Recreation Area lands.

During the short-term phase (Phase 1), various existing open space areas of the SFVAMC Fort Miley Campus would be developed with proposed facilities, including the Mental Health Clinic Expansion and the Hoptel Addition. In addition, a new landscape area would be developed within the drop-off circle that is proposed as part of the Patient Welcome Center and Drop-off Area, and a healing garden would be integrated with the Welcome Center.



Source: VA, 2014
Note: The 17 short-term (Phase 1) projects identified in Table 2-1 are indicated in this figure.

Figure 2-1: Footprint and Concept Plan for Alternative 1 and Alternative 3 Short-Term (Phase 1) Projects through 2020—SFVAMC Fort Miley Campus

Utilities Infrastructure Improvements

Water

Implementing the Alternative 1 short-term (Phase 1) projects would require improvements to the existing SFVAMC Fort Miley Campus's water distribution system, because of utility conflicts with proposed facilities and other site improvements. Improving the water system would involve removing and/or abandoning existing water mains located within the footprint of proposed facilities, and installing new water mains to provide potable water and water for fire hydrants and sprinklers to connect to new buildings. Specifically, new domestic water service connections would be established to provide potable water to the buildings, and new fire hydrants and fire sprinkler system services would be installed as required to meet National Fire Protection Association Fire Code requirements.

Sewer and Stormwater

The current arrangement method of discharge (a combined sewer system that collects, conveys to the city, treats, and discharges both sewage and stormwater) would continue for the most part with implementation of Alternative 1; however, some modifications to catch basins, manholes, and pipelines would be required to support the new facilities included in the short-term (Phase 1) projects. Stormwater runoff would be minimized in accordance with executive orders, regulatory requirements, and VA design guidance. Furthermore, where practical, stormwater runoff would be redirected away from the sewer system to direct-discharge outfalls. New facilities would include landscaping and sustainable features such as green roofs and bioswales to the extent feasible, as well as energy dissipaters to prevent concentrated flows. Site drainage would flow via at-grade catch basins and area drains to landscaped areas, and to underground gravity lines. In addition, the building and site contours would be designed to minimize stormwater runoff.

The Alternative 1 short-term (Phase 1) projects would involve adding new buildings supporting medical uses similar to those at the existing SFVAMC Fort Miley Campus; therefore, implementing these projects would require improvements to the Campus's existing sanitary sewer system. These improvements would involve removing and/or abandoning existing sanitary sewer lines located within the footprint of proposed facilities, and installing new sewer lines from new facilities to the existing combined sewer interceptor on Clement Street.

Electricity

The existing electrical system is being upgraded through the Electrical Systems Upgrades Project. As part of this project, Pacific Gas and Electric Company (PG&E) is upgrading an existing feeder line along Clement Street to convert the existing secondary service to the SFVAMC Fort Miley Campus to a low-level transmission service. To support increased loads, SFVAMC is replacing and upgrading the existing infrastructure to provide adequate and reliable power to the existing Campus, and to accommodate future building loads.[3] Because the Electrical Systems Upgrades Project is being implemented, no additional improvements to the external electrical distribution system (i.e., within or along roads) would be required as part of the Alternative 1 short-term (Phase 1) projects.

[3] Specifically, the existing underground 4.16-kilovolt (kV) ring bus feeders would be replaced with new underground 15-kV double-ring bus feeders, cable pull boxes, and feeder loop isolation switches around the outer perimeter of the SFVAMC Fort Miley Campus. A total of 12 substation transformers and electrical distribution panels would provide power to the various buildings. The new electrical system would have the capacity to support a demand of approximately 6,000 kW.

Emergency Generator

A new 1,000-kilowatt (kW) engine-generator has been installed at the switchgear located in Building 205. This addition has increased the overall total backup power system capacity to 3,385 kW, more than 50 percent of the expected full future load, which makes the backup system adequate to support future mission-critical and life-safety power needs.

The SFVAMC Fort Miley Campus's existing natural gas distribution system may require improvements to serve additional new buildings supporting the medical uses proposed as part of the Alternative 1 short-term (Phase 1) projects. These improvements would involve removing and abandoning existing distribution lines located within the footprint of proposed facilities, and installing new distribution lines (originating from PG&E's main gas line on Clement Street) to provide natural gas to new facilities.

Site Access, Circulation, and Parking

The SFVAMC Fort Miley Campus would continue to experience multimodal access and circulation by passenger vehicles, buses, shuttle vans, delivery vehicles, emergency medical and fire vehicles, and pedestrians.

Vehicular Access and Circulation

Under Alternative 1, vehicular access to the SFVAMC Fort Miley Campus, including access by public buses, would continue to be provided at the intersections of Clement Street and 42nd Avenue and Clement Street and 43rd Avenue. Circulation within the Campus would be altered slightly to include a roundabout as part of the Patient Welcome Center Drop-Off Area near the entrance of Clement Street and 42nd Avenue. Changes from existing conditions would include disconnecting the internal roadway, Fort Miley Circle, between Buildings 200 and 203 to create open space and a pedestrian zone; and narrowing Fort Miley Circle between Buildings 200 and 12 to provide traffic calming and incorporate a healing garden area with pedestrian walkways.

The San Francisco Municipal Transportation Agency would continue to provide bus access to the SFVAMC Fort Miley Campus. However, because of the changes required to create the open space and pedestrian zone between Buildings 200 and 203, buses would use the Patient Welcome Center Drop-Off Area and the south side of the roundabout near the entrance of Clement Street and 42nd Avenue; they would no longer travel around the entire Fort Miley Circle loop.

Parking

Under Alternative 1 short-term (Phase 1) projects, 377 parking spaces would be added as part of the proposed Emergency Operations Center and Building 211 Parking Garage on the SFVAMC Fort Miley Campus. In addition, a total of 321 parking spaces would be eliminated from a combination of surface parking lots D, E, H, J, K, and L. Furthermore, a total of 250 parking spaces would be added as part of the extensions of Buildings 209 and 211. As a result, there would be a total of 306 net new parking spaces on the SFVAMC Fort Miley Campus. Thus, given the Campus's existing parking supply of 1,253 spaces, a total of 1,559 parking spaces would be provided for employees, visitors, and patients by 2020.

Pedestrian Access and Circulation

Under Alternative 1 short-term (Phase 1) projects, sidewalks and walkways for pedestrians would be modified to provide improved connectivity. These improvements to the pedestrian circulation system are expected to

encourage alternative modes of transportation. Proposed changes include disconnecting Fort Miley Circle between Buildings 200 and 203 to create the Patient Welcome Center, narrowing Fort Miley Circle between Buildings 200 and 12 to provide traffic calming and incorporate a healing garden area with pedestrian walkways, and providing pedestrian pathways and access adjacent to Building 41 to allow for improved connectivity and flow between facilities.

Alternative 1 Long-Term (Phase 2) Projects

Land Uses

The Alternative 1 long-term (Phase 2) project would involve new development of an ambulatory care structure on the 29-acre SFVAMC Fort Miley Campus through 2027. See Table 2-2 for detailed square footage and phasing related to implementation of the Alternative 1 long-term (Phase 2) project. Figure 2-2 presents the Footprint and Concept Plan for the Alternative 1 long-term (Phase 2) project through 2027. Note that the development footprint for the Alternative 1 long-term (Phase 2) project would occupy 0 net new acre within the previously developed areas of the existing 29-acre Campus.

Like short-term (Phase 1) development, all new long-term (Phase 2) development would be designed to achieve LEED® Silver certification and would implement the VA SSPP.

Construction

Implementing the Alternative 1 long-term (Phase 2) project would involve one development project over approximately 2 years, with completion anticipated by March 2026. See Table 2-2 for a detailed schedule and phasing for construction of the Alternative 1 long-term (Phase 2) project. All construction staging would occur within the SFVAMC Fort Miley Campus, in previously disturbed areas.

Table 2-2: Area, Massing, and Construction Schedule for the Alternative 1 Long-Term (Phase 2) Project at the SFVAMC Fort Miley Campus (2020–2027)[1]

Phase	Project	Gross Square Feet	Net New Gross Square Feet	Number of Stories	Construction Duration[2]	Approximate Completion Date[3]
2.1	Bldg 213 (Clinical Addition Building)	170,000	170,000	5 (+ basement)	24 months	March 2026
	Total Phase 2 Area	**170,000**	**170,000**	**Total Phase 2 Duration**		**24 months**

Notes: Bldg = Building; SFVAMC = San Francisco Veterans Affairs Medical Center
1 This table reflects approximate construction schedules and completion dates.
2 Construction includes all demolition, grading, structure development, and painting activities associated with the Proposed Action.
3 Dates shown represent approximate time frames; funding has yet to be secured for some projects. Furthermore, because of space restrictions, the ability of the U.S. Department of Veterans Affairs to construct multiple projects simultaneously is limited.
Source: VA, 2014



Source: VA, 2014
Note: The one long-term (Phase 2) project identified in Table 2-2 is indicated in this figure.

Figure 2-2: Footprint and Concept Plan for Alternative 1 Long-Term (Phase 2) Projects through 2027—SFVAMC Fort Miley Campus

Landscaping and Open Space Areas

As part of the Alternative 1 long-term (Phase 2) project, a Central Green park area would be completed with permanent landscaping, walkways, and gardens to serve employees, patients, visitors, and the surrounding community.

Utilities Infrastructure Improvements

Water

Improvements to the water distribution system for the Alternative 1 long-term (Phase 2) project would be similar to those implemented for the Alternative 1 short-term (Phase 1) projects.

Sewer and Stormwater

Improvements to the sewer and stormwater collection and conveyance system for the Alternative 1 long-term (Phase 2) project would build on and be similar to those implemented for the Alternative 1 short-term (Phase 1) projects.

Electricity and Natural Gas

It is unknown at this time whether improvements to the electrical distribution system would be necessary as part of the Alternative 1 long-term (Phase 2) project. Improvements to the natural gas distribution system for the Alternative 1 long-term (Phase 2) project would build on and be similar to those implemented for the Alternative 1 short-term (Phase 1) projects.

Site Access, Circulation, and Parking

The SFVAMC Fort Miley Campus would continue to experience multimodal access and circulation by passenger vehicles, buses, shuttle vans, delivery vehicles, emergency medical and fire vehicles, and pedestrians.

Vehicular Access and Circulation

Under the Alternative 1 long-term (Phase 2) project, no major changes to SFVAMC Fort Miley Campus access and circulation would occur. Campus access would continue to be provided at the intersections of Clement Street and 42nd Avenue and Clement Street and 43rd Avenue. Circulation would continue to be provided internally for all vehicles.

Parking

Development under the Alternative 1 long-term (Phase 2) project would not provide additional on-site parking spaces at the existing SFVAMC Fort Miley Campus. Thus, a total of 1,559 on-site spaces for employees, visitors, and patients would remain at the Campus by the year 2027.

Pedestrian Access and Circulation

Improvements to pedestrian access and circulation for the Alternative 1 long-term (Phase 2) project would build on and be similar to those implemented for the Alternative 1 short-term (Phase 1) projects.

2.3.2 Alternative 2: SFVAMC Fort Miley Campus Buildout

Alternative 2 Short-Term (Phase 1) Projects

Land Uses

Alternative 2 short-term (Phase 1) projects[4] would involve new development and/or retrofitting of patient care, research, administrative, hoptel, and parking structures on the existing 29-acre SFVAMC Fort Miley Campus through 2020. See Table 2-3 for detailed square footage and phasing related to implementation of the Alternative 2 short-term (Phase 1) projects. Figure 2-3 presents the Footprint and Concept Plan for Alternative 2 short-term (Phase 1) projects through 2020. Note that the development footprint for Alternative 2 short-term (Phase 1) projects would occupy approximately 0.69 acre in the previously developed areas of the existing 29-acre Campus.

All new short-term (Phase 1) development under Alternative 2 would be designed to achieve LEED® Silver certification and would implement the VA SSPP, which identifies VA's sustainability goals and defines VA's policy and strategy for achieving these goals.

In addition to new development and associated demolition, buildings would be retrofitted according to VA seismic design requirements (VA Directive H-18-8), in compliance with Executive Order 12941. Table 2-3 identifies the buildings that would be seismically retrofitted.

Construction

Implementing the Alternative 2 short-term (Phase 1) projects would involve 16 development projects and retrofitting over approximately 6 years, with completion anticipated by August 2019. See Table 2-3 for a detailed schedule and phasing for construction of the Alternative 2 short-term (Phase 1) projects. All construction staging would occur on the SFVAMC Fort Miley Campus, in previously disturbed areas. Demolition would generate a maximum of 58,091 cubic yards of construction waste,[5] at least 50 percent of which would be reused or recycled and diverted from landfills in accordance with the VA SSPP.

Landscaping and Open Space Areas

As mentioned in the discussion of Alternative 1 short-term (Phase 1) projects, a 2009 tree survey conducted to assess fall and limb breakage hazards determined that there are 232 trees within the landscaped portions of the SFVAMC Fort Miley Campus. Under Alternative 2, 65 of these trees would be removed (the same number of trees as under Alternative 1), because of their fall and limb breakage potential. In some cases, the aesthetics-related effects of removing certain vulnerable trees slated for removal would be offset by replacing removed trees with trees that are more adapted to the windy conditions at the SFVAMC Fort Miley Campus. Specifically, trees would be planted along internal circulation roads, within surface parking lots, near the two Campus entrances, and potentially along the eastern Campus boundary adjacent to Golden Gate National Recreation Area lands.

[4] LRDP short-term (Phase 1) projects span the 2012 through mid-2020 time frame.

[5] The volume of demolition waste generated was calculated based on the volume of all buildings proposed for demolition and seismic retrofit (in cubic feet), converted to cubic yards, and multiplied by a factor of 0.25 to obtain the demolition debris volume.

Table 2-3: Area, Massing, and Construction Schedule for Alternative 2 Short-Term (Phase 1) Projects at the SFVAMC Fort Miley Campus (2013–2020)[1,2]

Phase	Project	Gross Square Feet	Net New Gross Square Feet	Number of Stories	Construction Duration[3]	Approximate Completion Date[4]
1.1	Bldg 211—Emergency Operations Center and Parking Garage (377 spaces)[5]	155,000 (of which 2,000 is EOC and 3,000 is storage space)	155,000	4	12 months	July 2014
1.2	Bldg 41—Research (includes removal of Trailer 17)	14,200 (of which 4,600 is mechanical penthouse)	12,500	2	15 months	March 2015
1.3	Seismic Retrofit of Bldgs 5 and 7	27,393	0	2 and 3	14 months	May 2015
1.4	Bldg 22 Hoptel and Seismic Retrofit of Bldgs 9 and 10	18,200	8,700	2, 2, and 2	13 months	May 2015
1.5	Bldgs 209 and 211 Parking Garage Extensions (250 spaces)	82,252	82,252	5 and 4	12 months	March 2016
1.6	Bldg 203 C-Wing Extension (Ground-Floor Patient Welcome Center) and Drop-off Area with Canopy Structure	7,100	7,100	1	13 months	August 2016
1.7	Bldg 200 Expansion (Operating Room D-Wing)	5,300	5,300	1	12 months	June 2016
1.8	Bldg 24 Mental Health Clinic Expansion (includes demolition of Bldg 20)	15,600	13,300	3	14 months	October 2016
1.9	Bldg 40—Research (includes demolition of Bldgs 14, 18, and 21; removal of Trailer 23; and undergrounding of water tower)	110,000	91,300	4 (+ basement and mechanical penthouse)	39 months	September 2018
1.10	Bldg 207 Expansion (IT Support Space)	7,000	7,000	2	14 months	January 2017
1.11	Bldg 43—Research/ Administration (includes removal of Trailer 31)	15,000	13,500	2	15 months	February 2017
1.12	Trailer 36 (New Modular)	2,200	2,200	1	3 months	September 2016
1.13	Bldg 23—Mental Health Research Expansion	15,000	15,000	3 (+ basement)	14 months	December 2017
1.14	Bldg 203 Extension—Psychiatric Intensive Care Unit	1,200	1,200	1	18 months	June 2018

Table 2-3: Area, Massing, and Construction Schedule for Alternative 2 Short-Term (Phase 1) Projects at the SFVAMC Fort Miley Campus (2013–2020)[1,2]

Phase	Project	Gross Square Feet	Net New Gross Square Feet	Number of Stories	Construction Duration[3]	Approximate Completion Date[4]
1.15	Bldg 208 Extension—Community Living Center and National Cardiac Device Surveillance Center (includes removal of Trailer 24)	10,000	9,000	3	18 months	August 2017
1.16	Demolition of Bldg 12	0	-38,900	N/A	11 months	August 2019
	Total Phase 1 Area	**485,445**	**384,452**	**Total Phase 1 Duration**		**73 months**

Notes: Bldg = Building; EOC = Emergency Operations Center; IT = information technology; N/A = not applicable; SFVAMC = San Francisco Veterans Affairs Medical Center

1 This table reflects approximate construction schedules and completion dates.

2 In addition, a total of 321 parking spaces would be eliminated from a combination of surface parking lots D, E, H, J, K, and L.

3 Construction includes all demolition, grading, structure development, and painting activities associated with the Proposed Action.

4 Dates shown represent approximate time frames; funding has yet to be secured for some projects. Furthermore, because of space restrictions, the ability of the U.S. Department of Veterans Affairs to construct multiple projects simultaneously is limited.

5 The Emergency Operations Center and Building 211 Parking Garage square footage in this table reflects both the habitable (center and storage area) and the nonhabitable (parking garage) space planned for construction. Although the San Francisco Veterans Affairs Medical Center Long Range Development Plan discusses habitable square footage, this Environmental Impact Statement must evaluate the impacts associated with construction of the entire square footage, including nonhabitable space.

Source: VA, 2014

During the short-term phase (Phase 1), various existing open space areas of the SFVAMC Fort Miley Campus would be developed with proposed facilities, including the Mental Health Clinic Expansion and the Hoptel Addition. In addition, a new landscape area would be developed within the drop-off circle that is proposed as part of the Patient Welcome Center and Drop-off Area, and a healing garden would be integrated with the Welcome Center.

Utilities Infrastructure Improvements

Water

Implementing the Alternative 2 short-term (Phase 2) projects would require improvements to the existing SFVAMC Fort Miley Campus's water distribution system, because of utility conflicts with proposed facilities and other site improvements. Improving the water system would involve removing and/or abandoning existing water mains located within the footprint of proposed facilities, and installing new water mains to provide potable water and water for fire hydrants and sprinklers to connect to new buildings. Specifically, new domestic water service connections would be established to provide potable water to the buildings, and new fire hydrants and fire sprinkler system services would be installed as required to meet National Fire Protection Association Fire Code requirements.

Sewer and Stormwater

The current arrangement method of discharge (a combined sewer system that collects, conveys to the city, treats, and discharges both sewage and stormwater) would continue for the most part with implementation of Alternative 2; however, some modifications to catch basins, manholes, and pipelines would be required to support the new



Source: VA, 2014
Note: The 16 short-term (Phase 1) projects identified in Table 2-2 are indicated in this figure.

Figure 2-3: Footprint and Concept Plan for Alternative 2 Short-Term (Phase 1) Projects through 2020—SFVAMC Fort Miley Campus

facilities included in the short-term (Phase 1) projects. Stormwater runoff would be minimized in accordance with executive orders, regulatory requirements, and VA design guidance. Furthermore, where practical, stormwater runoff would be redirected away from the sewer system to direct-discharge outfalls. New facilities would include landscaping and sustainable features such as green roofs and bioswales to the extent feasible, as well as energy dissipaters to prevent concentrated flows. Site drainage would flow via at-grade catch basins and area drains to landscaped areas, and to underground gravity lines. In addition, the building and site contours would be designed to minimize stormwater runoff.

The Alternative 2 short-term (Phase 1) projects would involve adding new buildings supporting medical uses similar to those at the existing SFVAMC Fort Miley Campus; therefore, implementing these projects would require improvements to the Campus's existing sanitary sewer system. These improvements would involve removing and/or abandoning existing sanitary sewer lines located within the footprint of proposed facilities, and installing new sewer lines from new facilities to the existing combined sewer interceptor on Clement Street.

Electricity

As discussed previously for Alternative 1 short-term (Phase 1) projects, the existing electrical system is being upgraded through the Electrical Systems Upgrades Project. Because this project is being implemented, no additional improvements to the external electrical distribution system (i.e., within or along roads) would be required as part of the Alternative 2 short-term (Phase 1) projects.

Emergency Generator

The SFVAMC Fort Miley Campus's existing natural gas distribution system may require improvements to serve additional new buildings supporting the medical uses proposed as part of the Alternative 2 short-term (Phase 2) projects. These improvements would involve removing and abandoning existing distribution lines located within the footprint of proposed facilities, and installing new distribution lines (originating from PG&E's main gas line on Clement Street) to provide natural gas to new facilities.

Site Access, Circulation, and Parking

The SFVAMC Fort Miley Campus would continue to experience multimodal access and circulation by passenger vehicles, buses, shuttle vans, delivery vehicles, emergency medical and fire vehicles, and pedestrians.

Vehicular Access and Circulation

Under Alternative 2, vehicular access to the SFVAMC Fort Miley Campus, including access by public buses, would continue to be provided at the intersections of Clement Street and 42nd Avenue and Clement Street and 43rd Avenue. Circulation within the Campus would be altered slightly to include a roundabout as part of the Patient Welcome Center Drop-Off Area near the entrance of Clement Street and 42nd Avenue. Changes from existing conditions would include disconnecting the internal roadway, Fort Miley Circle, between Buildings 200 and 203 to create open space and a pedestrian zone; and narrowing Fort Miley Circle between Buildings 200 and 12 to provide traffic calming and incorporate a healing garden area with pedestrian walkways.

The San Francisco Municipal Transportation Agency would continue to provide bus access to the SFVAMC Fort Miley Campus. However, because of the changes required to create the open space and pedestrian zone between Buildings 200 and 203, buses would use the Patient Welcome Center Drop-Off Area and the south side of the

roundabout near the entrance of Clement Street and 42nd Avenue; they would no longer travel around the entire Fort Miley Circle loop.

Parking

Under Alternative 2 short-term (Phase 1) projects, 377 parking spaces would be added as part of the proposed Emergency Operations Center and Building 211 Parking Garage on the SFVAMC Fort Miley Campus. In addition, a total of 321 parking spaces would be eliminated from a combination of surface parking lots D, E, H, J, K, and L. Furthermore, a total of 250 parking spaces would be added as part of the extensions of Buildings 209 and 211. As a result, there would be a total of 306 net new parking spaces on the SFVAMC Fort Miley Campus. Thus, given the Campus's existing parking supply of 1,253 spaces, a total of 1,559 parking spaces would be provided for employees, visitors, and patients by 2020.

Pedestrian Access and Circulation

Under Alternative 2 short-term (Phase 1) projects, sidewalks and walkways for pedestrians would be modified to provide improved connectivity. These improvements to the pedestrian circulation system are expected to encourage alternative modes of transportation. Proposed changes include disconnecting Fort Miley Circle between Buildings 200 and 203 to create the Patient Welcome Center, narrowing Fort Miley Circle between Buildings 200 and 12 to provide traffic calming and incorporate a healing garden area with pedestrian walkways, and providing pedestrian pathways and access adjacent to Building 41 to allow for improved connectivity and flow between facilities.

Alternative 2 Long-Term (Phase 2) Projects

Land Uses

Alternative 2 long-term (Phase 2) projects[6] would involve primarily new development and/or retrofitting of patient care, research, administrative, and ambulatory care structures on the 29-acre SFVAMC Fort Miley Campus through 2027. See Table 2-4 for detailed square footage and phasing related to implementation of Alternative 2 long-term (Phase 2) projects. Figure 2-4 presents the Footprint and Concept Plan for Alternative 2 long-term (Phase 2) projects through 2027. Note that the development footprint for Alternative 2 long-term (Phase 2) projects would occupy 0 net new acre within the previously developed areas of the existing 29-acre Campus.

Like short-term (Phase 1) development, all new long-term (Phase 2) development would be designed to achieve LEED® Silver certification and would implement the VA SSPP. In addition to the new development and associated demolition, buildings would be seismically retrofitted according to VA seismic design requirements (VA Directive H-18-8), in compliance with Executive Order 12941. Table 2-4 identifies the buildings that would be seismically retrofitted.

Furthermore, there would be a need to add approximately 60,000 square feet of modular building swing space into the future demolition footprint of Building 12 in September 2020 to provide temporary facility space during building construction or retrofitting. This modular swing space would be temporary; it would be removed after approximately 43 months.

[6] LRDP long-term (Phase 2) projects span the late 2020 through 2027 time frame.

Table 2-4: Area, Massing, and Construction Schedule for Alternative 2 Long-Term (Phase 2) Projects at the SFVAMC Fort Miley Campus (2020–2027)[1]

Phase	Project	Gross Square Feet	Net New Gross Square Feet	Number of Stories	Construction Duration[2]	Approximate Completion Date[3]
2.1	Seismic Retrofit of Bldg 8	25,521	0	3	14 months	December 2021
2.2	Seismic Retrofit of Bldg 1	37,765	0	5	20 months	June 2022
2.3	Seismic Retrofit of Bldg 6	52,261	0	4	20 months	February 2024
2.4	Bldg 213 (Clinical Addition Building)	170,000	170,000	5 (+ basement)	24 months	March 2026
	Total Phase 2 Area	**285,487**	**170,000**	**Total Phase 2 Duration**		**65 months**

Notes: Bldg = Building; SFVAMC = San Francisco Veterans Affairs Medical Center
1 This table reflects approximate construction schedules and completion dates.
2 Construction includes all demolition, grading, structure development, and painting activities associated with the Proposed Action.
3 Dates shown represent approximate time frames; funding has yet to be secured for some projects. Furthermore, because of space restrictions, the ability of the U.S. Department of Veterans Affairs to construct multiple projects simultaneously is limited.
Source: VA, 2014

Construction

Implementing the Alternative 2 long-term (Phase 2) projects would involve four development and retrofitting projects occurring over approximately 5.5 years, with completion anticipated by March 2026. See Table 2-4 for a detailed schedule and phasing for construction of the Alternative 2 long-term (Phase 2) projects. All construction staging would occur on the SFVAMC Fort Miley Campus, in previously disturbed areas. Demolition would generate a maximum of 69,403 cubic yards of construction waste,[7] at least 50 percent of which would be reused or recycled and diverted from landfills in accordance with the VA SSPP. In addition, temporary modular swing space totaling approximately 60,000 gsf would be present in one location on Campus (within the future demolition footprint of existing Building 12) from September 2020 through February 2024. The general location of the swing space would be south of Building 41. The use of this modular swing space would not require any construction or demolition of buildings.

Landscaping and Open Space Areas

As part of Alternative 2 long-term (Phase 2) projects, a Central Green park area would be completed with permanent landscaping, walkways, and gardens to serve employees, patients, visitors, and the surrounding community.

Utilities Infrastructure Improvements

Water

Improvements to the water distribution system for the Alternative 2 long-term (Phase 2) projects would be similar to those implemented for the Alternative 1 short-term (Phase 1) projects.

7 The volume of demolition waste generated was calculated based on the volume of all buildings proposed for demolition and seismic retrofit (in cubic feet), converted to cubic yards, and multiplied by a factor of 0.25 to obtain the demolition volume.



Source: VA, 2014
Note: The four long-term (Phase 2) projects identified in Table 2-4 are indicated in this figure.

Figure 2-4: Footprint and Concept Plan for Alternative 2 Long-Term (Phase 2) Projects through 2027—SFVAMC Fort Miley Campus

Sewer and Stormwater

Improvements to the sewer and stormwater collection and conveyance system for the Alternative 2 long-term (Phase 2) projects would build on and be similar to those implemented for the Alternative 1 short-term (Phase 1) projects.

Electricity and Natural Gas

It is unknown at this time whether improvements to the electrical distribution system would be necessary as part of the Alternative 2 long-term (Phase 2) projects. Improvements to the natural gas distribution system for the Alternative 2 long-term (Phase 2) projects would build on and be similar to those implemented for the Alternative 1 short-term (Phase 1) projects.

Site Access, Circulation, and Parking

The SFVAMC Fort Miley Campus would continue to experience multimodal access and circulation by passenger vehicles, buses, shuttle vans, delivery vehicles, emergency medical and fire vehicles, and pedestrians.

Vehicular Access and Circulation

Under Alternative 2 long-term (Phase 2) projects, no major changes to SFVAMC Fort Miley Campus access and circulation would occur. Campus access would continue to be provided at the intersections of Clement Street and 42nd Avenue and Clement Street and 43rd Avenue. Circulation would continue to be provided internally for all vehicles.

Parking

Development under Alternative 2 long-term (Phase 2) projects would not provide additional on-site parking spaces at the existing SFVAMC Fort Miley Campus. Thus, a total of 1,559 on-site spaces for employees, visitors, and patients would remain at the Campus by the year 2027.

Pedestrian Access and Circulation

Improvements to pedestrian access and circulation for the Alternative 2 long-term (Phase 2) projects would build on and be similar to those implemented for the Alternative 1 short-term (Phase 1) projects.

2.3.3 Alternative 3: SFVAMC Fort Miley Campus Plus Mission Bay Campus Alternative

Alternative 3 Short-Term (Phase 1) Projects

Alternative 3 short-term (Phase 1) projects would be the same as Alternative 1 short-term (Phase 1) projects; thus, all Alternative 3 short-term (Phase 1) projects would occur at the SFVAMC Fort Miley Campus. See Table 2-1 for detailed square footage and phasing related to implementation of the Alternative 3 short-term (Phase 1) projects. Figure 2-1 presents the Footprint and Concept Plan for Alternative 3 short-term (Phase 1) projects through 2020.

Alternative 3 Long-Term (Phase 2) Projects

Land Uses

The off-site portion of Alternative 3 would occur under long-term (Phase 2) projects. Specifically, Alternative 3 long-term (Phase 2) projects would involve development of an ambulatory care center and associated parking structure at a potential new SFVAMC Mission Bay Campus. For purposes of the EIS analysis, it is assumed that the potential new campus would be constructed somewhere within an approximately 2.5-square-mile area in two segments (bounded by Interstate 80, Seventh Street, and Brannan Street on the north, Second Street and San Francisco Bay on the east, and Cesar Chavez Street on the south and west). See Figure 2-5 for the location of Alternative 3 long-term (Phase 2) projects.

This off-site space could be accomplished on a 0.98-acre site, assuming four-story buildings or other multi-story development consistent with other proximate buildings. Alternative 3 long-term (Phase 2) projects at the potential new Mission Bay Campus would be constructed roughly between 2024 and 2027. See Table 2-5 for detailed square footage and phasing related to implementation of Alternative 3 long-term (Phase 2) projects at the potential new Mission Bay Campus. Note that the actual development footprint, concept plan, and site location within Mission Bay have not been determined at this time. All new long-term (Phase 2) development would be designed to achieve LEED® Silver certification and would implement the VA SSPP.

Table 2-5: Area, Massing, and Construction Schedule for Alternative 3 Long-Term (Phase 2) Projects at the Potential New SFVAMC Mission Bay Campus (2024–2027)[1]

Phase	Project	Gross Square Feet	Net New Gross Square Feet	Number of Stories	Construction Duration[2]	Approximate Completion Date
2.1	Ambulatory Care Center	140,000	140,000	4	24 months	December 2025
2.2	Clinical Parking Garage (100 spaces)	30,000	30,000	4	24 months	December 2027
	Total Phase 2 Area at the Potential New SFVAMC Mission Bay Campus	**170,000**	**170,000**	**Total Phase 2 Duration**		**42 months**

Notes: SFVAMC = San Francisco Veterans Affairs Medical Center; SFVAMC = San Francisco Veterans Affairs Medical Center
1 This table reflects approximate construction schedules and completion dates.
2 Construction includes all demolition, grading, structure development, and painting activities associated with the Proposed Action.
3 Dates shown represent approximate time frames; funding has yet to be secured for projects.
4 The square footages in this table reflect both the habitable (ambulatory care and research area) and the nonhabitable (parking garage) space planned for construction. This Environmental Impact Report must evaluate the impacts associated with construction of the entire square footage, including nonhabitable space.
Source: VA, 2014

Construction

Implementing the Alternative 3 long-term (Phase 2) projects at the potential new SFVAMC Mission Bay Campus would involve two development projects over approximately 3.5 years, with completion anticipated by December 2027. See Table 2-5 for a detailed schedule and phasing for construction of the Alternative 3 long-term (Phase 2) projects at the potential new Mission Bay Campus.



Source: Compiled by AECOM in 2012

Figure 2-5: Location of Off-Site Portion of Alternative 3 for the Potential Mission Bay Campus

Landscaping and Open Space Areas

A potential new SFVAMC Mission Bay Campus would include landscaping and open space areas. It is unknown at this time where these areas would be provided; however, it is assumed that there would be some amount of landscaping and open space near the potential new Mission Bay Campus.

Utilities Infrastructure Improvements

It is assumed that under Alternative 3 long-term (Phase 2) projects, proposed facilities would tie into existing utilities infrastructure in the Mission Bay area.

Water

Implementing the Alternative 3 long-term (Phase 2) projects would require improvements to the existing water distribution system near the potential new SFVAMC Mission Bay Campus to support the construction and operation of the potential new Campus. It is assumed that improving the water system would involve removing

and/or abandoning existing water mains located within the footprint of proposed facilities, and installing new water mains to provide potable water and water for fire hydrants and sprinklers to new buildings. Specifically, new domestic water service connections would be established to provide potable water to the buildings, and new fire hydrants and fire sprinkler system services would be installed to meet National Fire Protection Association Fire Code requirements.

Sewer and Stormwater

Operating the stormwater collection and conveyance system for the potential new 620,000-square-foot SFVAMC Mission Bay Campus as part of Alternative 3 long-term (Phase 2) projects would require improvements to existing and/or construction of new catch basins, manholes, and pipelines near the potential new Campus. However, the new facilities would reduce the amount of impervious surface on the site because landscaping and sustainable features such as green roofs would be added as part of the building design for the potential new Mission Bay Campus to the extent feasible. The use of energy dissipaters to prevent concentrated flows would also minimize the impact of stormwater flows. Site drainage would flow via at-grade catch basins and area drains to landscaped areas, and to underground gravity lines. In addition, the building and site contours would be designed to minimize stormwater runoff. To provide sewer service to a potential new Mission Bay Campus under Alternative 3, new building lateral connections to existing sewer lines would be constructed to connect the potential new Campus to nearby San Francisco Public Utilities Commission combined sewer interceptors.

Electricity and Natural Gas

Constructing and operating a potential new SFVAMC Mission Bay Campus as part of Alternative 3 long-term (Phase 2) projects would require upgrades to the electrical system and improvements to the natural gas distribution system near the potential new Campus. Specifically, upgrades to existing feeder lines and other local infrastructure would be required to provide adequate and reliable power to the potential new Campus, and to accommodate future building loads. It is assumed that improving the existing natural gas distribution system would involve removing and abandoning existing distribution lines located within the footprint of proposed facilities, and installing new distribution lines to connect the new facilities to PG&E's main gas lines in the Mission Bay area.

Site Access, Circulation, and Parking

Under Alternative 3 long-term (Phase 2) projects, a potential SFVAMC Mission Bay Campus would experience multimodal access and circulation by passenger vehicles, buses, shuttle vans, delivery vehicles, emergency medical and fire vehicles, and pedestrians.

Vehicular Access and Circulation

Constructing and operating a potential new SFVAMC Mission Bay Campus under Alternative 3 long-term (Phase 2) projects may require street improvements to provide vehicular access and internal site circulation. It is unknown at this time where the vehicular access and circulation would be needed.

Parking

Development under Alternative 3 long-term (Phase 2) projects would provide 100 new parking spaces at the potential new SFVAMC Mission Bay Campus for employees, visitors, and patients by the year 2027.

Pedestrian Access and Circulation

Constructing and operating a potential new SFVAMC Mission Bay Campus as part of Alternative 3 long-term (Phase 2) projects would require pedestrian access and circulation. It is unknown at this time how and where pedestrian access and circulation would be needed at the potential new Campus.

2.3.4 Alternative 4: No Action Alternative

Under Alternative 4, the No Action Alternative, the LRDP would not be implemented. The purpose of describing and analyzing the No Action Alternative is to allow decision-makers to compare the impacts of the action alternatives with the impacts of not proceeding with a project.

The No Action Alternative would be limited to maintenance and repair of facilities at the existing SFVAMC Fort Miley Campus, including emergency repairs that would reasonably be expected to occur in the foreseeable future. This alternative would include continued operations despite space, seismic, and parking deficiencies. The No Action Alternative would not meet the needs, purpose, or mission of VA and is deemed unacceptable. However, in accordance with NEPA practice, it is carried forward as a baseline in the evaluation of potential impacts.

2.4 REFERENCES

U.S. Department of Veterans Affairs (VA). (2014). *San Francisco Veterans Affairs Medical Center Fort Miley Campus Long Range Development Plan*. San Francisco, CA.

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May 11, 2012

Reply in Reference To: VA120323A

Lawrence Carroll, Director
Department of Veterans Affairs Medical Center
4150 Clement Street
San Francisco, CA 94121

Re: Section 106 Consultation for San Francisco Department of Veterans Affairs Medical Center Draft Long Range Development Plan

Dear Director Carroll:

Thank you for initiating consultation regarding the Veterans Affairs (VA) efforts to comply with Section 106 of the National Historic Preservation Act of 1966 (16 U.S.C. 470f), as amended, and its implementing regulation found at 36 CFR Part 800.

The VA has identified the undertaking as the preparation of a Long Range Development Plan (LRDP) for the San Francisco Medical Center campus (SFVAMC). This document is being prepared to address and support future campus construction, expansion, and preservation planning. Based on information acquired through meetings between the VA and my staff and as provided in your 20 March 2012 submittal, the VA intends to create an additional 600,000 square feet at the SFVAMC campus over the next 20 years. It is my understanding that upon analyzing the potential impacts on historic properties posed by proposed undertakings the VA will submit a finding of effect to my office. Importantly, the VA will continue to consult with my office, the public and interested parties including the National Park Service to assist with their planning process.

In addition, I have the following comments:

1) I concur that the APE has been properly determined and documented pursuant to 36 CFR Parts 800.4 (a)(1) and 800.16(d).

2) I concur the VA has properly defined and established the undertaking pursuant to 36 CFR Part 800.3.

3) I agree with the VA's approach to the Section 106 process for this undertaking as described in your submittal and as discussed in meetings between my staff and the VA.

Thank you for seeking my comments and considering historic properties as part of your project planning. I look forward to working with the VA toward the effective management of their historic resources. If you have any questions or concerns, please contact Ed Carroll of my staff at (916) 445-7006 or at email at ecarroll@parks.ca.gov.

Sincerely,

Susan K Stratton for

Milford Wayne Donaldson, FAIA
State Historic Preservation Officer

CC:

Brian Lusher
Advisory Council on Historic Preservation
Old Post Office Building
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Kathleen Schamel
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Department of Veterans Affairs
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3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

Chapter 3.0 sets forth the affected environment and addresses the environmental consequences of the Environmental Impact Statement (EIS) Alternatives with respect to 15 environmental resource areas. The discussions of the affected environment describe the present physical conditions, or the baseline conditions, in the area of the EIS Alternatives. Generally, the baseline used for the analysis of environmental impacts under the National Environmental Policy Act (NEPA) reflects the conditions present at or about the time the EIS was initiated.

The area, or region of influence, is defined for each environmental resource based on the extent of physical resources that may be affected directly or indirectly by the EIS Alternatives, applying appropriate guidelines of regulatory agencies or common professional practice. Table 3-1 summarizes the environmental resource areas and associated regions of influence described in this San Francisco Veterans Affairs Medical Center (SFVAMC) Long Range Development Plan (LRDP) Final EIS.

Table 3-1: Environmental Issues and Regions of Influence for the SFVAMC Long Range Development Plan

Environmental Issue	Region of Influence
Aesthetics	Project site and viewsheds to and from the project site
Air Quality	San Francisco Bay Area Air Basin
Community Services	Project site and contiguous communities
Cultural Resources	Project site and adjacent areas
Floodplains, Wetlands, and Coastal Management	Project site and associated floodplains, wetlands, and coastal zone designations
Geology and Soils	Project site and San Francisco region
Greenhouse Gas Emissions	Global
Hydrology and Water Quality	Project site and associated subbasins
Land Use	Project site and adjacent land uses
Noise	Project site, surrounding areas, and traffic study areas
Socioeconomics and Environmental Justice	Communities contiguous with the project site and San Francisco Bay Area
Solid and Hazardous Materials	Project site and surrounding areas
Transportation and Parking	Project site and city of San Francisco in the vicinity of the project site
Utilities	Project site and contiguous communities
Wildlife and Habitat	Project site and contiguous wildlife corridors

The potential impacts of the EIS Alternatives are compared against the future No Action conditions for each environmental resource. Impacts are analyzed for both short-term (Phase 1) projects and long-term (Phase 2) projects associated with Alternatives 1, 2, and 3. “Short-term” projects are those that would occur during Phase 1,

which spans the 2012 through mid-2020 time frame; “long-term” projects are those that would occur during Phase 2, which spans the late 2020 through 2027 time frame. For the sake of simplicity, the analyses of each environmental resource area in this chapter refer to Phase 1 and Phase 2 projects as simply “short-term projects” and “long-term projects,” respectively.

Each Alternative (including Alternative 4, the No Action Alternative) is analyzed from the viewpoint of these 15 environmental resource areas. Indirect impacts are discussed for those resources only where they have the potential to occur (e.g., air quality, biological resources, cultural resources).

Impacts are analyzed and the findings are included in this Final EIS, applying the following levels of significance:

- Adverse Impact
- Potentially Adverse Impact
- Minor Impact
- No Impact
- Beneficial Impact

Adverse Impacts are defined in terms of context and intensity. Context is related to the uniqueness of a resource; intensity refers to the severity of the impact. Best management practices are incorporated into the project to limit the potential for an Adverse Impact. Where necessary, mitigation measures are identified for Adverse Impacts to limit the degree or magnitude of the action; rectify the impact by repairing, rehabilitating, or restoring the affected environment; or compensate for the impact by replacing or providing substitute resources or environments. Potentially Adverse impacts are identified in some cases for Alternative 3 long-term projects at the potential new SFVAMC Mission Bay Campus, where an impact cannot be concluded to be Adverse or Minor without the determination of a specific project location.

3.1 AESTHETICS

This section describes the aesthetics setting and regulatory framework and discusses the potential effects of the EIS Alternatives on views and visual character and in relation to light and glare.

3.1.1 Affected Environment

Views and Visual Character

Existing SFVAMC Fort Miley Campus

The existing SFVAMC Fort Miley Campus is located in San Francisco's outer Richmond District, fronting Clement Street between 42nd and 46th Avenue. The Campus is located adjacent to the Point Lobos bluff overlooking the northwestern edge of the city and has views to the Pacific Ocean. The National Park Service–managed Golden Gate National Recreation Area (GGNRA) borders the Campus to the north, east, and west; the western edge of the Richmond District is adjacent to the south. This portion of the GGNRA was previously known as the Fort Miley Military Reservation. The Campus sits at an elevation of 300–350 feet relative to mean sea level (msl), and is higher than the areas in its immediate vicinity: the land to the north and west of the site drops sharply downward toward the Pacific Ocean, while the terrain to the east slopes more gently through the Lincoln Park Golf Course. Views of the Golden Gate Bridge and the Marin Headlands are available from northern areas of the Campus. The Richmond District is located beyond a moderate downward slope to the south of the Campus. The Campus is not located adjacent to any designated State scenic highways, but it is located near the route of San Francisco's 49-Mile Scenic Drive. Point Lobos Avenue and Geary Boulevard pass to the south of the Campus (although the Campus does not front these streets), and the route also comes close to the northeastern tip of the Campus as it passes the Legion of Honor.

The SFVAMC Fort Miley Campus is characterized by the facility's visually prominent buildings, which range in height from one to seven stories above slope, and the natural features that surround them—mainly mature trees—located both within and adjacent to the developed areas of the Campus. Monterey pine and Monterey cypress trees are the most visible vegetation in the area, and are found in landscaped areas within the Campus as well as in the adjacent, natural GGNRA areas. These trees and other vegetation partially screen views to and from areas within the southern and southwestern portions of the Campus. However, in views from points outside of the Campus, especially from the south, the trees and vegetation do not always completely obscure the site's mostly developed areas, as evidenced by the buildings, paved roadways, gravel lots, and outdoor storage areas that are visible to passersby.

The SFVAMC Fort Miley Campus's built environment is composed of a combination of architectural styles and building sizes, resulting in an overall visually eclectic physical campus layout. However, a series of 14 buildings built in 1934 do provide a measure of visual continuity, especially in the northeastern quadrant of the Campus. Stylistically, some of the buildings have Art Deco motifs used for emphases at doorways, spandrel panels, and as horizontal stringcourses at cornices near the rooflines (VA, 2010). Some of the designs have an overall Mayan/Aztec/Mesoamerican-stylistic influence, which was a part of the Art Deco movement, with designs varying by building and location, but typically adhering to generally consistent motifs. Other areas of the Campus contain buildings constructed since the 1934 structures were established. Often, these newer buildings were built

in styles and at scales that are inconsistent with that of the original structures, resulting in the variety of structures that are seen today.

Field visits to the existing SFVAMC Fort Miley Campus were conducted in March 2011 and July 2012 to observe and document the existing visual quality and character of the Campus. Also, field visits to the Marin Headlands, San Francisco Presidio, and Golden Gate Park were conducted in July 2011 to observe the Campus from more distant locations to determine whether the Campus was visible. Table 3.1-1, aerial images (Figure 3.1-1a and 3.1-1b),[1] written text, and photographs (Figures 3.1-2a through 3.1-7b) identify and describe specific locations near the SFVAMC Fort Miley Campus that provide a representative cross section of visual images that provide information about the existing aesthetic of the Campus and its immediate surroundings. These locations represent views that may be seen by a variety of observers in the area, ranging from motorists traveling in automobiles to pedestrians walking along urban sidewalks and hikers walking along park trails.

Other nearby popular public recreational locations, Ocean Beach and Golden Gate Park, were also visited to determine whether the Campus could be seen from certain locations within these recreation spots. In both cases, the Campus was difficult to distinguish at this distance. At Ocean Beach, one can see the general shapes and form of some buildings, but the Campus blends into the City's urban fabric. From nearly all vantage points in Golden Gate Park, the Campus is not visible because of distance, varied topography, and intervening vegetation. Only a portion of the Campus can be seen when standing at the outside edge of Golden Gate Park, if an observer focuses his or her view up one of the streets that leads to the Campus.

Table 3.1-1: Existing SFVAMC Fort Miley Campus View Locations

View No.	View Description
View 1	Northwestward View of SFVAMC Fort Miley Campus from 42nd Street and Clement Street
View 2	Northward View of SFVAMC Fort Miley Campus from 43rd Street and Clement Street
View 3	Northward View of SFVAMC Fort Miley Campus from 44th Street and Clement Street
View 4	Northeastward View of SFVAMC Fort Miley Campus from 45th Street and Clement Street
View 5	Southeastward View of SFVAMC Fort Miley Campus from El Camino del Mar toward Helipad
View 6	Southward View of SFVAMC Fort Miley Campus from El Camino del Mar and Lands End Trail Connection
View 7	Southward View of SFVAMC Fort Miley Campus from El Camino del Mar, South of Putting Green
View 8	Southwestward View of SFVAMC Fort Miley Campus from El Camino del Mar, near Palace of Legion of Honor
View 9	Eastward View of SFVAMC Fort Miley Campus from GGNRA East Fort Miley, near Building 10
View 10	Northwestward View of SFVAMC Fort Miley Campus from GGNRA East Fort Miley, near National Park Service Building
View 11	Southward View of SFVAMC Fort Miley Campus from Hawk Hill Parking Lot at Marin Headlands
View 12	Southwestward View of SFVAMC Fort Miley Campus from San Francisco Presidio

[1] Figure 3.1-1 illustrates locations near the existing SFVAMC Fort Miley Campus. View 11 is located at the Hawk Hill lookout point parking area off of Conzelman Road in the Marin Headlands area of the GGNRA, while View 12 is located in the San Francisco Presidio, at the intersection of the Batteries & Bluffs Trail and the Coastal Trail, which are located east of Marshall Beach and west of Lincoln Boulevard.



Source: Google Earth, 2011; compiled by AECOM in 2012

Figure 3.1-1a: Photograph Viewpoints



Source: San Francisco County, 2009; compiled by AECOM in 2012

Figure 3.1-1b: Photograph Viewpoints

View 1

The photo location at 42nd Street and Clement Street, shown in Figure 3.1-2a, offers a view of the existing SFVAMC Fort Miley Campus main entrance as experienced by pedestrians and motorists traveling north along 42nd Street toward the entrance looking northwest. Distant views are not available from this location because existing Campus buildings, hilly topography, and vegetation block views of distant features.

View 2

The photo location at 43rd Street and Clement Street, shown in Figure 3.1-2b, provides a view of the existing SFVAMC Fort Miley Campus from farther west along Clement Street than the view shown in the Figure 3.1-1a photo. This is also a view experienced by pedestrians and motorists traveling north along 43rd Street at its intersection with Clement Street. This is a view of a relatively open area of the Campus. Because of the densely developed nature of the existing Campus, it is not common to have an unimpeded view through the Campus from other locations around the site. Although distant, this view offers glimpses of some of the Campus's historic structures.

View 3

The view location photographed from 44th Street and Clement Street, as shown in Figure 3.1-3a, provides a close-range view of Building 203, the main hospital building on the existing SFVAMC Fort Miley Campus. This viewpoint illustrates the hilly nature of the Campus, as well as the mature vegetation that exists there.

View 4

The existing SFVAMC Fort Miley Campus's southwestern corner is visible from the intersection of 45th Street and Clement Street, as shown in Figure 3.1-3b. From this location, pedestrians and motorists can see the western portion of Building 203, as well as the rooftops of Buildings 15, 29, 30, and 208. Existing mature vegetation obscures some but not all of the facades of these buildings.

View 5

The photo presented in Figure 3.1-4a provides a view from the El Camino del Mar Trail, located near the helipad at the existing SFVAMC Fort Miley Campus's northwestern corner. From this location, very few Campus features are visible because of the considerable elevation difference between the Campus and the hiking trail. The Campus is currently not a visibly prominent feature for hikers walking along the trail.

View 6

The El Camino del Mar Trail and Lands End Trail parallel each other and are connected by a short trail located between them. A view from the intersection of the short trail and El Camino del Mar Trail is shown in Figure 3.1-4b. From this location, views toward the existing SFVAMC Fort Miley Campus are largely obscured toward the Campus. The photo in this figure indicates that Building 6 would be mostly obscured from this vantage point by visually dominant thick vegetation.



A: View 1—Northwestward View of Existing SFVAMC Fort Miley Campus from 42nd Street and Clement Street



B: View 2—Northward View of Existing SFVAMC Fort Miley Campus from 43rd Street and Clement Street

Source: AECOM, 2012

Figure 3.1-2: Representative Photographs



A: View 3—Northward View of Existing SFVAMC Fort Miley Campus from 44th Street and Clement Street



B: View 4—Northeastward View of Existing SFVAMC Fort Miley Campus from 45th Street and Clement Street

Source: AECOM, 2012

Figure 3.1-3: Representative Photographs



A: View 5—Southeastward View of Existing SFVAMC Fort Miley Campus from El Camino del Mar toward Helipad



B: View 6—Southward View of Existing SFVAMC Fort Miley Campus from El Camino del Mar and Lands End Trail Connection

Source: AECOM, 2012

Figure 3.1-4: Representative Photographs

View 7

The photo presented in Figure 3.1-5a provides a view from the El Camino del Mar Trail, south of the putting green on the Lincoln Park Golf Course. The trail is heavily vegetated, which limits views of the existing SFVAMC Fort Miley Campus. From this location, only a partially obscured view of Buildings 2 and 3 is available because of existing thick vegetation.

View 8

The existing SFVAMC Fort Miley Campus's northeastern corner is visible as indicated in Figure 3.1-5b, from the El Camino del Mar Trail near the Legion of Honor. From this location, the Campus is not a visibly prominent feature and passersby have only a partial view of Building 11.

View 9

The viewpoint for the photo presented in Figure 3.1-6a is located along a trail directly east of Building 10 on the existing SFVAMC Fort Miley Campus. From this location, Building 10 and the water tower is barely visible, because of the presence of a considerable amount of vegetation that obscures it. This northern area of the Campus is a pathway for hikers making their way to Lincoln Park and connecting into surrounding trails.

View 10

The photo presented in Figure 3.1-6b shows a view from GGNRA East Fort Miley, near the National Park Service Building. This location can be accessed by hikers who visit the trails around the adjacent GGNRA lands. The existing SFVAMC Fort Miley Campus is moderately visible from this location, but is partially obscured by a grassy berm and mature vegetation that exists in the foreground.

View 11

The viewpoint for the photo presented in Figure 3.1-7a is located at the Hawk Hill lookout point parking area off of Conzelman Road in the Marin Headlands area of the GGNRA, north of the Golden Gate Bridge. The viewpoint is roughly equidistant from Rodeo Beach to the west and Fort Baker to the east, and is about 3 miles north of the existing SFVAMC Fort Miley Campus across San Francisco Bay. This is a stop for visitors to the area, many of whom park their cars to enjoy views of San Francisco's northern shoreline, points south, and the East Bay as well. Some of the largest structures and the water tower on the Campus are visible from this location, but they are not dominant features of the view individually or collectively, because (1) the structures are at a relatively long distance from the viewer, (2) much of the Campus is obstructed by vegetation, and (3) the surrounding features of the view such as San Francisco's rocky shoreline and the bay waters attract more of the viewer's attention.

View 12

The viewpoint for the photo presented in Figure 3.1-7b is located in the San Francisco Presidio, at the intersection of the Batteries to Bluffs Trail and the Coastal Trail, which are located east of Marshall Beach and west of Lincoln Boulevard. This viewpoint is located about 2 miles northeast of the existing SFVAMC Fort Miley Campus and is representative of views toward the Campus from various points on the above-mentioned trails. Similarly, but to a lesser extent than in the case of View 11, some of the largest structures and the water tower on



A: View 7—Southward View of Existing SFVAMC Fort Miley Campus from El Camino del Mar, South of Putting Green



B: View 8—Southwestward View of Existing SFVAMC Fort Miley Campus from El Camino del Mar, near the Legion of Honor

Source: AECOM, 2012

Figure 3.1-5: Representative Photographs



A: View 9—Eastward View of Existing SFVAMC Fort Miley Campus from GGNRA East Fort Miley, near Building 10



B: View 10—Northwestward View of Existing SFVAMC Fort Miley Campus from GGNRA East Fort Miley, near National Park Service Building

Source: AECOM, 2012

Figure 3.1-6: Representative Photographs



A: View 11—Southward View of Existing SFVAMC Fort Miley Campus from Hawk Hill Parking Lot at Marin Headlands



B: View 12—Southwestward View of Existing SFVAMC Fort Miley Campus from San Francisco Presidio

Source: AECOM, 2012

Figure 3.1-7: Representative Photographs

the Campus are visible from this location, but they are not dominant features of the view individually or collectively because (1) these structures are at a relatively long distance from the viewer and (2) much of the Campus is partially obstructed by vegetation.

The rendering shown in Figure 3.1-8 provides an aerial perspective, looking to the northeast that illustrates the massing that existed in 2012 at the SFVAMC Fort Miley Campus.



Source: VA, 2014

Figure 3.1-8: Aerial Perspective of 2012 SFVAMC Fort Miley Campus

Mission Bay Area

The Mission Bay area is a relatively flat area characterized primarily by human-made visual landmarks. Mission Bay is bordered by the area north of China Basin Channel, which is characterized by an array of new development that includes mid- and high-rise (80–160 feet) residential buildings with ground-floor commercial spaces, offices in new and converted warehouse buildings along King and Berry Streets, as well as the 45,000-seat AT&T Park sports stadium at King and Third Streets. The area supports a mix of uses with a mix of architectural styles in which contemporary residential buildings coexist with older structures.

The terminus of the Caltrain commuter rail system is located at Fourth and King Streets. The Muni Metro's T rail line also serves this area along with other bus lines. Transportation infrastructure visually dominates the area between Fourth and Seventh Streets along Townsend Street. Caltrain and Muni tracks, the railyard, trains, platforms, utility sheds, light posts, and power lines characterize the visible features. In addition, various highways traverse the Mission Bay area. Interstates 80 and 280 and U.S. Highway 101 have a visual presence, especially in locations where the highways are elevated above grade.

The University of California, San Francisco (UCSF) Mission Bay Campus is located between Third Street and Interstate 280 and between Nelson Rising Lane and 16th Street. The UCSF Mission Bay Campus consists of a

variety of medical research and education facilities, some of which require interior nighttime lights for building users and exterior nighttime lighting for safety and security reasons.

The area immediately north or east of the UCSF Mission Bay Campus consists of various mixed-use buildings up to 10 stories high. Some of the buildings are occupied by biotechnology companies, while others are residential structures. The area immediately south of the UCSF Mission Bay Campus consists of low-rise warehouse and industrial buildings, and vacant or undeveloped land. The proposed Mission Bay South site is largely underutilized, consisting of vacant land and old warehouse or industrial buildings ranging from one to three stories tall. These buildings are generally unadorned and utilitarian in character.

Other visual features in the area include power lines and light posts, as well as signage for commercial establishments. Natural features in the vicinity include Potrero Hill, located to the southwest and elevated above Mission Bay, and San Francisco Bay, which serves as the major visual boundary to the east. However, because of the density of urban development in these areas, such as tall buildings, these natural features are seldom viewable from within the Mission Bay area except when seen from close range.

To the south of the Mission Bay area is the Potrero Hill neighborhood, which consists of a mix of multifamily units, commercial buildings, and industrial facilities. The area south of 16th Street east of U.S. Highway 101, west of Interstate 280, and north of Cesar Chavez Street is characterized mostly by single-family residential structures, while the area east of Interstate 280 to the waterfront is characterized by a collection of large industrial and warehouse facilities, and large expansive surface parking lots.

A few scattered areas of public open space can be found in the Mission Bay area. The largest of these are Mission Bay Commons Park and Bay Front Park, which, along with a few other smaller parks, provide a visual contrast to the many other densely urbanized locations found in the area.

Light and Glare[2]

Existing SFVAMC Fort Miley Campus

The existing SFVAMC Fort Miley Campus is located in the northwestern corner of San Francisco, surrounded to the north, west, and east by GGNRA-managed lands, and by the outer Richmond District residential neighborhood to the south. The undeveloped GGNRA lands do not contain substantial sources of nighttime light, and are in fact among the most minimally lit areas of the city. GGNRA lands are not a source of glare, given that the area is mostly undeveloped. The street lights and residential lights in the outer Richmond District produce a moderate amount of nighttime light, but the neighborhood is not a substantial source of light or glare.

The existing SFVAMC Fort Miley Campus is substantially developed with medical buildings, research buildings, parking structures, and surface parking lots, all of which are equipped with exterior lighting fixtures. Some medical facilities have nighttime lighting that is required for safety and security. However, because the majority of activity on the Campus takes place during daytime hours, nighttime lighting consists primarily of low-level security lights used around Campus buildings and parking facilities, as well as limited hospital lights. In addition,

[2] In this NEPA context, light is nighttime illumination that stimulates sight and makes things visible, and glare is difficulty seeing in the presence of bright light such as direct or reflected sunlight.

field observations revealed that because Campus facilities are generally set back from the property boundaries, existing low-level lighting is not substantially noticeable to viewers in the surrounding area.

The existing SFVAMC Fort Miley Campus is not a substantial source of glare. The windows of the existing buildings on the Campus may at times reflect the sun's rays, but these occurrences are minor and intermittent. In addition, building fenestration is intermixed with nonreflective building materials, minimizing the amount of glare caused by the buildings.

Mission Bay Area

The Mission Bay area contains a diversity of land uses, each contributing to the urban fabric of San Francisco. The northern portion of the Mission Bay area is visually dominated by groups of high-rise office and residential buildings that are internally lit and also have associated outdoor entry and security lighting. The northeastern portion of the Mission Bay area is anchored by AT&T Park, which is a substantial source of nighttime lighting on the occasions when it hosts sporting or other events. In addition to these light sources, other commercial, residential, and industrial buildings create sources of light. The area is also extensively lit by streetlights, motor vehicles, and transit vehicles traveling through the area on city streets and highways.

The majority of the Mission Bay area (south of AT&T Park) is also heavily urbanized and contains a large number of lighting sources, including city streets and highways, as well as internally lit commercial, industrial, and research buildings (e.g., UCSF) and their associated entry and exterior security lighting. The primarily residential Potrero Hill neighborhood is a relatively minor source of nighttime lighting.

Tall high- and mid-rise buildings in the Mission Bay area are occasional sources of glare, during periods when their windows reflect the sun's rays. However, these occurrences are relatively minor and intermittent.

3.1.2 Regulatory Framework

There are no applicable federal standards relating to visual resources or aesthetics.

3.1.3 Environmental Consequences

Significance Criteria

A NEPA evaluation must consider the context and intensity of the environmental effects that would be caused by, or result from, the EIS Alternatives.

Thus, an Alternative analyzed in this EIS is considered to result in an adverse impact related to aesthetics if it would:

- have a substantial adverse effect on a scenic vista;
- substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a State scenic highway;
- substantially degrade the existing visual character or quality of the site and its surroundings; or

- create a new source of substantial light or glare which would adversely affect day or nighttime views in the area.

In this case, "substantial" refers to a noticeable physical effect that causes the visual setting and viewer experience to change in a negative way.

Assessment Methods

This section provides a discussion of the visual impacts associated with the EIS Alternatives and the area surrounding the project sites.

Several variables affect the degree of visibility, visual contrast, and ultimately project impacts: (1) scale and size of facilities, (2) viewer types and activities, (3) distance and viewing angle, and (4) influences of adjacent scenery or land uses. Viewer response and sensitivity vary depending on viewer attitudes and expectations. Viewer sensitivity is distinguished among project viewers in identified scenic corridors, and recreational, residential, office, and industrial areas. Recreational areas and scenic corridors are considered to have relatively high sensitivity, residential areas have moderate sensitivity, and office and industrial areas have low sensitivity.

As part of this analysis, various areas in San Francisco and within GGNRA lands were screened as potential view locations, based on whether the existing SFVAMC Fort Miley Campus is visible from these locations and the degree to which viewers at those locations would be sensitive to proposed physical changes at the Campus during the proposed construction and operational periods. A set of locations that constitute a representative cross section of views experienced by a representative cross section of observers was chosen for the analysis. Views from these locations were photographed and are included in this EIS to illustrate existing conditions. Consequently, visual simulations were conducted for these same views to facilitate project impact determinations. Project design drawings and information about height and massing were also relied upon, in conjunction with the visual simulations, to identify whether or when the proposed structures would result in visual impacts.

Alternative 1: SFVAMC Fort Miley Campus Buildout Alternative

Short-Term Projects

Construction

Visual Character

Alternative 1 short-term projects would involve construction or retrofitting of patient care buildings, research buildings, business occupancy buildings, residential buildings, and parking structures. Construction activities would require establishing construction staging areas throughout the existing SFVAMC Fort Miley Campus and would include the presence of large construction vehicles. However, conventional best management practices (BMPs) related to screening of construction staging areas would be implemented to limit the frequency and prominence of views of construction equipment and materials. Therefore, this would result in a temporary minor visual impact.

Temporary modular swing space totaling approximately 60,000 gross square feet (gsf) would be spread over four locations on Campus to accommodate displaced employees during the seismic retrofitting of Buildings 1, 6, and 8. The general locations of the swing space would be west of Building 10 (one story), south of Building 200 (one story), east of Building 6 (one story), and within Parking Area B (two stories). The swing space would be in place from April 2016 to March 2019. Three of the four swing space locations would be visible in some public views of the Campus,[3] including from the main entrance of the Campus, given the presence of the proposed two-story modular space within Parking Area B. However, the visual change associated with the modular structures would primarily affect the on-site population of personnel, patients, and visitors. In addition, because these would be temporary structures on Campus, there would be a minor construction-related visual impact.

Light

Construction activity for Alternative 1 short-term projects would take place during daytime hours; therefore, no impact from the use of construction equipment lights would occur. Some low-level security lighting would be required for construction staging areas, which would have a minor impact relative to the area's ambient light levels. However, in accordance with BMPs, lighting equipment would be shielded and directed downward to minimize light spillover to neighboring residential areas or adjacent GGNRA lands. Therefore, this impact would be minor.

Operation

Views and Visual Character

Alternative 1 short-term projects would include the operation of four new research, administrative, hoptel, and emergency operations/parking buildings and one expanded medical building on the existing SFVAMC Fort Miley Campus. The proposed structures would range in size from approximately 8,700 to 155,000 square feet, with heights ranging from one to four stories above grade. None of the proposed structures would exceed the height of Building 2, which is the tallest existing building on the Campus.

Some of the structures proposed as part of Alternative 1 short-term projects would be located in relatively central areas of the Campus, which are not as visible from outside the Campus boundaries as areas along the perimeter. By and large, buildings proposed in central portions of the Campus would not be visually dominant relative to existing buildings in that part of the Campus, because several of the existing structures are larger than the proposed structures. In addition, views of these new buildings from outside the Campus would be mostly screened from view by existing buildings, and/or would be set back sufficiently from the Campus boundaries to render them visually subordinate to other visible features. Therefore, buildings proposed for the central Campus would have a minor visual impact on views and would minimally affect the visual character of the Campus.

Buildings proposed for the eastern portion of the existing SFVAMC Fort Miley Campus during Alternative 1 short-term projects would be intermittently visible from GGNRA East Fort Miley. East Fort Miley contains trails that allow access by hikers visiting GGNRA lands. Visitors can travel along a trail that parallels the Campus boundary, from which Campus buildings are intermittently visible through existing vegetation. From areas where views are unobstructed, hikers can clearly observe existing buildings located on the eastern edge of the Campus.

[3] Except for temporary modular space located south of Building 200, given its location in the center of Campus.

Although they would be noticeable from GGNRA lands, the proposed new buildings would not be inconsistent with the character or scale of existing buildings in this area of the Campus, and would be visible only intermittently through the heavy vegetation along the East Fort Miley and Campus boundary.

New buildings proposed for the western portion of the Campus would be visible from some publicly accessible locations on GGNRA lands north and west of the existing SFVAMC Fort Miley Campus, resulting in alteration of the physical surroundings experienced by visitors to that area. This change would be noticeable where proposed multistory buildings would be visible to regular hikers who are used to taking the trail along El Camino del Mar and looking up toward the buildings. These observers are considered sensitive to changes in the area's visual character because they pass through the area for recreational purposes and are familiar with the scenery as part of their regular trail experience.

However, implementing Alternative 1 short-term projects would result in only a minor impact related to views and visual character. These locations are not focal or prime destinations for hikers, and the changes would be noticeable only when looking up toward the building rather than along the trail or out toward San Francisco Bay. Instead, these are generally areas that people pass through on their way to more scenic GGNRA locations with more expansive views of San Francisco Bay, including views of the Golden Gate Bridge and Marin Headlands. The proposed new buildings would also be built with materials, colors, and massing that would be designed to fit within the context of the existing buildings on the SFVAMC Fort Miley Campus, thereby minimizing their visual effect. With implementation of Alternative 1 short-term projects, trees would be planted along the perimeter of the Campus, which would further screen views of the proposed new buildings from the trail along El Camino del Mar and from more distant views such as those from the Marin Headlands and the Presidio. Furthermore, the proposed Patient Welcome Center drop-off area roundabout, though visible from the adjacent residential streets, would be in the same location as the current on-Campus bus drop-off area.

For a specific analysis based on visual simulations showing views with implementation of Alternative 1 short-term projects, see the discussion below. Trees would be removed for construction associated with Buildings 24 and 203, and such tree removal was taken into account in the visual simulations. These proposed development changes to the Campus would result in a minor impact.

View 1a

The visual simulation shown in Figure 3.1-9a offers a publicly accessible view of the proposed main entrance of the SFVAMC Fort Miley Campus, as experienced by pedestrians and motorists traveling north along 42nd Street, looking northwest. As depicted, a part of proposed new Building 24 would be visible in the far right side of this view. However, it would not be dominant in the view. In addition, the removal of one tree would not adversely affect this view. This would represent a minor visual impact.

View 2a

The visual simulation shown in Figure 3.1-9b offers a publicly accessible view of the SFVAMC Fort Miley Campus, as seen from farther west along Clement Street than the visual simulation discussed above under View 1a. This visual simulation shows the view as experienced by pedestrians and motorists traveling north along 43rd Street at its intersection with Clement Street. As depicted, a part of proposed new Building 24 would be visible in the far right side of this view. This would represent a minor visual impact.



A: View 1a—Northwestward View of Proposed SFVAMC Fort Miley Campus from 42nd Street and Clement Street



B: View 2a—Northward View of Proposed SFVAMC Fort Miley Campus from 43rd Street and Clement Street

Source: Square One Productions, 2014

Figure 3.1-9: Visual Simulations for Short-Term Projects under Alternatives 1 and 2

View 3a

The visual simulation shown in Figure 3.1-10a offers a publicly accessible view of the SFVAMC Fort Miley Campus, particularly depicting a close-range view of Building 203, the main hospital building on the Campus. As depicted, the Building 203 expansion would not be visible in the middle of this view, because mature vegetation would obscure the view. Building 203 would be slightly more visible as a result of the planned removal of some of the vegetation in the foreground on the left. However, this change would not be dominant in the view. In addition, the reduction in trees would not adversely affect this view. This would represent a minor visual impact.

View 4a

The visual simulation shown in Figure 3.1-10b offers a publicly accessible view of the SFVAMC Fort Miley Campus as experienced by pedestrians and motorists. This simulation shows the western portion of Building 203, the rooftop of Building 208, and a very small portion of the rooftop of Buildings 29 and 30. As depicted, Building 203 would be slightly more visible as a result of the planned removal of some of the vegetation in the foreground. However, this change would not be dominant in the view. In addition, the removal of trees would not adversely affect this view. This would represent a minor visual impact.

View 5a

The visual simulation shown in Figure 3.1-11a offers a publicly accessible view of the SFVAMC Fort Miley Campus, as experienced by pedestrians along a GGNRA trail northwest of the Campus if they were to look up at the Campus buildings. As depicted, the proposed new Buildings 40 and 211 would be visible, introducing building elements to the middle-ground aspect of this view. However, this change would not be dominant in the view given the extent of natural foliage in the foreground and middle ground, including some vegetation that would slightly obscure the proposed new buildings. The landscape screening along this edge of the property will be discussed with NPS and the Coastal Commission with the intent to continue to partially obstruct buildings 40 and 211. This would represent a minor visual impact.

View 6a

The visual simulation shown in Figure 3.1-11b offers a publicly accessible view of the SFVAMC Fort Miley Campus, as experienced by pedestrians along a GGNRA trail north of the Campus if they were to look up at the Campus buildings. As depicted, there would be no change in the view from the existing view of heavy foliage and trail. This would represent no visual impact.

View 7a

The visual simulation shown in Figure 3.1-12a offers a publicly accessible view of the SFVAMC Fort Miley Campus, as experienced by pedestrians along the El Camino del Mar Trail north of the Campus if they were to look up at the Campus buildings. As depicted, a part of proposed new Building 43 would be barely visible in the far middle of this view. However, existing heavy foliage would continue to dominate this view. This would represent a minor visual impact.



A: View 3a—Northward View of Proposed SFVAMC Fort Miley Campus from 44th Street and Clement Street



B: View 4a—Northeastward View of Proposed SFVAMC Fort Miley Campus from 45th Street and Clement Street

Source: Square One Productions, 2014

Figure 3.1-10: Visual Simulations for Short-Term Projects under Alternatives 1 and 2



A: View 5a—Southeastward View of Proposed SFVAMC Fort Miley Campus from El Camino del Mar toward Helipad



B: View 6a—Southward View of Proposed SFVAMC Fort Miley Campus from El Camino del Mar and Lands End Trail Connection

Source: Square One Productions, 2014

Figure 3.1-11: Visual Simulations for Short-Term Projects under Alternatives 1 and 2



A: View 7a—Southward View of Proposed SFVAMC Fort Miley Campus from El Camino del Mar, South of Putting Green



B: View 8a—Southwestward View of Proposed SFVAMC Fort Miley Campus from El Camino del Mar, near the Legion of Honor

Source: Square One Productions, 2014

Figure 3.1-12: Visual Simulations for Short-Term Projects under Alternatives 1 and 2

View 8a

The visual simulation shown in Figure 3.1-12b offers a publicly accessible view of the SFVAMC Fort Miley Campus, as experienced by pedestrians along the El Camino del Mar Trail near the Legion of Honor northeast of the Campus if they were to look up at the Campus buildings. As depicted, a part of proposed new Building 43 would be visible in the far middle of this view. However, existing heavy foliage and the surface parking lot in the foreground would continue to dominate this view. This would represent a minor visual impact.

View 9a

The visual simulation shown in Figure 3.1-13a offers a publicly accessible view of the SFVAMC Fort Miley Campus, as experienced by pedestrians along a GGNRA trail east of Building 10. As depicted, a part of proposed new Buildings 40 and 211 would be partially visible and proposed new Buildings 22 and 43 would be barely visible through the trees in the far middle of this view. However, existing heavy foliage in the foreground would continue to dominate this view. This would represent a minor visual impact.

View 10a

The visual simulation shown in Figure 3.1-13b offers a publicly accessible view of the SFVAMC Fort Miley Campus as experienced by pedestrians along a GGNRA trail east of Building 212. As depicted, there would be no change in the view from the existing view of a berm, Building 212, and foliage. This would represent no visual impact.

View 11a

The visual simulation shown in Figure 3.1-14a offers a publicly accessible view of the SFVAMC Fort Miley Campus as experienced by pedestrians and motorists at the Hawk Hill lookout point parking area off Conzelman Road in the Marin Headlands area of the GGNRA, north of the Golden Gate Bridge. As depicted, a part of proposed new Buildings 40, 43, and 211 would be visible across San Francisco Bay in the far middle of this view. The existing water tower would be removed and the water system would be upgraded to store water underground, and would therefore not be visible from this view or any view location. The design of the underground water storage shall be completed in compliance with regulatory requirements and coordinated with NPS and the Coastal Commission. However, the bay in the foreground and the overall San Francisco skyline against the Pacific Ocean in the background would continue to dominate this view. This would represent a minor visual impact.

View 12a

The visual simulation shown in Figure 3.1-14b offers a publicly accessible view of the SFVAMC Fort Miley Campus as experienced by pedestrians in the San Francisco Presidio, at the intersection of the Batteries to Bluffs Trail and the Coastal Trail, located east of Marshall Beach and west of Lincoln Boulevard. As depicted, a part of proposed new Building 40 would be visible across San Francisco Bay in the far middle of this view. However, the bay in the foreground and the northwestern San Francisco topography and the Pacific Ocean in the background would continue to dominate this view. In addition, the existing water tower would be removed and the water system would be upgraded to store water underground, and would therefore not be visible from this view or any view



A: View 9a—Eastward View of Proposed SFVAMC Fort Miley Campus from GGNRA East Fort Miley, near Building 10



B: View 10a—Northwestward View of Proposed SFVAMC Fort Miley Campus from GGNRA East Fort Miley, near National Park Service Building

Source: Square One Productions, 2014

Figure 3.1-13: Visual Simulations for Short-Term Projects under Alternatives 1 and 2



A: View 11a—Southward View of Proposed SFVAMC Fort Miley Campus from Hawk Hill Parking Lot at Marin Headlands



B: View 12a—Southwestward View of Proposed SFVAMC Fort Miley Campus from San Francisco Presidio

Source: Square One Productions, 2014

Figure 3.1-14: Visual Simulations for Short-Term Projects under Alternatives 1 and 2

location. The design of the underground water storage shall be completed in compliance with regulatory requirements and coordinated with NPS and the Coastal Commission. This would represent a minor visual impact.

The rendering shown in Figure 3.1-15 provides an aerial perspective that illustrates the proposed overall facility massing for buildout under short-term projects for Alternative 1 by mid-2020, combined with existing massing at the SFVAMC Fort Miley Campus.



Source: VA, 2014

Figure 3.1-15: Aerial Perspective of SFVAMC Fort Miley Campus Buildout at the End of Alternative 1 Short-Term Projects in Mid-2020

Light and Glare

Because most operations on the existing SFVAMC Fort Miley Campus take place during daytime hours, nighttime lighting related to operations would consist primarily of shielded and downward-directed low-level security lights used around Campus buildings and parking facilities. Because Campus facilities are generally set back from the Campus boundaries, low-level lighting would not be substantially noticeable to users of the surrounding area**.** Furthermore, most buildings proposed at locations near the Campus perimeter would not generally be occupied on a 24-hour continual basis as occurs in the Campus's existing medical care buildings, from which interior lighting is emitted during nighttime hours. Some of the medical buildings may keep their interior lights on during nighttime hours, and those buildings would emit lighting from within. However, because of the setback from Campus boundaries and existing lighting sources, interior lighting would not be substantially noticeable. The ambient light level would not change substantially, as long as security lighting is shielded and directed downward. No substantial increase in glare would result from Alternative 1 short-term projects on the Campus. The windows of the buildings on the Campus may at times reflect the sun's rays, but these occurrences would be minor and intermittent. Therefore, this impact would be minor.

Long-Term Projects

Construction

Visual Character

The Alternative 1 long-term project would be similar to the short-term projects for this alternative in terms of construction equipment and staging areas and their respective visual shielding. However, temporary modular swing space would not be included and construction would occur in the center of the Campus under the Alternative 1 long-term project. Therefore, the impact of the Alternative 1 long-term project related to visual character would be temporary and less than the temporary impact identified for Alternative 1 short-term projects.

Light

As for Alternative 1 short-term projects, construction activity associated with the Alternative 1 long-term project would take place during daytime hours; therefore, no impact would result from the use of construction equipment lights. Shielded, downward-directed, low-level security lighting would be used for construction staging areas, which would have a minor impact relative to the area's ambient light levels during the construction period. Therefore, this would be a temporary minor impact.

Operation

Views and Visual Character

The Alternative 1 long-term project would involve operation of a new medical building on the existing SFVAMC Fort Miley Campus. The proposed structure would be 170,000 square feet and five stories tall. The proposed structure would not exceed the height of Building 2, which is the tallest existing building on the Campus.

The massing of this building would be visible from various publicly accessible locations on GGNRA lands north and east of the existing SFVAMC Fort Miley Campus, resulting in an alteration of the physical surroundings experienced by visitors to that area. This change would be most noticeable in locations such as those shown in Figure 3.1-4 (View 5) and Figure 3.1-5 (View 8), where proposed multistory buildings would be visible to hikers from the trail along El Camino del Mar. These observers are considered sensitive to changes in the area's visual character because they pass through the area for recreational purposes and enjoy the existing scenery of the area as part of the recreational experience. However, implementation of the Alternative 1 long-term project would result in a minor impact, because this location is not the focal or prime destination for hikers. Instead, this is generally an area that people pass through on their way to more scenic GGNRA locations with more expansive views that include views of the Golden Gate Bridge and Marin Headlands. The proposed new building would be built with materials, colors, and massing that would be designed to fit with the context of the existing buildings on the SFVAMC Fort Miley Campus, thereby minimizing the visual effect. In addition, vegetation currently screens portions of these views. With implementation of the Alternative 1 long-term project, trees would be planted along the perimeter of the Campus, which would further screen views of the proposed new building from the trail along El Camino del Mar and from more distant views such as those from the Marin Headlands and the Presidio. For a specific analysis based on visual simulations showing views with implementation of the Alternative 1 long-term

project, see the discussion below. The impact of this proposed development change to the Campus would be considered minor.

View 1b

The visual simulation shown in Figure 3.1-16a is the same as the visual simulation shown in Figure 3.1-9a, because the buildout of the long-term project in 2027 would look the same in this view as the buildout of short-term projects in mid-2020. This would represent a minor visual impact.

View 2b

The visual simulation shown in Figure 3.1-16b is the same view as the visual simulation shown in Figure 3.1-9b, because the buildout of the long-term project in 2027 would look the same in this view as the buildout of short-term projects in mid-2020. This would represent no visual impact.

View 3b

The visual simulation shown in Figure 3.1-17a is the same as the visual simulation shown in Figure 3.1-10a, because the buildout of the long-term project in 2027 would look the same in this view as the buildout of short-term projects in mid-2020. This would represent a minor visual impact.

View 4b

The visual simulation shown in Figure 3.1-17b differs from the visual simulation shown in Figure 3.1-10b, because the buildout of the long-term project in 2027 would look different in this view than the buildout of short-term projects in mid-2020. Specifically, the top portion of the proposed new Building 213 (five stories in height) would be visible in the center of this view upon buildout of the long-term project. However, Building 213 would not be taller than the other buildings seen in the view, nor would it be taller than the tallest existing building on the SFVAMC Fort Miley Campus. This would represent a minor visual impact.

View 5b

The visual simulation shown in Figure 3.1-18a is the same as the visual simulation shown in Figure 3.1-11a, because the buildout of the long-term project in 2027 would look the same in this view as the buildout of short-term projects in mid-2020. This would represent a minor visual impact.

View 6b

The visual simulation shown in Figure 3.1-18b is the same as the visual simulation shown in Figure 3.1-11b, because the buildout of the long-term project in 2027 would look the same in this view as the buildout of short-term projects in mid-2020. This would represent no visual impact.



A: View 1b—Northwestward View of Proposed SFVAMC Fort Miley Campus from 42nd Street and Clement Street



B: View 2b—Northward View of Proposed SFVAMC Fort Miley Campus from 43rd Street and Clement Street

Source: Square One Productions, 2014

Figure 3.1-16: Visual Simulations for Long-Term Projects under Alternatives 1 and 2



A: View 3b—Northward View of Proposed SFVAMC Fort Miley Campus from 44th Street and Clement Street



B: View 4b—Northeastward View of Proposed SFVAMC Fort Miley Campus from 45th Street and Clement Street

Source: Square One Productions, 2014

Figure 3.1-17: Visual Simulations for Long-Term Projects under Alternatives 1 and 2



A: View 5b—Southeastward View of Proposed SFVAMC Fort Miley Campus from El Camino del Mar toward Helipad



B: View 6b—Southward View of Proposed SFVAMC Fort Miley Campus from El Camino del Mar and Lands End Trail Connection

Source: Square One Productions, 2014

Figure 3.1-18: Visual Simulations for Long-Term Projects under Alternatives 1 and 2

View 7b

The visual simulation shown in Figure 3.1-19a is almost the same as the visual simulation shown in Figure 3.1-12a, with proposed new Building 213 barely visible in this view upon buildout of the long-term project. However, Building 213 would be mostly obscured by foliage. This would represent a minor visual impact.

View 8b

The visual simulation shown in Figure 3.1-19b is almost the same as the visual simulation shown in Figure 3.1-12b, with proposed new Building 213 barely visible in this view upon buildout of the long-term project. However, Building 213 would be mostly obscured by foliage. This would represent a minor visual impact.

View 9b

The visual simulation shown in Figure 3.1-20a is the same as the visual simulation shown in Figure 3.1-13a, because the buildout of the long-term project in 2027 would look the same in this view as the buildout of short-term projects in mid-2020. This would represent a minor visual impact.

View 10b

The visual simulation shown in Figure 3.1-20b is almost the same as the visual simulation shown in Figure 3.1-13b, with proposed new Building 213 barely visible in this view upon buildout. However, Building 213 would be mostly obscured by foliage. This would represent a minor visual impact.

View 11b

The visual simulation shown in Figure 3.1-21a is almost the same as the visual simulation shown in Figure 3.1-14a, with proposed new Building 213 barely visible in this view upon buildout. However, Building 213 would not be dominant in this view, which focuses on San Francisco Bay in the foreground and the overall San Francisco skyline against the Pacific Ocean backdrop in the background. The existing water tower would be removed and the water system would be upgraded to store water underground, and would therefore not be visible from this view or any view location. The design of the underground water storage shall be completed in compliance with regulatory requirements and coordinated with NPS and the Coastal Commission. This would represent a minor visual impact.

View 12b

The visual simulation shown in Figure 3.1-21b is almost the same as the visual simulation shown in Figure 3.1-14b, with proposed new Building 213 barely visible in this view upon buildout. However, Building 213 would not be dominant in this view, which focuses on San Francisco Bay in the foreground and the northwestern San Francisco topography and the Pacific Ocean in the background. In addition, the existing water tower would be removed and the water system would be upgraded to store water underground, and would therefore not be visible from this view or any view location. The design of the underground water storage shall be completed in compliance with regulatory requirements and coordinated with NPS and the Coastal Commission. This would represent a minor visual impact.



A: View 7b—Southward View of Proposed SFVAMC Fort Miley Campus from El Camino del Mar, South of Putting Green



B: View 8b—Southwestward View of Proposed SFVAMC Fort Miley Campus from El Camino del Mar, near the Legion of Honor

Source: Square One Productions, 2014

Figure 3.1-19: Visual Simulations for Long-Term Projects under Alternatives 1 and 2



A: View 9b—Eastward View of Proposed SFVAMC Fort Miley Campus from GGNRA East Fort Miley, near Building 10



B: View 10b—Northwestward View of Proposed SFVAMC Fort Miley Campus from GGNRA East Fort Miley, near National Park Service Building

Source: Square One Productions, 2014

Figure 3.1-20: Visual Simulations for Long-Term Projects under Alternatives 1 and 2



A: View 11b—Southward View of Proposed SFVAMC Fort Miley Campus from Hawk Hill Parking Lot at Marin Headlands

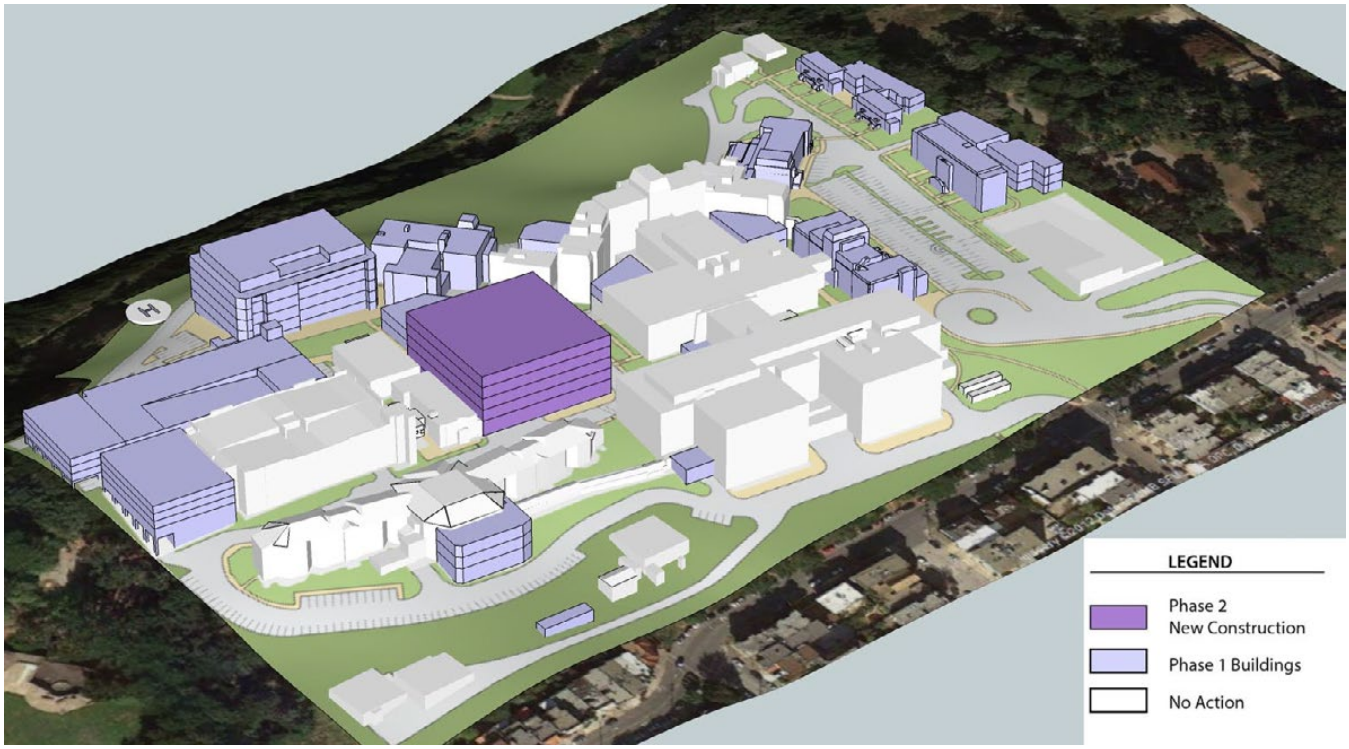


B: View 12b—Southwestward View of Proposed SFVAMC Fort Miley Campus from San Francisco Presidio

Source: Square One Productions, 2014

Figure 3.1-21: Visual Simulations for Long-Term Projects under Alternatives 1 and 2

The rendering shown in Figure 3.1-22 provides an aerial perspective that illustrates the proposed overall facility massing for buildout of long-term projects under Alternative 1 or Alternative 2 in 2027, combined with existing massing at the SFVAMC Fort Miley Campus and development of short-term projects under Alternative 1 or Alternative 2, which is assumed to already be in place by mid-2020.



Source: VA, 2014

Figure 3.1-22: Aerial Perspective of SFVAMC Fort Miley Campus Buildout at the End of Long-Term Projects under Alternative 1 or Alternative 2 in 2027

Light and Glare

Because most of the activity on the existing SFVAMC Fort Miley Campus takes place during daytime hours, most exterior lighting related to operations consists primarily of low-level security lights used around Campus buildings and parking facilities. Because Campus buildings would continue to generally be set back from the Campus boundaries, low-level lighting would not be substantially noticeable to users of the surrounding area. Furthermore, most buildings proposed at locations near the Campus perimeter would not generally be occupied on a 24-hour continual basis as occurs in the Campus's existing medical care buildings, from which interior lighting is emitted during nighttime hours. Some of the medical buildings may keep their interior lights on during nighttime hours, and those buildings would emit lighting from within. However, because of the setback from Campus boundaries and existing lighting sources, interior lighting would not be substantially noticeable. The Campus would not cause a substantial source of glare. The windows of the proposed buildings on the Campus may at times reflect the sun's rays, but these occurrences would be minor and intermittent. Therefore, this impact would be minor.

Alternative 2: SFVAMC Fort Miley Campus Buildout Alternative

Short-Term Projects

Construction

Visual Character

Alternative 2 short-term projects would be similar to short-term projects for Alternative 1 in terms of construction equipment and staging areas and their respective visual shielding. However, temporary modular swing space would not be included in Alternative 2 short-term projects. Therefore, the impact of Alternative 2 long-term projects related to visual character would be temporary and less than the temporary visual impact identified for Alternative 1 short-term projects.

Light

As for Alternative 1 short-term projects, construction activity associated with Alternative 2 short-term projects would take place during daytime hours; therefore, no impact would result from the use of construction equipment lights. Shielded, downward-directed, low-level security lighting would be used for construction staging areas, which would have a minor impact relative to the area's ambient light levels during the construction period. Therefore, this would be a temporary minor impact.

Operation

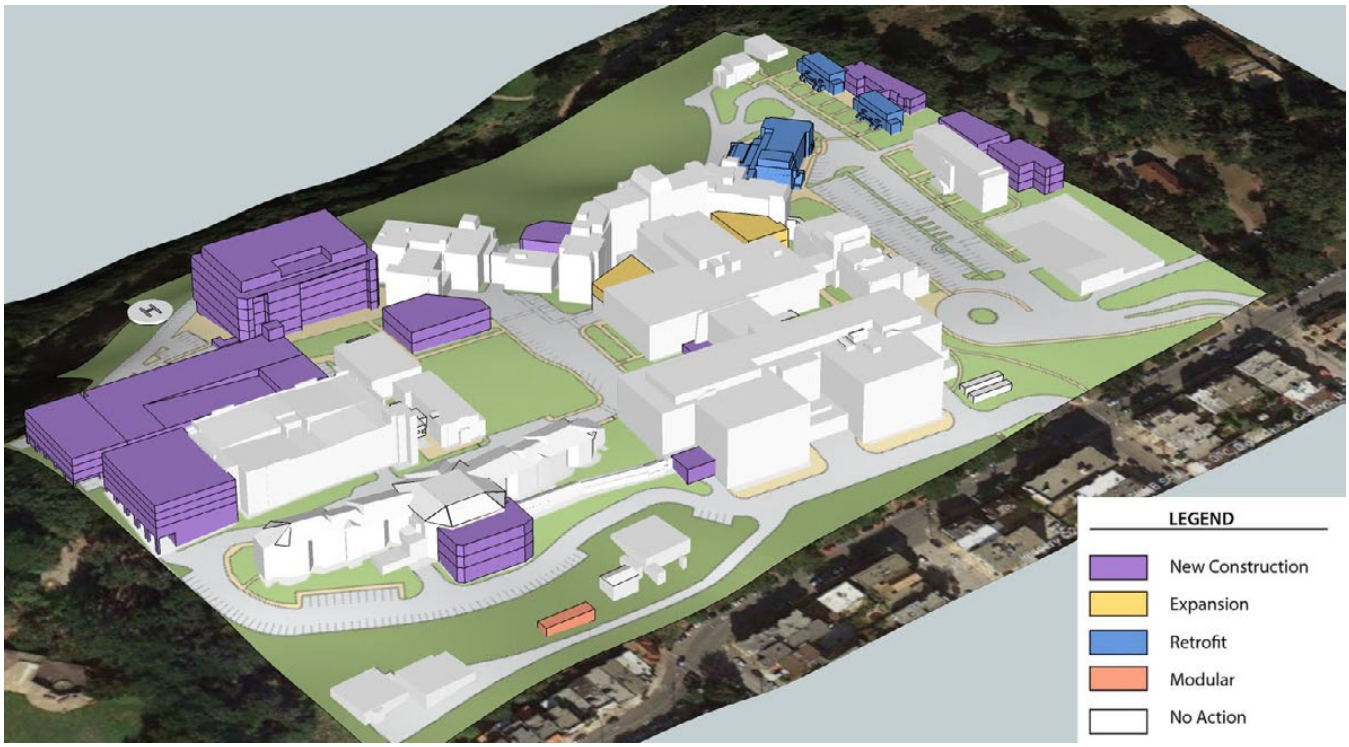
Views and Visual Character

Because buildout operations would be similar under Alternatives 1 and 2, views associated with operation of Alternative 2 short-term projects would be similar as the view impacts of operation of short-term projects for Alternative 1. Although the completion of retrofitting of Buildings 1, 6, and 8 would occur in a different time frame than under Alternative 1, retrofitting activities would be internal to these buildings; therefore, external public views would be unaffected by these retrofitting projects. See the visual simulations and associated discussion under Alternative 1 short-term projects discussed above related to LRDP operations. This impact would be minor.

The rendering shown in Figure 3.1-23 provides an aerial perspective that illustrates the proposed overall facility massing for buildout under long-term projects for Alternative 2 in 2027, combined with existing massing at the SFVAMC Fort Miley Campus.

Light and Glare

Because buildout operations would be the same under Alternatives 1 and 2, light and glare associated with operation of Alternative 2 short-term projects would be the same as the light and glare impacts of operation of Alternative 1 short-term projects. This impact would be minor.



Source: VA, 2014

Figure 3.1-23: Aerial Perspective of SFVAMC Fort Miley Campus Buildout at the End of Alternative 2 Long-Term Projects in 2027

Long-Term Projects

Construction

Visual Character

Alternative 2 long-term projects would be similar to the Alternative 1 long-term project in terms of construction equipment and respective visual shielding that would be employed. However, seismic retrofitting of Buildings 1, 6, and 8 would occur and temporary modular swing space would be included under Alternative 2 short-term projects. Seismic retrofitting of Buildings 1, 6, and 8 would result in no changes to exterior massing, height, or style. Temporary modular swing space totaling approximately 60,000 gsf would be present in one location on Campus (within the future demolition footprint of existing Building 12) to accommodate displaced employees during the seismic retrofitting of Buildings 1, 6, and 8. The general location of this swing space, which would be three stories tall, would be south of Building 41. The swing space would be in place from September 2020 to February 2024. The swing space location would not be dominant in public views of the Campus, given its location in the center of Campus. Therefore, this would be a temporary visual impact, but greater than the temporary visual impact identified for the Alternative 1 long-term project.

Light

As with the Alternative 1 long-term project, construction activity associated with Alternative 2 long-term projects would take place during daytime hours; therefore, no impact would result from the use of construction equipment lights. Shielded, downward-directed, low-level security lighting would be used for construction staging areas,

which would have a minor impact relative to the area's ambient light levels during the construction period. Therefore, this would be a temporary minor impact.

Operation

Views and Visual Character

Because buildout operations would be the same under Alternatives 1 and 2, views associated with operation of Alternative 2 long-term projects would be the same as the view impacts of operation of the Alternative 1 long-term project (see Figure 3.1-22). Although the retrofitting of Buildings 1, 6, and 8 would occur in a different time frame than under Alternative 1, retrofitting activities would be internal to these buildings and would result in no changes to exterior massing, height, or style; therefore, external public views would be unaffected by these retrofitting projects. See the visual simulations and associated discussion of operational impacts of Alternative 1 short-term projects discussed above. This impact would be minor.

Light and Glare

Because buildout operations would be the same under Alternatives 1 and 2, light and glare associated with operation of Alternative 2 long-term projects would be similar to the light and glare anticipated with operation of the Alternative 1 long-term project. This impact would be minor.

Alternative 3: SFVAMC Fort Miley Campus Plus Mission Bay Campus Alternative

Short-Term Projects

Construction and Operation

Alternative 3 short-term projects (during both construction and operation) would be the same as short-term projects for Alternative 1 (Table 2-1 and Figure 2-1). Therefore, the construction-related and operational impacts of Alternative 3 short-term projects would be the same as the impacts of Alternative 1 short-term projects. These impacts would be minor.

Long-Term Projects

Alternative 3 long-term projects would be similar to long-term projects for Alternative 1, except that the ambulatory care center and a new associated parking structure would be located at the potential new SFVAMC Mission Bay Campus (Table 2-5 and Figure 2-5).

Construction

Visual Character

Alternative 3 long-term projects would involve construction of a medical building as well as a parking structure in the Mission Bay area. This would necessitate construction activity, requiring the establishment of construction staging areas and the presence of large construction vehicles on the site of the potential new SFVAMC Mission Bay Campus.

Conventional BMPs related to screening of construction staging areas would be implemented to limit the frequency and prominence of views of construction equipment and materials. Therefore, this would be a temporary minor impact.

Light

Alternative 3 long-term projects would involve construction activity during daytime hours at the potential new Mission Bay Campus; therefore, no impact would result from the use of construction equipment lights. Some low-level security lighting would be required for construction staging areas, which would have a minor impact relative to the area's ambient light levels. However, in accordance with BMPs, lighting equipment would be shielded and directed downward as part of Alternative 3 to minimize light spillover to neighboring areas. Therefore, this would be a temporary minor impact.

Operation

Views and Visual Character

Changes to views of the Mission Bay area and alterations to the existing visual character resulting from implementation of Alternative 3 long-term projects would occur. The ambulatory care center and parking structure would not be located at the existing Campus under Alternative 3.

It is unknown specifically where in the Mission Bay area the proposed new 170,000 gsf of medical, research, and parking space under Alternative 3 would be located. A project-level environmental review would be conducted in the future when more specific project details are available. It is anticipated that project elements would be designed to fit within the visual context of the Mission Bay area while complying with local codes and regulations. Therefore, visual impacts related to the potential new SFVAMC Mission Bay Campus would be minor.

Light and Glare

Alternative 3 long-term projects that would be located at the potential new SFVAMC Mission Bay Campus (ambulatory care center and parking structure) have potential to affect light and glare levels, depending on the design. Some medical buildings also keep their interior lights on and emit nighttime lighting from within. Any new medical development would require exterior shielded, downward-directed, low-level security lighting. The Mission Bay area is urbanized and contains a large number of lighting sources, including city streets and highways, as well as internally lit commercial, industrial, and research buildings and their associated outdoor entry and security lighting. Buildings in the Mission Bay area are occasional sources of glare during periods when their windows reflect the sun's rays. However, these occurrences are relatively minor and intermittent. In addition, many commercial buildings in Mission Bay have interior light that is emitted during the nighttime. The new ambulatory care center and parking structure would be required to follow codes to limit light and glare conditions. Therefore, this would be a minor light and glare impact.

Alternative 4: No Action Alternative

Short-Term and Long-Term Projects

Construction

Under Alternative 4, there would be no new construction or retrofitting of existing buildings. Therefore, no construction-related impacts related to visual character or light and glare would occur.

Operation

Under Alternative 4, the LRDP would not be implemented. Therefore, no operational impacts related to visual character or light and glare would occur.

3.1.4 References

U.S. Department of Veterans Affairs (VA). 2010 (January). *San Francisco Veterans Affairs Medical Center Seismic Upgrade of Buildings 9, 10 & 13 and Building 22 Construction Environmental Assessment*.

———. 2014. *San Francisco Veterans Affairs Medical Center Fort Miley Campus Long Range Development Plan*. San Francisco, CA.

Square One Productions. 2014. SFVAMC LRDP at Fort Miley Campus Visual Simulations.

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3.2 AIR QUALITY

This section describes the existing physical affected environment and regulatory framework related to emissions of criteria air pollutants and hazardous air pollutants (HAPs) and discusses the potential effects of each of the EIS Alternatives as related to emissions of criteria air pollutants and HAPs.

3.2.1 Affected Environment

The existing SFVAMC Fort Miley Campus is located adjacent to the Richmond District in San Francisco, which is located within the San Francisco Bay Area Air Basin (SFBAAB). The SFBAAB is one of 15 air basins in California and consists of all of Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, and Santa Clara Counties; the southern portion of Sonoma County; and the southwestern portion of Solano County. Each basin denotes a specific area in the state that is defined by its common geographical features and weather patterns, which correspond to similar air pollution burdens. About 19 percent of California's population resides in the San Francisco Bay Area, and pollution sources in the region account for about 15 percent of the total statewide emissions of criteria pollutants (ARB, 2009).

Ambient concentrations of air pollutants are determined by the qualities and quantities of emissions released by sources and the atmosphere's ability to transport, dilute, and transform the emissions. Natural factors that affect transport, dilution, and transformation include terrain, wind, atmospheric stability, and sunlight. The combination of low wind speeds and restricted vertical mixing is referred to as stable or inversion conditions, and generally produces the highest concentrations of air pollutants. Therefore, existing air quality conditions in an area are determined by natural factors, such as topography, meteorology, and climate, in addition to the sources and strengths of emissions, as discussed separately below.

Climate and Topography

The SFBAAB is characterized by complex terrain consisting of coastal mountain ranges, inland valleys, and bays that alter normal wind flow patterns. The Coast Ranges split, resulting in a western coast gap, the Golden Gate, and an eastern coast gap, the Carquinez Strait. These coast gaps allow air to flow in and out of the SFBAAB and the Central Valley. The greatest alterations occur when low-level inversions are present and the air beneath the inversion flows independently of air above the inversion, a condition that is common in the summertime. During the summer, winds flowing from the northwest are drawn inland through the Golden Gate and over the lower portions of the San Francisco Peninsula. Immediately south of Mount Tamalpais, the northwesterly winds accelerate considerably and come more directly from the west as they stream through the Golden Gate (BAAQMD, 2012a).

The climate is dominated by the strength and location of a semipermanent, subtropical high-pressure cell. During the summer, the Pacific high-pressure cell is centered over the northeastern Pacific Ocean, resulting in stable meteorological conditions and a steady northwesterly wind flow. Upwelling of cold ocean water from below to the surface as a result of the northwesterly flow produces a band of cold water off the California coast. The cool and moisture-laden air approaching the coast from the Pacific Ocean is further cooled by the presence of the cold water band, resulting in condensation and the presence of fog and stratus clouds along the Northern California coast (BAAQMD, 2012a).

In the winter, the Pacific high-pressure cell weakens and shifts southward, resulting in wind flow offshore, the absence of upwelling, and the occurrence of storms. Weak inversions coupled with moderate winds result in low air pollution potential. The Pacific high-pressure cell does periodically become dominant, bringing strong inversions, light winds, and high pollution potential (BAAQMD, 2012a).

The local meteorology of the existing SFVAMC Fort Miley Campus and the Mission Bay area is represented by measurements recorded at the Arkansas Street and San Francisco and Oakland International Airport stations. The normal annual precipitation, which occurs primarily from November through March, is approximately 20 inches. Normal January temperatures range from a minimum of 44 degrees Fahrenheit (°F) to a maximum of 58°F, and September temperatures range from a minimum of 54°F to a maximum of 66°F (WRCC, 2010a). The predominant wind direction and speed, measured at the San Francisco International Airport station, is from the west at approximately 10.6 miles per hour (WRCC, 2010b; NCDC, 2010).

Properties, Effects, and Sources of Criteria Pollutants

The U.S. Environmental Protection Agency (EPA) currently focuses on the following air pollutants as indicators of ambient air quality: ozone, carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), particulate matter (PM), and lead. These are the most prevalent air pollutants known to be deleterious to human health and extensive health-effects criteria documents and are commonly referred to as *criteria air pollutants*.

The federal Clean Air Act (CAA) requires EPA to set outdoor air quality standards for the nation. EPA has established primary and secondary national ambient air quality standards (NAAQS) for the following criteria pollutants: ozone, CO, NO_2, SO_2, respirable particulate matter (PM_{10}), fine particulate matter ($PM_{2.5}$), and lead. The primary standards protect the public health and the secondary standards protect public welfare. EPA also permits states to adopt additional or more protective air quality standards if needed.

The California Air Resources Board (ARB) has established California ambient air quality standards (CAAQS) for sulfates, hydrogen sulfide, vinyl chloride, and visibility-reducing particulate matter, in addition to the above-mentioned criteria pollutants. In most cases the CAAQS are more stringent than the NAAQS. Differences in the standards are generally explained by the health-effects studies considered during the standard-setting process and the interpretation of the studies. Lastly, the CAAQS incorporate an additional margin of safety to protect sensitive receptors, particularly children, the elderly, and infants (ARB, 2010a).

The NAAQS and CAAQS as discussed above are listed in Table 3.2-1, and health effects are described in Table 3.2-2. Sulfur dioxide and lead are not discussed further because all counties in the Bay Area meet the standards for these pollutants.

Ozone

Ozone is a photochemical oxidant, a highly reactive gas, and even at low concentrations it is irritating and toxic. The primary component of smog, ozone is not emitted directly into the air, but formed through complex chemical reactions between precursor emissions of reactive organic gases (ROG) and oxides of nitrogen (NO_X) in the presence of sunlight. ROG are volatile organic compounds that are emitted from natural sources (such as plants), incomplete fossil fuel combustion, and the evaporation of chemical solvents and fuels. NO_X are a group of gaseous compounds of nitrogen and oxygen that result from the combustion of fuels.

Table 3.2-1: Summary of Ambient Air Quality Standards and Attainment Designations

Pollutant	Averaging Time	California		National Standards[1]		
		Standards[2,3]	Attainment Status (San Francisco County)[4]	Primary[3,5]	Secondary[3,6]	Attainment Status (San Francisco County)[7]
Ozone	1 hour	0.09 ppm (180 µg/m^3)	N (Serious)	–	–	–
	8 hours	0.070 ppm (137 µg/m^3)	N	0.075 ppm (147 µg/m^3)	Same as Primary Standard	N (Marginal)
Carbon monoxide (CO)	1 hour	20 ppm (23 mg/m^3)	A	35 ppm (40 mg/m^3)	None	U/A
	8 hours	9.0 ppm (10 mg/m^3)		9 ppm (10 mg/m^3)		
Nitrogen dioxide (NO_2)	Annual Arithmetic Mean	0.030 ppm (57 µg/m^3)	A	0.053 ppm (100 µg/m^3)	Same as Primary Standard	U/A
	1 hour	0.18 ppm (339 µg/m^3)	A	0.100 ppm	None	U/A
Respirable particulate matter (PM_{10})	Annual Arithmetic Mean	20 µg/m^3	N	–	Same as Primary Standard	U
	24 hours	50 µg/m^3		150 µg/m^3		
Fine particulate matter ($PM_{2.5}$)	Annual Arithmetic Mean	12 µg/m^3	N	12.0 µg/m^3	15 µg/m^3	A
	24 hour	No Separate State Standard		35 µg/m^3	Same as Primary Standard	N

Notes: µg/m^3 = micrograms per cubic meter; mg/m^3 = milligrams per cubic meter; ppm = parts per million

1 National standards (other than ozone, particulate matter, and those standards based on annual averages or annual arithmetic mean) are not to be exceeded more than once a year. The ozone standard is attained when the fourth highest 8-hour concentration in a year, averaged over 3 years, is equal to or less than the standard. The PM_{10} 24-hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 µg/m^3 is equal to or less than 1 day. For $PM_{2.5}$, the 24-hour standard is attained when 98 percent of the daily concentrations, averaged over 3 years, are equal to or less than the standard. The NO_2 standard is attained when the 3-year average of the 98th percentile of the daily maximum 1-hour average at each monitor within an area does not exceed 0.100 ppm (effective January 22, 2010).

2 California standards for ozone, CO (except Lake Tahoe), NO_2, and particulate matter are not to be exceeded. All others are not to be equaled or exceeded.

3 Concentrations are expressed first in units in which they were issued (i.e., ppm or µg/m^3). Equivalent units given in parentheses are based on a reference temperature of 25° Celsius and a reference pressure of 760 torr. Most measurements of air quality are to be corrected to a reference temperature of 25° Celsius and a reference pressure of 760 torr; ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.

4 Unclassified (U): The data are incomplete and do not support a designation of attainment or nonattainment.
Attainment (A): The State standard for that pollutant was not violated at any site in the area during a 3-year period.
Nonattainment (N): There was at least one violation of a State standard for that pollutant in the area.

5 National Primary Standards: The levels of air quality necessary, with an adequate margin of safety, to protect the public health.

6 National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.

7 Nonattainment (N): Any area that does not meet (or that contributes to ambient air quality in a nearby area that does not meet) the national primary or secondary ambient air quality standard for the pollutant.
Attainment (A): Any area that meets the national primary or secondary ambient air quality standard for the pollutant.
Unclassifiable (U): Any area that cannot be classified on the basis of available information as meeting or not meeting the national primary or secondary ambient air quality standard for the pollutant.

Sources: ARB, 2013a; BAAQMD, 2014.

Table 3.2-2: Health Effects of Criteria Air Pollutants

Pollutant	Acute[1] Health Effects			Chronic[2] Health Effects		
	Concentration	Averaging Time	Symptoms	Concentration	Averaging Time	Symptoms
Ozone	0.10 to 0.40 ppm	1–2 hours	Increased respiration and pulmonary resistance; cough, pain, shortness of breath	–	Long/lifetime	Permeability of respiratory epithelia, possibility of permanent lung impairment
	<= 0.12 ppm	6–8 hours	Lung inflammation			
Carbon monoxide (CO)	70–400 ppm	< 3 hours	Headache, dizziness, fatigue, nausea, vomiting	–	After acute exposure not resulting in death	Permanent heart and brain damage
	> 800 ppm	2–3 hours	Death			
Nitrogen dioxide (NO_2)	10–20 ppm	Short	Coughing, difficulty breathing, vomiting, headache, eye irritation	–	Severe intoxication after acute exposure	Chronic bronchitis, decreased lung function
	–	4–12 hours	Chemical pneumonitis or pulmonary edema; breathing abnormalities, cough, cyanosis, chest pain, rapid heartbeat			
	> 150 ppm	Hours	Death			
Respirable particulate matter (PM_{10}), fine particulate matter ($PM_{2.5}$)	Dependent on particle size, composition, number	–	Breathing and respiratory symptoms, aggravation of existing respiratory and cardiovascular diseases, premature death	Dependent on particle size, composition, number	Long/lifetime	Alterations to the immune system, carcinogenesis

Notes: ppm = parts per million
1 "Acute" refers to effects of short-term exposures to criteria air pollutants, usually at fairly high concentrations.
2 "Chronic" refers to effects of long-term exposures to criteria air pollutants, usually at lower, ambient concentrations.
Sources: Godish, 2004; NHDES, 2007; USOTA, 1989; EPA, 2010a and 2010b

ROG and NO_X are not themselves criteria pollutants (with the exception of NO_2), but are controlled through federal, State, regional, and local regulations, programs, and rules to limit ozone formation. For simplicity, ROG and NO_X will be referred to as criteria pollutants in this EIS, even though they are technically ozone precursors.

Ozone located in the upper atmosphere (stratosphere) shields the earth from harmful ultraviolet radiation that is emitted by the sun. However, ozone located in the lower atmosphere (troposphere) is a major health and environmental concern. Meteorology and terrain play a major role in ozone formation. Generally, low wind speeds and stagnant air coupled with warm temperatures and sunlight provide the optimum conditions for formation. As a result, summer is generally the peak ozone season. Because of the reaction time involved, peak ozone concentrations often occur downwind of the precursor emissions, making ozone a regional pollutant that can affect large areas. In general, ozone concentrations over or near urban and rural areas reflect an interplay of emissions of ozone precursors, transport, meteorology, and atmospheric chemistry (ARB, 2009; Godish, 2004).

The adverse health effects associated with exposure to ozone pertain primarily to the respiratory system. Scientific evidence indicates that ambient levels of ozone affect not only sensitive receptors (people who are particularly susceptible), such as asthmatics, the elderly, and children, but also healthy adults. Exposure to ambient levels of ozone ranging from 0.10 to 0.40 part per million (ppm) for 1 or 2 hours has been found to significantly alter lung functions by increasing respiratory rates and pulmonary resistance, decreasing tidal volumes, and impairing respiratory mechanics. Ambient levels of ozone above 0.12 ppm are linked to symptomatic responses that include such symptoms as throat dryness, chest tightness, headache, and nausea. In addition to the above adverse health effects, evidence also exists relating ozone exposure to an increase in the permeability of respiratory epithelia, which can inhibit the immune system's ability to defend against infection (Godish, 2004).

In 1997 EPA promulgated a new 8-hour standard in recognition of impacts resulting from daylong exposure. On April 15, 2004, EPA designated areas of the country that exceed the 8-hour standard ozone standard as nonattainment. The designations were in place as of February 2009. These designations have triggered new planning requirements for the 8-hour standard.

More stringent mobile-source emission standards and cleaner burning fuels have largely contributed to a decline in NO_X emissions in the past 30 years (ARB, 2009). ROG emissions have been decreasing significantly for the last 30 years, because of more stringent motor vehicle standards and new rules for control of ROG from various industrial coating and solvent operations (ARB, 2009). Consequently, peak 1-hour and 8-hour indicators have declined in the SFBAAB by nearly 18 percent during the last 20 years. The number of days when State and national standards are exceeded show a similar trend (ARB, 2009).

Although the long-term trends indicate improving air quality, since 2000 the peak indicators have been relatively flat. This may be attributable to changes in the mix and reactivity of precursor emissions in the SFBAAB. Additionally, meteorology can cause ozone and ozone precursor emissions to be transported from one air basin to another. ARB has identified the SFBAAB as a transport contributor to the following six areas: the Sacramento region, the Mountain Counties Air Basin, the North Central Coast Air Basin, the North Coast Air Basin, the San Joaquin Valley Air Basin, and the South Central Coast Air Basin. To the extent that the Bay Area continues to reduce ozone precursor emissions, the transport impact on downwind areas should also decrease (ARB, 2009).

Carbon Monoxide

CO is a colorless, odorless, and poisonous gas produced by incomplete combustion of carbon in fuels, primarily from mobile (transportation) sources, which composed 80 percent of the statewide CO emissions in 2008. The remaining 20 percent of CO is emitted primarily from wood-burning stoves, managed burning, and incineration (ARB, 2009).

CO enters the bloodstream through the lungs by combining with hemoglobin, which normally supplies oxygen to the cells. However, CO combines with hemoglobin much more readily than oxygen does, resulting in a drastic reduction in the amount of oxygen available to the cells. Adverse health effects associated with exposure to CO include dizziness, headaches, fatigue, and at higher concentrations, death (EPA, 2010a; NHDES, 2007). CO exposure is especially harmful to individuals who suffer from cardiovascular and respiratory diseases (EPA, 2010b).

The highest CO concentrations are generally associated with cold, stagnant weather conditions that occur during the winter. In contrast to ozone, a regional pollutant, CO tends to cause localized problems, such as the formation of "hotspots" when large numbers of mobile sources idle at congested intersections.

On-road motor vehicles and other mobile sources are by far the largest contributors to CO emissions. As in other areas of the state, CO concentrations in the SFBAAB have declined substantially over the last 20 years. The peak 8-hour indicator value during 2007 is 32 percent of what it was during 1988 and neither the State nor the national standards have been exceeded in this area since 1991 (ARB, 2009).

Nitrogen Dioxide

NO_2 is a brownish, highly reactive gas that is present in all urban environments. The major human-made sources of NO_2 are combustion devices, such as boilers, gas turbines, and mobile and stationary reciprocating internal-combustion engines. Combustion devices emit primarily nitric oxide (NO), which oxidizes in the atmosphere to form NO_2 (EPA, 2010a). The combined emissions of NO and NO_2 are referred to as NO_X, which are reported as equivalent NO_2. Because NO_2 is formed and depleted by reactions associated with photochemical smog (ozone), the NO_2 concentration in a particular geographical area may not be representative of the local NO_X emission sources. In California, NO_X is emitted primarily by mobile sources, which account for 86 percent of the total state NO_X emissions (ARB, 2009).

Inhalation is the most common route of exposure to NO_2. Because NO_2 has relatively low solubility in water, the principal site of toxicity is in the lower respiratory tract. The severity of the adverse health effects depends primarily on the concentration inhaled rather than the duration of exposure. An individual may experience a variety of acute symptoms, including coughing, difficulty with breathing, vomiting, headache, and eye irritation, during or shortly after exposure. After approximately 4–12 hours, an exposed individual may experience chemical pneumonitis or pulmonary edema with breathing abnormalities, cough, cyanosis, chest pain, and rapid heartbeat. Severe, symptomatic NO_2 intoxication after acute exposure has been linked on occasion with prolonged respiratory impairment, with such symptoms as chronic bronchitis and decreased lung functions.

As mentioned previously, more stringent mobile-source emission standards and cleaner burning fuels have largely contributed to a decline in NO_X emissions (ARB, 2009). The SFBAAB has attained both the State and national NO_2 standards for more than 20 years. During this time period, there have been no concentrations that exceeded

the level of the State 1-hour or the national annual standard. Ambient concentrations continue to be well below the level of both standards. The peak 1-hour indicator has declined by 56 percent since 1988 and this downward trend is expected to continue (ARB, 2009).

Particulate Matter

Respirable PM with an aerodynamic diameter of 10 microns or less is referred to as PM_{10}. The major fraction of PM_{10} by mass consists of coarse particulate matter emitted directly into the air, such as mechanically generated dust, soot, and smoke from mobile sources, stationary sources, and fires. $PM_{2.5}$ is a subgroup of PM_{10} composed of finer particles that have an aerodynamic diameter of 2.5 microns or less, generally formed by secondary processes, such as condensation of combustion gases or transformation of ambient SO_2, NO_X, and ROG (EPA, 2010a).

The adverse health effects of PM_{10} depend on the specific composition of the particulate matter. For example, adverse health effects may be associated with adsorption of metals, polycyclic aromatic hydrocarbons, and other toxic substances onto fine PM ("piggybacking"), or with fine dust particles of silica or asbestos. Generally, adverse health effects associated with PM_{10} may result from both short-term and long-term exposure to elevated concentrations. These effects may include breathing and respiratory symptoms, aggravation of existing respiratory and cardiovascular diseases, alterations to the immune system, carcinogenesis, and premature death (EPA 2010a). $PM_{2.5}$ poses an increased health risk because the particles can deposit deep in the lungs and contain substances that are particularly harmful to human health.

The largest sources of $PM_{2.5}$ and PM_{10} in San Francisco County are areawide sources, such as residential fuel combustion, construction and demolition, and road dust; other substantial sources of $PM_{2.5}$ and PM_{10} are ocean-going vessels (ARB, 2013b).

Direct emissions of PM_{10} have been increasing in the SFBAAB in the past 30 years, primarily from areawide sources such as paved road dust, which increases proportionally with vehicle miles traveled. Direct emissions of $PM_{2.5}$ have been fairly stable over the same time period. Statewide programs aimed at reducing ozone and diesel PM will also help to reduce public exposure to both direct and secondary (formed in the atmosphere) PM emissions. Additionally, measures adopted as part of Senate Bill 656 will help in reducing public exposure to $PM_{2.5}$ in this region (ARB, 2009). (Senate Bill 656 requires ARB and air districts to adopt and implement control measures to reduce $PM_{2.5}$ and PM_{10} from stationary, area, and mobile sources, and to make progress toward attainment of State and federal PM standards.)

The 24-hour concentrations of PM_{10} in the SFBAAB have improved relative to State and national standards in the past 20 years. During the period for which data are available, the 3-year average of the statewide annual average decreased by 23 percent. Calculated exceedance days for the State 24-hour standard dropped from a high of 76 days during 1989 to 24 days during 2007. The national 24-hour standard was last exceeded in 1991 (ARB, 2009).

National annual average $PM_{2.5}$ concentrations in the SFBAAB have decreased in the last 9 years. The 98th percentile of 24-hour $PM_{2.5}$ concentrations also declined during the last 9-year period. The statewide annual average concentration trend, however, remained relatively constant during the last 8 years, because of differences in State and national monitoring methods. Similar to PM_{10}, year-to-year changes in meteorology can mask the impacts of emission control programs (ARB, 2009).

Local Air Basin Attainment Status

To determine whether a region's air quality is healthful or unhealthful, contaminant levels in ambient air samples are compared to the CAAQS and NAAQS. Both EPA and ARB use ambient air quality monitoring data to designate areas according to their attainment status for criteria pollutants. The purpose of these designations is to identify areas with air quality problems and initiate planning efforts for improvement. The three basic designation categories are attainment, nonattainment, and unclassified.

An *attainment* designation for an area signifies that pollutant concentrations did not exceed the established standard. In most cases, areas designated or redesignated as attainment must develop and implement maintenance plans, which are designed to assure continued compliance with the standard.

In contrast to attainment, a *nonattainment* designation indicates that a pollutant concentration has exceeded the established standard. Nonattainment may differ in severity. To identify the severity of the problem and the extent of planning and actions required to meet the standard, nonattainment areas are sometimes assigned a classification that is commensurate with the severity of their air quality problem (e.g., moderate, serious, severe, extreme).

Finally, an *unclassified* designation indicates that there are insufficient data for determining attainment or nonattainment. In addition, the California designations include a subcategory of *nonattainment-transitional*, which is given to nonattainment areas that are progressing and nearing attainment.

Because it does not meet the air quality standards for ozone, San Francisco County, as part of the larger SFBAAB, is designated a marginal nonattainment area for the federal 8-hour ozone standard, a nonattainment area for the State 8-hour ozone standard, and a "serious" nonattainment area for the State 1-hour ozone standard (Table 3.2-1).

The SFBAAB is in attainment for the State and federal CO standards, for the State 1-hour NO_2 standard, and for the federal annual arithmetic mean NO_2 standard; it is unclassifiable for the federal 1-hour NO_2 standard.

In addition, the SFBAAB is currently designated as nonattainment for the State $PM_{2.5}$ and PM_{10} standards; it is designated as unclassifiable for the federal PM_{10} 24-hour standard, in attainment for the federal $PM_{2.5}$ annual standard, and in nonattainment for the federal $PM_{2.5}$ 24-hour standard.

Existing Emissions of Criteria Pollutants

Inventory for Criteria Pollutant Emissions in San Francisco County

Table 3.2-3 shows the emissions inventory for criteria air pollutants in San Francisco County for various source categories. Mobile sources are the largest contributor to emissions of ROG, CO, NO_X, and SO_X, accounting for approximately 51 percent, 96 percent, 94 percent, and 98 percent, respectively, of the total inventory. Areawide sources (e.g., solvent evaporation, residential fuel combustion, construction and road dust, fires) account for approximately 72 percent and 49 percent of San Francisco County's PM_{10} and $PM_{2.5}$ emissions, respectively.

Table 3.2-3: Summary of 2012 Estimated Emissions Inventory for Criteria Air Pollutants and Precursors (San Francisco County)

Source Type/Category	Estimated Annual Average Emissions (tons per day)					
	ROG	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Stationary Sources						
Fuel Combustion	0.21	0.82	1.41	0.02	0.07	0.07
Waste Disposal	0.07	0.01	0.05	0.02	–	–
Cleaning and Surface Coating	2.76	0.00	0.00	–	–	–
Petroleum Production and Marketing	0.76	–	0.00	–	–	–
Industrial Processes	0.33	0.01	0.02	0.01	0.05	0.03
Subtotal (Stationary Sources)	4.13	0.85	1.48	0.05	0.12	0.10
Areawide Sources						
Solvent Evaporation	6.70	–	–	–	–	–
Miscellaneous Processes	0.71	3.41	1.91	0.05	7.69	2.30
Subtotal (Areawide Sources)	7.41	3.41	1.91	0.05	7.69	2.30
Mobile Sources						
On-Road Motor Vehicles	5.85	52.29	11.93	0.07	1.06	0.54
Other Mobile Sources	6.34	48.87	38.49	4.24	1.82	1.72
Subtotal (Mobile Sources)	12.18	101.17	50.42	4.32	2.88	2.26
Total for San Francisco County	**23.72**	**105.42**	**53.81**	**4.42**	**10.70**	**4.66**

Notes:
CO = carbon monoxide; NO_X = oxides of nitrogen; PM_{10} = respirable particulate matter; $PM_{2.5}$ = fine particulate matter; ROG = reactive organic gases; SO_X = oxides of sulfur
Totals in table may not add exactly because of rounding.
Source: ARB, 2013b

San Francisco Bay Area Air Basin Monitoring Station Data

Criteria air pollutants are monitored at several monitoring stations within the SFBAAB. The monitoring station nearest the existing SFVAMC Fort Miley Campus and the Mission Bay area is at 10 Arkansas Street in San Francisco. This monitoring station measures ozone, NO_2, CO, PM_{10}, $PM_{2.5}$, and toxics (including hexavalent chromium). In general, the ambient air-quality measurements from this station are representative of the air quality near the existing Campus and in the Mission Bay area. Table 3.2-4 summarizes the air quality data from the most recent 3 years for which data were available (2010–2012).

During this period, there were no measured violations of the State 1-hour or 8-hour ozone standards. The State CO standard was also not exceeded in any of the last 3 years. The State 1-hour NO_2 standard was exceeded once in 2011. The State 24-hour PM_{10} standard and the national 24-hour $PM_{2.5}$ standard were exceeded on multiple days in in all 3 years.

Table 3.2-4: Summary of Annual Ambient Air Quality Data (2010–2012)[1]

	2010	2011	2012
Ozone			
Maximum concentration (1-hour/8-hour, ppm)	0.079/0.051	0.070/0.054	0.069/0.049
Number of days State standard exceeded (1-hour/8-hour)	0/0	0/0	0/0
Number of days national standard exceeded (8-hour)	0	0	0
Carbon Monoxide (CO)			
Maximum concentration (1-hour/8-hour, ppm)	1.8/1.4	1.8/1.2	1.8/1.1
Number of days State standard exceeded (8-hour)	0	0	0
Number of days national standard exceeded (1-hour/8-hour)	0	0	0
Nitrogen Dioxide (NO_2)			
Maximum concentration (1-hour, ppm)	92.9	93.3	124.0
Number of days State standard exceeded	0	0	1
Annual average (ppm)	13	14	12
Fine Particulate Matter ($PM_{2.5}$)			
Maximum concentration ($\mu g/m^3$) (National/California[2])	45.3/–	47.5/–	35.7/–
Number of days national standard exceeded	3.2	2.0	1.1
Annual average ($\mu g/m^3$) (National/California)	10.5/–	9.5/–	8.2/-
Respirable Particulate Matter (PM_{10})			
Maximum concentration ($\mu g/m^3$) (National/California[2])	38.6/39.7	43.7/45.6	48.2/50.6
Number of days standard exceeded (National/California)	0/0	0/0	0/0
Annual average ($\mu g/m^3$) (California)	–	19.5	17.5

Notes:
$\mu g/m^3$ = micrograms per cubic meter; ppm = parts per million; – = data not available
[1] Measurements were recorded at the Arkansas Street monitoring station.
[2] State and national statistics may differ for the following reasons: State statistics are based on California-approved samplers, whereas national statistics are based on samplers using federal reference or equivalent methods. State and national statistics may therefore be based on different samplers. State statistics are based on local conditions while national statistics are based on standard conditions. State criteria for ensuring that data are sufficiently complete for calculating valid annual averages are more stringent than the national criteria.
Sources: ARB, 2014

Existing Sources of Criteria Pollutants

As shown in Table 3.2-3, sources of criteria pollutants in San Francisco County and near the existing SFVAMC Fort Miley Campus and the Mission Bay area include area, stationary, and mobile sources. Mobile sources are the greatest contributors of CO, NO_X, and $PM_{2.5}$ in San Francisco County, contributing about half of the ROG emissions. Stationary and areawide sources are also substantial contributors of ROG emissions (from solvent cleaning, consumer products, and architectural coatings), while areawide and mobile sources are the greatest contributors of PM_{10} (from construction and demolition, paved road dust, and cooking) (ARB, 2013b).

Areawide Sources

The major areawide sources of ROG emissions in San Francisco County are solvent evaporation from consumer products and application of architectural coatings. Residential fuel combustion, construction and demolition, paved road dust, and cooking processes are the major areawide sources of PM in San Francisco County (ARB, 2013b).

Stationary Sources

San Francisco County

ARB and EPA databases were searched for permitted stationary sources of criteria pollutants, toxics, and odors in the vicinity of San Francisco (ARB, 2010b); the Bay Area Air Quality Management District (BAAQMD) also provided a summary of permitted stationary sources in San Francisco (BAAQMD, 2011).

Most stationary sources of criteria pollutant emissions in San Francisco are minor sources, and include hospitals, small electrical producers and cogeneration facilities, and light commercial and industrial processes (i.e., wrecking/demolition, food processing with and without cogeneration) (ARB, 2010b; BAAQMD, 2011). In the greater county area, the other noteworthy stationary source is San Francisco International Airport.

Existing SFVAMC Fort Miley Campus

As shown in the 1,000-foot radius around the SFVAMC Fort Miley Campus in Figure 3.2-1, there are no permitted stationary sources of criteria pollutants or toxics within 1,000 feet of the Campus, except the Campus itself.

The existing SFVAMC Fort Miley Campus is a stationary source of criteria pollutants. Emissions of criteria air pollutants associated with operation of the existing SFVAMC facilities were modeled using URBEMIS. The Campus currently generates about 0.4 ton per year (tpy) of ROG, 9.3 tpy of NO_X, and 2.3 tpy of CO from natural gas combustion for heating (four boilers) as well as gasoline combustion associated with landscaping equipment.

The SFVAMC Fort Miley Campus also contains permitted stationary combustion sources that may generate criteria pollutants and toxic air contaminants (TACs): three emergency standby diesel generators, an emergency standby diesel fire pump engine, an incinerator, three fuel oil tanks, one diesel fuel tank, and one portable emergency standby diesel generator. The total annual average emissions for the SFVAMC Fort Miley Campus are 0.5 tpy of ROG, 11.4 tpy of NO_x, 2.8 tpy of CO, 0.3 tpy of PM, and 0.05 tpy of SO_2.

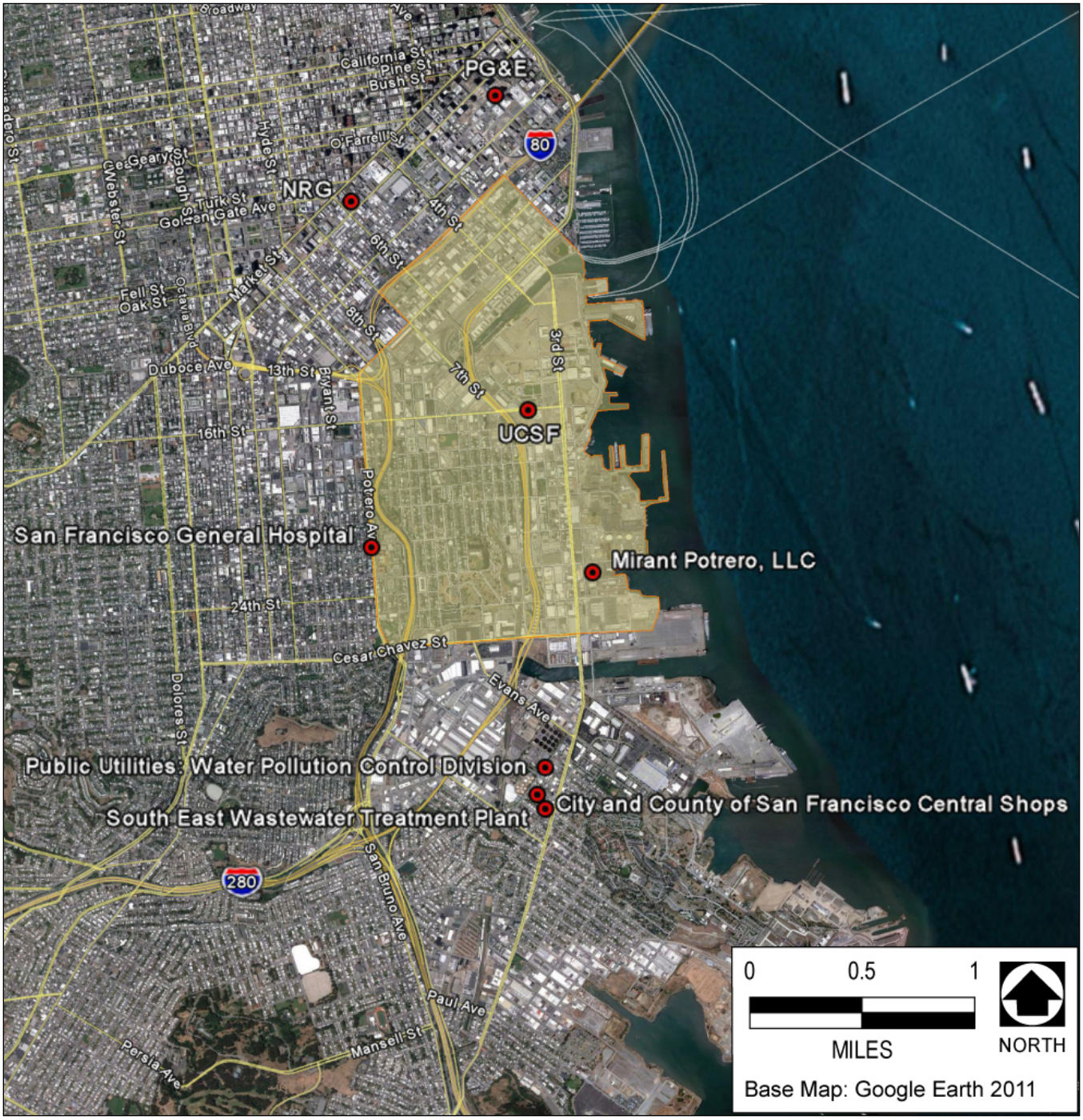
Mission Bay Area

Permitted stationary sources of criteria pollutants, HAPs (see subsequent section), and odors associated with the Mission Bay area are shown in Figure 3.2-2. Numerous permitted sources operate within 1,000 feet of the Mission Bay area.



Source: BAAQMD, 2011

Figure 3.2-1: Locations of Permitted Sources of Criteria Pollutants, Hazardous Air Pollutants, and Odors near the Existing SFVAMC Fort Miley Campus



Source: BAAQMD, 2011

Figure 3.2-2: Locations of Permitted Sources of Criteria Pollutants, Hazardous Air Pollutants, and Odors near the Mission Bay Area

The only large sources of criteria pollutants (and several HAPs) in the vicinity of the Mission Bay area are the City and County of San Francisco Central Shops and Mirant Potrero, LLC (closed January 2011) (electric services). Smaller sources of criteria pollutants and HAPs in the area are the Pacific Gas and Electric Company offices; NRG (electric and combined services); the San Francisco South East Wastewater Treatment Plant; the Water Pollution Control Division of the Public Utilities Department; the University of California, San Francisco; and San Francisco General Hospital (Figure 3.2-2). The odor source in the vicinity of this area is the San Francisco South East Wastewater Treatment Plant (Figure 3.2-2).

Mobile Sources

San Francisco County

On-road and other mobile sources are the largest contributors of ROG, CO, and NO_X in San Francisco County. On-road sources consist of passenger vehicles, trucks, buses, and motorcycles, while off-road vehicles and other mobile sources consist of heavy-duty equipment, boats, aircraft, trains, recreational vehicles, and farm equipment.

Most NO_X emissions (94 percent) are attributable to mobile sources. In the mobile-source category, oceangoing vessels and commercial harbor craft contribute 57 percent of NO_X emissions, while on-road vehicles contribute 20 percent and off-road vehicles contribute 21 percent.

$PM_{2.5}$ from mobile sources is emitted primarily by oceangoing vessels, commercial harbor craft, and off-road equipment. The remainder of $PM_{2.5}$ emissions are generated mostly by area sources (residential fuel combustion, construction and demolition, paved road dust, and cooking).

Existing SFVAMC Fort Miley Campus

There are no major roadways near the existing SFVAMC Fort Miley Campus. (BAAQMD guidance defines "major roadways" as those carrying more than 10,000 vehicles per day.) There is little to no potential for CO hotspots associated with the operation of the current SFVAMC facilities; daily traffic volumes near the medical center are low (see above), and SFVAMC generated about 4,369 vehicle trips per day in 2011 (~437 peak-hour trips), which is far below the number that could result in a CO hotspot at a nearby intersection (~44,000 per hour) (BAAQMD, 2012a). BAAQMD has identified 44,000 vehicles per hour at a given intersection to be the threshold for the potential of a CO hotspot (i.e., exceedance of CO ambient air quality standard). The existing SFVAMC Fort Miley Campus's vehicle trip generation is substantially less than this threshold and is also a small contribution to this threshold; therefore, it does not currently contribute to any potential CO hotspots.

Few heavy-truck trips or other mobile sources of diesel PM are associated with current operation of the SFVAMC Fort Miley Campus. Approximately 12 delivery truck trips (which could be made by medium-duty or heavy-duty trucks) are made to the Campus per day.

Mission Bay Area

Freeways near the potential new SFVAMC Mission Bay Campus include Interstate 80 (I-80), Interstate 280 (I-280), and U.S. Highway 101 (U.S. 101). Among the other major roads are Third, Fourth, Sixth, Seventh, and Brannan Streets and Potrero Avenue (CEHIB, 2011). Average daily traffic volumes on the freeways in the area are on the

order of 50,000 vehicles per day on I-280, 100,000 vehicles per day on I-80, and 200,000 vehicles per day on U.S. 101 (Caltrans, 2009). Truck traffic near the junction of I-80 and U.S. 101 is about 2 percent of the annual average daily traffic (AADT). Near the junction of U.S. 101 and I-280, truck traffic is about 2.5 to 4 percent of the AADT, and near I-280 and Third Street, truck traffic is about 4.5 percent of the AADT (Caltrans, 2010).

Surface street traffic in the vicinity of the potential new SFVAMC Mission Bay Campus varies, but is high in the vicinity of Third Street and Brannan Street, on the order of 10,000–20,000 average daily trips (SFMTA, 2010).

The Caltrain station is also in the vicinity of the potential new SFVAMC Mission Bay Campus, at Fourth and King Streets. Trains are diesel-electric. About 100 trains per day operate on weekdays, and about 30 per day operate on weekends (Caltrain, 2010). The Caltrain station is also served by numerous San Francisco Municipal Railway buses (diesel, electric, and hybrid electric), as well as taxis and passenger cars for passenger drop-offs and pick-ups.

Properties, Effects, and Sources of Hazardous Air Pollutants

Air quality regulations also focus on localized HAPs, which are also called TACs. As with criteria pollutants, TACs may be emitted by stationary, area, or mobile sources. Unlike criteria pollutants, TACs may also originate from indoor, noncombustion sources (e.g., building materials and consumer products like pesticides and cleaning solvents). Common stationary sources of TAC (and $PM_{2.5}$) emissions include gasoline stations, dry cleaners, and diesel backup generators, which are subject to the requirements of local air district permits. The other, often more significant, sources of TACs (and $PM_{2.5}$) emissions are motor vehicles on freeways, high-volume roadways, or other areas with high numbers of diesel vehicles such as distribution centers. Off-road mobile sources include construction equipment, ships, and trains.

TACs can be separated into carcinogens and noncarcinogens based on the nature of the effects associated with exposure to the pollutant. For regulatory purposes, carcinogens are assumed to have no safe threshold below which health impacts would not occur and cancer risk is expressed as excess cancer cases per 1 million exposed individuals. Noncarcinogens differ in that there is generally assumed to be a safe level of exposure below which no negative health impact is believed to occur. These levels are determined on a pollutant-by-pollutant basis. Acute and chronic exposure to noncarcinogens is expressed in using a Hazard Index (HI), which is the ratio of expected exposure levels to acceptable health-acceptable exposure levels.

EPA and ARB have ongoing programs to identify and regulate TACs. Among the many substances identified as TACs are asbestos, lead, and diesel exhaust particulates (which contain hundreds of TACs). The regulation of TACs generally occurs through statutes and rules that require the use of the maximum or best available control technology (MACT or BACT) to limit TAC emissions.

MACT/BACT for asbestos and lead have been identified for many years, and there are established rules and procedures to prevent dispersion and inhalation of these substances. Asbestos is a naturally occurring mineral that was used in building materials for thermal and acoustical insulation and fire resistance until the mid-1980s, before it became subject to a partial ban by EPA in 1989. Lead, which has a NAAQS, was used in paint for housing until 1978, when EPA banned lead-based paint for use in housing. Asbestos and lead, when disturbed during building demolition, can become airborne as inhalable health hazard pollutants and therefore require abatement before demolition.

ARB identified emissions of particulate exhaust from diesel-fueled engines (diesel PM) as a TAC in 1998. EPA has since developed an extensive list of mobile-source TACs for both evaporative and exhaust emissions for many types of fuels (EPA, 2006a). The control of diesel PM emissions is currently an active regulatory area. Federal and State efforts to reduce diesel PM emissions have focused on encouraging the use of improved fuels, adding particulate filters to engines, and requiring the production of new-technology engines that emit fewer exhaust particulates.

Of the TACs for which data are available in California, diesel PM, benzene, 1,3-butadiene, acetaldehyde, carbon tetrachloride, hexavalent chromium, para-dichlorobenzene, formaldehyde, methylene chloride, and perchloroethylene pose the greatest existing ambient risks (ARB, 2009). Diesel PM poses the greatest health risk among these 10 TACs, comprising 79 percent of the 2007 statewide health risk (ARB, 2009). Health risks associated with diesel PM are expected to drop by the year 2020 with implementation of EPA's Highway Diesel Rule as well as ARB's heavy-duty vehicle regulations and *Diesel Risk Reduction Plan* (ARB, 2009).

Existing Sources of Hazardous Air Pollutants

San Francisco Bay Area Air Basin

Diesel PM emissions in the SFBAAB are estimated to be 4,151 tpy, constituting approximately 12 percent of the diesel PM emissions in the state (ARB, 2009). Based on receptor modeling techniques, ARB estimated health risks from diesel PM exposure in the SFBAAB in the year 2000 to be 480 excess cancer cases per million people (ARB, 2009). Although the health risk is higher than the statewide average, it represents a 36 percent drop between 1990 and 2000 (ARB, 2009). Overall, levels of most TACs in the SFBAAB have decreased since 1990 (ARB, 2009). Several stationary sources of TACs exist in San Francisco.

Existing SFVAMC Fort Miley Campus

The only stationary sources of TACs (diesel PM) in the vicinity of the existing SFVAMC Fort Miley Campus are the emergency generators and diesel fire pump on the Campus itself. These are operated only during electrical-outage emergency conditions, under permitted conditions, and their operation results in only very minor impacts, if any. In addition, operations of the existing SFVAMC Fort Miley Campus involve using shuttle buses and delivery trucks, respectively, to bring patients and medical supplies to the facility. Considering the quantity and frequency of TAC (diesel PM) emissions generated by the few daily truck and bus trips, impacts (if any) are anticipated to be minor.

Mission Bay Area

Sources of TACs in the vicinity of the Mission Bay area are listed above and shown in Figure 3.2-2.

Odors

Odor is considered an air quality issue in the context of NEPA, both at the local level (e.g., odor from wastewater treatment) and at the regional level (e.g., smoke from wildfires).

Odors are generally regarded as an annoyance rather than a health hazard. However, manifestations of a person's reaction to foul odors can range from psychological (e.g., irritation, anger, or anxiety) to physiological (e.g., circulatory and respiratory effects, nausea, vomiting, and headache).

The ability to detect odors varies considerably among the population and is subjective. Some individuals have the ability to smell minute quantities of specific substances while others may not have the same sensitivity but may have sensitivities to odors of other substances. In addition, people may have different reactions to the same odor; an odor that is offensive to one person (e.g., from a fast-food restaurant or bakery) may be perfectly acceptable to another. Unfamiliar odors may be more easily detected and likely to cause complaints than familiar ones. This is because of the phenomenon known as odor fatigue, in which a person can become desensitized to almost any odor and recognition only occurs with an alteration in the intensity.

Quality and intensity are two properties present in any odor. The quality of an odor indicates the nature of the smell experience. For instance, if a person describes an odor as flowery or sweet, then the person is describing the quality of the odor. Intensity refers to the strength of the odor. For example, a person may use the word "strong" to describe the intensity of an odor. Odor intensity depends on the odorant concentration in the air. When an odorous sample is progressively diluted, the odorant concentration decreases. As this occurs, the odor intensity weakens and eventually becomes so low that the detection or recognition of the odor is quite difficult. At some point during dilution, the concentration of the odorant reaches a detection threshold. An odorant concentration below the detection threshold means that the concentration in the air is not detectable by the average human.

Several examples of common land use types that generate substantial odors are wastewater treatment plants, landfills, composting/green waste facilities, recycling facilities, petroleum refineries, chemical manufacturing plants, painting/coating operations, rendering plants, and food packaging plants.

Existing SFVAMC Fort Miley Campus

ARB and EPA databases were searched by SIC code for permitted stationary sources that could also generate odors (ARB, 2010b). There are no known major odor sources near the existing SFVAMC Fort Miley Campus.

In addition to the search of permitted stationary-source databases, odor complaints in San Francisco from January 1, 2009, to March 1, 2011, were obtained from BAAQMD and reviewed (see Appendix B for details). There are no odor sources in the vicinity of the SFVAMC Fort Miley Campus with any recorded complaints in the past several years.

Mission Bay Area

Potential major odor sources in the general Mission Bay area include the following:

1. San Francisco South East Treatment Plant, 1700 Jerrold Avenue (wastewater treatment)
2. Darling International, 429 Amador Street, Pier 92, Islais Creek (animal rendering)
3. Central Shops/City & County of San Francisco, 1800 Jerrold Avenue (solvent use)

There are numerous potential odor sources in the Mission Bay area, but none have five or more confirmed complaints in the past several years. Several smaller odor sources in this area have more than five unconfirmed

complaints on record in the past several years (i.e., January 1, 2009 to March 1, 2011), including the following two sources:

1. Ritual Coffee Roasters (1050 Howard Street)
2. S&S Auto Collision (538 Bryant Street)

Existing Sensitive Receptors

Some members of the population are especially sensitive to air pollutant emissions and should be given special consideration when evaluating air quality impacts from projects. These people include children, the elderly, persons with preexisting respiratory or cardiovascular illness, and athletes and others who engage in frequent exercise. Structures that house these persons or places where they gather are defined as sensitive receptors, and include residences, schools, childcare centers, playgrounds, and health care facilities (including hospitals and nursing homes).

Residential areas are considered sensitive to air pollution, because residents (including children and the elderly) tend to be at home for extended periods of time, resulting in sustained exposures to any pollutants present. Recreational land uses are considered moderately sensitive to air pollution. Exercise places a high demand on respiratory functions, which can be impaired by air pollution even though exposure periods during exercise may be short. In addition, noticeable air pollution can detract from the enjoyment of recreation. Commercial and industrial areas are considered the least sensitive to air pollution. Exposure periods are relatively short and intermittent because the majority of the workers tend to stay indoors most of the time. In addition, the working population is generally the healthiest segment of the public.

Existing SFVAMC Fort Miley Campus

Sensitive receptors (residences) are located within 50 feet of the southern property line of the existing SFVAMC Fort Miley Campus. In addition, the Campus itself includes some sensitive receptors, including buildings providing patient care and the childcare center, which is located in the northeast corner of the Campus behind Building 32.

Mission Bay Area

There are numerous sensitive receptors in the Mission Bay area, including medical facilities, clinics, residences, an elementary school, and park areas.

3.2.2 Regulatory Framework

Air quality in the SFBAAB is regulated at the federal level by EPA, at the State level by ARB, and at the local level by BAAQMD. Each of these agencies develops rules, regulations, and policies to comply with applicable legislation. Although EPA regulations may not be superseded, both State and local regulations may be more stringent. Applicable regulations associated with emissions of criteria air pollutants, TACs, and odors are described in the following sections.

Clean Air Act and Clean Air Act Amendments

At the federal level, EPA has been charged with implementing national air quality programs. EPA's air quality mandates are drawn primarily from the federal CAA, which was enacted in 1970. The most recent major amendments by Congress were made in 1990.

The CAA required EPA to establish primary and secondary NAAQS (Table 3.2-1). The CAA also required each state to prepare an air quality control plan referred to as a state implementation plan (SIP). The federal Clean Air Act Amendments (CAAA) added requirements for states with nonattainment areas to revise their SIPs to incorporate additional control measures to reduce air pollution. The SIP is modified periodically to reflect the latest emissions inventories, planning documents, and rules and regulations of the air basins as reported by their jurisdictional agencies. EPA has responsibility for reviewing all SIPs to determine conformation to the mandates of the CAAA and determine whether implementation will achieve air quality goals. If EPA determines a SIP to be inadequate, a federal implementation plan that imposes additional control measures may be prepared for the nonattainment area. Failure to submit an approvable SIP or to implement the plan within the mandated time frame may result in application of sanctions to transportation funding and stationary air pollution sources in the air basin.

Clean Air Act Amendments General Conformity Rule

General conformity requirements were adopted by Congress as part of the CAAA and were implemented by EPA regulations in the November 30, 1993 *Federal Register* (40 Code of Federal Regulations [CFR] Sections 6, 51, and 93: "Determining Conformity of General Federal Actions to State or Federal Implementation Plans; Final Rule"). General conformity requires that all federal actions conform to the SIP as approved or promulgated by EPA, by determining that the action is either exempt from the General Conformity Rule requirements, or subject to a formal conformity determination.

The purpose of the general conformity program is to ensure that actions taken by the federal government do not undermine state or local efforts to achieve and maintain NAAQS. Before a federal action is taken, it must be evaluated for conformity with the SIP. All reasonably foreseeable emissions, both direct and indirect, predicted to result from the action are taken into consideration and must be identified with respect to location and quantity. Direct emissions occur at the same time and place as the action. Indirect emissions are reasonably foreseeable emissions that may occur later in time and/or farther removed from the action; they are subject to conformity if the federal agency can practicably control them and maintain control through a continuing program responsibility. If it is found that the action would create emissions above *de minimis* threshold levels specified in EPA regulations, the action cannot proceed unless mitigation measures are specified that would bring the project into conformance.

General conformity applies in both federal nonattainment and maintenance areas. In these areas, it applies to any federal action not specifically exempted by the CAA or EPA regulations. General conformity does not apply to projects or actions that are covered by the transportation conformity rule. If a federal action falls under the general conformity rule, the federal agency responsible for the action is responsible for making the conformity determination. In some instances, a state will make the conformity determination under delegation from a federal agency. Private developers are not responsible for making a conformity determination, but can be directly affected by a determination.

The selected EIS Alternative would be implemented within the SFBAAB, which is a federal attainment/maintenance area for CO and a nonattainment area for 8-hour ozone and 24-hour $PM_{2.5}$. Therefore, the General Conformity Rule is applicable for emissions of CO, ozone precursors (volatile organic compounds [VOCs] and NO_X), and $PM_{2.5}$ from construction and operation of proposed projects in the SFBAAB. The applicable General Conformity *de minimis* thresholds and emissions inventory for the SFBAAB are shown in Table 3.2-5 for informational purposes. In addition, the Record of Non-Applicability of General Conformity has been prepared and is included in Appendix B. The analysis presented below in Section 3.2.3, "Environmental Consequences," compares the construction and operational emissions of the EIS Alternatives with the applicable conformity thresholds.

Table 3.2-5: General Conformity *de Minimis* Thresholds for Projects in the San Francisco Bay Area Air Basin

Pollutant	Emission Threshold (tons per year)
CO	100[1]
NO_X	100[2]
VOC/ROG	50[2]
PM_{10}	100[3]
$PM_{2.5}$	100[4]

Notes:
CO = carbon monoxide; NO_X = oxides of nitrogen; $PM_{2.5}$ = fine particulate matter; PM_{10} = respirable particulate matter; ROG = reactive organic gases; SFBAAB = San Francisco Bay Area Air Basin; VOC = volatile organic compound
1 Attainment/maintenance area for CO.
2 Marginal nonattainment area for 8-hour ozone precursors: NO_X and VOC.
3 SFBAAB is unclassifiable for PM_{10}; however, for the purposes of a conservative analysis, the nonattainment *de minimis* threshold for PM_{10} was used to evaluate the project's construction and operational emissions.
4 Nonattainment area for $PM_{2.5}$ (EPA, 2006b).
Sources: 40 CFR 93; BAAQMD, 2014

Title III of the Clean Air Act Amendments

EPA regulates TACs by requiring the use of the MACT and BACT to limit emissions from stationary sources. Emission control strategies for area and mobile sources include generally available control technologies and reformulated fuels.

EPA has programs for identifying and regulating HAPs. Title III of the CAAA directed EPA to promulgate national emissions standards for HAPs (NESHAPs). The NESHAPs for major sources of HAPs may differ from those for area sources. Major sources are defined as stationary sources with potential to emit more than 10 tpy of any HAP or more than 25 tpy of any combination of HAPs; all other sources are considered area sources.

The CAAA called on EPA to promulgate emissions standards in two phases. In the first phase (1992–2000), EPA developed technology-based emissions standards designed to reduce emissions as much as feasible. These standards are generally referred to as requiring MACT. For area sources, the standards may be different, based on generally available control technology. In the second phase, EPA promulgated health risk–based emissions standards were deemed necessary to address risks remaining after implementation of the technology-based NESHAP standards.

Rule on Control of Hazardous Air Pollutants from Mobile Sources

In February 2007, EPA finalized a rule to reduce HAPs from mobile sources (Control of Hazardous Air Pollutants from Mobile Sources, February 9, 2007). The rule limits the benzene content of gasoline and reduces toxic emissions from passenger vehicles and gas cans. EPA estimates that in 2030 this rule will have reduced total emissions of mobile-source air toxics by 330,000 tons and VOC emissions (precursors to ozone and $PM_{2.5}$) by more than 1 million tons.

Other milestones include the low-sulfur diesel fuel requirement, and tighter emissions standards for heavy-duty diesel trucks (2007) and off-road diesel equipment (2011) nationwide.

3.2.3 Environmental Consequences

Significance Criteria

A NEPA evaluation must consider the context and intensity of the environmental effects that would be caused by, or result from, the EIS Alternatives.

Criteria Pollutants

For evaluation of criteria pollutants, a NEPA air quality significance analysis differs from the General Conformity analysis in that all project emissions of criteria pollutants are considered; this would include attainment pollutants as well as nonattainment and maintenance pollutant emissions considered under General Conformity. Therefore, in the SFBAAB, attainment emissions of SO_2 and PM_{10} are considered for NEPA impact significance for air quality in addition to CO, VOCs, NO_X, and $PM_{2.5}$, which must be addressed under General Conformity.

An Alternative analyzed in this EIS is considered to result in an adverse impact related to criteria pollutant emissions if it would:

- result in annual criteria pollutant emissions during construction or operation in excess of EPA General Conformity *de minimis* thresholds, as stated in Table 3.2-5 above.

Direct emissions would result from construction activities, area operational sources (i.e., natural gas combustion and landscaping fuel combustion), and mobile operational sources. Indirect area-source emissions of criteria pollutants resulting from energy use (electricity and water use) are too speculative to evaluate, because it is unknown what proportion of electricity consumed under the EIS Alternatives is produced in the SFBAAB. Additionally, criteria pollutant emissions resulting from permitted sources of electricity production in the SFBAAB are presumably already included in the regional emissions budget and covered under the current SIP.

Localized Carbon Monoxide

In addition to regional CO emissions, localized operational CO emissions can be of concern. Emissions from vehicle traffic can cause localized CO impacts. Severe vehicle congestion at major signalized intersections can generate elevated CO levels in excess of NAAQS and/or CAAQS, called “hotspots,” that can be hazardous to

human receptors adjacent to the intersection. Severe vehicle congestion is determined by a level of service (LOS) analysis for roadways and intersections. Localized CO impacts are typically of concern at signalized intersections of unacceptable LOS.

The local air district, BAAQMD, has developed a screening approach to determine whether the EIS Alternatives could generate high enough traffic volumes to cause or contribute to a CO hotspot (BAAQMD, 2012a:3-3 to 3-4).

Thus, an Alternative analyzed in this EIS is considered to result in an adverse impact related to localized CO concentrations if it would:

- not be consistent with an applicable congestion management program established by the county congestion management agency for designated roads or highways, regional transportation plan, and local congestion management agency plans;
- result in increased traffic volumes at affected intersections that total more than 44,000 vehicles per hour; or
- result in increased traffic volumes at affected intersections that total more than 24,000 vehicles per hour where vertical and/or horizontal mixing is substantially limited (e.g., tunnel, parking garage, bridge underpass, natural or urban street canyon, below-grade roadway).

Localized Toxic Air Contaminant and Particulate Matter Emissions

The thresholds for localized TAC and $PM_{2.5}$ impacts resulting from construction or operational activities are identical. Operational activities include the siting of new stationary sources or permanent mobile sources (such as a distribution center) of TACs and $PM_{2.5}$, or the siting of receptors to existing or new stationary or mobile sources of TACs and $PM_{2.5}$.

The thresholds of significance for localized TAC and $PM_{2.5}$ emissions are based on concentrations that produce risks of cancer at great than 10 cases in a million, noncancer health effects with HIs greater than 1, and an annual average increase of ambient $PM_{2.5}$ greater than 0.3 microgram per square meter ($\mu g/m^3$). The zone of influence is considered to be within 1,000 feet of the property line of the source or receptor.

Thus, an Alternative analyzed in this EIS is considered to result in an adverse impact related to localized TAC and PM emissions if it would:

- result in exposure[1] of sensitive receptors to TAC and $PM_{2.5}$ in a manner that causes excess cancer risk levels of more than 100 in 1 million or a chronic HI greater than 10 for TACs; or
- result in exposure of sensitive receptors to TAC and $PM_{2.5}$ in a manner that exceeds 0.8 $\mu g/m^3$ annual average $PM_{2.5}$.

[1] The aggregate total of all past, present, and foreseeable future sources within a 1,000-foot radius (or beyond where appropriate) from the fence line of a source, or from the location of a receptor, plus the contribution from an alternative.

Odors

BAAQMD threshold guidance for odor impacts was used to determine the significance of impacts (BAAQMD, 2012a:2-5 to 2-6). Thus, an Alternative analyzed in this EIS is considered to result in an adverse impact related to odors if it would:

- result in siting a new odor source or a new receptor within the applicable screening distance shown in Table 3.2-6; or
- result in siting a sensitive receptor near[2] an odor source with five or more confirmed complaints per year averaged over 3 years.

Table 3.2-6: Project Screening Trigger Levels for Potential Odor Sources

Type of Operation	Project Screening Distance (miles)
Wastewater Treatment Plant	2
Wastewater Pumping Facilities	1
Sanitary Landfill	2
Transfer Station	1
Composting Facility	1
Petroleum Refinery	2
Asphalt Batch Plant	2
Chemical Manufacturing	2
Fiberglass Manufacturing	1
Painting/Coating Operations	1
Rendering Plant	2
Coffee Roaster	1
Food Processing Facility	1
Confined Animal Facility/Feed Lot/Dairy	1
Metal Smelting Plant	2

Source BAAQMD, 2012a

Assessment Methods

Construction Emissions

Construction emissions of criteria pollutants were modeled using the CalEEMod, Version 2013.2.2 computer program (CAPCOA, 2013). Phasing information was provided by SFVAMC. Assumptions regarding construction

[2] "Near" refers to the screening distances shown in Table 3.2-6. Note that not all types of odor sources with complaint histories have recommended screening distances, in which case the maximum distance of 2 miles will be utilized to determine the significance of the impact.

equipment (type and number) to be used on-site were determined based on CalEEMod defaults and reviewed by SFVAMC to take into consideration on-site spacing restrictions that would affect the equipment types and numbers that could operate simultaneously within the boundaries of the site.

No indirect construction emissions of criteria pollutants would occur outside of those associated with incidental electricity use during construction under the selected EIS Alternative; however, emissions associated with grid-based power would already be accounted for in SFBAAB air quality plans and the SIP (discussed previously).

It should be noted that proposed parking garages were analyzed for construction-related emissions only. Operational mobile-source emissions from vehicles using the garages are accounted for in the trip generation and emissions calculations for the other Campus medical facilities. Indirect operational emissions from stationary sources would be limited to emissions from security lighting, which would indirectly generate minimal criteria pollutants (which are not considered for the reasons mentioned above).

Health Risk Assessment

A health risk assessment (HRA) was performed to evaluate the potential exposure of sensitive receptors to the incremental increase in TACs (represented by $PM_{2.5}$) emitted during phased construction activities for the EIS Alternatives. The HRA was performed in accordance with BAAQMD's *Recommended Methods for Screening and Modeling Local Risks and Hazards* (BAAQMD, 2012b) as well as methodologies presented in the California Air Pollution Control Officers Association's *Health Risk Assessments for Land Use Projects*. Using these methods to model and evaluate the health risk impacts of the EIS Alternatives provides the most conservative estimate. Therefore, to evaluate the maximum impact of the EIS Alternatives, local and State guidance was used for this analysis.

As part of this HRA, excess cancer risks and chronic and acute noncancer HIs were estimated. The estimated excess cancer risks and chronic and acute noncancer HIs were compared to the thresholds of significance for TACs in the BAAQMD CEQA Guidelines for a maximally exposed individual at an existing residential receptor, maximally exposed child at the SFVAMC childcare center, and maximally exposed individual at an existing occupational worker receptor.

Screening Assessment

The BAAQMD Screening Tables for Air Toxics Evaluation during Construction were used to evaluate the minimum distance required between the construction boundary and nearby sensitive receptors to ensure that cancer and noncancer risks associated with proposed construction activities would not be adverse. Based on the screening assessment, refined dispersion modeling was completed to more accurately determine health risks to nearby workers and residential receptors during construction-related activities.

Dispersion Modeling

Atmospheric modeling was performed to analyze potential localized impacts on ambient air quality and health risk impacts associated with the generation of $PM_{2.5}$ during construction activities. Air dispersion modeling requires consideration and selection of the following parameters, which are described briefly below.

- Selection of the dispersion model
- Selection of appropriate dispersion coefficients based on land use
- Preparation of meteorological data
- Evaluation of potential terrain considerations
- Selection of receptor locations
- Identification of the source-specific release parameters, operational schedule, and averaging time periods

Model Selection

EPA's Industrial Source Complex (ISCST3) model (Version 02035) was used to model $PM_{2.5}$ emission impacts during construction. ISCST3 was applied with the regulatory default options, the rural modeling option (dispersion coefficients), and 5 years (2004 to 2008) of hourly meteorological data obtained from BAAQMD for the Mission Bay meteorological station.

Meteorological Data

ISCST3 requires a sequential hourly record of dispersion meteorology representative of the region within which the proposed source would be located. For this analysis, the proposed sources are represented by area sources at the location of proposed construction and demolition. ISCST3 was applied with 5 years (2004 to 2008) of hourly meteorological data, consisting of surface observations from the Mission Bay meteorological station in San Francisco. A wind rose of the 5 years of data is included in Appendix B. The wind rose indicates that the predominant wind direction is west to west-southwest.

Terrain and Receptor Data Processing

An important consideration in an air dispersion modeling analysis is whether the terrain in the modeling area is simple or complex (i.e., terrain above the effective height of the emission point). Complex terrain can affect the results of a dispersion analysis involving point and volume sources, but does not affect the predicted results for area sources.

Terrain elevations were obtained from commercially available digital terrain elevations developed by the U.S. Geological Survey by using its National Elevation Dataset (NED). The NED data provide terrain elevations with 1-meter vertical resolution and 10-meter (1/3 arc-second) horizontal resolution based on a Universal Transverse Mercator (UTM) coordinate system. The U.S. Geological Survey specifies coordinates in North American Datum 83, UTM Zone 10. Lakes Environmental software was used to process the NED data and assign elevations to the receptor locations and sources. Electronic files containing these terrain elevations are included in Appendix A. Because the modeling area for this assessment contains varied terrain, terrain elevations were used in the air dispersion modeling for this HRA.

$PM_{2.5}$ concentrations were estimated for 1.8-meter high-grid receptors within a 1,000-foot radius from the construction boundary, referred to as the "zone of influence" as shown in Figure 3.2-3 (see Appendix B of this EIS for detailed wind rose). Because of the nature of the health risk being evaluated (i.e., temporary construction health risks), the potential receptors were not limited to nearby residents, which would be typical of a health risk evaluation. To present a conservative analysis, all potential receptors, including park visitors and pedestrians,

were considered. Receptors were placed within the project boundary at the childcare center. All coordinates for sources and receptors were specified in North American Datum 83, UTM Zone 10.

Operating Schedule, Source Parameters, and Emissions Summary

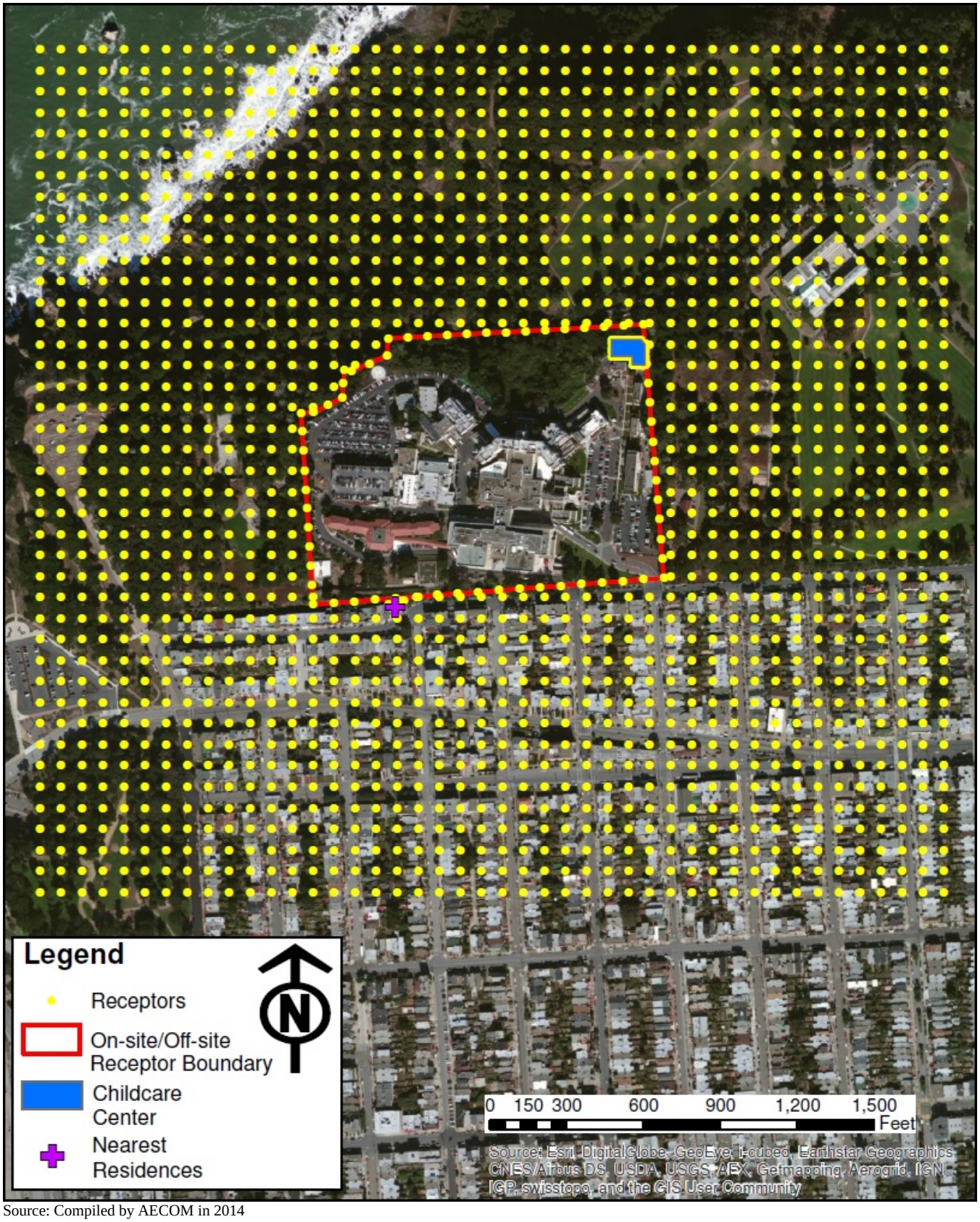
For this analysis, the operating schedule of the construction equipment is assumed to be 7 a.m. to 5 p.m., Monday through Friday. The area-source parameters used in the air dispersion model for long-term projects under Alternatives 1 and 2 are summarized in Appendix B.

Temporary construction activities would include operation of diesel-fueled nonroad equipment, resulting in emissions of $PM_{2.5}$, which are used as a surrogate for TACs. Emission rates for each area of construction activity were obtained from CalEEMod outputs, as described above. $PM_{2.5}$ emissions were calculated for the duration of each subphase for short-term projects under Alternatives 1 and 2 (see Appendix B for further details). The total $PM_{2.5}$ emissions were apportioned to the construction/demolition areas on-site and modeled for the adult and child residential cancer risk, childcare cancer risk, and the 5-day-per-week worker cancer risk. The worst-case year, 2016, was modeled using ISCST3 and the cancer risk and chronic and acute HIs were calculated based on the equations in Section 6 of BAAQMD's *Recommended Methods for Screening and Modeling Local Risks and Hazards* (BAAQMD, 2012b).

Operational Area-Source Emissions

Direct operational area-source emissions of criteria pollutants were modeled using the CalEEMod, Version 2013.2.2 computer program (CAPCOA, 2013). Direct area emissions associated with short- and long-term operations were estimated, assuming no change to the intensity of area emissions (i.e., energy use per square foot of building space) of criteria pollutants from the current baseline. Direct emissions of criteria pollutants would decrease as building energy use (and associated gas use) decreases, according to the strategy put forward in the *Department of Veterans Affairs Strategic Sustainability Performance Plan* (VA SSPP). The reductions in direct future emissions of criteria pollutants are too speculative to estimate, however, because the percentage reduction in natural gas use is unknown. (See Section 3.7, "Greenhouse Gas Emissions and Climate Change," for further details.)

For all EIS Alternatives, direct area emissions were calculated on the incremental difference in building square footage. For Alternatives 1 and 3, at the existing SFVAMC Fort Miley Campus only the new buildings were considered for estimation of area emissions. For Alternative 3 off-site emissions (i.e., those occurring on the yet-to-be-determined potential new SFVAMC Mission Bay Campus), all new construction was considered for estimation of area emissions. Future direct area emissions were estimated based on square footage only, with no reduction in energy intensity. All modeled area emissions of criteria pollutants are direct emissions associated with on-site natural gas combustion (for heating) and gasoline combustion (landscaping equipment). There would be no indirect emissions, because criteria pollutants associated with building electricity use (grid-based power) would already be accounted for in SFBAAB air quality plans and the SIP, discussed previously.



Source: Compiled by AECOM in 2014
Note: On-site childcare center assessed because of long-term exposure (250 days/year), whereas patients and visitors are typically on-site for 1 day.

Figure 3.2-3 **Receptor Grid**

Operational Mobile-Source Emissions

Operational mobile-source emissions of criteria pollutants were modeled using CalEEMod in conjunction with trip rates provided in the traffic study. For Alternatives 1 and 3, the incremental trip rate associated with new construction at the existing SFVAMC Fort Miley Campus was used to evaluate impacts. For the off-site portion of Alternative 3, trip rates associated with the new leasing and/or construction were used to evaluate impacts. For the No Action Alternative (Alternative 4), future trip rates were assumed not to grow in the absence of SFVAMC expansion. (That is, no new employee, patient, or delivery trips would occur in the absence of new buildings and services, including parking.) For the No Action Alternative, current SFVAMC trips (2011) were used to evaluate future mobile-source emissions impacts in 2014 and 2023.

Alternative 1: SFVAMC Fort Miley Campus Buildout Alternative

Short-Term Projects

Construction

Criteria Air Pollutants

Alternative 1 short-term projects would involve construction of approximately 384,452 net new gross square feet (gsf) of medical facilities at the existing SFVAMC Fort Miley Campus (see Table 2-1), including the square footage of a parking garage expansion. Alternative 1 would also involve the demolition of existing structures on the site (Buildings T17, 18, 14, 21, T23, T31, T24, 12, and 20). Thus, implementation of Alternative 1 short-term projects would result in 152,200 net new square feet on the Campus.

Foreseeable construction activities for Alternative 1 short-term projects would include site preparation (e.g., demolition and clearing/grubbing), trenching, grading and excavation, building construction, asphalt paving, and application of architectural coatings. Construction activities under Alternative 1 short-term projects would occur over a period of approximately 7 years and 1 months, beginning in 2014 and continuing until August 2020. (See Chapter 2.0, “Alternatives,” and Appendix B for anticipated short-term construction schedules and phasing at the existing SVAMC Fort Miley Campus.) Several building retrofits would occur as part of implementation of Alternative 1 short-term projects. However, these retrofits would involve the use of hand tools and would not be anticipated to generate criteria air pollutants.

Construction activities typically require the use of concrete saws (demolition), heavy trucks, excavating and grading equipment (tractors, forklifts), concrete mixers, pavers, and other mobile and stationary construction equipment. The types of criteria pollutants generated by construction activities are typically NO_X and PM (dust and exhaust), although CO and ROG are also emitted during operation of fossil fuel–powered construction equipment.

Direct, construction-related emissions of criteria air pollutants were quantified using CalEEMod. The results are shown below in Table 3.2-7.

Table 3.2-7: Summary of Modeled Maximum Annual Emissions of Criteria Air Pollutants and Precursors Associated with Construction Activities for Alternative 1 Short-Term Projects at the SFVAMC Fort Miley Campus

Source	Emissions (tons per year)[1]				
	CO	NO_X	VOCs/ROG	PM_{10}	$PM_{2.5}$
Alternative 1 Short-Term Projects[2]	30.1	53.0	5.8	3.1	2.8
de Minimis Threshold	100	100	50	100	100

Notes:
CO = carbon monoxide; NO_X = oxides of nitrogen; PM_{10} = respirable particulate matter with an aerodynamic diameter of 10 micrometers or less; $PM_{2.5}$ = fine particulate matter with an aerodynamic diameter of 2.5 micrometers or less; ROG = reactive organic gases; VOC = volatile organic compounds

1 Details of annual construction emissions, including construction phasing, input parameters used in the modeling, and detailed modeling output, may be found in Appendix B.

2 Construction emissions shown represent *total* construction emissions associated with Alternative 1 short-term projects. In reality, only a fraction (e.g., 1/7) of these emissions would be generated in any particular year.

Source: Modeling performed by AECOM in 2014.

As shown, the direct construction-related emissions of criteria pollutants from Alternative 1 short-term projects would be substantially less than the significance thresholds. In addition, construction emissions presented in Table 3.2-7 conservatively assume that all Alternative 1 short-term projects would be constructed in a single year. In reality, only a portion (e.g., 1/7) of these emissions would occur in any particular year. The direct impact on regional air quality would be minor. No indirect impacts would occur.

Because they would be concurrent in the near term, construction-related and operational emissions were combined (Table 3.2-8) to determine the "worst-case" impacts of maximum annual construction emissions and operational emissions at buildout, even though buildout would be only partial for much of the construction period for Alternative 1 short-term projects.

As shown, worst-case construction-related emissions of criteria air pollutants combined with operational emissions under Alternative 1 short-term projects would still be substantially less than the significance thresholds. The direct impact on regional air quality would be minor. No indirect impacts would occur.

It should be noted that in an effort to reduce the effects of construction at VA facilities on the environment, VA requires that temporary environmental controls be employed during construction activities and enumerated as part of VA Master Construction Specifications (Section 015719). These controls typically include actions related to the control of air pollutant emissions. The following identifies language typical of Section 015719 that would be employed during construction of Alternative 1 short-term projects:

Protection of Air Resources: Keep construction activities under surveillance, management, and control to minimize pollution of air resources. Burning is not permitted on the job site. Keep activities, equipment, processes, and work operated or performed, in strict accordance with State and federal emission and performance laws and standards. Maintain ambient air quality standards set by EPA for those construction operations and activities specified.

Table 3.2-8: Summary of Modeled Maximum Annual Emissions of Criteria Air Pollutants and Precursors Associated with Construction and Operational Activities for Alternative 1 Short-Term Projects at the SFVAMC Fort Miley Campus

Source	Emissions (tons per year)[1]				
	CO	NO_X	VOC/ROG	PM_{10}	$PM_{2.5}$
Alternative 1 Short-Term Projects					
Max Construction[2]	30.1	53.0	5.8	3.1	2.8
Operation	2.8	0.7	1.1	0.4	0.1
Total	32.9	53.7	6.9	3.5	2.9
de Minimis Threshold	100	100	50	100	100

Notes:
CO = carbon monoxide; NO_X = oxides of nitrogen; PM_{10} = respirable particulate matter with an aerodynamic diameter of 10 micrometers or less; $PM_{2.5}$ = fine particulate matter with an aerodynamic diameter of 2.5 micrometers or less; ROG = reactive organic gases; VOC = volatile organic compounds

[1] Details of annual construction and operational emissions, including input parameters used in the modeling and detailed modeling output, may be found in Appendix B.

[2] Construction emissions shown represent *total* construction emissions with Alternative 1 long-term projects, assuming all of the long-term projects are constructed simultaneously with short-term operations, which represents the worst-case scenario.

Source: Modeling performed by AECOM in 2014

1. *Particulates:* Control dust particles, aerosols, and gaseous byproducts from all construction activities, processing, and preparation of materials (such as from asphaltic batch plants) at all times, including weekends, holidays, and hours when work is not in progress.

2. *Particulates Control:* Maintain all excavations, stockpiles, haul roads, permanent and temporary access roads, plant sites, spoil areas, borrow areas, and all other work areas within or outside the project boundaries free from particulates that would cause a hazard or a nuisance. Sprinklering, chemical treatment of an approved type, light bituminous treatment, baghouse, scrubbers, electrostatic precipitators, or other methods are permitted to control particulates in the work area.

3. *Hydrocarbons and Carbon Monoxide:* Control monoxide emissions from equipment to federal and State allowable limits.

4. *Odors:* Control odors of construction activities and prevent obnoxious odors from occurring.

Applying these controls would provide a further reduction of construction-related PM and odors from emissions shown in Tables 3.2-7 and 3.2-8, although the level of reduction achieved depends on the manner in which the controls are implemented. This analysis does not quantify the reduction of construction emissions from Alternative 1 short-term projects attributable to implementation of VA Master Construction Specifications (Section 015719). Because these controls are required by VA, the analysis assumes that they would be implemented as part of the Alternative 1 short-term projects. Thus, for a conservative analysis and to present worst-case construction emissions, the unmitigated construction emissions (i.e., emissions without VA Master Construction Specifications measures) were compared with the applicable *de minimis* thresholds.

With implementation of the abovementioned controls, the direct impact on regional air quality of construction-related emissions of criteria pollutants from Alternative 1 short-term projects would be minor. No indirect impacts would occur.

Localized Emissions of Toxic Air Contaminants and Particulate Matter

As discussed previously, Alternative 1 short-term projects would include demolition of existing structures. It is assumed that asbestos and lead-based paint are present in each of the structures to be demolished, and would be abated per VA Specification Sections 028333.13, "Lead-Based Paint Removal and Disposal," and 028213.41, "Asbestos Abatement for Total Demolition Projects Prior to Building Demolition."

Screening Assessment Results

With respect to construction-related TAC emissions, BAAQMD has developed the Screening Tables for Air Toxics Evaluation during Construction. The Screening Tables represent worst-case conditions (i.e., overlapping, on-site construction). Should sensitive receptors be located within applicable screening distances, additional evaluation of potential health risks would be warranted to determine the level of impact that would occur.

The Alternative 1 short-term projects would require 318,400 square feet of building construction. For a commercial project with 300,000–500,000 square feet of construction, the offset required for combined risk with age sensitivity factor (to account for early life exposures) is 200 meters (656 feet) from the project fence line to ensure that a sensitive receptor would have a minor toxics impact. Because numerous sensitive receptors (residences) are located within 50 feet of the proposed site fence line on the southern boundaries of the SFVAMC Fort Miley Campus and the on-site childcare center, the construction-related TAC impact does not pass the screen. Therefore, a refined HRA was completed to further evaluate potential health risks to sensitive receptors.

Health Risk Assessment Results

For Alternative 1 short-term projects, the cancer risks for the maximally exposed child, childcare center, and maximally exposed worker, as well as the maximum acute health index and $PM_{2.5}$ concentration were all determined to be above the BAAQMD thresholds of significance (Table 3.2-9). Thus, the construction-related diesel PM exhaust emissions from Alternative 1 short-term projects would have a potential adverse impact.

Table 3.2-9: Summary of Unmitigated Maximum Impacts for Construction of Alternative 1 Short-Term Projects

Receptor Type		Construction Period Maximum Cancer Risk (per million)	Maximum Cancer Risk (per million)	Maximum Chronic HI	Maximum Acute HI	Annual Average $PM_{2.5}$ Conc. ($\mu g/m^3$)
MEIR[1]	Adult	–	5.26	0.05	3.38	1.83
	Child	31.82	–			
Childcare Center[2]	Child	29.63	–			
MEIW[3]		–	11.75			
BAAQMD Significance Threshold		10	10	1	1	0.3
Exceed Threshold (Y/N)?		Y	Y	N	Y	Y

Notes:
$\mu g/m^3$ = micrograms per cubic meter; HI = Hazard Index; $PM_{2.5}$ = fine particulate matter
1 MEIR: Maximally exposed individual at a new residential receptor; involves an adult exposure scenario and 8-year child exposure scenario for cancer risk, as required by the Bay Area Air Quality Management District (BAAQMD). These exposure periods are used for the purposes of the health risk assessment pursuant to the Office of Environmental Health Hazard Assessment's *Air Toxics Hot Spots Program Risk Assessment Guidelines* and are intended to represent actual exposure periods. Construction activities for Alternative 1 short-term projects would only last approximately 8 years and 2 months.
2 Childcare: 5-year child exposure for cancer risk assuming 10 hours per day exposure.
3 MEIW: Maximally exposed individual at an existing occupational worker receptor; involves an adult worker exposure scenario as required by BAAQMD.
Source: Modeling performed by AECOM in 2014

Mitigation Measure AIR-1: Employ Tier 4 Engines in Construction Equipment for Alternative 1 for Specific Short-Term Projects

VA will employ Tier 4 engines in construction equipment or the equivalent retrofitted construction equipment to achieve Tier 4 engine emission standards during Phases 1.7, 1.8, 1.10, and 1.13.

With implementation of Mitigation Measure AIR-1, VA would make provisions for those receptors that may be exposed to diesel PM levels in excess of BAAQMD standards.[3] Following implementation of Mitigation Measure AIR-1, cancer risks attributable to construction emissions were determined to be as follows:

- 1.50 in 1 million for the adult resident cancer risk
- 9.08 in 1 million for the resident child cancer risk during the construction period
- 9.94 in 1 million for the child cancer risk at the SFVAMC childcare center during the construction period (5-year exposure period)
- 4.22 in 1 million for the worker maximum cancer risk

[3] It should be noted that the proposed project is not located in within the Potential Roadway Exposure Zone Map pursuant to San Francisco Department of Public Health's Article 38.

Maximum chronic HI was determined to be 0.04 and the maximum acute HI was determined to be 0.52 (Table 3.2-10). The annual average concentration for $PM_{2.5}$ is equal to 0.25, which is less than the 0.3 $\mu g/m^3$ threshold.

With implementation of Mitigation Measure AIR-1 maximum health risk impacts for both workers and residential receptors would not exceed 10 in 1 million (Table 3.2-10). In addition, annual average concentrations for $PM_{2.5}$ would not exceed the threshold with implementation of Mitigation Measure AIR-1. Therefore, with implementation of Mitigation Measure AIR-1, TAC and $PM_{2.5}$ emissions generated during construction of Alternative 1 short-term projects would result in a minor direct impact with respect to health risks on on-site and nearby residential receptors. No indirect impacts would occur. The locations of the maximally exposed individual at an existing residential receptor, the maximally exposed individual at an existing occupational worker receptor, and the maximum cancer risk at the childcare center are shown in Figure 3.2-4.

Table 3.2-10: Summary of Mitigated Maximum Impacts for Construction of Alternative 1 Short-Term Projects

Receptor Type		Construction Period Maximum Cancer Risk (per million)	Maximum Cancer Risk (per million)	Maximum Chronic HI	Maximum Acute HI	Annual Average $PM_{2.5}$ Conc. ($\mu g/m^3$)
MEIR[1]	Adult	–	1.50	0.04	0.52	0.25
	Child	9.08	–			
Childcare Center[2]	Child	9.94	–			
MEIW[3]		–	4.22			
BAAQMD Significance Threshold		10	10	1	1	0.3
Exceed Threshold (Y/N)?		N	N	N	N	N

Notes:
$\mu g/m^3$ = micrograms per cubic meter; HI = Hazard Index; $PM_{2.5}$ = fine particulate matter

1 MEIR: Maximally exposed individual at a new residential receptor; involves an adult exposure scenario and 8-year child exposure scenario for cancer risk, as required by the Bay Area Air Quality Management District (BAAQMD). These exposure periods are used for the purposes of the health risk assessment pursuant to the Office of Environmental Health Hazard Assessment's *Air Toxics Hot Spots Program Risk Assessment Guidelines* and are intended to represent actual exposure periods. Construction activities for Alternative 1 short-term projects would only last approximately 8 years and 2 months.

2 Childcare: 5-year child exposure for cancer risk assuming 10 hours per day exposure.

3 MEIW: Maximally exposed individual at an existing occupational worker receptor; involves an adult worker exposure scenario as required by BAAQMD.

Source: Modeling performed by AECOM in 2014

Odors

Construction activities associated with Alternative 1 short-term projects could result in odors (i.e., from diesel exhaust emitted by equipment). These odors would be temporary, would occur during business hours during the construction period, and would disperse quickly given the wind in the area. Therefore, potential direct odor impacts of Alternative 1 short-term projects during construction would be minor. No indirect impacts would occur.



Source: Compiled by AECOM in 2014
Note: The MEIW corresponds to an employee of the Golden Gate National Recreation Area, not a recreation user.

Figure 3.2-4 **Locations of Maximum Exposed Individuals**

Operation

Criteria Air Pollutants

Short-term area- and mobile-source emissions were modeled using CalEEMod. The modeling results are summarized in Table 3.2-11.

Table 3.2-11: Summary of Modeled Maximum Annual Emissions of Criteria Air Pollutants and Precursors Associated with Operational Activities for Alternative 1 Short-Term Projects at the SFVAMC Fort Miley Campus

Source	Emissions (tons per year)[1]				
	CO	NO_X	VOC/ROG	PM_{10}	$PM_{2.5}$
Alternative 1 Short-Term Projects					
Operation	2.8	0.7	1.1	0.4	0.1
de Minimis Threshold	100	100	50	100	100

Notes:
CO = carbon monoxide; NO_X = oxides of nitrogen; PM_{10} = respirable particulate matter with an aerodynamic diameter of 10 micrometers or less; $PM_{2.5}$ = fine particulate matter with an aerodynamic diameter of 2.5 micrometers or less; ROG = reactive organic gases; VOC = volatile organic compounds

[1] Details of annual operational emissions, including input parameters used in the modeling and detailed modeling output, may be found in Appendix B.

Source: Modeling performed by AECOM in 2014

As shown, operational emissions of criteria pollutants associated with Alternative 1 short-term projects would be substantially lower than the *de minimis* thresholds. Therefore, the direct impact on regional air quality of operational emissions of criteria pollutants under Alternative 1 short-term projects would be minor. No indirect impacts would occur.

Localized Carbon Monoxide Emissions

Implementing Alternative 1 short-term projects would not increase short-term (2020) traffic volumes in the vicinity of the existing SFVAMC Fort Miley Campus to 44,000 vehicles per hour. (This is the CO hotspot screening level that has been recommended by BAAQMD and that evaluates a project's relative level of compliance with NAAQS and CAAQS.) There are no horizontal or vertical restrictions in the area that would trap CO and limit mixing. See the traffic study included as Appendix E of this EIS for detailed information regarding existing and future intersection volumes in the vicinity of the SFVAMC Fort Miley Campus. Therefore, receptors in the vicinity of the Campus would not be directly adversely affected by operation of Alternative 1 short-term projects. Impacts would be minor. No indirect impacts would occur.

Localized Emissions of Toxic Air Contaminants and Particulate Matter

Buildout of the existing SFVAMC Fort Miley Campus under Alternative 1 short-term projects would involve expansion of the existing medical facility. Medical facilities such as hospitals, by their nature, are considered sensitive land uses, because the facilities are used by patients who are considered sensitive receptors. The Campus is not located near any roadways with high traffic volumes (i.e., 100,000 vehicles per day within a 150-meter

radius of the Campus), and daily delivery truck trips to the Campus average approximately 12 per day. This number could potentially increase relative to current conditions in the near term, but not substantially. Therefore, localized emissions from both on-site and off-site mobile sources would not directly adversely affect sensitive receptors either on-site (patients) or off-site (residents).

No permitted sources of TACs currently operate near the existing SFVAMC Fort Miley Campus, outside of the Campus itself (Figure 3.2-1). New or replacement permitted sources of TACs, such as incinerators or backup diesel generators, would operate in accordance with applicable standards. Thus, Alternative 1 short-term projects could potentially include one or more of the above-mentioned sources of TACs and/or $PM_{2.5}$, but such a source would require a permit and best available control technology for toxics (T-BACT) to avoid adversely affecting the patients and the neighboring community. Therefore, operational TAC and $PM_{2.5}$ emissions from stationary sources would not adversely affect sensitive receptors on- or off-site. Direct impacts would be minor. No indirect impacts would occur.

Odors

As described previously, the sensitive land uses in the vicinity of the existing SFVAMC Fort Miley Campus include residences and medical facilities used by patients who are considered sensitive receptors. As described above in Section 3.2.1, "Affected Environment," no complaints about odors were recorded during the years 2009–2011 for the area surrounding the existing SFVAMC Fort Miley Campus.

The SFVAMC Fort Miley Campus would house additional sensitive receptors under Alternative 1 short-term projects; however, major odor sources are not anticipated to be permitted on the Campus or in the nearby residential community. Alternative 1 short-term projects would not involve the use of any net new incinerators, which could be a source of odor emissions. Other minor sources such as garbage dumpsters on the Campus or in the nearby neighborhood could expose on-site and off-site sensitive receptors to odors; however, these types of odor exposures are unlikely given the windy atmospheric conditions in the area (see Section 3.2.1, "Affected Environment").

SFVAMC would continue to comply with industry standards such as the Medical Waste Management Act (California Health and Safety Code, Sections 117600–118360) so that on-site minor odor sources, such as garbage dumpsters, would not adversely affect on-site or off-site sensitive receptors. Solid and hazardous waste would be handled in compliance with existing local, State, and federal laws. Waste from the proposed uses would be collected at least once per week to avoid odor problems. With implementation of this best management practice (BMP) (i.e., compliance with industry standards and existing local, State, and federal laws), this impact of Alternative 1 short-term projects would be minor.

Long-Term Projects

Construction

Criteria Air Pollutants

The Alternative 1 long-term project would involve the construction of approximately 170,000 gsf of medical, research, and administrative facilities (Building 213) at the existing SFVAMC Fort Miley Campus.

Construction activities associated with the Alternative 1 long-term project would be similar to those discussed above for Alternative 1 short-term projects. Construction activities under the Alternative 1 long-term project would occur over a period of 2 years, from March 2024 to March 2026. Construction-related emissions of criteria air pollutants were quantified using CalEEMod. The results are shown in Table 3.2-12.

Table 3.2-12: Summary of Modeled Maximum Annual Emissions of Criteria Air Pollutants and Precursors Associated with Construction Activities for the Alternative 1 Long-Term Project at the SFVAMC Fort Miley Campus

Source	Emissions (tons per year)[1]				
	CO	NO_X	VOC/ROG	PM_{10}	$PM_{2.5}$
Alternative 1 Long-Term Project[2]	4.1	3.7	1.3	0.2	0.2
de Minimis Threshold	100	100	50	–	100

Notes:
CO = carbon monoxide; NO_X = oxides of nitrogen; PM_{10} = respirable particulate matter with an aerodynamic diameter of 10 micrometers or less; $PM_{2.5}$ = fine particulate matter with an aerodynamic diameter of 2.5 micrometers or less; ROG = reactive organic gases; VOC = volatile organic compounds
1 Details of annual construction emissions, including input parameters used in the modeling and detailed modeling output, may be found in Appendix B.
2 Construction emissions shown represent *total* construction emissions for construction of the Alternative 1 long-term project, assuming that all construction activities for the long-term project occur in a single year, which represents the worst-case scenario.
Source: Modeling performed by AECOM in 2014

As shown, direct construction-related impacts of the Alternative 1 long-term project would be minor. No indirect impacts would occur.

Because construction activities and operation of Alternative 1 long-term project would occur concurrently, construction and operational emissions were combined (Table 3.2-13) to determine the "worst-case" impacts of maximum annual construction emissions and operational emissions at buildout, even though buildout would be only partial for much of the long-term construction period. It should be noted that, with respect to the emission levels shown in Table 3.2-13, construction emissions include only long-term emissions, but operational emissions include both short-term and long-term operational emissions, because both would occur in the long term.

Construction-related emissions of criteria air pollutants combined with the short- and long-term operational emissions under Alternative 1 would be substantially less than the significance thresholds (Table 3.2-13). The direct impact on regional air quality would be minor. No indirect impacts would occur.

Localized Emissions of Toxic Air Contaminants and Particulate Matter

As described previously, BAAQMD has developed the Screening Tables for Air Toxics Evaluation during Construction (BAAQMD, 2010b). Sensitive receptors located within applicable screening distances could experience increased health risks during construction. Depending on the intensity of construction, impacts could be considered adverse.

Table 3.2-13: Summary of Modeled Maximum Annual Emissions of Criteria Air Pollutants and Precursors Associated with Construction and Operational Activities for the Alternative 1 Long-Term Project at the SFVAMC Fort Miley Campus

Source	Emissions (tons per year)[1]				
	CO	NO_X	VOC/ROG	PM_{10}	$PM_{2.5}$
Alternative 1 Long-Term Project					
Max Construction[2]	4.1	3.7	1.3	0.2	0.2
Operation	10.1	2.2	2.7	1.9	0.6
Total	**14.2**	**5.9**	**4.0**	**2.1**	**0.8**
de Minimis Threshold	100	100	50	100	100

Notes:
CO = carbon monoxide; NO_X = oxides of nitrogen; PM_{10} = respirable particulate matter with an aerodynamic diameter of 10 micrometers or less; $PM_{2.5}$ = fine particulate matter with an aerodynamic diameter of 2.5 micrometers or less; ROG = reactive organic gases; VOC = volatile organic compounds

1 Details of annual construction emissions, including input parameters used in the modeling and detailed modeling output, may be found in Appendix B.

2 Construction emissions shown represent *total* construction emissions for Alternative 1 long-term projects, assuming that all construction activities for the long-term project occur in a single year, which represents the worst-case scenario.

Source: Modeling performed by AECOM in 2014

Screening Assessment Results

The Alternative 1 long-term project would require about 318,400 square feet of construction. For a commercial project with 300,000–500,000 square feet of construction, the offset required for combined risk with age sensitivity factor incorporated is 200 meters (656 feet) from the project activity to ensure that a sensitive receptor would have no more than a minor toxics impact. Because numerous sensitive receptors (residences) are located within 200 meters of construction activities for the Alternative 1 long-term project, the construction-related TAC impact does not pass the screen.

Health Risk Assessment Results

For the Alternative 1 long-term project, cancer risk attributable to construction emissions was determined to be as follows:

- 0.03 in 1 million for the adult resident cancer risk
- 0.34 in 1 million for the resident child cancer risk during the construction period
- 0.19 in 1 million for the child cancer risk at the SFVAMC childcare center during the construction period
- 0.10 in 1 million for the worker maximum cancer risk

Maximum chronic HI was determined to be 0.003 and the maximum acute HI was determined to be 0.04 (Table 3.2-14). The annual average concentration for $PM_{2.5}$ is equal to 0.06, which is less than the 0.3 $\mu g/m^3$ threshold.

Table 3.2-14: Summary of Maximum Impacts for Construction of the Alternative 1 Long-Term Project

Receptor Type		Construction Period Maximum Cancer Risk (per million)	Maximum Cancer Risk (per million)	Maximum Chronic HI	Maximum Acute HI	Annual Average $PM_{2.5}$ Conc. ($\mu g/m^3$)
MEIR[1]	Adult	–	0.03	0.003	0.04	0.06
	Child	0.34	–			
Childcare Center[2]	Child	0.19	–			
MEIW[3]		–	0.10			
BAAQMD Significance Threshold		10	10	1	1	0.3
Exceed Threshold (Y/N)?		N	N	N	N	N

Notes:
$\mu g/m^3$ = micrograms per cubic meter; HI = Hazard Index; $PM_{2.5}$ = fine particulate matter
1 MEIR: Maximally exposed individual at a new residential receptor; involves an adult exposure scenario and 8-year child exposure scenario for cancer risk, as required by the Bay Area Air Quality Management District (BAAQMD).
2 Childcare: 5-year child exposure for cancer risk assuming 10 hours per day exposure.
3 MEIW: Maximally exposed individual at an existing occupational worker receptor; involves an adult worker exposure scenario; as required by BAAQMD.
Source: Modeling performed by AECOM in 2014

Chronic and cancer health risks associated with construction of the Alternative 1 long-term project would not exceed the thresholds; the annual average concentration of $PM_{2.5}$ would also not exceed the threshold (Table 3.2-14). Therefore, direct impacts would be minor. No indirect impacts would occur.

Odors

Construction of the Alternative 1 long-term project could generate odors (i.e., from diesel exhaust emitted by equipment). These odors would be temporary, would occur during business hours during the construction period, and would disperse quickly given the wind in the area. Therefore, potential direct odor impacts of the Alternative 1 long-term project during construction would be minor. No indirect impacts would occur.

Operation

Criteria Air Pollutants

Long-term area- and mobile-source emissions (both short-term and long-term operational emissions) were modeled using CalEEMod. The modeling results are summarized in Table 3.2-15. Both incremental (long-term) and combined (short-term and long-term) operational emissions are shown as full buildout of the Alternative 1 long-term project.

Table 3.2-15: Summary of Modeled Maximum Annual Emissions of Criteria Air Pollutants and Precursors Associated with Operational Activities for the Alternative 1 Long-Term Project at the SFVAMC Fort Miley Campus

Source	Emissions (tons per year)[1]				
	CO	NO_X	VOC/ROG	PM_{10}	$PM_{2.5}$
Alternative 1 Long-Term Project					
Short- and Long-Term Operation	10.1	2.2	2.7	1.9	0.6
de Minimis Threshold	100	100	50	100	100

Notes:
CO = carbon monoxide; NO_X = oxides of nitrogen; PM_{10} = respirable particulate matter with an aerodynamic diameter of 10 micrometers or less; $PM_{2.5}$ = fine particulate matter with an aerodynamic diameter of 2.5 micrometers or less; ROG = reactive organic gases; VOC = volatile organic compounds
[1] Details of annual construction emissions, including input parameters used in the modeling and detailed modeling output, may be found in Appendix B.
Source: Modeling performed by AECOM in 2014

As shown, the direct operational emissions of criteria pollutants (incremental and combined) from the Alternative 1 long-term project would be substantially lower than the *de minimis* thresholds. Therefore, the direct impact on regional air quality from operational emissions of criteria pollutants under the Alternative 1 long-term project would be minor. No indirect impacts would occur.

Localized Carbon Monoxide Emissions

Implementing the incremental long-term project for Alternative 1 or the combined short-term and long-term projects for Alternative 1 would not increase long-term (2023) traffic volumes in the vicinity of the existing SFVAMC Fort Miley Campus to 44,000 vehicles per hour. (This is the CO hotspot screening level recommended by BAAQMD.) There are no horizontal or vertical restrictions in the area that would trap CO and limit mixing. Therefore, receptors in the vicinity of the Campus would not be directly adversely affected by operation of the Alternative 1 long-term projects. Direct impacts would be minor. No indirect impacts would occur.

Localized Emissions of Toxic Air Contaminants and Particulate Matter

The Alternative 1 long-term project would not include residential uses, but hospitals are considered to be sensitive land uses because the facilities are used by patients who are considered sensitive receptors. The existing SFVAMC Fort Miley Campus is not located near any roadways with high traffic volumes (i.e., 100,000 vehicles per day within a 150-meter radius of the Campus), and daily delivery truck trips to the Campus average approximately 12 per day as discussed previously. This number could potentially increase in the long term relative to current conditions, but not substantially. Therefore, localized emissions from both on-site and off-site mobile operations would not directly adversely affect sensitive receptors either on-site (patients) or off-site (residents). The impact would be minor.

No permitted sources of TACs operate in the vicinity of the existing SFVAMC Fort Miley Campus, outside of the Campus itself (Figure 3.2-1). It is unknown at the time of writing this EIS whether the Alternative 1 long-term project would include any new permitted sources of TACs such as incinerators, fume hoods, sterilizers, or backup

diesel generators. The Alternative 1 long-term project could potentially include one or more of the above-mentioned sources of TACs and/or $PM_{2.5}$, but such a source would require a permit and T-BACT to avoid adversely affecting the patients and the neighboring community. Therefore, operational stationary-source emissions of TACs and $PM_{2.5}$ would not adversely affect sensitive receptors. The direct impact would be minor. No indirect impacts would occur.

Odors

Odor impacts from operation of the Alternative 1 long-term project would be identical to those of operation of Alternative 1 short-term projects. It is not anticipated that additional odor source types would occur in the long term, although numbers may increase to some degree. However, with implementation of the BMP described above under the operational impacts of Alternative 1 short-term projects, the impact of direct, on-site odors would be minor. No indirect impacts would occur.

Alternative 2: SFVAMC Fort Miley Campus Buildout Alternative

Short-Term Projects

Alternative 2 short-term projects at the existing SFVAMC Fort Miley Campus would be the same as short-term projects for Alternative 1, with one exception. Specifically, retrofitting of the existing Buildings 1, 6, and 8 would not occur as part of Alternative 2 short-term projects (Table 2-3 and Figure 2-3), but would instead be accomplished in the long term. Alternative 2 short-term projects include construction of a total of 485,445 gsf, which is 115,547 gsf less than for short-term projects under Alternative 1. Therefore, impacts of Alternative 2 short-term projects would be similar to or less than those of Alternative 1 short-term projects.

Construction

Criteria Air Pollutants

Construction activities associated with Alternative 2 short-term projects would be similar to those described above for Alternative 1. These construction activities would include construction of new medical facility buildings, seismic retrofits of existing buildings, demolition of existing buildings, and removal/installation of trailer units. It is anticipated that Alternative 2 would also commence in 2014 and short-term projects would continue until August 2019 (see Table 2-3 and Appendix B for a full detailed construction schedule).

Direct, construction-related emissions of criteria air pollutants were quantified using methods similar to those described for Alternative 1. Table 3.2-16 presents the worst-case construction emissions associated with construction of Alternative 2 short-term projects. Emissions shown in Table 3.2-16 would be slightly less than the construction emissions for Alternative 1 short-term projects (Table 3.2-7) because Alternative 2 short-term projects would not include the seismic retrofit of Buildings 1, 6, and 8.

As shown in Table 3.2-16, direct, short-term, construction-related emissions of criteria pollutants would be substantially less than the significance thresholds. In addition, construction emissions presented in Table 3.2-16 conservatively assume that all Alternative 2 short-term projects would be constructed in a single year. In reality,

Table 3.2-16: Summary of Modeled Maximum Annual Emissions of Criteria Air Pollutants and Precursors Associated with Construction Activities for Alternative 2 Short-Term Projects at the SFVAMC Fort Miley Campus

Source	Emissions (tons per year)[1]				
	CO	NO_X	VOCs/ROG	PM_{10}	$PM_{2.5}$
Alternative 2 Short-Term Projects[2]	28.6	49.2	7.6	3.6	2.9
de Minimis Threshold	100	100	50	100	100

Notes:
CO = carbon monoxide; NO_X = oxides of nitrogen; PM_{10} = respirable particulate matter with an aerodynamic diameter of 10 micrometers or less; $PM_{2.5}$ = fine particulate matter with an aerodynamic diameter of 2.5 micrometers or less; ROG = reactive organic gases; SFVAMC = San Francisco Veterans Affairs Medical Center; VOC = volatile organic compounds

1 Details of annual construction emissions, including construction phasing, input parameters used in the modeling, and detailed modeling output, may be found in Appendix B.

2 Construction emissions shown represent *total* construction emissions associated with Alternative 2 short-term projects. In reality, only a fraction (e.g., 1/7) of these emissions would be generated in any particular year.

Source: Modeling performed by AECOM in 2014.

only a portion (e.g., 1/7) of these emissions would occur in any particular year. The direct impact on regional air quality would be minor. No indirect impacts would occur.

Because they would be concurrent in the short term, construction-related and operational emissions were combined (Table 3.2-17) to determine the "worst-case" impacts of maximum annual construction emissions and operational emissions at buildout, even though buildout would be only partial for much of the short-term construction period.

As shown, worst-case construction-related emissions of criteria air pollutants combined with the operational emissions under Alternative 2 short-term projects would still be substantially less than the significance thresholds. The direct impact on regional air quality would be minor. No indirect impacts would occur.

Localized Emissions of Toxic Air Contaminants and Particulate Matter

As discussed previously, Alternative 2 short-term projects would include demolition of existing structures (Buildings 20, 18, 14, 21, and 12). It is assumed that asbestos and lead-based paint are present in each of the structures to be demolished, and would be abated per VA Specification Sections 028333.13, "Lead-Based Paint Removal and Disposal," and 028213.41, "Asbestos Abatement for Total Demolition Projects."

Screening Assessment Results

Alternative 2 short-term projects would require 318,400 square feet of building construction. As under Alternative 1, for a commercial project with 300,000–500,000 square feet of construction, the offset required for combined risk with age sensitivity factor, to account for early life exposures, is 200 meters (656 feet) from the construction fence line to ensure that a sensitive receptor would have a minor toxics impact. Because numerous sensitive receptors (residences) are located within 50 feet of the fence line on the southern boundaries of the SFVAMC Fort Miley Campus and the on-site childcare center and medical facilities used by patients who are considered

Table 3.2-17: Summary of Modeled Maximum Annual Emissions of Criteria Air Pollutants and Precursors Associated with Construction and Operational Activities for Alternative 2 Short-Term Projects at the SFVAMC Fort Miley Campus

Source	Emissions (tons per year)[1]				
	CO	NO_X	VOC/ROG	PM_{10}	$PM_{2.5}$
Alternative 2 Short-Term Projects					
Max Construction[2]	28.6	49.2	7.6	3.6	2.9
Short-Term Operation	2.8	0.7	1.1	0.4	0.1
Total	31.4	49.9	8.7	4.0	3.0
de Minimis Threshold	100	100	50	100	100

Notes:
CO = carbon monoxide; NO_X = oxides of nitrogen; PM_{10} = respirable particulate matter with an aerodynamic diameter of 10 micrometers or less; $PM_{2.5}$ = fine particulate matter with an aerodynamic diameter of 2.5 micrometers or less; ROG = reactive organic gases; SFVAMC = San Francisco Veterans Affairs Medical Center; VOC = volatile organic compounds
1 Details of annual construction and operational emissions, including input parameters used in the modeling and detailed modeling output, may be found in Appendix B.
2 Construction emissions shown represent *total* construction emissions for Alternative 2 short-term projects, assuming that all of the short-term projects would be constructed simultaneously with short-term operations, which represents the worst-case scenario.
Source: Modeling performed by AECOM in 2014

sensitive receptors, the construction-related TAC impact does not pass the screen. Therefore, a refined HRA was completed to further evaluate potential health risks to sensitive receptors.

Health Risk Assessment Results

For Alternative 2 short-term projects, the cancer risks for the maximally exposed child, childcare center, and maximally exposed worker, and well as the maximum acute health index and $PM_{2.5}$ concentration were all determined to be above the BAAQMD thresholds of significance (Table 3.2-18). Thus, construction-related diesel PM exhaust emissions from Alternative 2 short-term projects would have a potential adverse impact.

Table 3.2-18: Summary of Unmitigated Maximum Impacts for Construction of Alternative 2 Short-Term Projects

Receptor Type		Construction Period Maximum Cancer Risk (per million)	Maximum Cancer Risk (per million)	Maximum Chronic HI	Maximum Acute HI	Annual Average $PM_{2.5}$ Conc. ($\mu g/m^3$)
MEIR[1]	Adult	–	5.69	0.06	2.36	1.70
	Child	35.79	–			
Childcare Center[2]	Child	29.63	–			
MEIW[3]		–	11.35			
BAAQMD Significance Threshold		10	10	1	1	0.3

Table 3.2-18: Summary of Unmitigated Maximum Impacts for Construction of Alternative 2 Short-Term Projects

Receptor Type	Construction Period Maximum Cancer Risk (per million)	Maximum Cancer Risk (per million)	Maximum Chronic HI	Maximum Acute HI	Annual Average $PM_{2.5}$ Conc. ($\mu g/m^3$)
Exceed Threshold (Y/N)?	Y	Y	N	Y	Y

Notes:
$\mu g/m^3$ = micrograms per cubic meter; HI = Hazard Index; $PM_{2.5}$ = fine particulate matter
[1] MEIR: Maximally exposed individual at a new residential receptor; involves an adult exposure scenario and 8-year child exposure scenario for cancer risk, as required by the Bay Area Air Quality Management District (BAAQMD).
[2] Childcare: 5-year child exposure for cancer risk, assuming 10 hours per day exposure.
[3] MEIW: Maximally exposed individual at an existing occupational worker receptor; involves an adult worker exposure scenario, as required by BAAQMD
Source: Modeling performed by AECOM in 2014

Mitigation Measure AIR-2: Employ Tier 4 Engines in Construction Equipment for Alternative 2 for Specific Short-Term Projects

VA will utilize Tier 4 engines or the equivalent retrofitted construction equipment to achieve Tier 4 engine emission standards in construction equipment used during Phases 1.8, 1.10, 1.11, and 1.13.

With implementation of Mitigation Measure AIR-2, VA would make provisions for those receptors that may be exposed to diesel PM levels in excess of BAAQMD standards.[4] Following implementation of Mitigation Measure AIR-2, cancer risk attributable to construction emissions was determined to be as follows:

- 1.04 in 1 million for the adult resident cancer risk
- 6.56 in 1 million for the resident child cancer risk during the construction period
- 7.75 in 1 million for the child cancer risk at the SFVAMC childcare center during the construction period
- 4.04 in 1 million for the worker maximum cancer risk

Maximum chronic HI was determined to be 0.04 and the maximum acute HI was determined to be 0.77 (Table 3.2-19). The annual average concentration for $PM_{2.5}$ is equal to 0.26, which is less than the 0.3 $\mu g/m^3$ threshold.

As shown in Table 3.2-19, with Mitigation Measure AIR-2, maximum health risk impacts for both workers and residential receptors would not exceed the applicable health risk thresholds for cancer risk, $PM_{2.5}$ concentrations, or chronic/acute hazard index. Therefore, with Mitigation Measure AIR-2, TAC and $PM_{2.5}$ emissions generated during construction of Alternative 2 short-term projects would result in a minor direct impact with respect to health risks on on-site and nearby residential receptors. No indirect impacts would occur.

[4] It should be noted that the project site is not located within the boundaries of the Potential Roadway Exposure Zone Map pursuant to San Francisco Department of Public Health's Article 38.

Table 3.2-19: Summary of Mitigated Maximum Impacts for Construction of Alternative 2 Short-Term Projects

Receptor Type		Construction Period Maximum Cancer Risk (per million)	Maximum Cancer Risk (per million)	Maximum Chronic HI	Maximum Acute HI	Annual Average $PM_{2.5}$ Conc. ($\mu g/m^3$)
MEIR[1]	Adult	–	1.04	0.04	0.77	0.26
	Child	6.56	–			
Childcare Center[2]	Child	7.55	–			
MEIW[3]		–	4.04			
BAAQMD Significance Threshold		10	10	1	1	0.3
Exceed Threshold (Y/N)?		N	N	N	N	N

Notes:
$\mu g/m^3$ = micrograms per cubic meter; HI = Hazard Index; $PM_{2.5}$ = fine particulate matter
[1] MEIR: Maximally exposed individual at a new residential receptor; involves an adult exposure scenario and 8-year child exposure scenario for cancer risk, as required by the Bay Area Air Quality Management District (BAAQMD).
[2] Childcare: 5-year child exposure for cancer risk, assuming 10 hours per day exposure.
[3] MEIW: Maximally exposed individual at an existing occupational worker receptor; involves an adult worker exposure scenario, as required by BAAQMD
Source: Modeling performed by AECOM in 2014

Odors

Construction activities associated with Alternative 2 short-term projects could generate odors (i.e., from diesel exhaust emitted by equipment). These odors would be temporary, would occur during business hours during the construction period, and would disperse quickly given the wind in the area. Therefore, potential direct odor impacts of Alternative 2 short-term projects during construction would be minor. No indirect impacts would occur.

Operation

Criteria Air Pollutants

Short-term area- and mobile-source emissions were modeled using CalEEMod. The modeling results are summarized below in Table 3.2-20.

As shown in Table 3.2-20, operational emissions of criteria pollutants during Alternative 2 short-term projects would be substantially lower than the *de minimis* thresholds. Therefore, the direct impact on regional air quality of operational emissions of criteria pollutants from Alternative 2 short-term projects would be minor. No indirect impacts would occur.

Table 3.2-20: Summary of Modeled Maximum Annual Emissions of Criteria Air Pollutants and Precursors Associated with Operational Activities for Alternative 2 Short-Term Projects at the SFVAMC Fort Miley Campus

Source	Emissions (tons per year)[1]				
	CO	NO_X	VOC/ROG	PM_{10}	$PM_{2.5}$
Alternative 2 Short-Term Projects					
Operation	2.8	0.7	1.1	0.4	0.1
de Minimis Threshold	100	100	50	100	100

Notes:
CO = carbon monoxide; NO_X = oxides of nitrogen; PM_{10} = respirable particulate matter with an aerodynamic diameter of 10 micrometers or less; $PM_{2.5}$ = fine particulate matter with an aerodynamic diameter of 2.5 micrometers or less; ROG = reactive organic gases; SFVAMC = San Francisco Veterans Affairs Medical Center; VOC = volatile organic compounds
[1] Details of annual construction and operational emissions, including input parameters used in the modeling and detailed modeling output, may be found in Appendix B.
Source: Modeling performed by AECOM in 2014

Localized Carbon Monoxide Emissions

Implementing Alternative 2 short-term projects would not increase short-term (2020) traffic volumes in the vicinity of the existing SFVAMC Fort Miley Campus to 44,000 vehicles per hour. (This is the CO hotspot screening level that has been recommended by BAAQMD and that evaluates a project's relative level of compliance with NAAQS and CAAQS.) There are no horizontal or vertical restrictions in the area that would trap CO and limit mixing. See the traffic study included as Appendix E of this EIS for detailed information regarding existing and future intersection volumes in the vicinity of the Campus. Therefore, receptors in the vicinity of the SFVAMC Fort Miley Campus would not be directly adversely affected by operation of Alternative 2 short-term projects. Impacts would be minor. No indirect impacts would occur.

Localized Emissions of Toxic Air Contaminants and Particulate Matter

Buildout of the existing SFVAMC Fort Miley Campus under Alternative 2 short-term projects involves expansion of the existing medical facility. Hospital facilities, by their very nature, are considered to be sensitive land uses because they are used by patients who are considered sensitive receptors. The Campus is not located near any roadways with high traffic volumes (i.e., 100,000 vehicles per day within a 150-meter radius of the Campus), and daily delivery truck trips to the Campus average approximately 12 per day, as discussed previously. This number could potentially increase in the short term relative to current conditions, but not substantially. Therefore, localized emissions from both on-site and off-site mobile sources would not directly adversely affect sensitive receptors either on-site (patients) or off-site (residents).

No permitted sources of TACs operate near the existing SFVAMC Fort Miley Campus, outside of the Campus itself (Figure 3.2-1). Alternative 2 short-term projects do not currently include any new or replacement permitted sources of TACs such as incinerators, boilers, or backup diesel generators. If the Alternative 2 short-term projects would include one or more of the above-mentioned sources of TACs and/or $PM_{2.5}$, SFVAMC would acquire permits as required to avoid adversely affecting the patients and the neighboring community. Therefore,

operational TAC and $PM_{2.5}$ emissions from stationary sources under Alternative 2 short-term projects would not adversely affect sensitive receptors. Direct impacts would be minor. No indirect impacts would occur.

Odors

As described previously, the sensitive land uses in the vicinity of the existing SFVAMC Fort Miley Campus include residences and the hospital facilities, because they are used by patients who are considered sensitive receptors. As described above in Section 3.2.1, "Affected Environment," no complaints about odors were recorded during the years 2009–2011 for the area surrounding the existing SFVAMC Fort Miley Campus. SFVAMC would house additional sensitive receptors under Alternative 2 short-term projects; however, major odor sources are not anticipated to be permitted on the Campus or in the nearby residential community. The Alternative 2 short-term projects would not involve any net new incinerators, which could be a source of odor emissions. Other minor sources such as garbage dumpsters on the Campus or in the nearby neighborhood could expose on-site and off-site sensitive receptors to odors; however, these types of odor exposures are unlikely given the windy atmospheric conditions in the area (see Section 3.2.1, "Affected Environment").

SFVAMC would develop a plan to ensure that on-site minor odor sources, such as garbage dumpsters, would not adversely affect on-site or off-site sensitive receptors. Solid and hazardous wastes would be handled in compliance with existing local, State, and federal laws. Waste from the proposed uses would be collected at least once per week to avoid odor problems. With implementation of this BMP, this impact of Alternative 2 short-term projects would be minor.

Long-Term Projects

Construction

Criteria Air Pollutants

Alternative 2 long-term projects, like the Alternative 1 long-term project, would involve the construction of approximately 170,000 gsf of medical, research, and administrative facilities (Building 213) at the existing SFVAMC Fort Miley Campus. However, Alternative 2 long-term projects would also include the seismic retrofits of existing buildings (Buildings 1, 6, and 8) and, thus, would generate more construction-related air quality emissions than the Alternative 1 long-term project.

Construction activities associated with Alternative 2 long-term projects would be similar to those discussed above for Alternative 2 short-term projects, but would also include seismic retrofits of Buildings 1, 6, and 8. Construction activities under Alternative 2 long-term projects would occur over a period of approximately 5 years, from December 2021 to March 2026. Construction-related emissions of criteria air pollutants were quantified using CalEEMod. The results are shown below in Table 3.2-21.

As shown, direct, long-term construction-related impacts would be minor. No indirect impacts would occur. As mentioned above, because Alternative 2 long-term projects would involve seismic retrofits of Buildings 1, 6, and 8 in addition to construction of Building 213, the emissions shown in Table 3.2-21 would be greater than those shown in Table 3.2-12 for construction emissions associated with Alternative 1 long-term projects.

Table 3.2-21: Summary of Modeled Maximum Annual Emissions of Criteria Air Pollutants and Precursors Associated with Construction Activities for Alternative 2 Long-Term Projects at the SFVAMC Fort Miley Campus

Source	Emissions (tons per year)[1]				
	CO	NO_X	VOC/ROG	PM_{10}	$PM_{2.5}$
Alternative 2 Long-Term Projects[2]	12.8	12.6	2.8	1.2	0.7
de Minimis Threshold	100	100	50	100	100

Notes:
CO = carbon monoxide; NO_X = oxides of nitrogen; PM_{10} = respirable particulate matter with an aerodynamic diameter of 10 micrometers or less; $PM_{2.5}$ = fine particulate matter with an aerodynamic diameter of 2.5 micrometers or less; ROG = reactive organic gases; SFVAMC = San Francisco Veterans Affairs Medical Center; VOC = volatile organic compounds

1 Details of annual construction emissions, including input parameters used in the modeling and detailed modeling output, may be found in Appendix B.

2 Construction emissions shown represent *total* construction emissions for construction of Alternative 2 long-term projects, assuming all of the long-term projects are constructed in a single year, which represents the worst-case scenario.

Source: Modeling performed by AECOM in 2014

Because construction activities and operation of Alternative 2 long-term projects would occur concurrently in the long term, construction and operational emissions were combined (Table 3.2-22) to determine the "worst-case" impacts of maximum annual construction emissions and operational emissions at buildout, even though buildout would be only partial for much of the long-term construction period. It should be noted that, with respect to the emission levels shown below in Table 3.2-22, construction emissions include only long-term emissions, but operational emissions include both short-term and long-term operational emissions, because both would occur in the long term.

As shown in Table 3.2-22, construction-related emissions of criteria air pollutants under Alternative 2 long-term projects combined with the short- and long-term operational emissions under Alternative 2 would be substantially less than the significance thresholds. The direct impact on regional air quality would be minor. No indirect impacts would occur.

Localized Emissions of Toxic Air Contaminants and Particulate Matter

As described previously, BAAQMD has developed the Screening Tables for Air Toxics Evaluation during Construction. Sensitive receptors located within applicable screening distances could experience increased health risks during construction. Depending on the intensity of construction, impacts could be considered adverse.

Screening Assessment Results

The Alternative 2 long-term projects would require about 318,400 square feet of total construction. For a commercial project with 300,000–500,000 square feet of construction, the offset required for combined risk with age sensitivity factor incorporated is 200 meters (656 feet) from the project activity to ensure that a sensitive receptor would have no more than a minor toxics impact. Because numerous sensitive receptors (residences) are located within 200 meters of construction (see Figure 3.2-3), the construction-related TAC impact does not pass the screen.

Table 3.2-22: Summary of Modeled Maximum Annual Emissions of Criteria Air Pollutants and Precursors Associated with Construction and Operational Activities for Alternative 2 Long-Term Projects at the SFVAMC Fort Miley Campus

Source	Emissions (tons per year)[1]				
	CO	NO_X	VOC/ROG	PM_{10}	$PM_{2.5}$
Alternative 2 Long-Term Projects					
Max Construction[2]	12.8	12.6	2.8	1.2	0.7
Operation	10.1	2.2	2.7	1.9	0.6
Total	**22.9**	**14.8**	**5.5**	**3.1**	**1.3**
de Minimis Threshold	100	100	50	100	100

Notes:
CO = carbon monoxide; NO_X = oxides of nitrogen; PM_{10} = respirable particulate matter with an aerodynamic diameter of 10 micrometers or less; $PM_{2.5}$ = fine particulate matter with an aerodynamic diameter of 2.5 micrometers or less; ROG = reactive organic gases; SFVAMC = San Francisco Veterans Affairs Medical Center; VOC = volatile organic compounds
1 Details of annual construction emissions, including input parameters used in the modeling and detailed modeling output, may be found in Appendix B.
2 Construction emissions shown represent *total* construction emissions for construction of Alternative 2 long-term projects, assuming that all of the long-term projects would be constructed in a single year, which represents the worst-case scenario.
Source: Modeling performed by AECOM in 2014

Health Risk Assessment Results

For Alternative 2 long-term projects, cancer risk attributable to construction emissions was determined to be as follows:

- 0.10 in 1 million for the adult resident cancer risk
- 0.73 in 1 million for the resident child cancer risk during the construction period
- 0.61 in 1 million for the child cancer risk at the SFVAMC childcare center during the construction period
- 0.31 in 1 million for the worker maximum cancer risk

Maximum chronic HI was determined to be 0.004 and the maximum acute HI was determined to be 0.34 (Table 3.2-23). The annual average concentration for $PM_{2.5}$ is equal to 0.10, which is less than the 0.3 $\mu g/m^3$ threshold.

As shown, maximum health risk impacts for both workers and residential receptors would not exceed the applicable health risk thresholds for cancer risk, $PM_{2.5}$ concentrations, or chronic/acute hazard index. Therefore, TAC and $PM_{2.5}$ emissions generated during construction of Alternative 2 long-term projects would result in a minor direct impact with respect to health risks. No indirect impacts would occur.

Odors

Alternative 2 long-term projects could generate odors during construction (i.e., from diesel exhaust emitted by equipment). These odors would be temporary, would occur during business hours during the construction period, and would disperse quickly given the wind in the area. Therefore, potential direct odor impacts during construction would be minor. No indirect impacts would occur.

Table 3.2-23: Summary of Maximum Impacts for Construction of Alternative 2 Long-Term Projects

Receptor Type		Construction Period Maximum Cancer Risk (per million)	Maximum Cancer Risk (per million)	Maximum Chronic HI	Maximum Acute HI	Annual Average $PM_{2.5}$ Conc. ($\mu g/m^3$)
MEIR[1]	Adult	–	0.10	0.004	0.34	0.10
	Child	0.73	–			
Childcare Center[2]	Child	0.61	–			
MEIW[3]		–	0.31			
BAAQMD Significance Threshold		10	10	1	1	0.3
Exceed Threshold (Y/N)?		N	N	N	N	N

Notes:
$\mu g/m^3$ = micrograms per cubic meter; HI = Hazard Index; $PM_{2.5}$ = fine particulate matter
1 MEIR: Maximally exposed individual at a new residential receptor; an adult exposure scenario and 8-year child exposure scenario for cancer risk; as required by BAAQMD.
2 Childcare: 5-year child exposure for cancer risk assuming 10 hours per day exposure.
3 MEIW: Maximally exposed individual at an existing occupational worker receptor; an adult worker exposure scenario; as required by BAAQMD.
Source: Modeling Performed by AECOM in 2014

Operation

Criteria Air Pollutants

Long-term area- and mobile-source emissions (both short-term and long-term operational emissions) were modeled using CalEEMod. The modeling results are summarized in Table 3.2-24. Both incremental (long-term) and combined (short-term and long-term) operational emissions are shown, because both would occur simultaneously in the long term (after August 2020).

Table 3.2-24: Summary of Modeled Maximum Annual Emissions of Criteria Air Pollutants and Precursors Associated with Operational Activities for Alternative 2 Long-Term Projects at the SFVAMC Fort Miley Campus

Source	Emissions (tons per year)[1]				
	CO	NO_X	VOC/ROG	PM_{10}	$PM_{2.5}$
Alternative 2 Long-Term Projects					
Short- and Long-Term Operation	10.1	2.2	2.7	1.9	0.6
de Minimis Threshold	100	100	50	100	100

Notes:
CO = carbon monoxide; NO_X = oxides of nitrogen; PM_{10} = respirable particulate matter with an aerodynamic diameter of 10 micrometers or less; $PM_{2.5}$ = fine particulate matter with an aerodynamic diameter of 2.5 micrometers or less; ROG = reactive organic gases; SFVAMC = San Francisco Veterans Affairs Medical Center; VOC = volatile organic compounds
1 Details of annual operational emissions, including input parameters used in the modeling and detailed modeling output, may be found in Appendix B.
Source: Modeling performed by AECOM in 2014

As shown, direct, long-term operational emissions of criteria pollutants (incremental and combined) would be substantially lower than the *de minimis* thresholds. Therefore, the direct impact on regional air quality of operational emissions of criteria pollutants under Alternative 2 short- and long-term projects would be minor. No indirect impacts would occur.

Localized Carbon Monoxide Emissions

Implementing the incremental long-term projects for Alternative 2 or the combined short-term and long-term projects for Alternative 2 would not increase long-term traffic volumes in the vicinity of the existing SFVAMC Fort Miley Campus to 44,000 vehicles per hour. (This is the CO hotspot screening level recommended by BAAQMD.) There are no horizontal or vertical restrictions in the area that would trap CO and limit mixing. Therefore, receptors in the vicinity of the Campus would not be directly adversely affected by operation of the Alternative 2 long-term projects. Direct impacts would be minor. No indirect impacts would occur.

Localized Emissions of Toxic Air Contaminants and Particulate Matter

Alternative 2 long-term projects would not include residential uses, but hospital facilities are considered to be sensitive land uses. The existing SFVAMC Fort Miley Campus is not located near any roadways with high traffic volumes (i.e., 100,000 vehicles per day within a 150-meter radius of the Campus), and daily delivery truck trips to the Campus average approximately 12 per day as discussed previously. This number could potentially increase in the long term relative to current conditions, but not substantially. Therefore, localized emissions from both on-site and off-site mobile operations would not directly adversely affect sensitive receptors either on-site (patients) or off-site (residents). The impact would be minor.

No permitted sources of TACs operate in the vicinity of the existing SFVAMC Fort Miley Campus, outside of the Campus itself (Figure 3.2-1). Alternative 2 does not currently include any new or replacement permitted sources of TACs such as incinerators, boilers, or backup diesel generators. If the Alternative 2 long-term projects would require one or more of the above-mentioned sources of TACs and/or $PM_{2.5}$, SFVAMC would acquire permits to avoid adversely affecting that the patients and the neighboring community. Therefore, the operational impacts of stationary-source TAC and $PM_{2.5}$ emissions under Alternative 2 long-term projects would not adversely affect sensitive receptors. The direct impact would be minor. No indirect impacts would occur.

Odors

Odor impacts from operation of Alternative 2 long-term projects would be similar to those of operation of Alternative 2 short-term projects. It is not anticipated that additional odor source types would occur in the long term, although numbers may increase to some degree. However, with implementation of the BMP described above under the operational impacts of Alternative 2 short-term projects, the impact of direct, on-site odors related to Alternative 2 long-term projects would be minor. No indirect impacts would occur.

Alternative 3: SFVAMC Fort Miley Campus Plus Mission Bay Campus Alternative

Short-Term Projects

Alternative 3 short-term projects (during both construction and operation) would be the same as Alternative 1 short-term projects. Therefore, the impacts of Alternative 3 short-term projects would be the same as the impacts of Alternative 1 short-term projects. These impacts would be minor or minor with mitigation.

Long-Term Projects

Alternative 3 long-term projects (during both construction and operation) located at the SFVAMC Fort Miley Campus would be the same as Alternative 1 long-term projects, except that the ambulatory care center would be located at the potential new SFVAMC Mission Bay Campus under Alternative 3. Therefore, the impacts of Alternative 3 long-term projects at the SFVAMC Fort Miley Campus would be the same as or less than the impacts of Alternative 1 long-term projects.

Alternative 3 long-term projects at the potential new SFVAMC Mission Bay Campus would primarily involve development of 170,000 gsf of new construction including an ambulatory care clinic and a parking structure at the potential new Campus. This alternative would include construction of new facilities on a footprint of approximately 0.98 acre.

Construction

Criteria Air Pollutants

Construction-related emissions of criteria air pollutants were quantified using CalEEMod. Direct long-term construction-related emissions of criteria pollutants under Alternative 3 long-term projects would be substantially less than the established significance thresholds (Table 3.2-25). Thus, the direct impact on regional air quality would be minor. No indirect impacts would occur.

Table 3.2-25: Summary of Modeled Maximum Annual Emissions of Criteria Air Pollutants and Precursors Associated with Construction Activities for Alternative 3 Long-Term Projects

Source	Emissions (tons per year)[1]				
	CO	NO_X	VOC/ROG	PM_{10}	$PM_{2.5}$
Alternative 3 Long-Term Projects					
Construction[2]	2.8	2.4	1.7	0.1	0.1
de Minimis Threshold	100	100	50	100	100

Notes:
CO = carbon monoxide; NO_X = oxides of nitrogen; PM_{10} = respirable particulate matter with an aerodynamic diameter of 10 micrometers or less; $PM_{2.5}$ = fine particulate matter with an aerodynamic diameter of 2.5 micrometers or less; ROG = reactive organic gases; VOC = volatile organic compounds

1 Details of annual construction emissions, including construction phasing, input parameters used in the modeling, and detailed modeling output, may be found in Appendix B.

2 Construction emissions shown conservatively assume that all Alternative 3 long-term projects would be constructed in a single year, which represents a worst-case scenario.

Source: Modeling performed by AECOM in 2014

Because they would be concurrent in the long term, construction-related and operational emissions were combined (Table 3.2-26) to determine the "worst-case" impacts of maximum annual construction emissions and operational emissions at buildout, even though buildout would be only partial for much of the long-term construction period.

Table 3.2-26: Summary of Modeled Maximum Annual Emissions of Criteria Air Pollutants and Precursors Associated with Construction and Operational Activities under Alternative 3 Long-Term Projects

Source	Emissions (tons per year)[1]				
	CO	NO_X	VOC/ROG	PM_{10}	$PM_{2.5}$
Alternative 3 Long-Term Projects					
Max Construction	2.8	2.4	1.7	0.1	0.1
Short- and Long-Term Operations	7.3	1.7	2.7	1.4	0.4
Total	**10.1**	**4.1**	**4.4**	**1.5**	**0.5**
de Minimis Threshold	100	100	50	100	100

Notes:
CO = carbon monoxide; NO_X = oxides of nitrogen; PM_{10} = respirable particulate matter with an aerodynamic diameter of 10 micrometers or less; $PM_{2.5}$ = fine particulate matter with an aerodynamic diameter of 2.5 micrometers or less; ROG = reactive organic gases; VOC = volatile organic compounds

1 Details of annual construction emissions, including construction phasing, input parameters used in the modeling, and detailed modeling output, may be found in Appendix B.

2 Construction emissions shown conservatively assume that all Alternative 3 long-term projects would be constructed in a single year, which represents a worst-case scenario.

Source: Modeling performed by AECOM in 2014

As shown in Table 3.2-26, construction-related emissions of criteria air pollutants combined with the operational emissions under Alternative 3 long-term projects would be substantially less than the significance thresholds. Thus, the direct impact on regional air quality would be minor. No indirect impacts would occur.

Localized Emissions of Toxic Air Contaminants and Particulate Matter

As described previously, BAAQMD has developed the Screening Tables for Air Toxics Evaluation During Construction. Sensitive receptors located within applicable screening distances could experience increased health risks during construction. Depending on the intensity of construction, impacts could be considered adverse.

Construction of Alternative 3 long-term projects would require approximately 500,000 square feet of construction including parking structures. For a commercial project with 500,000–1,000,000 square feet of construction, the offset required for combined risk with age sensitivity factor incorporated is 300 meters (984 feet) from the fence line to ensure that a sensitive receptor would have a minor toxics impact.

Prolonged construction from 2024 to 2027 and associated TAC emissions could affect potential on-site and off-site sensitive receptors. Because the exact location of a proposed new Campus in the Mission Bay area is unknown at this time, it would be speculative to predict the impacts of TAC and PM emissions at the numerous

on-site and off-site sensitive land uses in the Mission Bay area. The maximum annual construction-related exhaust[5] emissions of $PM_{2.5}$ (a proxy for diesel PM) are relatively small over the long term from 2024 to 2027 (0.3 tpy maximum); however, it is unknown whether TAC thresholds for carcinogens and noncarcinogens would be exceeded. Because TAC exposures could occur at nearby sensitive receptors during the 10 years of construction for Alternative 3, TAC exposure from construction activities could result in potentially adverse air quality impacts, and incorporation into Alternative 3 of additional construction mitigation/abatement measures would be required.

The windy atmospheric conditions in the area (see Section 3.2.1, "Affected Environment"), the limited exposure duration for carcinogenicity (10 years of construction out of a lifetime exposure of 70 years [OEHHA, 2011]), and implementation of future control technologies required under both State and federal programs (see "Properties, Effects, and Sources of Hazardous Air Pollutants") would reduce the direct impacts of TAC and PM emissions on sensitive receptors. It should be noted that the level of construction of long-term projects under Alternative 3 would be less than contemplated under Alternative 1. Therefore, the direct impact related to potential health risks at the existing SFVAMC Fort Miley Campus during construction of long-term projects would be minor. No indirect impacts would occur. However, because of the numerous on-site and off-site sensitive receptors that could be located in the vicinity of the potential new Mission Bay Campus, it is unknown whether the impacts would be reduced to a minor level. Therefore, this direct impact would be potentially adverse. No indirect impacts would occur.

Odors

Alternative 3 long-term projects could generate odors related to construction (i.e., from diesel exhaust emitted by equipment). These odors would be temporary, would occur during business hours during the construction period, and would disperse quickly given the wind in the area. Therefore, potential direct odor impacts during construction would be minor. No indirect impacts would occur.

Operation

Criteria Air Pollutants

Area- and mobile-source emissions from Alternative 3 long-term projects were modeled using CalEEMod. The modeling results are summarized in Table 3.2-27. Criteria pollutant emissions for Alternative 3 long-term projects would be lower than the *de minimis* thresholds. The direct air quality impact from construction and operation of Alternative 3 long-term projects would be minor. No indirect impacts would occur.

Localized Carbon Monoxide Emissions

The operation of the potential new SFVAMC Mission Bay Campus is unlikely to create an adverse impact on localized CO emissions and existing CO concentrations at the site, because it would only generate an additional 3,150 vehicle trips per day. (This assumes that 315 p.m. peak-hour vehicle trips is representative of 10 percent of average daily vehicle trips; see the project traffic study located in Appendix E for more detailed information regarding trip generation.)

[5] Exhaust emissions of PM are always lower than total PM emissions (dust and exhaust), and may be found in Appendix C.

Table 3.2-27: Summary of Modeled Maximum Annual Emissions of Criteria Air Pollutants and Precursors Associated with Operational Activities for Alternative 3 Long-Term Projects

Source	Emissions (tons per year)[1]				
	CO	NO_X	VOC/ROG	PM_{10}	$PM_{2.5}$
Alternative 3 Long-Term Projects					
Short- and Long-Term Operation	7.3	1.7	2.7	1.4	0.4
de Minimis Threshold	100	100	50	100	100

Notes:
CO = carbon monoxide; NO_X = oxides of nitrogen; PM_{10} = respirable particulate matter with an aerodynamic diameter of 10 micrometers or less; $PM_{2.5}$ = fine particulate matter with an aerodynamic diameter of 2.5 micrometers or less; ROG = reactive organic gases; VOC = volatile organic compounds
1 Details of annual construction emissions, including input parameters used in the modeling and detailed modeling output, may be found in Appendix B.
Source: Modeling performed by AECOM in 2014

In the Mission Bay area, there are numerous high-volume roadways and a Caltrain station, as described in Section 3.2.1, "Affected Environment." The exact location of the potential new SFVAMC Mission Bay Campus is unknown at the time of writing this EIS, but it is possible that operation of the potential new Campus could expose potential on-site sensitive receptors to an existing CO hotspot. This direct impact would be potentially adverse. No indirect impacts would occur.

Localized Emissions of Toxic Air Contaminants and Particulate Matter

In the Mission Bay area, there are several stationary sources, high-volume roadways, and a Caltrain station, as described in Section 3.2.1, "Affected Environment." Additionally, the new medical facilities could include permitted TAC sources. The exact location of the potential new SFVAMC Mission Bay Campus is unknown at the time of writing this EIS, but it is possible that operation of the potential new Campus could expose potential on-site sensitive receptors to existing localized TAC emissions and expose potential on- and off-site sensitive receptors to permitted sources associated with the potential new Campus facilities. This direct impact would be potentially adverse. No indirect impacts would occur.

Odors

There are numerous potential odor sources in the Mission Bay area, but none have had five or more confirmed complaints in the past several years. However, complaints could occur if the project were to locate new sensitive receptors near odor sources that were remotely located in the past.

The facilities that could potentially emit odors on or near the vicinity of the potential new SFVAMC Mission Bay Campus (within the screening distances presented in Table 3.2-6) include the following:

1. San Francisco South East Treatment Plant, 1700 Jerrold Avenue (wastewater treatment)
2. Darling International, 429 Amador Street, Pier 92, Islais Creek (animal rendering)
3. Central Shops/City and County of San Francisco, 1800 Jerrold Avenue (solvent use)

Additionally, there are several smaller odor sources in the vicinity of the off-site portion of Alternative 3 with more than five confirmed or unconfirmed complaints on record in the past 3 years:

1. Ritual Coffee Roasters (1050 Howard Street)
2. S&S Auto Collision (538 Bryant Street)

Because the exact location of the potential new SFVAMC Mission Bay Campus in the Mission Bay area is unknown at this time, it would be speculative to estimate the effects of localized odor emissions on potential sensitive receptors and recommend mitigation/abatement measures to be incorporated into the facility design. However, any new odor sources permitted in the vicinity of the potential new Campus would be subject to odor control measures, and potential odors associated with medical office use in general are considered minimal. Therefore, potential direct odor impacts would be minor. No indirect impacts would occur.

Alternative 4: No Action Alternative

Short- and Long-Term Construction

Alternative 4 involves continued operation of the existing SFVAMC Fort Miley Campus. There would be no new construction or retrofitting of existing buildings. Therefore, no construction-related air quality emissions impact would occur.

Short- and Long-Term Operation

Criteria Air Pollutant Emissions

Criteria air pollutant emissions from area sources (i.e., natural gas combustion and landscaping) are predicted to decrease in the future with implementation of the VA SSPP, but the reductions cannot be estimated because the percentage reduction of natural gas combustion is unknown. The VA SSPP applies only to new or renovated construction, however. Therefore, without implementation of Alternative 1, 2, or 3 (the EIS action Alternatives), the anticipated reductions would be minimal.

There is no potential for increases in criteria pollutant emissions from mobile sources with continuing operation of the current facilities at the existing SFVAMC Fort Miley Campus in the short or long term. Mobile-source emissions would decrease in the future because of current regulations and future technological improvements. Additionally, because future traffic conditions under Alternative 4 would be attributed to regional growth that occurs in the vicinity of the Campus (i.e., employee, patient, or service-related trips would not increase without expansion), Alternative 4 would not contribute to an existing problem or result in a long-term and adverse impact on air quality relative to existing conditions.[6] No direct or indirect impact would occur.

Localized Carbon Monoxide Emissions

There is no potential for CO hotspots with continuing operation of the existing SFVAMC Fort Miley Campus in the short or long term. Because future traffic conditions under the No Action Alternative would be affected solely

[6] See the traffic study in Appendix E for further details regarding cumulative traffic volumes under the No Action Alternative.

by regional growth (i.e., employee, patient, or service-related trips would not increase without expansion), Alternative 4 would not increase local CO concentrations relative to existing conditions. It should be noted that as vehicle emission rates continue to improve over time, CO concentrations would reasonably be expected to decrease under Alternative 4. No direct or indirect impact would occur.

Localized Emissions of Toxic Air Contaminants and Particulate Matter

As described previously, the existing SFVAMC Fort Miley Campus is the only potential source of TACs in its current location. Because future conditions under Alternative 4 are presumed to be the same as current conditions (i.e., no expansion, employee, or service growth can be expected without expansion), exposure of sensitive receptors to TACs under Alternative 4 is expected to remain unchanged in the short or long term. Unpermitted off-site TAC sources (stationary or mobile) are not expected to increase in the mixed residential/commercial area surrounding the Campus. There are few truck deliveries or other mobile sources of diesel PM at the SFVAMC Fort Miley Campus, and the only stationary combustion sources are permitted by BAAQMD (boilers, emergency diesel generators, diesel fire pump, and incinerator). Therefore, no direct or indirect adverse air quality impact associated with continued operation of Alternative 4 would occur. It should be noted that mobile source–related TAC emissions would decrease in the future with implementation of State and federal regulations that would reduce vehicular TAC emissions.

Odors

Because future conditions under Alternative 4 are presumed to be the same as current conditions (i.e., no expansion, employee, or service growth can be expected without expansion), short- and long-term exposures of sensitive receptors to odors are expected to remain unchanged under Alternative 4. There is currently no odor complaint history related to the SFVAMC Fort Miley Campus that would affect off-site sensitive receptors, and no other odor sources are in the vicinity that could affect on-site sensitive receptors. However, given the mixed residential/commercial character of the nearby area (retail food businesses with fume hoods and dumpsters), both permitted (with odor controls) and uncontrolled odor sources in the vicinity of or on the existing SFVAMC Fort Miley Campus could increase in the short term and long term. No direct or indirect odor-related impact would occur with implementation of Alternative 4.

3.2.4 References

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3.3 COMMUNITY SERVICES

This section describes the existing physical affected environment and regulatory framework related to fire protection/emergency medical services, public safety, law enforcement services, and parks and recreation and discusses the potential effects of the EIS Alternatives related to these community services.

3.3.1 Affected Environment

This section describes law enforcement, fire protection, and parks/recreational conditions in the immediate vicinity of the existing SFVAMC Fort Miley Campus and in the Mission Bay area of San Francisco. Other public services, including solid waste disposal, are discussed in Section 3.12, "Solid and Hazardous Materials and Hazards."

Fire Protection Services and Emergency Medical Services

The San Francisco Fire Department (SFFD) provides fire suppression services and emergency medical services throughout San Francisco. SFFD operates out of 44 fire stations and is headquartered at 698 Second Street in the South of Market Area (SOMA). SFFD operates 42 engines, 19 trucks, multiple ambulances, two heavy-rescue squads, two fireboats, and multiple special-purpose units. Emergency response operations include fire suppression, tactical rescues, emergency medical care, fire prevention, arson investigations, responses to natural disasters, responses to mass-casualty and hazardous-materials incidents, and fire and emergency medical services (EMS) dispatch supervision. SFFD has a current staff of 1,571 uniformed members and 64 civilians. The daily operational strength is approximately 412 staff members (Schultheis, pers. comm., 2011). Based on San Francisco's estimated 2010 population of 856,095 residents (DOF, 2010), SFFD's staffing levels on a per-capita basis are 1.9 staff members per 1,000 residents.

SFFD has three divisions: the Airport Division (serving San Francisco International Airport) and Divisions 2 and 3 (serving the rest of San Francisco). Division 2 is divided into four battalions and extends from downtown San Francisco and the Financial District to the city's northwestern boundaries. Division 3 is divided into five battalions that serve an area extending from SOMA to the southwestern city limits. The roles and responsibilities of the members of Divisions 2 and 3 are to establish command and control at emergency scenes, conduct fire suppression activities, provide emergency medical services, manage disaster operations, mitigate the effects of hazardous-materials spills, respond to incidents involving weapons of mass destruction, and effectively and rapidly bring closure to mass-casualty incidents. Fire prevention responsibilities consist of preplanning and inspections of buildings, fire protection devices, and water supplies. San Francisco ensures fire safety and emergency accessibility in new and existing developments through provisions of its building and fire codes (CCSF, 2010).

Existing SFVAMC Fort Miley Campus

SFFD responds to fire, EMS, and other emergency calls at the existing SFVAMC Fort Miley Campus. As a primary and specialty acute-care center, the Campus provides limited emergency medical service because it lacks a fully licensed emergency room. The Campus is located within the Division 2 service area in San Francisco's outer Richmond District neighborhood. The Campus is in the first-alarm area[1] for the following stations: Station

[1] The first alarm is the geographic area in which a station is responsible for arriving first in case of an emergency call.

34 (Battalion 7), Station 14 (Battalion 7), and Station 23 (Battalion 8). Station 34, the nearest fire station, is located at 499 41st Avenue, approximately 0.3 mile southeast of the Campus. Station 34 houses an engine company that is staffed by one officer (a lieutenant or captain) and three firefighters, all of whom are qualified as emergency medical technicians (EMTs).[2] Station 14, located at 551 26th Avenue, is 1.2 miles southeast of the Campus and houses one fire engine and one truck. Staffing includes two officers and seven firefighters for a total of nine staff members, all of whom are EMT qualified. Station 23, located at 1348 45th Avenue, is located approximately 2.1 miles south of the Campus and houses an engine company that is staffed by one officer (a lieutenant or captain) and three firefighters. All three firefighters are EMT qualified.

If additional fire resources are necessary, Station 31, located at 441 12th Avenue, would also be dispatched to the existing SFVAMC Fort Miley Campus. Station 31 (Battalion 7) is situated approximately 2 miles east of the Campus and houses an engine company. Staffing includes one officer and three firefighters as well as a rescue captain (paramedic supervisor) and a battalion chief (Schultheis, pers. comm., 2011).

SFFD also transports clinically stable patients to the existing SFVAMC Fort Miley Campus upon request (Myers, pers. comm., 2011). The primary entrance for emergency medical vehicles is at the intersection of 42nd Avenue and Clement Street. Patients are delivered to the west side of Building 200 (the Ambulatory Care Center) via an internal Campus roadway, Fort Miley Circle (VA, 2012). As indicated previously, the Campus is a primary and specialty acute-care center that provides limited emergency medical service because it lacks a fully licensed emergency room. The Campus does not receive a high number of ambulance transports compared to the other hospitals in San Francisco, and most are not considered life-threatening emergencies (Myers, pers. comm., 2011). According to SFFD, the Campus received 756 transports in 2010 and 561 transports in 2009. SFFD can expect to have an average of 650 transports to the Campus per year (Schultheis, pers. comm., 2011).

According to the Association of Bay Area Governments (ABAG), the existing SFVAMC Fort Miley Campus is not designated as a "Community at Risk" of wildfire because it is an urbanized area; therefore, the Campus is not considered susceptible to wildland fires (ABAG, 2015a). In addition, the California Department of Forestry and Fire Protection (CAL FIRE) has ranked the Campus as having "little to no threat" of fire susceptibility, based on expected fire behavior and according to site-specific topography and vegetation (ABAG, 2015b). Furthermore, CAL FIRE has no record of any wildfire in San Francisco (CCSF, 2009).

Mission Bay Area

Three SFFD stations operate in the Mission Bay area of San Francisco (see Figure 2-5 in Chapter 2.0, "Alternatives"). All three stations are located within the Division 3 service area, which extends from SOMA to the southwestern city limits.

Station 8 (Battalion 3) is located in SOMA at 36 Bluxome Street and houses one fire engine and one truck. Staffing includes a battalion chief, two officers, and seven firefighters, all of whom are EMT qualified. Station 29 (Battalion 2) is located in SOMA at 299 Vermont Street and houses one engine company. Staffing includes one officer and three firefighters, all of whom are EMT qualified. Station 37 (Battalion 10) is located in the Potrero Hill neighborhood at 798 Wisconsin Street and houses one engine company. Staffing includes one officer and three firefighters, all of whom are EMT qualified (Schultheis, pers. comm., 2011).

[2] On any given day one of the EMT qualified personnel may be a paramedic (Schultheis, pers. comm., 2011).

A fourth station is being incorporated into the Public Safety Building at Third Street and Mission Rock. As of the writing of this document, construction is near completion with a targeted opening by early2015 (DPW, 2014).

According to ABAG, the Mission Bay area is designated as an urbanized area; therefore, this area is not considered susceptible to wildland fires (ABAG, 2015a). In addition, CAL FIRE has ranked the area as having "little to no threat" of fire susceptibility, based on expected fire behavior and according to site-specific topography and vegetation (ABAG, 2015b).

Fire Water Needs and Fire Truck Access

The San Francisco Water Department supplies water for the city's domestic and industrial water needs and for fire service. Fire service requirements include not only the water supplied to SFFD's low-pressure hydrants but also the water supplied to the storage reservoir and tanks of SFFD's high-pressure system. This system, also known as the Auxiliary Water Supply System, is a separate and distinct water supply for fire protection use only. The system was built in response to the 1906 earthquake and fire, solely for the purpose of firefighting, and has special features designed to protect the city in emergency situations. Additionally, a separate backup water supply is provided in the form of underground cisterns strategically located throughout San Francisco. SFFD's cistern system consists of 172 cisterns with a total storage capacity of approximately 11 million gallons (CCSF, 2010).

SFFD has established required minimum street widths to facilitate access by emergency equipment. The San Francisco Fire Code requires a minimum of 20 feet of unobstructed roadway and a vertical clearance of no less than 13.5 feet, and specifies that a turnaround area of at least 80 feet and a 40-foot radius are sufficient for dead-end fire access roads exceeding 150 feet. All site improvements must meet the minimum requirements for fire access stipulated in the San Francisco Fire Code and required by SFFD (SFFD, 2011a).

Existing SFVAMC Fort Miley Campus

The domestic and fire water needs of the existing SFVAMC Fort Miley Campus are served by a common water system. The system consists of a 500,000-gallon reservoir located in Building 29; a primary pump (P-1), secondary pump (P-2), and fire pump (P-3) located in Building 30 (pump station); and a 40,000-gallon water tower (Building 206). The reservoir is fed from the City's water distribution system through primary and secondary connection points located on Clement Street. From the reservoir, the primary and secondary pumps (P-1 and P-2) pressurize the Campus's loop water system and feed the water tower. The water tower back-feeds the distribution system when the pumps are not running.

Annex H of the 2009 National Fire Protection Association (NFPA) Fire Code provides the required minimum fire flow rate and duration for all new buildings or building upgrades. These requirements are based on the type of building construction and the total building area in square feet. The minimum required fire flow for any building type or size is 1,500 gallons per minute for a minimum of 2 hours, with a minimum system residual pressure of no less than 20 pounds per square inch. A reduction in the required fire flow rate of up to 75 percent, as approved by the local fire chief, and not less than 1,000 gallons per minute is allowed if each new building is equipped with an approved automatic sprinkler system installed in accordance with the applicable building and fire code requirements (Kennedy, pers. comm., 2011).

The Campus's existing fire flow system has sufficient capacity to meet NFPA Fire Code requirements (Kennedy, pers. comm., 2011).

Fire access is provided to each building on the existing SFVAMC Fort Miley Campus via Fort Miley Circle and Veterans Drive, which together form an access loop around the perimeter and through the center of the Campus. Emergency fire apparatus and related vehicles use the 42nd Avenue or 43rd Avenue entrance to the Campus. Although the Campus provides limited emergency medical service, Building 200 is the Ambulatory Care Center and the current destination of emergency medical vehicles to the Campus. Patients are delivered to the west side of Building 200 via Fort Miley Circle. The primary entrance for emergency medical vehicles is at the intersection of 42nd Avenue and Clement Street.

Emergency Response Times

SFFD is a permitted ambulance provider in San Francisco providing EMS care for the full spectrum of medical emergencies. The department follows the local ambulance ordinance and adheres to the policies and protocols for pre-hospital care set by the San Francisco Emergency Medical Services Agency. SFFD responds to an average of more than 73,000 EMS calls per year (more than 200 per day) and, as of 2010, provided about 80 percent of the ambulance response in San Francisco (SFFD, 2011b).

To bring a higher level of care to patients more quickly, SFFD reconfigured ambulance deployment in 2004. As part of the reconfiguration, ambulances were moved to geographically relevant locations, and ambulance scheduling was adjusted to accommodate the busiest times of day. The new deployment, which was completed in 2009, benefited SFFD by providing flexibility of scheduling, increased efficiency, and improved response times, creating a more mobile response force to cover its service area. SFFD is working closely with the San Francisco Department of Emergency Management to explore new ways to further reduce response times and improve efficiency (SFFD, 2011b).

According to SFFD, any single-alarm response[3] brings the four closest available fire engines, the two closest available fire trucks, and the closest available heavy-rescue squad. Each vehicle is typically staffed by at least one officer and three to four firefighters. Some of the firefighters may be licensed paramedics, but that is not always the case. An ambulance carrying two paramedics and one paramedic rescue captain would also be dispatched to the scene. This response scenario is the *initial* dispatch (first response) to any confirmed working fire, regardless of the size of the fire. If the magnitude of the fire is found to require more resources, a second-alarm response (i.e., more fire trucks and/or engines) would be dispatched to the scene, as would be the case in a high-rise building. The responding units are from the nearest and available stations (assuming that all engines and trucks are available and not responding to calls somewhere else). Because four engines respond to a fire, a minimum of four stations would receive a dispatch for a single fire incident. Chief officers from various stations may be dispatched as well.

[3] A single-alarm response is defined as the initial response to a confirmed working fire or reports of smoke.

Existing SFVAMC Fort Miley Campus

All emergency (911) and nonemergency calls for police, fire, and medical services are received by San Francisco's Emergency Communications Dispatch Center located at 1011 Turk Street. The 911 dispatch center receives approximately 2,500 calls per day; of these calls, 80 percent require police services, 14 percent involve EMS, and the remaining 6 percent require fire protection (CCSF, 2010). Based on this information, the dispatch center receives approximately 912,500 calls per year, of which 182,500 are related to EMS or fire.

Table 3.3-1 provides a breakdown of the annual number of calls responding to SFVAMC according to service type (fire or EMS) during the time frame from 2006 to 2010. According to SFFD personnel, SFFD can expect to respond to calls at the Campus an average of 50 times per year, with 55 percent expected to be EMS-related responses and 45 percent expected to be fire-related responses (Schultheis, pers. comm., 2011). Given that SFFD annually responds to 182,500 calls per year, the estimated 50 calls for service at the Campus represent less than 0.01 percent of the total call volume for EMS or fire services in San Francisco.

Table 3.3-1: Responses to the Existing SFVAMC Fort Miley Campus by the San Francisco Fire Department

Year	Fire	EMS	Total	% Fire	% EMS
2006	25	8	33	75.76%	24.24%
2007	20	19	39	51.28%	48.72%
2008	26	26	52	50%	50%
2009	18	27	45	40%	60%
2010	23	29	52	44.23%	55.77%

Note:
EMS = emergency medical services
Source: Schultheis, pers. comm., 2011

San Francisco's objective is to get professional help to the scene of high-priority medical emergencies within 6.5 minutes of receiving a 911 call, 90 percent of the time. The 6.5-minute goal includes 2 minutes for dispatch and 4.5 minutes for the fire engine or ambulance to arrive at the curb. This standard was adopted in 2004 by the San Francisco Emergency Medical Services Agency under the Department of Public Health. The State's goal for emergency response to a high-priority call in an urban area is 5 minutes (CCSF, 2010). According to SFFD personnel, the department's average response time is 3 minutes and 23 seconds for all emergency calls, which indicates that SFFD is exceeding both the City and State standards (Schultheis, pers. comm., 2011). The two closest stations to the SFVAMC Fort Miley Campus (Stations 34 and 14) also have superior average response times. Table 3.3-2 displays the average response times per station and SFFD as a whole.

Table 3.3-2: Average Response Times by the San Francisco Fire Department for All Emergency Calls: Existing SFVAMC Fort Miley Campus

SFFD Station	Destination	Average Response Time (minutes)
Station 34, 499 41st Avenue	SFVAMC Fort Miley Campus, 4150 Clement Street	3:47
Station 14, 551 26th Avenue		3:32
All SFFD stations	Citywide	3:23

Notes:
SFFD = San Francisco Fire Department; SFVAMC = San Francisco Veterans Affairs Medical Center
Average response times were not provided for Stations 23 and 31
Source: Schultheis, pers. comm., 2011

Mission Bay Area

As mentioned earlier, SFFD's average response time of 3 minutes and 23 seconds for all emergency calls surpasses both the City and State standards (Schultheis, pers. comm., 2011). All three stations located in the Mission Bay area also have superior average response times. Table 3.3-3 presents a breakdown of average response times per station in the Mission Bay area.

Table 3.3-3: Average Response Times by the San Francisco Fire Department for All Emergency Calls: Mission Bay Area

SFFD Station	Destination	Average Response Time (in minutes)
Station 8, 36 Bluxome Street	Mission Bay Area	3:35
Station 29, 299 Vermont Street		3:26
Station 37, 798 Wisconsin Street		3:25
All SFFD stations	Citywide	3:23

Note:
SFFD = San Francisco Fire Department
Source: Schultheis, pers. comm., 2011

Fire Hazards

Existing SFVAMC Fort Miley Campus

Fire response services to the existing SFVAMC Fort Miley Campus are provided by SFFD as described above. The Campus itself is ranked by CAL FIRE as having "little to no threat" of fire susceptibility, based on expected fire behavior and according to site-specific topography and vegetation (ABAG, 2015b). Although CAL FIRE has no record of any wildfire in San Francisco (CCSF, 2009), the SFVAMC Fort Miley Campus is located at the wildland urban interface (ABAG, 2015a) and surrounded on three sides by forested public land belonging to the National Park Service's (NPS's) Golden Gate National Recreation Area (GGNRA), with an identified wildfire threat of "high" and "very high" (CCSF, 2008).

Mission Bay Area

Fire response services to the Mission Bay area are provided by SFFD. According to ABAG, the Mission Bay area is designated as an urbanized area; therefore, the area is not considered to be susceptible to wildland fires (ABAG, 2015a). In addition, CAL FIRE ranked the area as having "little to no threat" of fire susceptibility, based on expected fire behavior and according to site-specific topography and vegetation (ABAG, 2015b). The Mission Bay area is not located at a wildland urban interface or adjacent to forested land.

Law Enforcement Services

VA maintains a police force, VA Police, at the existing SFVAMC Fort Miley Campus. As a federal entity, VA Police operates under the Office of Security and Law Enforcement (OS&LE). The OS&LE provides national oversight and direct support in the areas of physical security and law enforcement to individual VA Police services at each location throughout the United States. In addition to OS&LE upper-level management and specialty positions, there are standardized rank positions established within each VA Police service at the local level. VA Police services are empowered by statute to exercise federal authority for offenses occurring on property owned by VA (SFVA Police, 2011a). According to VA Police personnel, there is a mutual-aid agreement with the San Francisco Police Department (SFPD) for nonroutine police matters, such as traffic control and parking enforcement (Baczek, pers. comm., 2011). The mutual-aid agreement articulates a reciprocal relationship where each party helps one another when needed (Baczek, pers. comm., 2011).

SFPD provides police protection services to San Francisco. SFPD operates out of 10 district stations and is headquartered at 850 Bryant Street, in SOMA. There are a total of 2,242 sworn members and 412 civilian members in SFPD (SFPD, 2011a). Based on San Francisco's estimated 2010 population of 856,095 residents (DOF, 2010), SFPD's staffing levels on a per-capita basis are 3.1 staff members per 1,000 residents. Authorized staffing at each district station includes one captain, four lieutenants, and 16 sergeants. The number of active patrol units varies from day to day from one station to another (SFPD, 2011a). SFPD has mutual-aid agreements with all government law enforcement agencies that border the City and County of San Francisco (SFPD, 2011a).

In the performance measures for SFPD set out as part of the City's 2008–2009 budget plan, the department established target response times for 2008–2009. All calls are prioritized into three categories—A, B, and C—with Type A calls reflecting those of highest priority. Priority A calls are defined as "life-threatening emergencies," otherwise known as Code 3 calls, and include situations such as a homicide or an officer down. Priority B calls are defined as involving "potential for harm to life and/or property" but are not considered emergency situations, and include violations such as a burglary. Priority C calls, the lowest priority, are categorized as "crime committed with no threat to life or property/suspect left crime scene" and typically consist of quality-of-life violations, found property, or an auto burglary with no suspect (CCSF, 2010).

Target response times are 4.4 minutes for Priority A calls, 8.3 minutes for Priority B calls, and 10.8 minutes for Priority C calls. In 2007, SFPD met the 2008–2009 target response times for Priority A and C calls but failed to meet the Priority B target response time of 8.3 minutes (CCSF, 2010).

Existing SFVAMC Fort Miley Campus

VA Police is responsible for the protection and safety of the Veterans, staff members, and visitors who use the existing SFVAMC Fort Miley Campus. SFVAMC's police force at the existing Campus consists of 22 VA Police officers (Baczek, pers. comm., 2011). The police officers provide 24-hour patrols of the facility and parking lots; their duties include responding to suspicious or criminal activity, vehicle accidents, and personal property losses on the facility grounds (SFVA Police, 2011b). The area directly south of the existing SFVAMC Fort Miley Campus is patrolled by SFPD's Richmond Police District Station. The Richmond Police District Station is within SFPD's Golden Gate Division and employs a total of 98 sworn officers. Located at 461 Sixth Avenue, the Richmond District Station is located approximately 2.4 miles southeast of the Campus (SFPD, 2011a).

Although property owned by VA is considered federal property and outside the jurisdiction of SFPD, SFPD may provide backup support in the event of an emergency.

Mission Bay Area

SFPD provides police protection services throughout San Francisco, including the Mission Bay area. The Mission Bay area is currently patrolled by SFPD's Southern and Bayview Police District Stations. As explained above, VA Police is responsible for providing law enforcement and security services to Veterans, staff members, and visitors on VA facilities and grounds. Thus, any VA-owned medical center facility in this area would be under the jurisdiction of VA Police and not the local SFPD station.

Parks and Recreation

The City and County of San Francisco has approximately 5,848 acres of land permanently dedicated to publicly accessible park and recreational uses. These lands are under the jurisdiction of the San Francisco Recreation and Park Department (SFRPD), the State of California, NPS, and local agencies. SFRPD owns and manages approximately 3,433 acres of that total, including more than 200 parks, playgrounds, and open spaces. System recreation facilities also include 15 recreation centers, nine swimming pools, five golf courses, and more than 300 athletic fields, tennis courts, baseball diamonds, and basketball courts. The State of California owns approximately 255 acres at Candlestick Point State Recreation Area and Mount Sutro, and the federal government owns approximately 1,600 acres, including portions of the Presidio and the GGNRA, managed by NPS.

The remaining 560 acres of publicly accessible lands are under the jurisdiction of local agencies other than SFRPD (e.g., Port of San Francisco, San Francisco Public Utilities Commission, San Francisco Redevelopment Agency, San Francisco Department of Public Works, and San Francisco Unified School District). These spaces include shoreline access, reservoirs, schoolyards open during nonschool hours, college campuses, urban plazas, alleys, and undeveloped street rights-of-way (CCSF, 2010).

The National Park and Recreation Association (NPRA) formerly required 10 acres of open space per 1,000 city residents. However, the NPRA no longer recommends a single absolute "average" park acreage per population, in recognition of the fact that it is more relevant for each area plan and its program facilities to be based on community need. More important than acreage is accessibility (location and walking distance) and whether the facility provides needed services to the population in question. Based on San Francisco's estimated 2008

household population (856,095 persons) (DOF, 2010), the 5,848 acres of parkland result in approximately 6.8 acres per 1,000 residents, somewhat less than the former NPRA standard.

The City has not established a citywide target ratio of parkland to residents, nor has it adopted a Quimby Act ordinance requiring land dedications or in-lieu fees, because San Francisco's population density, small land mass, and other development constraints make such policies infeasible. However, revisions to the Recreation and Open Space Element (May 2009 draft) of the *San Francisco General Plan* (City General Plan) do not state a baseline standard to be maintained. The focus of the updated Recreation and Open Space Element is on developing existing open space into high-performing open spaces that better serve neighborhood residents, improving access to open space, and prioritizing open space acquisitions and improvements in high-need areas. Furthermore, the updated Recreation and Open Space Element states that publicly owned open spaces make up almost 20 percent of the city's total land area, making San Francisco among the top five cities in the nation in terms of parkland per resident (SF Planning, 2014a).

Existing SFVAMC Fort Miley Campus

Recreational resources within 0.5 mile of the existing SFVAMC Fort Miley Campus are discussed below. A 0.5-mile radius to recreational resources was defined because the City General Plan specifies that this is an acceptable walking distance (an approximately 10-minute walk) for City-serving open spaces (CCSF, 2010). As listed in Table 3.3-4, two GGNRA facilities and one SFRPD facility are located within 0.5 mile of the SFVAMC Fort Miley Campus.

Table 3.3-4: Parks and Related Facilities within 0.5 Mile of the SFVAMC Fort Miley Campus

Facility	Park Acres	Ownership
Lands End	110	NPS/GGNRA
East and West Fort Miley (excluding SFVAMC Campus)	24.82	NPS/GGNRA
Lincoln Park	112	SFRPD

Notes:
GGNRA = Golden Gate National Recreation Area; NPS = National Park Service; SFPRD = San Francisco Recreation and Park Department; SFVAMC = San Francisco Veterans Affairs Medical Center
East and West Fort Miley acreage was derived from Figure 1-2 of the SFVAMC Long Range Development Plan ("Existing SFVAMC Fort Miley Campus Layout").
Source: Data compiled by AECOM in 2013

Golden Gate National Recreation Area

The existing SFVAMC Fort Miley Campus occupies 29 acres near the Lands End region of San Francisco. Lands End is a 110-acre portion of the GGNRA[4] known for its rugged natural areas and dramatic coastal cliffs. NPS manages the Golden Gate National Parks and 391 other park sites across the United States (NPS, 2010). These

[4] Established in 1972, the GGNRA constitutes one of the largest urban parks in the world, encompassing 80,500 acres in three counties: Marin, San Francisco, and San Mateo. Parklands in San Francisco County ring the northern and western shores of San Francisco and include areas such as Ocean Beach, Fort Funston, Lands End, and the Presidio. These lands are coastal preserves that encompass many miles of bay and ocean shorelines. Each year 16–20 million visitors explore the park, accounting for nearly 50 percent of all visits to the 29 national park systems in California (NPS, 2014).

federal parklands border the Campus to the north, east, and west and provide a greenbelt next to the dense urban neighborhoods of the outer Richmond District. Some of the featured attractions in Lands End are Eagles' Point Overlook, East and West Fort Miley, and Point Lobos, which includes the Cliff House and Sutro Baths.

Lands End is considered a coastal preserve and offers a number of mid-length hikes along a network of trails that meander through the cliff bluffs. In addition to several informal trails, the most popular trails are the California Coastal Trail[5] and El Camino del Mar Trail. The California Coastal Trail at Lands End offers a cliff-top walk with several scenic overlooks (including the Golden Gate Bridge and Marin Headlands), 30-mile views of the coast, opportunities for bird watching, and foot access to several shoreline pocket beaches (GGNPC, 2011). The Coastal Trail at Lands End is currently being improved and the surrounding forest is being revitalized through NPS stewardship programs. Since the recent area restorations and upgrades to the Lands End section of the Coastal Trail, visitor use has increased substantially (GGNRA, 2011). El Camino del Mar Trail at Lands End runs parallel to the California Coastal Trail, offering access points through connector trails or staircases. Visitors follow the trails, stopping at historic landmarks such as the *USS San Francisco* Memorial and the Fort Miley Military Reservation.

The existing SFVAMC Fort Miley Campus is surrounded on three sides by GGNRA-managed property (including East Fort Miley and West Fort Miley) and a historic resource listed in the National Register of Historic Places. (For more information about the historical significance of Fort Miley, see Section 3.4, "Cultural Resources.") There are several access points into Fort Miley via the surrounding trail system, but the main entrances are located at the Merrie Way parking lot located on Point Lobos Avenue and Merrie Way and the El Camino del Mar parking lot off Point Lobos Avenue. Access to Fort Miley from the Legion of Honor is also very common (The Bandit Notes, 2000).

Because of its unique location adjacent to the GGNRA, the existing SFVAMC Fort Miley Campus provides access points to East Fort Miley and West Fort Miley. Two paved roadways lead into GGNRA lands. One is located on the east side of the Campus immediately south of Building 211, and the other is located on the west side of the Campus near the western termini of Parking Areas G and H. These roadways provide access through the SFVAMC Fort Miley Campus to GGNRA lands and are intended for use by NPS personnel. Pedestrians are allowed to pass through on these roadways unless the Campus is in a secure status because of an emergency. Along these access points, signage indicates entry into GGNRA lands. For the most part, the boundaries between the Campus and the NPS portion of Fort Miley are delineated with a chain-link fence and dense vegetation (Winzler and Kelly, 2011).

The portion of Fort Miley within the GGNRA is a popular visitor attraction because it offers hiking and sightseeing, all within a historic military setting. NPS maintains picnicking facilities and hiking trails within West Fort Miley. The picnic area is open during daylight hours and is accessible from the West Fort Miley entrance at El Camino del Mar and 48th Avenue. This area is popular because it is situated among three gun emplacements, including Battery Chester, which offers views down to Ocean Beach (NPS, 2011). West Fort Miley is also the site of an outdoor skills and fitness challenge course sponsored by Pacific Leadership in partnership with NPS (PLI, 2009). East Fort Miley houses a maintenance building for NPS (NPS, 2011). The remains of several pre–World

[5] The Coastal Trail at Lands End is part of a larger network of public trails along the 1,200-mile California Coast (Coastwalk, 2011).

War I batteries are located along the perimeter of the existing SFVAMC Fort Miley Campus (NPS, 2011) and represent some of the original concepts of coastal defense.

These adjacent federal parklands are patrolled by law enforcement programs provided by the GGNRA. The mission of the GGNRA's law enforcement personnel is to protect people, property, and park resources and to ensure that park visitors can enjoy the park without unlawful interference. Patrol operations cover all GGNRA lands (GGNRA, 2011). In addition, SFFD has a memorandum of understanding with the GGNRA to provide fire suppression services for GGNRA property (Schultheis, pers. comm., 2011).

Lincoln Park

Immediately east of and contiguous to East Fort Miley is Lincoln Park, a 112-acre facility owned and maintained by SFRPD. Because of its adjacency to GGNRA lands, Lincoln Park includes some natural areas and trails; however, the bulk of the park is consumed by a golf course and the Legion of Honor (The Bandit Notes, 2000). The Lincoln Park Golf Course is an 18-hole golf facility known for its scenic qualities and year-round public memberships. Views are highlighted by the famed 17th hole, which overlooks San Francisco Bay and the Golden Gate Bridge (SFNGF, 2007). The Legion of Honor is one of two fine arts museums in San Francisco (FAMSF, 2011). This museum can be accessed by trails and overlooks the Pacific Ocean, Golden Gate Bridge, and large portions of San Francisco.

Mission Bay Area

As listed in Table 3.3-5, 10 SFRPD and five non-SFRPD facilities are located within the boundaries of the Mission Bay project area.

Esprit Park, located at Minnesota and 20th Streets, features a grass field surrounded by redwood trees and picnic tables (NPC, 2011a). Jackson Playground, located at 17th and Carolina Streets, provides a variety of amenities including a kids' play structure and sand area, tennis and basketball courts, and two baseball fields (NPC, 2011b). James Rolph Playground, located at Potrero Avenue and Cesar Chavez Street, includes a playground, baseball field, recreation center, and two basketball and tennis courts (NPC, 2011c). Located at the corner of 20th and Vermont Streets, McKinley Square features a playground with a sand pit, large grassy area, walking trail, and a community garden with benches (NPC, 2011d). The recently remodeled Potrero del Sol Park is located at 25th and Utah Streets. This park offers a new skate park, grassy areas for picnics, a performance space, and a community garden (NPC, 2011e). The Potrero Hill Recreation Center and Mini Park is located at 801 Arkansas Street and offers a playground, baseball field, two tennis courts, a basketball court, and a recreation center (NPC 2011f). The Arkansas and Connecticut Friendship Gardens are located on 22nd Street, just north of the Potrero Hill Recreation Center. South Park is a small neighborhood park located on South Park Street and Jack London Alley. This 1.1-acre park has a small playground with paths and picnic tables (NPC, 2011g). The Utah & 18th Mini Park is currently undergoing renovation with short- and long-term projects (NPC, 2011h).

The non-SFRPD facilities include AT&T Park, Yerba Buena Gardens, United Nations Plaza, Agua Vista Park, Warm Water Cove Park, Hallidie Plaza, Mission Creek Garden, and Woods Yard Park. AT&T Park is the San Francisco Giants' baseball stadium. The Giants lease the land from the Port of San Francisco. This 12-acre site is bounded by King Street, Second Street, Third Street, and China Basin (Ballparks, 2011). Agua Vista Park, owned by the Port Authority, is located at 800 Terry Francois Boulevard. It is a small landscaped park and fishing pier

Table 3.3-5: Parks and Related Facilities located in the Mission Bay Area

Facility	Park Acres	Ownership
Potrero Hill Neighborhood		
Jackson Playground	4.41	SFRPD
McKinley Square	2.81	SFRPD
Potrero Hill Recreation Center & Mini Park	10.29	SFRPD
James Rolph Jr. Playground	2.93	SFRPD
Potrero del Sol	4.36	SFRPD
South of Market Area (SOMA)		
South Park	1.12	SFRPD
Utah & 18th Mini Park	0.10	SFRPD
Connecticut Friendship Garden	0.14	SFRPD
Arkansas Friendship Garden	0.13	SFRPD
AT&T Park	11.96	Port
Dogpatch Neighborhood		
Esprit Park	1.83	SFRPD
Woods Yard Park	0.28	Muni
Mission Bay Neighborhood		
Agua Vista Park	0.62	Port
Mission Creek Garden	0.69	Port
Central Waterfront		
Warm Water Cove Park	0.57	Port

Notes:
Muni = San Francisco Municipal Railway; Port = Port of San Francisco; SFRPD = San Francisco Recreation and Park Department
Source: Stasio, pers. comm., 2011

with picnic benches and public art (NPC, 2011i). Warm Water Cove is located at the end of 24th Street and east of Illinois Street. This waterfront park is owned by the Port of San Francisco and sits adjacent to a power plant (SF Citizen, 2010). Mission Creek Garden is owned by the Port Authority and located at Channel and Sixth Streets. This park is a new green space on the creek with many trees and shrubs. A basketball court, volleyball court, and dog park were recently added (NPC, 2011j). Woods Yard Park is owned by the San Francisco Municipal Transit Authority and located at Tennessee and 22nd Streets. This park is a block-long miniature open space with two grassy areas and a sand pit (NPC, 2011k).

3.3.2 Regulatory Framework

National Fire Protection Association Fire Code

The NFPA is an international nonprofit organization established in 1896 that provides consensus codes and standards for fire protection. Specifically, the NFPA is responsible for 300 codes and standards designed to

minimize the risk and impacts of fire by establishing criteria for building, processing, design, service, and installation in the United States. The NFPA Fire Code provides the requirements to establish a reasonable level of fire safety and property protection in new and existing buildings. The NFPA Fire Code includes standards for the inspection of permanent and temporary buildings, processes, equipment, systems, and other fire and related life safety situations; investigation of fires, explosions, hazardous materials incidents, and other related emergency incidents; and review of construction plans, drawings, and specifications for life safety systems, fire protection systems, access, water supplies, processes, hazardous materials, and other fire and life safety issues.

Because the existing SFVAMC Fort Miley Campus is a federal property, the NFPA Fire Code requirements would apply to all new or modified buildings on-site. Building fire suppression system design and site fire water system improvements should be evaluated for each specific project in accordance with NFPA Fire Code requirements. These requirements vary depending on the type of construction and size (square feet) of new buildings.

2010 San Francisco Fire Code

The 2010 San Francisco Fire Code went into effect January 1, 2011 (SFFD, 2011c). The new San Francisco Fire Code replaced the 2007 Fire Code and consists of the 2010 California Fire Code and portions of the 2009 International Fire Code, together with San Francisco amendments. The San Francisco Fire Code is designed to regulate and govern the safeguarding of life and property from fire and explosion hazards arising from the storage, handling, and use of hazardous substances, materials and devices, and from conditions hazardous to life or property in the occupancy of buildings and premises; and to provide for the issuance of permits, inspections, and other SFFD services, and the assessment and collection of fees for those permits (SFFD, 2011d).

Although the existing SFVAMC Fort Miley Campus is a federal property, SFFD is responsible for responding to emergency calls for fire, EMS, and other emergencies at the site. Because SFFD serves the Campus, any new development would need to meet the requirements in accordance with the latest edition of the NPFA Fire Code (i.e., the NFPA 1 Fire Code), with consideration of the San Francisco Fire Code. The buildings' fire flow requirements are adjusted individually for buildings with sprinkler systems whose designs meet the requirements of the NPFA Fire Code (Kennedy, pers. comm., 2011).

Golden Gate National Recreation Area Muir Woods National Monument Final General Management Plan/Environmental Impact Statement

The GGNRA operates under U.S. Department of the Interior and NPS policies and guidelines, in accordance with a general management plan (GMP), which was first published in 1980. The park GMP was revised to reflect new lands and responsibilities added since the park was established (NPS, 2014).

The 2014 *Golden Gate National Recreation Area Muir Woods National Monument Final General Management Plan* addresses the NPS-administered lands within the legislative boundaries of the GGNRA and Muir Woods National Monument. Although the existing SFVAMC Fort Miley Campus is under the jurisdiction of VA and outside the NPS boundaries, the Campus is surrounded on three sides by these national parklands (specifically Lands End and Fort Miley). Furthermore, the SFVAMC LRDP has taken as a core design principle integration of

the site into the surrounding park and pedestrian systems to the extent possible. Because VA is an adjacent landowner, the GGNRA land management objectives are referenced in this document.

In the Fort Miley area, the GMP advocates "better connections to the surrounding community, nearby Land's End site, and the Veteran's Administration hospital campus." The area is also under management for the preservation of dark night skies (NPS, 2014). The following summarizes the GMP mitigation measures to avoid or minimize potential impacts on natural ambient lightscapes (NPS, 2014):

- Limiting the use of artificial outdoor lighting to that which is necessary for basic safety requirements
- Shielding all outdoor lighting to the maximum extent possible
- Keeping light on the intended subject and out of the night sky to the greatest degree possible
- Working with park partners and visitors on education and best management practices to minimize their impacts on lightscapes

These GMP mitigation measures are summarized in this document because under NEPA, all relevant reasonable mitigation measures that could improve the project are to be identified, even if such measures are outside the jurisdiction of the lead agency or the cooperating agencies, and thus would not be committed to as part of these agencies' records of decision (CEQ, 2011).

The existing SFVAMC Fort Miley Campus itself is not NPS property; however, through the LRDP, SFVAMC attempts where possible to take into consideration the GGNRA policies to minimize effects on adjacent NPS parklands. See Section 3.1, "Aesthetics," for a discussion of LRDP lighting impacts. See Section 3.9, "Land Use," for a discussion of land use impacts.

San Francisco General Plan Recreation and Open Space Element

The City General Plan provides the following description for the existing SFVAMC Fort Miley Campus:

> East and West Fort Miley (GGNRA)
>
> Develop public open space area for continued recreational use and preserve natural and historic features in conjunction with the GGNRA. Maintain picnic areas and create an historic interpretive center and facilities for day camp use. Fort Miley Veteran's Administration hospital parking should be provided on the hospital grounds.

Although the existing SFVAMC Fort Miley Campus is not subject to City General Plan policies, the LRDP aims to integrate the site into the surrounding park and pedestrian systems.

Western Shoreline Area Plan

The Western Shoreline Area Plan is a part of the City General Plan that covers the San Francisco Coastal Zone, which extends approximately 6 miles along the western shoreline from the Fort Funston cliff area to the Point Lobos recreational area. The Western Shoreline Area Plan consists of 10 subareas and contains transportation policies for the entire Coastal Zone and specific policies relating to the subareas (SF Planning, 2014b). The Western Shoreline

Area Plan does not specifically mention the existing SFVAMC Fort Miley Campus, although the site lies within the boundaries of the plan. The following policies are referenced in the LRDP:

- **Policy 1.1:** Improve crosstown public transit connections to the coastal area, specifically Ocean Beach, the zoo, and the Cliff House.
- **Policy 1.2:** Provide transit connections amongst the important coastal recreational destinations.
- **Policy 1.3:** Connect local transit routes with regional transit, including BART [Bay Area Rapid Transit], Golden Gate Transit, and the Golden Gate National Recreation Transit.
- **Policy 1.4:** Provide incentives for transit usage (VA, 2010).

Even though the *Western Shoreline Area Plan* does not directly apply to the existing SFVAMC Fort Miley Campus (because the Campus is under federal jurisdiction), these policies are relevant because the LRDP would maintain San Francisco Municipal Railway (i.e., Muni) access by way of the traffic circle and a stop near the Patient Welcome Center.

3.3.3 Environmental Consequences

Significance Criteria

A NEPA evaluation must consider the context and intensity of the environmental effects that would be caused by, or result from, the EIS Alternatives. There is currently no Council on Environmental Quality (CEQ) guidance related to the analysis of park resources, police, and fire services. Therefore, other environmental assessment documents were reviewed and the following criteria were selected for evaluation.

Park Resources and Recreational Facilities

National thresholds for park resources exist in the form of the NPS Management Guidelines. The NPS Management Guidelines value the importance of leaving "park resources and values unimpaired unless a particular law directly and specifically provides otherwise" (NPS, 2006). The NPS Guidelines go on to say that impairment of park resources can be triggered by activities operating within the park but may also result from "sources or activities outside the park" (NPS, 2006). The impact threshold at which impairment occurs is not readily apparent; therefore, NPS has established policies that protect against unacceptable impacts within a park's environment. Park managers must not allow uses that would cause unacceptable impacts; they must evaluate existing or proposed uses and determine whether the associated impacts on park resources and values are acceptable. Therefore, for the purposes of these policies, unacceptable impacts are impacts that, individually or cumulatively, would do any of the following (NPS, 2006):

- be inconsistent with a park's purposes or values;
- impede the attainment of a park's desired future conditions for natural and cultural resources as identified through the park's planning process;
- create an unsafe or unhealthful environment for visitors or employees;

- diminish opportunities for current or future generations to enjoy, learn about, or be inspired by park resources or values;
- unreasonably interfere with:
  - park programs or activities;
  - an appropriate use;
  - the atmosphere of peace and tranquility, or the natural soundscape maintained in wilderness and natural, historic, or commemorative locations within the park; or
  - NPS concessioner or contractor operations or services;
- increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated or the construction or expansion of recreational facilities would be required; or
- substantially inhibit access to and use of existing recreational facilities.

Police and Fire Services

As described above, no national thresholds exist for police and fire services from an individual project. CEQ states that the significance of an effect is determined by the context and intensity of the resulting change relative to the existing environment (40 Code of Federal Regulations [CFR] 1508.27). Other environmental assessment documents and the aforementioned NPS thresholds were reviewed and the following criteria were selected for the evaluation.

Thus, an Alternative analyzed in this EIS is considered to result in an adverse impact related to community services if it would:

- result in substantial adverse physical impacts associated with the provision of, or need for, new or physically altered fire or police facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for police and fire protection;
- result in inadequate fire access and circulation; or
- result in the need for expanded fire-flow infrastructure.

Assessment Methods

The evaluation of potential community service and recreation impacts was based on a review of documents pertaining to the project area including the SFVAMC LRDP and the GGNRA GMP, consultation with appropriate agencies and City staff members, and review of the project area and surroundings. The EIS Alternatives do not involve proposals for new residential structures and would not directly generate new residents in the project area. Because the Alternatives would not generate new residents, they would not substantially increase citywide demand on community services. However, localized impacts resulting from increases in daily population (personnel, patients, visitors) may occur and are analyzed below.

For purposes of this analysis, impacts on fire and police services consider whether the EIS Alternatives would result in an increase in daily population such that fire and police services would experience inadequate staffing levels, increased response times, and/or increased demand for services requiring the construction or expansion of new or altered facilities that could have an adverse physical effect on the environment. With regard to fire flow adequacy, it is assumed that all temporary and permanent improvements would be designed and constructed in compliance with all applicable building and fire codes, which include requirements for fire alarms, smoke detectors, sprinkler systems, fire extinguishers, and the number and location of exits.

In determining whether the EIS Alternatives would have an adverse impact on recreational facilities, this analysis considers the surrounding recreational facilities, the existing capacity (usage) of those facilities, and the expected recreational improvements that would be included as part of the EIS Alternatives.

Alternative 1: SFVAMC Fort Miley Campus Buildout Alternative

Short-Term Projects

The construction of Alternative 1 short-term projects would involve 17 development and retrofitting projects occurring over approximately 7 years (Table 2-1). Alternative 1 short-term projects would involve construction of 600,992 gross square feet (gsf) (384,452 gsf of which would be net new) at the existing SFVAMC Fort Miley Campus.

Construction

Fire Protection Services

Fire and EMS Response Times

Alternative 1 short-term projects would involve new development and/or retrofitting of patient care, research, administrative, hoptel, and parking structures on the existing 29-acre SFVAMC Fort Miley Campus through 2020. The existing Campus is already served by SFFD, with the nearest fire station (Station 34) located only 0.3 mile southeast of the Campus. Three other fire stations—Stations 14, 23, and 31—are located within approximately 2 miles of the Campus and could provide backup in an emergency.

Construction of Alternative 1 short-term projects would increase the potential for accidental on-site fires from such sources as the operation of mechanical equipment and use of flammable construction materials. In most cases, implementation of “good housekeeping” procedures and best construction practices by the construction contractors and work crews would minimize such hazards.

Construction activities also have the potential to affect fire protection services, such as emergency vehicle response times, by adding construction traffic to the street network and potentially requiring partial land closures during street improvements and utility installations. Access to all buildings by fire trucks and emergency vehicles would be maintained during construction; however, slow-moving, construction-related traffic near the site could reduce traffic flows and delay emergency vehicles traveling through the area, thereby potentially affecting emergency response times. However, given the current traffic levels of surrounding streets, impacts related to response times are expected to be less than in other more congested areas. (See Section 3.13, “Transportation,

Traffic, Circulation, and Parking," for more information about traffic flow and street closures.) More importantly, Station 34 is within close range of the existing SFVAMC Fort Miley Campus (only 0.3 mile southeast of the Campus), indicating that response times would not likely be affected.

Any on-site street closures or temporary obstruction would be subject to NFPA emergency access standards, requirements, and review (with consideration of the San Francisco Fire Code), which would further reduce construction-related effects on response times. Thus, construction-related impacts of Alternative 1 short-term projects on fire protection services are expected to be minor.

Fire Truck Access and Circulation

Construction activities may result in temporary blockages of internal roadways. However, access to all buildings by fire trucks and emergency vehicles would be maintained at all times during construction. Management Measures TRANS-1 through TRANS-3 (see Section 3.13, "Transportation, Traffic, Circulation, and Parking") would alleviate construction-related effects on traffic, transit, and pedestrian circulation, ensuring coordination between construction activities and the timing of projects. Therefore, impacts of Alternative 1 short-term projects related to fire truck access and circulation would be minor.

Fire Hazards

Certain construction equipment, materials, and activities, such as welding, may increase the risk of fire on the existing SFVAMC Fort Miley Campus during construction of Alternative 1 short-term projects. This would be a potentially adverse impact. However, in accordance with VA Specification Section 010000, "General Requirements," the construction contractor would be required to prepare a fire safety plan (prepared in accordance with 29 CFR 1926) before the initiation of work. The plan would provide detailed project-specific fire safety measures. In addition, all workers would be required to undergo a safety briefing in accordance with Occupational Safety and Health Administration requirements. Compliance with the fire safety plan and safety measures conveyed at the worker safety briefing would ensure that the potential fire-related impacts during construction would be minor.

Law Enforcement Services

Because the existing SFVAMC Fort Miley Campus is under federal jurisdiction, VA Police would continue to provide police service during construction. The Campus currently maintains a police force of 22 officers, who are responsible for providing law enforcement and security services to Veterans, staff members, and visitors at department facilities and grounds.

Construction sites can be sources of attractive nuisances, providing hazards and inviting theft and vandalism. Therefore, the additional activity associated with construction of Alternative 1 short-term projects has the potential to increase the number of calls regarding minor incidents. To properly secure the site, VA Police may have to hire additional personnel and/or acquire equipment to serve the project site during construction. The need for additional staff and/or equipment would not in itself constitute an adverse environmental effect related to police protection services unless it would "result in substantial adverse physical impacts associated with the provision of, or need for, new or physically altered government facilities, the construction of which could cause significant environmental impacts."

Because any increase in police activity would be limited to the construction period and would not result in the need for a new police station, impacts of Alternative 1 short-term projects during construction would be minor.

Parks and Recreation

Park Accessibility

The existing SFVAMC Fort Miley Campus is bounded on three sides by a contiguous system of parklands consisting of Lands End, Fort Miley, and Lincoln Park. Immediately east and west of the hospital is Fort Miley, part of the GGNRA managed by NPS. Under the proposed LRDP, there would be no taking of adjacent parklands; all future modifications would occur entirely within the hospital's existing footprint. East Fort Miley and West Fort Miley are currently accessible from the Campus via paved roadways on the project site. These roadways provide access through the SFVAMC Fort Miley Campus to NPS land for NPS vehicles only. Although these access roads are not the primary entry points into adjacent Fort Miley, pedestrians (hospital-related staff members and recreationists) are allowed to pass through on these roadways to access the parklands unless the Campus is in a secure status. The only vehicles allowed to use these two roadways are those operated by NPS. To the extent practicable, the access roads would be kept open during construction. Should temporary closure of the roadways be necessary, VA would make every attempt to continue to provide notification of the closure. Notification would occur at least 2 weeks in advance.

Although temporary closure of these roads could potentially restrict access to the surrounding parklands from the hospital, it is not expected to affect overall recreational use of Fort Miley. There are multiple access points into the Lands End–Fort Miley–Lincoln Park system within blocks of the Campus (i.e., Merrie Way trailhead/parking lot and Camino del Mar parking lot). These access points are considered the primary entrances into Lands End–Fort Miley–Lincoln Park system, and they likely experience higher usage than the Campus's access roads.

Because the primary access points into the Lands End–Fort Miley–Lincoln Park system would remain open, temporary closure of the Campus's access roads is not expected to inhibit access to and use of these parks. Access to the parklands would not be substantially disrupted because recreationalists could still visit these areas via other nearby park entrances. For these reasons, impacts of Alternative 1 short-term projects related to park accessibility during construction would be minor.

Park Usage

Construction of Alternative 1 short-term projects would be performed by a temporary workforce consisting of approximately 72 persons derived from the local labor pool, depending on the concurrent project(s) for LRDP construction on the existing SFVAMC Fort Miley Campus. Although construction workers would be within walking distance of nearby parks and open space areas such as adjacent Fort Miley, Lands End, or Lincoln Park, the increase in park usage would be minimal. The temporary influx of construction workers on the Campus would not be expected to substantially increase the demand for surrounding parks and recreational facilities. In addition, all of these workers would be expected to already reside in San Francisco or the greater Bay Area. Therefore, construction-related impacts of Alternative 1 short-term projects on park usage would be minor.

Operation

Fire Protection Services

Fire and EMS Response Times

By 2020, there would be a net increase in daily population at the existing SFVAMC Fort Miley Campus of 642 people (approximately 18 percent) as a result of the increase in VA employees and services. This increase in personnel, patients, and visitors is expected to occur incrementally over a period of 7 years as the short-term projects of Alternative 1 are completed; therefore, additional fire and EMS demand is expected to be minimal.

As described previously, SFFD (Stations 34 and 14) currently responds to calls at the existing SFVAMC Fort Miley Campus an average of 50 times per year, which represents less than 0.01 percent of total calls for EMS or fire service in San Francisco. Using the conservative assumption that calls for service would double to 100 calls per year by 2020, these additional calls would continue to make up less than 0.01 percent of the total call volume for fire or EMS services in San Francisco. SFFD has indicated that the EIS Alternatives would not increase demand for fire protection, equipment, and services beyond its ability to maintain acceptable service ratios, response times, or other performance objectives (Schultheis, pers. comm., 2011). In addition, SFFD conducted fire drills at the SFVAMC Fort Miley Campus in 2014 and found no obstructions, delays, or compromise to the response times of Stations 34 and 14 (Castellanos, pers. comm., 2014). Therefore, any increase in demand would be considered minimal and is not expected to compromise response times. Operational impacts of Alternative 1 short-term projects related to fire and EMS response times are expected to be minor.

Fire Truck Access and Circulation

Alternative 1 short-term projects would result in alterations to the circulation within the SFVAMC Fort Miley Campus. Fire vehicles and related equipment would continue to use the two designated entrances at 42nd Avenue or 43rd Avenue and would have access along the full perimeter of the Campus site along Veterans Drive and Fort Miley Circle. Because the SFVAMC Fort Miley Campus's Emergency Department is not a trauma center and does not expect to receive patients who have experienced major trauma, ambulance transports to the Campus do not constitute a high percentage of SFFD's patient clientele. Emergency vehicles would be directed to enter though the 43rd Avenue entrance, and proceed to the new Ambulatory Care Center (VA, 2012, 2014). Pursuant to the SFVAMC LRDP, the circulation system would "provide clear access and mobility for multiple modes of transportation: pedestrians, private vehicles, public transit, and shuttles, as well as emergency and delivery vehicles" (VA, 2014). Vertical and horizontal clearance would be sufficient under the proposed parking garages extensions, and turning radii would be sufficient within the Campus to allow for fire access in compliance with code requirements (VA, 2014).Operational fire access and circulation impacts of Alternative 1 short-term projects are expected to be minor.

Water and Fire Flow Systems

Implementing Alternative 1 short-term projects would require making improvements to the existing SFVAMC Fort Miley Campus's water distribution system. Water system improvements necessary to support development of Alternative 1 short-term projects would require moving the water tower; removing and/or abandoning portions of the existing water system where new water mains, service laterals, and fire hydrants could be located; and establishing new domestic water connections to provide potable water to the buildings.

The fire system and water system improvements would be thoroughly assessed as a part of the design process to satisfy the NFPA Fire Code requirements. Operational impacts of Alternative 1 short-term projects related to water and fire flow systems are expected to be minor.

Fire Hazards

As described previously, the existing SFVAMC Fort Miley Campus is located at the wildland urban interface and surrounded on three sides by forested public land. Droughts and extreme temperature events could result in dry vegetation, intensifying the existing threats of the wildland urban interface. Thus, operation of Alternative 1 short-term projects could result in potential wildfire risk where the Campus borders the forested public lands. This would represent a potentially adverse effect. Potential hazards to persons, property, and operations related to wildfire risk would be reduced to a minor level with the implementation of Mitigation Measure GHG-1, which requires maintenance of foliage on campus and coordinating with other jurisdictions to maintain the foliage adjacent to campus (see Section 3.7, “Greenhouse Gas Emissions and Climate Change”).

Law Enforcement Services

Because the existing SFVAMC Fort Miley Campus is under federal jurisdiction, VA Police would continue to provide police service. Implementing Alternative 1 short-term projects would increase the number of personnel at the Campus by 642; therefore, the additional activity associated with the new population has the potential to increase the number of calls for service. However, any increase in demand for police services is not expected to substantially affect response times because VA Police officers are stationed on-site. Although VA Police may have to hire additional personnel and acquire equipment to serve the Campus, the need for additional staff members and/or equipment would not in itself result in changes to service levels such that new police protection facilities would need to be built. Operational impacts of Alternative 1 short-term projects on law enforcement services are expected to be minor.

Parks and Recreation

Park Accessibility

Implementing Alternative 1 short-term projects would not inhibit access to or use of adjacent GGNRA recreational areas. Proposed Alternative 1 short-term projects would develop various existing open space areas of the SFVAMC Fort Miley Campus along with proposed buildings, including the Mental Health Clinic Expansion and the Hoptel Addition. A new landscape area would be developed within the drop-off circle that is proposed as part of the Patient Welcome Center and drop-off area, and a healing garden would be integrated with the Welcome Center. Sidewalks and walkways for pedestrians would be modified to improve connectivity and flow between facilities. Future Veterans and hospital personnel would benefit from these additional park spaces and connections to the surrounding federal park system. Operational impacts of Alternative 1 short-term projects related to park accessibility would be beneficial.

Park Usage

Implementing Alternative 1 short-term projects would result in new and additional medical space. No permanent housing component is proposed; therefore, the area’s population density would not be affected directly. However,

the number of personnel at the existing SFVAMC Fort Miley Campus is projected to increase by 642 (an 18 percent increase) between 2015 and 2020. Some of these people might use adjacent Fort Miley within the GGNRA (e.g., on their lunch breaks), but this additional usage is not expected to result in a substantial increase in demand for nearby recreational facilities. Furthermore, these employees would have lunch breaks at different times because they would work various shifts, and only a fraction of daytime employees might use park grounds for lunch or before or after work.

The use of nearby recreational spaces by Campus employees is expected to be concentrated on lunch hours during weekday shifts, when resident usage might be lower than during the evening and weekend hours. Visitors and patients are not expected to use nearby parks because their visits to the Campus would be focused on health care services. Finally, because there are existing open space areas on Campus for passive recreation and new open space amenities would be provided as part of Alternative 1 short-term projects, it is expected that access to on-site open space would help offset any potential deterioration of nearby parks caused by Campus personnel and visitors. For the reasons stated above, operational impacts of Alternative 1 short-term projects on park usage would be minor.

Long-Term Projects

The Alternative 1 long-term project would involve construction of 170,000 gsf (all of which would be net new) at the existing SFVAMC Fort Miley Campus.

Construction

Fire Protection Services

Fire and EMS Response Times

Construction of the Alternative 1 long-term project would require equipment and construction activities similar to those required by short-term projects for Alternative 1. The long-term project for Alternative 1 would have a smaller development program than the short-term projects for this alternative, and its construction activities and duration would be less. This project would require the same construction practices and compliance with the same applicable standards and requirements as Alternative 1 short-term projects. Therefore, construction-related impacts of the Alternative 1 long-term project on fire and EMS response times would be similar to those of Alternative 1 short-term projects. For the same reasons as described above for Alternative 1 short-term projects, construction-related impacts of the Alternative 1 long-term project on response times would be minor.

Fire Truck Access and Circulation

Construction-related impacts of the Alternative 1 long-term project on fire truck access and circulation would be similar to those of short-term projects for this alternative. Therefore, construction-related impacts of the Alternative 1 long-term project on fire truck access and circulation would be minor.

Fire Hazards

Construction-related impacts of the Alternative 1 long-term project related to fire hazards would be similar to those of Alternative 1 short-term projects identified above. Therefore, construction impacts of the Alternative 1 long-term project related to fire hazards would be minor.

Law Enforcement Services

Construction-related impacts of the Alternative 1 long-term project on law enforcement services would be similar to those of short-term projects for this alternative. Therefore, construction-related impacts of the Alternative 1 long-term project on law enforcement services would be minor.

Parks and Recreation

Park Accessibility

The impacts of the Alternative 1 long-term project on park accessibility would be similar to those of short-term projects for this alternative. Therefore, construction-related impacts of the Alternative 1 long-term project on park accessibility would be minor.

Park Usage

The impacts of the Alternative 1 long-term project on park usage would be similar to those of short-term projects for this alternative. Therefore, construction-related impacts of the Alternative 1 long-term project on park usage would be minor.

Operation

Fire Protection Services

Fire and EMS Response Times

Implementation of the Alternative 1 long-term project would involve one development project occurring over approximately 2 years, with completion anticipated by March 2026. By 2027, there would be a net increase in the daily employee population at the existing SFVAMC Fort Miley Campus of 616 persons. This represents an increase of 15 percent between 2020 and 2027. For the same reasons as described above for Alternative 1 short-term projects, the increase in daily population levels would not generate substantial demand on fire or EMS services. Impacts of the operation of the Alternative 1 long-term project on fire and EMS response times are expected to be minor.

Fire Truck Access and Circulation

Under the Alternative 1 long-term project, no major changes would be made to SFVAMC Fort Miley Campus access and circulation. Access for emergency medical and fire vehicles would continue to be provided internally. As described above for short-term projects under this alternative, VA would be required to comply with all applicable access and circulation requirements of the NFPA Fire Code (with consideration of the San Francisco

Fire Code) during implementation of the Alternative 1 long-term project. Therefore, impacts of the operation of the Alternative 1 long-term project on fire truck access and circulation are expected to be minor.

Water and Fire Flow Systems

Improvements to the water distribution system for the Alternative 1 long-term project would be similar to those implemented for Alternative 1 short-term projects. VA would be required to comply with all applicable fire flow regulations of the NFPA Fire Code (with consideration of the San Francisco Fire Code) during implementation of the Alternative 1 long-term project. Therefore, impacts of the operation of the Alternative 1 long-term project on water and fire flow systems are expected to be minor.

Fire Hazards

Operation of the Alternative 1 long-term project would result in impacts related to fire hazards similar to those identified above for operation of Alternative 1 short-term projects. Therefore, impacts of operation of the Alternative 1 long-term project related to fire hazards would be minor with mitigation.

Law Enforcement Services

Because the existing SFVAMC Fort Miley Campus is under federal jurisdiction, VA Police would continue to provide police service during operation of the Alternative 1 long-term project. Although daily employee population levels are expected to increase by 616 persons between 2020 and 2027, this increase is not expected to generate substantial demand on police services. Therefore, impacts of the operation of the Alternative 1 long-term project on law enforcement services are expected to be minor.

Parks and Recreation

Park Accessibility

Implementing the Alternative 1 long-term project would not inhibit access to or use of adjacent GGNRA recreational areas. Impacts of operation of the Alternative 1 long-term project on park accessibility are expected to be minor.

As part of the Alternative 1 long-term project, a Central Green park area would be completed with permanent landscaping, walkways, and gardens to serve employees, patients, visitors, and the surrounding community. Adding new park facilities and connections to surrounding parklands would provide a recreational benefit to the personnel and patients at the Campus.

Park Usage

In the long term, the number of personnel at the existing SFVAMC Fort Miley Campus is projected to increase by 616 persons (a 15 percent increase) between 2020 and 2027. This increase in daily population levels would not lead to a substantial increase in usage of nearby recreational facilities. Therefore, impacts of the operation of the Alternative 1 long-term project on park usage are expected to be minor.

Alternative 2: SFVAMC Fort Miley Campus Buildout Alternative

Short-Term Projects

Alternative 2 short-term projects at the existing SFVAMC Fort Miley Campus would be the same as Alternative 1 short-term projects, with one exception. Specifically, retrofitting of the existing Buildings 1, 6, and 8 would not occur as part of Alternative 2 short-term projects (Table 2-3 and Figure 2-3), but instead would be accomplished in the long term. Alternative 2 short-term projects include construction of a total of 485,445 gsf, which is 115,547 gsf less than for short-term projects under Alternative 1. Therefore, impacts of Alternative 2 short-term projects would be similar to or less than those of Alternative 1 short-term projects.

Construction

Fire Protection Services

Fire and EMS Response Times

Like construction of the short-term projects for Alternative 1, construction of Alternative 2 short-term projects would increase the potential for accidental on-site fires from such sources as the operation of mechanical equipment and use of flammable construction materials. Construction activities also have the potential to affect fire protection services, such as emergency vehicle response times, by adding construction traffic to the street network and potentially requiring partial land closures during street improvements and utility installations. As under Alternative 1 short-term projects, access to all buildings by fire trucks and emergency vehicles would be maintained during construction. Therefore, construction-related impacts of Alternative 2 short-term projects on fire protection services are expected to be minor.

Fire Truck Access and Circulation

As described above, access to all buildings by fire trucks and emergency vehicles would be maintained during construction. Therefore, impacts of Alternative 2 short-term projects related to fire truck access and circulation would be minor.

Fire Hazards

As with short-term projects for Alternative 1, construction activities for Alternative 2 short-term projects may increase the risk of fire. The measures to reduce impacts related to fire hazards during construction of Alternative 2 short-term projects would be the same as those described for construction of Alternative 1 short-term projects, and the potential impacts would be similar. Therefore, construction-related impacts of Alternative 2 short-term projects related to fire hazards would be minor.

Law Enforcement Services

As under Alternative 1 short-term projects, the SFVAMC Fort Miley Campus would continue to be served by VA Police during construction of Alternative 2 short-term projects. The additional activity associated with construction of Alternative 2 short-term projects has the potential to increase the number of calls regarding minor incidents. Therefore, construction-related impacts of Alternative 2 short-term projects on law enforcement services are expected to be minor.

Parks and Recreation

Park Accessibility

Like construction of the short-term projects for Alternative 1, construction of Alternative 2 short-term projects could result in temporary closure of access roads to East Fort Miley and West Fort Miley from the SFVAMC Fort Miley Campus. However, as under Alternative 1 short-term projects, the primary entrances into the Lands End–Fort Miley–Lincoln Park system would remain open. Therefore, construction-related impacts of Alternative 2 short-term projects on park accessibility during construction would be minor.

Park Usage

Like construction of the short-term projects for Alternative 1, construction of Alternative 2 short-term projects would be performed by a temporary workforce consisting of approximately 64 persons derived from the local labor pool, depending on the concurrent project(s) for LRDP construction on the existing SFVAMC Fort Miley Campus. Therefore, construction-related impacts of Alternative 2 short-term projects on park usage would be minor.

Operation

Fire Protection Services

Fire and EMS Response Times

By 2020, there would be a net increase in daily population at the existing SFVAMC Fort Miley Campus of 642 people as a result of the increase in VA employees. Because approximately 3,545 employees currently work at the Campus, this would represent an 18 percent net increase in employees at the Campus between 2015 and 2020. It should be noted that this increase in personnel, patients, and visitors is expected to occur incrementally over a construction period of 6 years as the short-term projects of Alternative 2 are completed.

Alternative 2 short-term projects would result in less overall development, but would have the same net new gross square footage as short-term projects for Alternative 1 (384,452 gsf). Therefore, for the same reasons as described for the operation of Alternative 1 short-term projects, impacts of Alternative 2 short-term projects would be minor.

Fire Truck Access and Circulation

Under Alternative 2 short-term projects, the SFVAMC Fort Miley Campus's circulation would be altered slightly, and would be the same as described previously for short-term projects under Alternative 1. For the same reasons as described for the operation of Alternative 1 short-term projects, operational fire access and circulation impacts of Alternative 2 short-term projects are expected to be minor.

Water and Fire Flow Systems

As with the short-term projects for Alternative 1, implementing Alternative 2 short-term projects would require making improvements to the existing SFVAMC Fort Miley Campus's water distribution system because of utility

conflicts with proposed facilities and other site improvements. For the same reasons as described for the operation of Alternative 1 short-term projects, impacts of Alternative 2 short-term projects related to water and fire flow systems are expected to be minor.

Fire Hazards

Operation of Alternative 2 short-term projects would result in impacts related to fire hazards similar to those of Alternative 1 short-term projects, and the measures to reduce operational fire hazard impacts would be the same. Therefore, impacts of operation of Alternative 2 short-term projects related to fire hazards would be minor with mitigation.

Law Enforcement Services

As with the short-term projects for Alternative 1, because the existing SFVAMC Fort Miley Campus is under federal jurisdiction, VA Police would continue to provide police service during Alternative 2 long-term projects. Implementing Alternative 2 short-term projects would increase the number of personnel at the Campus by 642. For the same reasons as described for the operation of Alternative 1 short-term projects, impacts of Alternative 2 short-term projects on law enforcement services are expected to be minor.

Parks and Recreation

Park Accessibility

As with the short-term projects for Alternative 1, implementing Alternative 2 short-term projects would not inhibit access to or use of adjacent GGNRA recreational areas. For the same reasons as described for the operation of Alternative 1 short-term projects, impacts of Alternative 2 short-term projects related to park accessibility are expected to be beneficial.

Park Usage

As with the short-term projects for Alternative 1, implementing Alternative 2 short-term projects would result in new and additional medical and medical office uses. No permanent housing component is proposed; therefore, the area's population density would not be affected directly. However, the number of personnel at the existing SFVAMC Fort Miley Campus is projected to increase by 642 (an 18 percent increase) between 2015 and 2020. For the same reasons as described for the operation of Alternative 1 short-term projects, operational impacts of Alternative 2 short-term projects on park usage would be minor.

Long-Term Projects

Alternative 2 long-term projects at the existing SFVAMC Fort Miley Campus would be the same as the Alternative 1 long-term project, with one exception. Specifically, three additional existing buildings—Buildings 1, 6, and 8—would be retrofitted as part of Alternative 2 long-term projects (Table 2-4 and Figure 2-4). Alternative 2 long-term projects include construction of a total of 285,487 gsf, which is 115,487 gsf more than under the Alternative 1 long-term project, because Alternative 2 includes construction of Building 213 along with the seismic retrofit of Buildings 1, 6, and 8. Therefore, construction impacts of Alternative 2 long-term projects would be similar to, although slightly greater than, those of the Alternative 1 long-term project.

Construction

Fire Protection Services

Fire and EMS Response Times

Construction of Alternative 2 long-term projects would require equipment and construction activities similar to those required by short-term projects for Alternative 1. Alternative 2 long-term projects would have a larger development program and may have greater construction activities and duration than the Alternative 1 short-term projects, but would implement the same construction practices and comply with the same applicable standards and requirements. Therefore, construction-related impacts of Alternative 2 long-term projects on fire and EMS response times would be similar to those of the short-term projects for Alternative 1. Construction-related impacts of Alternative 2 long-term projects on response times would be minor.

Fire Truck Access and Circulation

Construction-related impacts of Alternative 2 long-term projects on fire truck access and circulation would be similar to those of short-term projects for Alternative 1. Therefore, construction-related impacts of Alternative 2 long-term projects on fire truck access and circulation would be minor.

Fire Hazards

The impacts of construction of Alternative 2 long-term projects related to fire hazards would be similar to those of short-term projects for Alternative 1. Therefore, construction impacts of Alternative 2 long-term projects related to fire hazards would be minor.

Law Enforcement Services

Construction-related impacts of Alternative 2 long-term projects on law enforcement services would be similar to those of short-term projects for Alternative 1. Therefore, construction-related impacts of Alternative 2 long-term projects on law enforcement services would be minor.

Parks and Recreation

Park Accessibility

The impacts of Alternative 2 long-term projects on park accessibility would be similar to those of short-term projects for Alternative 1. Therefore, construction-related impacts of Alternative 2 long-term projects on park accessibility would be minor.

Park Usage

The impacts of Alternative 2 long-term projects on park usage would be similar to those of short-term projects for Alternative 1. Therefore, for the same reasons as described above for Alternative 1 short-term projects, construction-related impacts of Alternative 2 long-term projects on park usage would be minor.

Operation

Fire Protection Services

Fire and EMS Response Times

Implementation of Alternative 2 long-term projects would involve four development and retrofitting projects occurring over approximately 5 years and 5 months, with completion anticipated by March 2026. By 2027, there would be a net increase in daily employee population at the existing SFVAMC Fort Miley Campus of 616 persons. This represents an increase of 15 percent between 2020 and 2027. For the same reasons as described above for Alternative 1 short-term projects, the increase in daily population levels would not generate substantial demand on fire or EMS services. Impacts of the operation of Alternative 2 long-term projects on fire and EMS response times are expected to be minor.

Fire Truck Access and Circulation

Under Alternative 2 long-term projects, no major changes would be made to SFVAMC Fort Miley Campus access and circulation. Access for emergency medical and fire vehicles would continue to be provided internally. For the same reasons as described above for Alternative 1 short-term projects, impacts of the operation of Alternative 2 long-term projects on fire truck access and circulation are expected to be minor.

Water and Fire Flow Systems

Improvements to the water distribution system for Alternative 2 long-term projects would be similar to those implemented for short-term projects under Alternative 1. For the same reasons as described above for Alternative 1 short-term projects, impacts of the operation of Alternative 2 long-term projects on water and fire flow systems are expected to be minor.

Fire Hazards

Operation of Alternative 2 long-term projects would result in impacts related to fire hazards similar to those identified above for short-term projects under Alternative 1. For the same reasons as described above for Alternative 1 short-term projects, impacts of the operation of Alternative 2 long-term projects associated with hazards would be minor with mitigation.

Law Enforcement Services

Because the existing SFVAMC Fort Miley Campus is under federal jurisdiction, VA Police would continue to provide police service during operation of Alternative 2 long-term projects. For the same reasons as described above for Alternative 1 short-term projects, impacts of the operation of Alternative 2 long-term projects on law enforcement services are expected to be minor.

Parks and Recreation

Park Accessibility

Implementation of Alternative 2 long-term projects would be similar to implementation of short-term projects under this alternative and would not inhibit access to or use of adjacent GGNRA recreational areas. Impacts of operation of Alternative 2 long-term projects on park accessibility are expected to be beneficial.

Park Usage

In the long term, the number of personnel at the existing SFVAMC Fort Miley Campus is projected to increase by 616 persons (a 15 percent increase) between 2020 and 2030. This increase in daily population levels would not lead to a substantial increase in usage of nearby recreational facilities. For the same reasons as described above for Alternative 1 short-term projects, impacts of the operation of Alternative 2 long-term projects on park usage are expected to be minor.

Alternative 3: Fort Miley Campus Plus Mission Bay Campus Alternative

Short-Term Projects

Alternative 3 short-term projects (during both construction and operation) would be the same as short-term projects for Alternative 1 (Table 2-1 and Figure 2-1); thus, all Alternative 3 short-term projects would be located at the SFVAMC Fort Miley Campus. The impacts of Alternative 3 short-term projects would be the same as the impacts of Alternative 1 short-term projects. These impacts would be minor or minor with mitigation.

Long-Term Projects

Alternative 3 long-term projects (during both construction and operation) would involve development of 170,000 gsf for ambulatory care and parking structure uses at a potential new SFVAMC Mission Bay Campus. See Figure 2-5 for the location of Alternative 3 long-term projects.

It is assumed that all off-site development in Mission Bay would consist of four-story buildings (or other multi-story buildings consistent with other proximate buildings) in a development area totaling approximately 0.98 acre. Alternative 3 long-term projects at the potential new Mission Bay Campus would be constructed roughly between 2024 and 2027. See Table 2-5 for detailed square footage and phasing for implementation of the long-term projects of Alternative 3 at the potential new Mission Bay Campus. Note that the actual footprint and concept plan and site location within Mission Bay has not been determined at this time.

Construction

Fire Protection Services

Fire and EMS Response Times

Three fire stations operate in the Mission Bay area: Stations 8, 29, and 37. A fourth station will be incorporated into the Public Safety Building at Third Street and Mission Rock in early 2015. As of the writing of this

document, construction was estimated to be completed in December 2014, with targeted move-in of January/February 2015 (DPW, 2014). All three existing stations have response times that surpass both the City and State standards (Table 3.3-3).

Construction of Alternative 3 long-term projects in the Mission Bay area would increase the potential for accidental on-site fires from such sources as the operation of mechanical equipment and use of flammable construction materials. In most cases, implementation of "good housekeeping" procedures by the construction contractors and work crews would minimize such hazards. Construction activities also have the potential to affect fire protection services, such as emergency vehicle response times, by adding construction traffic to the street network and potentially requiring partial street closures during street improvements and utility installations. Because Alternative 3 would involve an alternate site, any street closures or temporary obstruction would be subject to the NFPA standards (with consideration of the local SFFD emergency access standards, requirements, and review), which would further reduce construction-related effects on response times. Thus, construction-related impacts of Alternative 3 long-term projects on fire protection services are expected to be minor.

Fire Truck Access and Circulation

Construction related to development of the potential new 170,000-square-foot SFVAMC Mission Bay Campus under Alternative 3 long-term projects has the potential to require temporary lane closures or detours for fire and emergency personnel. Partial lane closures, if determined to be necessary, would not greatly affect emergency vehicles; the drivers of these vehicles normally have a variety of options for avoiding traffic, such as using their sirens to clear a path of travel or driving in the lanes of opposing traffic. Additionally, should there be partial closures of streets surrounding the potential new Campus, flagmen would be used to facilitate the traffic flow until construction is complete. Although a specific site for the potential new Campus in the Mission Bay area has not been selected, it is assumed that access to all surrounding buildings by fire trucks and emergency vehicles would be maintained during construction. Therefore, construction-related impacts of Alternative 3 long-term projects on fire truck access and circulation would be minor.

Fire Hazards

Alternative 3 long-term projects would involve new construction at a potential new SFVAMC Mission Bay Campus. The potential impacts related to fire hazards during construction of Alternative 3 long-term projects would be similar to the impacts of construction of short-term projects under Alternative 1, and the measures to reduce those impacts would be the same. Therefore, impacts would be minor.

Law Enforcement Services

As under Alternative 1, because the potential new SFVAMC Mission Bay Campus would be under federal jurisdiction, VA would need to provide police service during construction of Alternative 3 long-term projects. Construction sites can be sources of attractive nuisances, providing hazards, and inviting theft and vandalism. Therefore, the additional activity associated with construction of Alternative 3 long-term projects has the potential to increase the number of calls for minor incidents. To properly secure the project site, VA Police would need to hire additional personnel and/or acquire equipment to serve the site during construction. The need for additional staff and/or equipment would not in itself constitute an adverse environmental effect related to police protection services unless it would "result in substantial adverse physical impacts associated with the provision of, or need

for, new or physically altered government facilities, the construction of which could cause significant environmental impacts." Because any increase in police activity would be limited to the construction period and would not result in the need for a new police station, construction-related impacts of Alternative 3 long-term projects on law enforcement services would be minor.

Construction-related impacts on traffic and circulation are identified in Section 3.13, "Transportation, Traffic, Circulation, and Parking." Traffic would be generated by construction workers and trucks primarily during off-peak hours. Although minor traffic delays could result from construction activities at times, these impacts would be temporary and would be coordinated ahead of time with local police and emergency officials. Impacts of Alternative 3 long-term projects are expected to be minor.

Parks and Recreation

Park Accessibility

Because a specific site has not yet been selected for the potential new 170,000-square-foot SFVAMC Mission Bay Campus, it is unclear whether construction activities for Alternative 3 long-term projects would affect park accessibility. A project-level NEPA analysis would be required once a specific location and site plan for the potential new Campus is determined. However, the Alternative 3 long-term projects would be built in a concentrated area of Mission Bay and construction is not anticipated to adversely affect the accessibility of parkland. Best management practices would be followed to ensure compliance with local codes and regulations. Therefore, the impact of Alternative 3 long-term projects on park accessibility during construction would be minor.

Park Usage

Construction of Alternative 3 long-term projects at the potential new SFVAMC Mission Bay Campus would be performed by a temporary workforce consisting of approximately 54 persons derived from the local labor pool, depending on the concurrent project(s) for construction for Alternative 3 long-term projects. Although construction workers would be within walking distance of nearby parks and open space areas, an increase in park usage is expected to be minimal and temporary. The temporary influx of construction workers in the Mission Bay area would not be expected to substantially increase the demand on surrounding parks and recreational facilities. Therefore, construction-related impacts of Alternative 3 long-term projects on park usage would be minor.

Operation

Fire and EMS Response Times

Adding 170,000 square feet of new development in the Mission Bay area under Alternative 3 long-term projects has the potential to result in an increase in fire demand in the Mission Bay area. Under these projects, there would be an increase in the daily employment population of 1,268 employees at the potential new SFVAMC Mission Bay Campus (Table 3.11-7). Three fire stations operate in the Mission Bay area, with a fourth station that is being incorporated into the Public Safety Building at Third Street and Mission Rock (plans to be completed in early 2015). All three existing stations have response times that surpass both the City and State standards (Table 3.3-3). Thus, operational impacts of Alternative 3 long-term projects on fire and EMS response times would be minor.

Fire Truck Access and Circulation

In implementing Alternative 3 long-term projects at the 170,000-square-foot space in the Mission Bay area, SFVAMC would be required to comply with all applicable access and circulation requirements of the NFPA Fire Code (with consideration of the San Francisco Fire Code). For the same reasons as described for Alternative 1, operational impacts of Alternative 3 long-term projects on fire truck access and circulation are expected to be minor.

Water and Fire Flow Systems

As described above, SFVAMC would be required to comply with all applicable provisions related to water and fire flow in the NFPA Fire Code (with consideration of the San Francisco Fire Code) during implementation of Alternative 3 long-term projects at the potential new SFVAMC Mission Bay Campus. Therefore, operational impacts of Alternative 3 long-term projects on water and fire flow systems are expected to be minor.

Fire Hazards

The Mission Bay area is characterized as an urbanized area with no or low wildland fire threat, according to CAL FIRE. Operation of Alternative 3 long-term projects would be consistent with existing urbanized land uses and the wildland fire threat would not increase.

Law Enforcement Services

As a federal entity, the potential new SFVAMC Mission Bay Campus would be served by VA Police during operation of Alternative 3 long-term projects. Although daily employee population levels are expected to increase by 100 percent between 2020 and 2027, this increase is not expected to affect public police (SFPD) resources. For the same reasons as described for Alternative 1, operational impacts of Alternative 3 long-term projects on law enforcement services are expected to be minor.

Parks and Recreation

Park Accessibility

Because a specific site has not yet been selected for the potential new 170,000-square-foot SFVAMC Mission Bay Campus, it is unclear whether operation of Alternative 3 long-term projects would affect park accessibility. A project-level NEPA analysis would be required once a specific location and site plan for the potential new Campus is determined. However, it is anticipated that project components would include open space for passive recreation and that the new Mission Bay Campus would be designed fit within the Mission Bay area while complying with local codes and regulations. Therefore, the impact of Alternative 3 long-term projects on park accessibility would be minor.

Park Usage

As described in Section 3.11, “Socioeconomics and Environmental Justice,” implementing Alternative 3 long-term projects would result in new and additional medical and medical office uses. No permanent housing component is proposed; therefore, the area’s population density would not be affected directly. Thus, the demand on recreational facilities resulting from implementation of Alternative 3 long-term projects would not be substantial in the context of existing citywide demand for these facilities.

Although medical personnel, and to a lesser extent, patients and visitors might use surrounding parks and recreational facilities (e.g., on their lunch breaks), the incremental increase in demand associated with operation of Alternative 3 long-term projects is not expected to result in the need to expand existing recreational facilities or construct new facilities, or to cause the physical deterioration of nearby parks and open spaces. Implementing Alternative 3 long-term projects would intensify the activity and uses on-site and could generate more trips to local nearby parks than under current conditions. Although some of these people might visit recreational facilities in the vicinity of the proposed new Campus, such usage is not expected to result in substantial physical deterioration of nearby facilities or facilities areawide. The use of nearby recreational spaces by employees is expected to be concentrated on lunch hours during weekday shifts, when resident usage might be lower than during the evening and weekend hours. Therefore, operational impacts of Alternative 3 long-term projects on park usage would be minor.

Alternative 4: No Action Alternative

Short-Term and Long-Term Projects

Construction

Under Alternative 4, there would be no new construction or retrofitting of existing buildings. However, ongoing maintenance repairs of the existing SFVAMC Fort Miley Campus would be completed. No impacts on community services (fire protection services, law enforcement services, or parks/recreation) would occur as a result of ongoing maintenance repairs under Alternative 4.

Operation

Under Alternative 4, the LRDP would not be implemented and no additional facilities would be operated. Thus, no impacts on community services (fire protection services, law enforcement services, or parks/recreation) or fire hazards would occur under this alternative.

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3.4 CULTURAL RESOURCES

This section describes the historical setting and the physical and regulatory framework related to cultural resources and addresses the potential effects of the EIS Alternatives on such resources. *VA Handbook 7545: Cultural Resource Management Procedures* defines cultural resources as "all aspects of the human environment that have historical, architectural, archaeological, or cultural significance, including, but not limited to, historic properties, archaeological resources and data, Native American ancestral remains and cultural items, religious places and practices, historical objects and artifacts, historical documents, and community identity" (VA, 2011a).

3.4.1 Affected Environment

Methodology for Assessment of Existing Conditions

SFVAMC held NEPA scoping meetings in October 2010 and March 2011 as well as public meeting NEPA/ National Historic Preservation Act (NHPA) Section 106 Meeting in September 2012, to gather information about issues of concern or about cultural resources located within the project area. Cultural resources studies for the project area included pre-field research, a review of cultural resources documentation on file at the Northwest Information Center (NWIC), an information request of the Native American Heritage Commission (NAHC) regarding sacred sites and sensitive areas, review of geotechnical reports, and a built-environment field reconnaissance visit of the SFVAMC Fort Miley Campus. The results of these studies were summarized in a baseline documentation report that was used for consultation with the California State Historic Preservation Officer (SHPO) in December 2011 (VA, 2011b).

In early 2012, SFVAMC developed a plan for soliciting comments from the public and interested parties on the cultural resources section of environmental review documents[1] being prepared in compliance with both NEPA and Section 106 of the NHPA.[2] This plan was outlined in the March 2012 Section 106 initiation letter to the SHPO, who concurred with the approach in May 2012. In June 2012, SFVAMC sent letters to the following organizations, inviting them to participate in the Section 106 process as consulting parties:[3]

- City and County of San Francisco
- San Francisco Veterans Affairs Commission
- National Park Service (Pacific Region)
- Golden Gate National Recreation Area (GGNRA)
- Planning Association for the Richmond
- Friends of Lands End

[1] Specifically, this refers to the Cultural Resources section of the August 2012 Draft EIS (for NEPA purposes) and the August 2012 Draft Finding of Effect (for Section 106 purposes).

[2] In this EIS, NHPA Section 106 is referred to as "Section 106."

[3] Section 106 requirements for public involvement include outreach to the general public, consultation with SHPOs and Tribal Historic Preservation Officers (for federally recognized tribes), and outreach to "other parties entitled to be consulting parties" by virtue of their demonstrated interest in historic properties or the proposed undertaking. These requirements also encourage federal agencies to coordinate the steps of the Section 106 process with reviews conducted under other authority, such as NEPA. 36 Code of Federal Regulations (CFR) 800.3.

- California Preservation Foundation
- National Trust for Historic Preservation
- NCIRE–The Veterans Health Research Institute, Board of Directors
- University of California, San Francisco (UCSF) School of Medicine
- Legion of Honor
- Presidio Trust
- San Francisco County Veterans Service Officers

In July 2012, AECOM sent a request to the NAHC for a search of its Sacred Lands Database and other information regarding the presence of cultural resources in the project area, as well as a list of tribal representatives who may have information or concerns about traditional, religious, or cultural resources in the project area. The NAHC did not identify any known traditional, religious, or cultural resources. In addition, based on the list of federally recognized tribes published in the *Federal Register* by the U.S. Bureau of Indian Affairs (2012), SFVAMC determined that there are no federally recognized tribes that may attach religious and cultural significance to properties under SFVAMC's administrative jurisdiction, or with which SFVAMC could consult under the Native American Graves Protection and Repatriation Act (NAGPRA). However, the NAHC provided a list of State-recognized tribes in its response to the 2012 AECOM request. These included the Amah/Mutsun Tribal Band, Costanoan Rumsen Carmel Tribe, Indian Canyon Mutsun Band of Costanoan, Muwekma Ohlone Indian Tribe of the San Francisco Bay Area, and Ohlone Indian Tribe, all of which were added to the list used during the NEPA and Section 106 process to notify the public of NEPA public meetings, availability of documents for review and comment, and all other public involvement in the environmental review processes. Several local and State organizations with a general interest in history and historic preservation, as well as the organizations that declined or did not respond to the invitation for consulting party status, were also added to this contact list. No input has been received from these parties.

Several of the organizations that served as consulting parties to the Section 106 process identified a concern for the historic, landscape, aesthetic, and recreational character of the former Fort Miley Military Reservation. These concerns were addressed in the Cultural Resources section of the Draft EIS through analysis of the LRDP's impacts on the Fort Miley Military Reservation Historic District (Fort Miley Historic District), which is listed in the National Register of Historic Places (NRHP). In October 2012, following the public comment period on the Draft EIS, SFVAMC met with representatives from the National Park Service's GGNRA and requested any further information available about the historical significance and integrity of the Fort Miley Historic District. GGNRA personnel subsequently provided SFVAMC with a copy of GGNRA's July 2013 *Cultural Landscape Report for Fort Miley and the Marine Exchange Lookout* (GGNRA, 2013).

To conclude the Section 106 process for the LRDP, SFVAMC negotiated a programmatic agreement with consulting parties. In December 2013 and March 2014, SFVAMC held meetings with the consulting parties to solicit feedback on a draft agreement. The *Programmatic Agreement Among the U.S. Department of Veterans Affairs, Veterans Health Administration, San Francisco Veterans Affairs Medical Center, the Advisory Council on Historic Preservation, and the California State Historic Preservation Officer Regarding the Long Range Development Plan for the San Francisco Veterans Affairs Medical Center* (PA) was executed on January 9, 2015, with SFVAMC, the Advisory Council on Historic Preservation (ACHP), and SHPO as signatories (VA, 2015).

Cultural and Historical Contexts

Prehistoric[4] Cultural Context

Regional

The Middle Archaic Period (5000– 2500 years Before Present [B.P.]) in the San Francisco Bay Area was characterized by more diversified economies than previous periods. Site-specific and intensive resource procurement, possible increased reliance on acorn harvesting and processing, and population growth help define this time. During the Upper Archaic Period (2500–1300 B.P.), permanent villages began to develop (particularly near principal waterways), and social status distinctions were more pronounced. Formalized and sustained trade between recognized groups also developed during this period. In the Emergent Period (1300–200 B.P.), populations increased as a result of intensive localized resource procurement and territorial boundaries became better established. Social status was often based on individual wealth, and exchange systems between individuals and groups were more complex (Fredrickson, 1974; Moratto, 1984).

SFVAMC Fort Miley Campus

No archaeological sites have been identified within the SFVAMC Fort Miley Campus.

Mission Bay Area

The preceding description of the regional archaeological setting also applies to the Mission Bay area.

Ethnographic[5] Context

Regional

At the time of European contact, the San Francisco Bay Area was home to as many as eight cultural groups and subgroups combined into the larger Costanoan (Ohlone) cultural unit. These included the Chochenyo, Ramaytush, Karkin, Tamyen, Awaswas, Coast Miwok, Bay Miwok, and Patwin. They occupied a variety of terrain, such as shorelines, salt marshes, hills, and valleys, and despite speaking different languages, they practiced a similar subsistence strategy focused primarily on seasonal resource exploitation and acorn usage (Bennyhoff, 1977; Arnold and Walsh, 2010). Populations are estimated to have exceeded 10,000, with the number of individuals residing in the San Francisco Bay area as high as 1,200. However, the combined effects of missionization and European-borne diseases nearly decimated the population and traditional practices of these groups (Bennyhoff, 1977).

SFVAMC Fort Miley Campus

Ethnographic and archaeological research indicates that the SFVAMC Fort Miley Campus falls within the traditional boundaries of the Ramaytush Costanoan, whose surrounding area was characterized by a variety of environments on which they could depend for resources. These included sandy slopes, salt marshes, the ocean,

[4] Of, relating to, or denoting the period before written records.
[5] The systematic study of people and cultures.

and small areas of forest habitat (Presidio Trust, 2002). The primary social organization of this group was centered around the patrilineal[6] family unit, with a focus on patrilocality[7] and tribelets[8] typically consisting of 200 to 250 people defined by territorial holdings, with intercommunity trade common (Bennyhoff, 1977).

Mission Bay Area

The preceding description of the regional ethnographic setting also applies to the Mission Bay area.

Historical Context

Regional

The earliest documented Euro-American arrived in 1776 in what is now San Francisco when a Spanish exploring party led by Fernando Rivera Moncado visited the area. A subsequent party led by Juan Bautista de Anza located sites for a presidio (military base) and the Mission Dolores. By 1836, the small settlement of Yerba Buena sprang up between the Presidio of San Francisco and the Mission Dolores. In 1847, Yerba Buena became known as San Francisco, and its primary function served as a shipping and transportation hub.

The Gold Rush of 1849 transformed the small shipping community into a booming city virtually overnight. Within 1 year San Francisco's population exploded from 500 to 25,000. The population steadily increased from less than 150,000 in 1870 to 342,000 by 1900. A few years later, despite a devastating earthquake and fire, San Francisco boasted a population of 350,000 and served as a major port and financial center on the West Coast, a position it enjoys well into the 21st century (Kyle et al., 1990).

In 1850, after California's entry into the United States, President Millard Fillmore reserved the land composing Fort Miley for its strategic value overlooking the entrance of the San Francisco Bay. It remained relatively unused until the 1860s, when the City purchased 200 acres (including the site of the future Fort Miley) for the municipal Golden Gate Cemetery (also known as the City Cemetery Reservation). The original City Cemetery Reservation included portions of Fort Miley, Lincoln Park, and the Campus, and was predominantly used as a paupers' cemetery. Records indicate that human remains were removed from the site in 1908, but there is some disagreement in the historical record, and the discovery of a 19th-century burial during the 1993 renovation and expansion at the Legion of Honor suggests that not all remains were removed.

As the prominence of San Francisco grew, so did the need to defend it and the surrounding region. In 1893, the U.S. Army appropriated 54 acres of the Golden Gate Cemetery land from the City to construct a military reservation and coastal artillery batteries. In 1900, the reservation was named Fort Miley after Lieutenant Colonel John D. Miley, one of the planners of San Francisco's coastal battery network. The Fort Miley post was developed between 1902 and 1906 and included a horseshoe-shaped Parade Ground and several frame barracks and quarters in the center of the reservation (the current site of the SFVAMC Fort Miley Campus) between the east and west batteries. During World War I, the Fort Miley batteries quickly became outdated with the advent of aerial bombardment. Fort Miley was deactivated in 1945, as modern technologies such as radar, Air Corps, and

[6] Descending through the male line of the family.
[7] A family unit residing with or near the husband's family.
[8] Within a larger tribe, each tribelet was an independent and sovereign nation having a defined and bounded territory, exercising control over the natural resources contained therein.

eventually guided missile defense systems replaced the 19th-century technologies of artillery-equipped defensive fortifications. A 2.4-acre portion of West Fort Miley became part of GGNRA in 1972, with the remainder of West and East Fort Miley added to GGNRA within a few years (GGNRA, 2013).

SFVAMC Fort Miley Campus

The SFVAMC Fort Miley Campus was originally part of U.S. Army Fort Miley. In 1932, the Veterans Administration[9] acquired 29 acres of Fort Miley and began construction of the medical center. The hospital, dedicated in November 1934, initially consisted of 21 buildings located primarily in the northern and eastern parts of the Campus. The original Campus was designed by VA architects in an Art Deco style with Mayan-inspired ornamentation and was built by the Herbert M. Baruch Corporation. By 1942, 11 additional buildings were added to the Campus. Few changes occurred at the site until the 1960s, when VA undertook efforts to modernize the SFVAMC by adding several new buildings and parking lots and modifying and renovating existing facilities. Construction projects occurred at the Campus sporadically over the next few decades (VA, 2013 and 2011b).

Mission Bay Area

The Mission Bay area was originally an open bay and marshy area. Starting in the late 19th century, the area was filled in to allow for development as an industrial tract. Southern Pacific Railroad used the site for several decades and constructed several tracks and spurs in the immediate area. It remained industrial until into the late 20th century, when it was redeveloped to include more dense mixed-use buildings, consisting of high-end residences, retail establishments, offices, studios, and research facilities. Currently, this area is being developed with a 43-acre UCSF Research Campus and a 14.5-acre UCSF Medical Center (Gebhard et al., 1973; UCSF, 2008).

Cultural Resources Identified in the Project Area

The cultural resources identified in the project area are the SFVAMC Historic District (NRID 05001112) and the Fort Miley Military Reservation Historic District (NRID 80000371/CA-SFR-98H). These and other nearby cultural resources are described below. No cultural resources were identified in the Mission Bay area.

Archaeological Resources, Data, and Historical Objects, Sites, or Artifacts

Archaeological resources may include sites, artifacts, features, or other indications of past human activities. Historical objects or artifacts are portable and semiportable objects that may have historical, archaeological, or cultural value, including but not limited to portable archaeological artifacts.

SFVAMC Fort Miley Campus

A record search conducted through the Northwest Information Center of the California Historical Resources Information System concluded that no Native American archaeological sites have been documented within the SFVAMC Fort Miley Campus (NWIC, 2011). Recent investigations on the SFVAMC Fort Miley Campus not included in the NWIC records consist of work conducted for the Mental Health Patient Parking Addition (also

[9] The Veterans Administration was created in 1930 by Executive Order 5398 signed by President Herbert Hoover. Legislation passed in 1988 elevated VA to Cabinet status, and on March 15, 1989, the Department of Veterans Affairs became the 14th department in the President's Cabinet. (VA, 2009.)

known as Building 212) (VA, 2010a) and the North Slope Seismic/Geologic Stabilization Project (VA, 2010b). These investigations found no archaeological resources.

No archaeological field survey was conducted for the LRDP because most of the SFVAMC Fort Miley Campus is previously developed with paving or covered in structures, open areas are landscaped, and the recent studies indicated a low likelihood of the presence of subsurface archaeological remains. The geotechnical report conducted by Treadwell & Rollo (2010) indicated that most of the Campus has a layer of fill material 1–6 feet deep overlying bedrock, although there are still areas of natural soil overlying bedrock. A search of the U.S. Department of Agriculture's Web soil survey (USDA, 2012) also indicates that most of the Campus surface (approximately 70 percent) has been developed (Appendix C).

Five archaeological sites have been identified within 0.5 mile of the SFVAMC Fort Miley Campus. The Campus is located on a ridge above San Francisco Bay, and the shoreline below appears to have been the focus of intensive prehistoric activity. Two prehistoric archaeological sites (CA-SFR-5 and CA-SFR-20) and one multicomponent site (CA-SFR-21) have been recorded on the present-day shoreline. In addition, two historic archaeological resources (CA-SFR-164H and CA-SFR-174H) have been reported.

- *CA-SFR-5:* The site (Nelson 397) was originally documented in 1949 at the site of the Sutro Baths. A surface survey found that this site contained a prehistoric lithic scatter, shell midden, and habitation debris. An unspecified amount of bone was also suggested. No subsurface excavation was performed, and little information is available about the site's size, constituents, or integrity. The site record was subsequently updated in 1967 and 1975 to provide additional data regarding location and condition. This resource is located west of the SFVAMC Fort Miley Campus.

- *CA-SFR-20:* Identified during a surface survey, the site (Nelson 396) is a prehistoric site originally mapped by Nels Nelson in 1908. Although few additional data are available regarding the site's type, a subsequent (1979) record from the Cabrillo College Archaeological Site Survey indicates that it was likely a shell midden. This resource is located northwest of the SFVAMC Fort Miley Campus boundaries.

- *CA-SFR-21:* The site (Sutro Baths), first recorded in 1901 (and updated in 2008) during a surface survey, was described as a multicomponent site with prehistoric attributes including a lithic scatter, evidence of hearths or fire pits, and habitation debris. It has been suggested that a large concentration of shell was almost completely removed as part of the Sutro Baths' construction. Historic attributes identified include structural foundations, landscaping features, historic trash/debris, machinery, and some walls/fences. This resource is located west of the SFVAMC Fort Miley Campus.

- *CA-SFR-164H:* Recorded in 2006, the site (Land's End Ocean Terrace) is described as a historic-period resource. Surface survey and excavation resulted in the identification of structural foundations and trash/debris scatters. This resource is located southwest of the SFVAMC Fort Miley Campus.

- *CA-SFR-174H:* Recorded in 2010, the site (Merrie Way/Sutro's Pleasure Grounds) is described as a historic-period resource. Surface survey and excavation resulted in the identification of historic trash/debris scatters, a water conveyance system, and enclosures (such as walls and fences). This resource is located southwest of the SFVAMC Fort Miley Campus.

Although no archaeological resources have been identified on-site, the SFVAMC Fort Miley Campus is sensitive for the presence of archaeological resources because a portion of Fort Miley once stood on the present-day Campus. It is also sensitive for the presence of human remains because the City Cemetery Reservation covered the site. The burials were removed in 1908, but human remains were discovered in 1921 and 1993 during construction activities at the Legion of Honor, indicating that perhaps not all remains were removed.

Mission Bay Area

An environmental impact report (EIR) prepared for the UCSF Hospital Replacement Program in Mission Bay assessed the potential for archaeological resources to be present in that UCSF project area, and the EIR provides insight into the archaeological sensitivity of the nearby site of the potential new Campus (UCSF, 2005). The EIR identified no archaeological sites in the program's project area. The EIR further noted that the area had been highly disturbed from previous development and that large amounts of fill had been imported; the EIR concluded that it was highly unlikely that archaeological resources were located within the program's project area (UCSF, 2005). Therefore, an NWIC record search was not conducted, nor were local inventories reviewed or archaeological surveys of the Mission Bay area conducted.

Historic Properties

A historic property is any district, site, building, structure, or object included in or eligible for the NRHP. Historical documents are documents preserved in any medium (e.g., paper, film, and electronic media) that may be of historical, archaeological, or cultural value, or that must be maintained by VA in accordance with the requirements of the Federal Records Act (VA 2011a:7-8).

SFVAMC Fort Miley Campus

The *National Historic Preservation Act Baseline Documentation* for the SFVAMC Fort Miley Campus (VA, 2011b) and the PA (VA, 2015) identified two historic properties: the SFVAMC Historic District on Campus and the Fort Miley Military Reservation Historic District to the east and west of the Campus.

Fort Miley Military Reservation Historic District

The Fort Miley Military Reservation Historic District surrounds the SFVAMC Fort Miley Campus on the east and west and was listed in the NRHP in 1980, under Criterion A, for its significance at the national level as part of the military defense system of San Francisco. The period of significance is 1892–1950. Extant structures and buildings within the district include battery emplacements, fire control stations, searchlight facilities, and an ordnance storehouse (Thompson, 1979).

GGNRA's recent cultural landscape report seeks to consolidate information about the Fort Miley Military Reservation Historic District, including site history, existing conditions, and further analysis of significance and integrity, and concludes with recommendations for future treatment. According to this study (GGNRA, 2013):

> East Fort Miley has always been considered a back space for GGNRA and has been utilized for operations by several park divisions. In addition, it has supported a variety of uses, most importantly serving as an informal connection between the SFVAMC, the Legion of Honor, and the surrounding

> neighborhood. With its views of the Golden Gate, grassy picnic area, and accessible concrete batteries, West Fort Miley has been more suited to recreation and the interpretation of cultural resources.

Changes over time have modified the military landscape, but the remaining buildings, structures, circulation patterns, and topography continue to convey the significant history of this defensive military location. As further stated by the study (GGNRA, 2013):

> In many ways, Fort Miley has remained essentially unchanged since becoming a part of GGNRA. In terms of landscape, significant alterations occurred with the removal of World War II–era post buildings and ground structures [at East Fort Miley] and the rehabilitation of much of East Fort Miley by the Roads & Trails Division. Beyond that, the remaining historic structures still stand much as they did in 1972, affected only by the decaying influence of weather, occasional graffiti, and vegetation that has been allowed to grow unchecked in certain areas.

SFVAMC Historic District

The northern and eastern sections of the SFVAMC Fort Miley Campus compose a historic district listed in the NRHP in April 2009 under Criteria A and C (Bright and Bamburg, 2008). The SFVAMC Historic District has a period of significance from 1934 to 1941; it contains 14 contributing buildings and structures (1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 18, 20, and a flagpole and base) and nine noncontributing buildings or structures (14, 25, 26, 31, 32, 33, 202, 210, and 212) on 12 acres of the overall 29-acre Campus. The facility is significant as an early example of federal construction using seismic-resistance technologies, for its Mayan Art Deco ornamentation, and as an early standardized VA hospital.

The NRHP nomination for the SFVAMC Historic District is not explicit about which physical or intangible qualities of the Historic District compose its character-defining features. Extrapolating from the statement of significance, however, the following are the three character-defining features of the SFVAMC Historic District:

- The SFVAMC Historic District's ongoing operations as a VA medical facility would be a key character-defining feature that conveys its significance as an early VA hospital.

- The structural system of each of the major contributing buildings constructed during the 1934 building campaign would be a seldom-seen but critically important quality that allows the Historic District to represent an early example of (early-20th-century) seismically resistant building technologies.

- The architectural qualities that convey the SFVAMC Historic District's significance as an example of Mayan Art Deco design include the "play between horizontal and vertical [that] is balanced with bold, horizontal podiums and thick concrete walls playing off delicate terra cotta ornament and strong vertical lines" (Bright and Bamburg, 2008:Section 7, Page 1). Dramatic massing and proportions, centrally located entrances that are embellished with terra cotta design motifs, towers with stepped parapets projecting above rooflines, and molded and inscribed terra cotta ornamentation that is inspired by historic Mayan designs are all mentioned in the nomination's description of the architectural significance of the SFVAMC Historic District.

The nomination also recognizes the following (Bright and Bamburg, 2008):

- Several major building campaigns since 1934 have dramatically altered the semi-pastoral character of the SFVAMC Fort Miley Campus by adding more than a dozen buildings whose design and locations do not support the design plan of the original Campus. The large size of many of these new buildings, combined with their awkward siting and incompatible materials and design, have harmed the overall integrity of the original Campus. In addition, many of the original 1934 buildings have been unsympathetically altered, particularly those that have received large additions.

- Some historic landscaping features had been removed by the time that the SFVAMC Historic District was listed, including the large garden and horseshoe-shaped driveway for patient drop-off located south of Building 2, which had served as the primary landscaped feature on the SFVAMC Fort Miley Campus (see Exhibits 7 A–D, "Historic Development," of the 2009 NRHP Nomination for the SFVAMC Historic District [Bright and Bamburg, 2008]). A secondary landscaped area to the east of Building 1 was replaced by surface parking in 1964, and all that remains is the memorial flagpole structure. The triangular patch of lawn fronting Clement Street between 42nd and 43rd Avenues and the strips of lawn buffering Buildings 2, 3, 5, 7, 8, 9, 10, 11, and 18 (all of which are contributors to the SFVAMC Historic District) are all that remain from a once extensively landscaped Campus.

There are also several sections of the current SFVAMC Fort Miley Campus that, while not landscaped, feature stands of trees and scrub. These areas are largely confined to the edges of the Campus, on steep slopes or other nonbuildable sections. After the SFVAMC hospital dedication in 1934, all sections of the Campus that were not developed or formally landscaped—including much of the western part of the Campus, the northern slope, and a patch near the water tower—were allowed to grow wild. Although this semi-wild vegetation was not formally planted and does not contribute to the understanding of the historic uses of Fort Miley or SFVAMC, it forms a green buffer between the institution, the Outer Richmond District neighborhood, GGNRA, and the Fort Miley Historic District.

Two areas within the SFVAMC Historic District retain a high degree of integrity: the eastern portion of the SFVAMC Fort Miley Campus, including Buildings 1, 8, 9, 10, and 11, and the northern portion of the Campus, including Buildings 2 (north-facing elevations), 3, 4, 6, and 18. To date, these two areas have undergone the fewest permanent alterations and retain a sufficient level of integrity of character and design to the Historic District's period of significance.

Select contributors to the SFVAMC Historic District are described below. This discussion of contributors is limited to Buildings 1, 5, 6, 7, 8, 9, 10, 18, and 20, because they would be physically altered by the EIS Alternatives and changes to these buildings could affect the Historic District as a whole. For additional information about each contributor and the SFVAMC Historic District, see the 2009 NRHP Nomination for the SFVAMC Historic District (Bright and Bamburg, 2008).

- *Building 1* was constructed in 1934. The prominent building has an E-shaped plan with a central bar and two wings intersecting at right angles. The central pavilion rises to four stories, with the wings dropping to three stories and further to two stories. It also features granite stairs, a tower, and a central bay that is the focal point of the façade. Building 1 displays a high level of architectural detailing including an elaborate entrance,

ornate terra cotta ornament, and concrete grills. The concrete exterior is finished with smooth stucco. The building has undergone several interior alterations, but the east-facing exterior retains a high level of integrity, having undergone few changes. The west side has linkage to the newer Building 200. The original metal casements have been replaced with anodized aluminum windows and the original Art Deco doors replaced with steel doors. The building's visual prominence and architecture lend it significance.

- *Building 5* is located between Buildings 2 and 7 and was constructed in 1934. The building features a restrained front façade that is six bays wide and features few architectural embellishments. The building's concrete exterior is finished in stucco. Building 5 has undergone several major alterations, including the filling in of the window indentations, closure of some window openings, the replacement of remaining windows, and the addition of external stairs. The interior has been heavily modified. The building retains a good level of integrity.

- *Building 6* is a three-story building located between Buildings 4 and 14 and is attached to Building 4 by a skybridge. Constructed in 1934, Building 6 is composed of reinforced concrete with a T-shaped plan. The building has an asymmetrically massed façade with a four-story tower placed east of the central axis. The exterior features a highly embellished entry pavilion flanked by elaborate terra cotta ornament, sculpted terra cotta spandrel panels, and incised vertical speed lines. The concrete exterior is finished in a thin layer of stucco. Significant exterior changes to Building 6 include the 1980s construction of an enclosed external stairwell on the northeast wall, the replacement of the original metal casements with anodized aluminum windows, and the replacement of the original Art Deco doors with steel doors. The interior has also undergone substantial alterations. The exterior otherwise has a high level of integrity.

- *Building 7* was constructed in 1934. It is a three-story reinforced-concrete building with basically a rectangular plan and a flat roof. The façade is seven bays wide with projecting corner pavilions. The pavilion on the west side of the building rises a full floor level. Mayan-inspired terra cotta designs decorate the spandrels at midpoint in the lower vertical window bays and in a band just below the cornice. The concrete exterior is finished in a thin layer of stucco. The exterior has undergone a series of alterations that have resulted in the removal of much of the building's original ornate detailing, especially on the north elevation where a "greenhouse" style canteen addition was constructed with glass sections within a metal frame. Another important alteration was the replacement of the original windows with new sash and the filling in of the lower sections of each window bay. The original Art Deco doors have been replaced. The interior theater was subsequently removed and a modern mezzanine constructed in its place. Building 7 has undergone many alterations that compromise its overall level of individual integrity.

- *Building 8* is a three-story-over-basement, reinforced-concrete building with a flat roof. It was constructed in 1934. The front elevation features a prominent entrance with a suspended metal canopy and terra cotta surrounds. Additional features include stepped pilasters and recessed window bays with terra cotta spandrel panels. The interior has been altered; however, the exterior of the building is relatively unchanged. Alterations include the replacement of original aluminum casement windows with aluminum-framed units, replacement of the original Art Deco door, the widening of exterior stairs, and addition of wheelchair access. Two rooms have also been added on the north and south ends above the first floor. The building's visual prominence, architectural quality, and exterior integrity are significant to the building.

- *Building 9* is adjacent to Building 8 and identical to Building 10 to the north and, like Building 8, was constructed in 1934. It is a two-story-over-basement reinforced-concrete building with an irregularly shaped plan, with side façades that step back to a smaller rear façade and a stepped parapet roof. Although not as heavily detailed as others within the SFVAMC Historic District, the façade of Building 9 is elaborated to a relatively high degree with a sculpted terra cotta frieze, pylon-shaped door hoods, and other Mayan-inspired ornament. Overall, the exterior has undergone few changes. Modifications include the replacement of the original casements with double-hung wood windows. The former open bay patio was closed in and converted into rooms. Building 9 retains a high degree of integrity.

- *Building 10,* like Building 9, is part of a cluster of buildings that were originally built in 1934. It is a two-story-over-basement reinforced-concrete building with an irregularly shaped plan and a stepped parapet roof. The façade of Building 10 is architecturally significant with its sculpted terra cotta frieze, pylon-shaped door hoods, and Mayan-inspired ornament. The exterior has undergone few changes aside from the replacement of the original metal casements with double-hung wood windows and the addition of awnings at the entrances. The open bay patios were also closed in and converted into rooms. Building 10 also retains a high degree of integrity and is a contributor to the Historic District.

- *Building 18* was constructed in 1897 and remodeled in 1934 to complement the rest of the then-new SFVAMC Fort Miley Campus. It is a two-story-over-basement wood-frame building with a U-shaped plan and a flat roof. The façade faces the former Fort Miley Circle (now Veterans Drive) and a central pavilion projects forward beyond the rest of the stucco-finished façade. The twin main entrances to the building flank this pavilion on either side. Building 18 has been incrementally remodeled, resulting in the replacement of many of the double-hung wood windows with aluminum casements. Nevertheless, the building retains a moderate level of architectural integrity from the substantial 1934 remodeling.

- Building 20 is east of Building 8 and was constructed in 1934 as a garage. The building is a one-story, wood-frame rectangular structure with a shallow pitched roof. The building is designed with Craftsman elements, with its most notable feature being its regularly spaced exposed wood rafters with decorative cut ends. The vehicular openings are fronted by contemporary garage doors. The interior walls are composed of hollow clay tile. The building has eight original garage bays, and three were added at some point during the 1950s or 1960s. Alterations to Building 20 include the replacement of the garage doors and the construction of an addition on the southwest corner of the building. Overall, the building retains a good level of integrity.

Mission Bay Area

The Mission Bay area is populated with modern development dating to the late 20th century, with pockets of historical development dating to the area's maritime industrial history. Building types include multifamily flats, commercial buildings, and industrial complexes. Common uses in the area, in addition to residential dwellings, are light industrial, commercial, and warehouse. The area features various architectural styles including contemporary residential, brick commercial, and converted warehouses, some of which are listed in the NRHP (Gebhard et al., 1973; UCSF, 2008).

Native American Ancestral Remains and Cultural Items

Ancestral remains are physical remains such as bones of deceased human beings, including those that must be given special consideration under NAGPRA (described further in Section 3.4.2, "Regulatory Framework"). Cultural items, as defined at Section 2(3) of NAGPRA with regard to Native Americans, include ancestral human remains, associated and unassociated funerary objects, sacred objects, and objects of cultural patrimony. Communities that are not of Native American ancestry may also have cultural items, and concerns regarding such items should be respected, even if they do not specifically meet NAGPRA criteria (VA, 2011c).

SFVAMC Fort Miley Campus

NAHC search results indicate that no known traditional, religious, or cultural resources are present on the SFVAMC Fort Miley Campus or in the immediate vicinity. No previous projects have resulted in the identification of Native American ancestral remains or cultural items at the SFVAMC Fort Miley Campus. Likewise, no information was provided by tribal representatives regarding cultural associations.

Mission Bay Area

NAHC search results indicate that no known traditional, religious, or cultural resources are present in the Mission Bay area or the immediate vicinity. No previous projects have resulted in the identification of Native American ancestral remains or cultural items in Mission Bay. Likewise, no information was provided by tribal representatives regarding cultural associations.

Religious Places and Practices

A religious place is a location where a group of people practice their beliefs. A religious practice is any activity carried out by a group of people expressing its religious beliefs. Impacts on such practices must be considered under the Religious Freedom Restoration Act and sometimes American Indian Religious Freedom Act (AIRFA) (VA, 2011c).

SFVAMC Fort Miley Campus

No information or concerns about religious places and/or practices were identified through the NEPA public involvement process, and neither the NWIC nor NAHC research has resulted in the identification of such properties.

Mission Bay Area

No information or concerns about religious places and/or practices were identified through the NEPA public involvement process, and neither the NWIC nor NAHC research has resulted in the identification of such properties.

Community Identity

Community identity is a human community's sense of itself, typically expressed in and reinforced by social institutions, beliefs, forms of expression, arts, crafts, means of subsistence, and patterns of interaction

(VA, 2011c). To use this definition of a type of cultural resource when determining the NEPA impacts of a proposed project, it is necessary to first identify whether such defined communities exist, and then to associate physical places, remains, structures, or objects with the community's expression of itself and determine whether such places are historically significant.

SFVAMC Fort Miley Campus

Veterans are a distinct community associated with the SFVAMC Historic District. Because the Campus would be enhanced to continue to serve Veterans, the impact would be beneficial.

Mission Bay Area

There is no indication of traditional, cultural, or historic communities in the Mission Bay project area.

3.4.2 Regulatory Framework

National Historic Preservation Act of 1966

The NHPA established the ACHP; authorized the Secretary of the Interior to maintain an NRHP; directed the Secretary to approve State historic preservation programs that provided for a SHPO; and established the requirement for federal use of historic properties.

Section 106 of the NHPA requires that federal agencies take into account the effects of their actions (undertakings) on properties that may be eligible for or listed on the NRHP, and afford the ACHP a reasonable opportunity to comment. The SFVAMC LRDP is an undertaking that is subject to Section 106.

VA initiated consultation under Section 106 with the California SHPO in March 2012 and invited parties with a demonstrated interest in historic preservation to consult in July 2012. SFVAMC prepared a finding of effect that was circulated for comments by the consulting parties and, as an appendix to the Draft EIS, by the public from August 12 through October 31, 2012. The finding of effect was revised based on comments received and was submitted to the SHPO, and the SHPO concurred with SFVAMC's findings of adverse effect in July 2013 (Appendix C).

National Register of Historic Places Evaluation Criteria

The NRHP is a register of districts, sites, buildings, structures, and objects of significance in American history, architecture, archaeology, engineering, and culture. The NRHP is maintained by the Secretary of the Interior. A property may be listed in the NRHP if it meets criteria for evaluation defined in 36 CFR 60.4:

> The quality of significance in American history, architecture, archeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association and:
>
> (A) That are associated with events that have made a significant contribution to the broad patterns of our history; or

(B) That are associated with the lives of persons significant in our past; or

(C) That embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or

(D) That have yielded, or may be likely to yield, information important in prehistory or history.

One of the types of cultural resources considered under NEPA is historic properties, which are further defined by VA Handbook 7545 as those resources that are eligible for or listed in the NRHP. Thus, the affected environment presented below includes those properties eligible for or listed in the NRHP.

Archaeological Resources Protection Act

The Archaeological Resources Protection Act (ARPA) amended the Antiquities Act of 1906 (16 U.S. Code 431–433) and set a broad policy that archaeological resources are important to the nation and should be protected, and required special permits before the excavation or removal of archaeological resources from public or Indian lands. The purpose of ARPA was to secure, for the present and future benefit of the American people, the protection of archaeological resources and sites that are on public lands and Indian lands, and to foster increased cooperation and exchange of information between governmental authorities, the professional archaeological community, and private individuals having collections of archaeological resources and data that were obtained before October 31, 1979.

Compliance with ARPA is required for the EIS Alternatives because the project site is located on public (federal) land. However, no actions are needed to comply with ARPA unless excavation of archaeological resources becomes necessary; no archaeological resources were identified for any EIS Alternative.

American Indian Religious Freedom Act

AIRFA established federal policy to protect and preserve the inherent rights of freedom for Native groups to believe, express, and exercise their traditional religions. These rights include but are not limited to access to sites, use and possession of sacred objects, and freedom to worship through ceremonials and traditional rites. AIRFA would be applicable to the EIS Alternatives if actions were to result in limits to the expression of Native American beliefs or restrict access to sites important to religious practice.

Native American Graves Protection and Repatriation Act

NAGPRA requires federal agencies and certain recipients of federal funds to document Native American human remains and cultural items within their collections, notify Native groups of their holdings, and provide an opportunity for repatriation of these materials. This law also requires planning for dealing with potential future collections of Native American human remains and associated funerary objects, sacred objects, and objects of cultural patrimony. NAGPRA is applicable to the EIS Alternatives because the project site is located on federal land. No actions are needed to comply with NAGPRA unless human remains of Native American origin are discovered on federal land.

VA Directive 7545, Cultural Resources Management, and VA Handbook 7545, Cultural Resource Management Procedures

In December 2011 VA issued Directive 7545 to establish direction for VA medical centers, cemeteries, regional offices, and staff offices to comply with historic preservation laws, regulations, and guidelines. The corollary Handbook 7545 provides procedures for complying with legal requirements for historic preservation and other aspects of cultural resource management in the conduct of VA projects and programs. It provides guidance in implementing the policies contained in VA Directive 7545.

VA Directive 7545 requires that direct, indirect, and cumulative impacts on cultural resources of all kinds be addressed when considering the environmental impacts of VA activities under NEPA. Consultation with federally recognized Indian tribal governments about cultural resource–related matters is guided by VA Directives 7545 and 8603. The consideration of impacts on cultural resources under NEPA, as presented in this EIS section, follows the policies and guidance established in VA Directive and Handbook 7545.

3.4.3 Environmental Consequences

Significance Criteria

A NEPA evaluation must consider the context and intensity of the environmental effects that would be caused by, or result from, the EIS Alternatives.

An Alternative analyzed in this EIS is considered to result in an adverse impact related to cultural resources if it would:

- damage or destroy an archaeological resource or site;
- disturb any human remains, including those interred outside of formal cemeteries;
- cause a substantial change to character-defining features of a historic property; or
- cause substantial change to a community's identity.

Assessment Methods

Cultural Resources

Of the types of cultural resources defined in VA Handbook 7545, those identified in the project area are historic properties (specifically, two historic districts), community identity, and the potential for archaeological resources and data or human remains. The assessment of NEPA impacts on cultural resources therefore focuses on the potential impacts on those resources.

Direct impacts on the SFVAMC and Fort Miley Historic Districts could occur if district components were physically altered in a way that would diminish their overall integrity. Indirect impacts could occur if visual and/or atmospheric intrusions outside the boundaries of the SFVAMC and Fort Miley Historic Districts would be introduced that would diminish the resources' ability to convey their significance. Direct impacts on archaeological data and human remains physically damage or destroy those resources.

To assess the potential cultural resources impacts associated with LRDP implementation, it was determined whether historic properties located in the project area would be subjected to any of the following:

- physical destruction of or damage to all or part of the property;
- alteration of the property, including restoration, rehabilitation, repair, maintenance, stabilization, hazardous material remediation, and provision of handicapped access, that is not consistent with the *Secretary of the Interior's Standards for the Treatment of Historic Properties* (36 CFR 68) and applicable guidelines;
- removal of the property from its historic location;
- change in the character of the property's use or of physical features within the property's setting that contribute to its historic significance;
- introduction of visual, atmospheric, or audible elements[10] that diminish the integrity of the property's significant historic features;
- neglect of the property that causes its deterioration, except where such neglect and deterioration are recognized qualities of a property of religious and cultural significance to an Indian tribe or Native Hawaiian organization; and
- transfer, lease, or sale of the property out of federal ownership or control without adequate and legally enforceable restrictions or conditions to ensure long-term preservation of the property's historic significance.

Alternative 1: SFVAMC Fort Miley Campus Buildout Alternative

Short-Term Projects

Construction

Archaeological Resources

Alternative 1 short-term projects would have no direct or indirect impact on presently documented archaeological resources and human remains.

No archaeological resources have been documented within the SFVAMC Fort Miley Campus, and project-related impacts on previously unrecorded archaeological resources are not anticipated. Nonetheless, although it is remote, the potential remains for unrecorded resources to be present beneath the layers of fill on the Campus, thereby elevating the potential to encounter such resources during ground-disturbance activities extending beyond the fill layer. Construction activities at the Campus for Alternative 1 short-term projects could have a direct adverse impact on presently undocumented significant archaeological resources or human remains, if such resources are present.

[10] Visual, atmospheric, and audible elements are those elements that are nonphysical and relate to the setting, feeling, and historical association of a property.

Mitigation Measure CR-1: Implement Stipulation V of the PA, "Inadvertent Discoveries"

If archaeological deposits are discovered during implementation of the LRDP, all ground disturbance will immediately stop within 50 feet (15 meters) of the discovery, and the location of the discovery will be marked for avoidance. A qualified archaeologist will recommend to SFVAMC whether the discovery is NRHP eligible by evaluating it in accordance with 36 CFR 60.4. SFVAMC will submit its finding to the SHPO for review and concurrence via e-mail. If SFVAMC finds that the archaeological resource is not eligible for the NRHP, and if the SHPO concurs or does not comment within 7 days, construction may proceed at the discretion of SFVAMC. If SFVAMC finds that the archaeological resource is eligible for the NRHP, and if the SHPO concurs or does not comment within 7 days, SFVAMC will seek to avoid the historic property. If it cannot avoid the resource, SFVAMC will prepare and implement a data recovery plan. The SHPO will be afforded the opportunity to review reports describing the evaluation, finding of effect, and proposed treatment of inadvertent discoveries. However, these reports will not be posted to the LRDP Web site because of the protected and sensitive nature of archaeological information.

Implementation of Mitigation Measure CR-1 would reduce potentially adverse impacts resulting from inadvertent damage or destruction of presently undocumented significant archaeological resources and human remains during construction of Alternative 1 short-term projects to a minor level.

Historic Properties

Alternative 1 short-term projects would involve construction of new structures, demolition of structures, and/or retrofitting of buildings on the SFVAMC Fort Miley Campus (Table 2-1 and Figure 2-1). The Campus site includes the SFVAMC Historic District and is adjacent to the Fort Miley Historic District.

LRDP construction would be limited to the SFVAMC Fort Miley Campus, and thus, there would be no direct impacts on the Fort Miley Historic District. Construction would introduce visual and/or atmospheric changes to the Fort Miley Historic District; however, these changes would be obscured from view by existing trees and steep terrain that diminish the views from the Fort Miley Historic District in the GGNRA toward the SFVAMC Fort Miley Campus. The Fort Miley Historic District would retain its integrity of location, design, feeling, and setting and would continue to convey its significance. Therefore, there would be no direct or indirect adverse impacts on the Fort Miley Historic District from the future buildout of the SFVAMC LRDP under Alternative 1 short-term projects.

LRDP construction at the Fort Miley Campus under Alternative 1 short-term projects would result in a direct adverse impact on the SFVAMC Historic District, because of demolition of a contributor (Building 18) and the incremental impairment of the integrity of materials, design, feeling, and setting of the Historic District that would result from buildout of all projects. Although a single project component may not result in an adverse effect on the SFVAMC Historic District on its own, the future setting of the Historic District would be impaired by the combination of physical changes to individual contributing buildings, introduction of new facilities within the Historic District, and changes to the character of the Historic District, including densification of the Campus. This would result in both direct and indirect adverse impacts on the SFVAMC Historic District under Alternative 1 short-term projects.

Table 3.4-1 lists each short-term project for Alternative 1 and indicates whether that project would have a direct impact, indirect impact, or no impact on the SFVAMC and Fort Miley Historic Districts. Table 3.4-1 indicates whether these projects would directly (physically) affect the districts or their contributing features, or indirectly affect their feeling and setting through the introduction of auditory or visual elements.

Table 3.4-1: Impacts of Alternative 1 Short-Term Projects on the SFVAMC and Fort Miley Historic Districts

Phase	Project	Within SFVAMC District Boundary?	Impact on SFVAMC District?	Impact on Fort Miley District?
Short-Term Projects				
1.1	Bldg 211—Emergency Operations Center and Parking Garage (377 spaces)	No	Indirect	Indirect
1.2	Bldg 41—Research (requires removal of Trailer 17)	No	Indirect	No
1.3	Seismic Retrofit of Bldgs 5 and 7	Yes	Direct	No
1.4	Bldg 22 Hoptel and Seismic Retrofit of Bldgs 9 and 10	Yes	Direct	Indirect
1.5	Bldgs 209 and 211 Parking Garage Extensions (250 spaces)	No	No	Indirect
1.6	Bldg 203 C-Wing Extension (Ground-Floor Patient Welcome Center) and Drop-off Area with Canopy Structure	Partial	Indirect	No
1.7	Bldg 200 Expansion (Operating Room D-Wing)	No	Indirect	No
1.8	Bldg 24 Mental Health Clinic Expansion (requires demolition of Bldg 20)	Yes	Direct	Indirect
1.9	Bldg 40—Research (requires demolition of Bldgs 14, 18, and 21; removal of Trailer 23; and relocation of water tower)	Yes	Direct	No
1.10	Bldg 207 Expansion (IT Support Space)	No	No	No
1.11	Bldg 43—Research/Administration (requires removal of Trailer 31)	Yes	Direct	No
1.12	Trailer 36 (New Modular)	No	No	No
1.13	Bldg 23—Mental Health Research Expansion	Yes	Direct	Indirect
1.14	Bldg 203 Extension—Psychiatric Intensive Care Unit	No	No	No
1.15	Bldg 208 Extension—Community Living Center and National Cardiac Device Surveillance Center (requires removal of Trailer 24)	No	No	No
1.16 under Alternative 1 and 2.1 through 2.3 under Alternative 2	Seismic Retrofit of Bldgs 1, 6, and 8	Yes	Direct	No
1.17	Demolition of Bldg 12	No	No	No

Notes: Bldg = Building; SFVAMC = San Francisco Veterans Affairs Medical Center
Sources: VA, 2012 and 2014

Swing Space (Temporary)

Planned activities would take place on the west end of the SFVAMC Fort Miley Campus inside the boundary of the SFVAMC Historic District**.**

Impacts of Swing Space (Temporary) on the SFVAMC Historic District. The planned addition of modular buildings would detract from the Historic District's design, setting, and feeling. The SFVAMC Historic District would still be able to convey its significance as an early standardized VA hospital, and as an example of a federal building designed with seismically resistant buildings in the Mayan Art Deco style. However, implementation of this component of Alternative 1 short-term projects would result in an indirect and direct impact on the SFVAMC Historic District.

> **Mitigation Measure CR-2: Remove the Temporary Modular Swing Space Following Completion of Short-Term Projects**
>
> *To mitigate impacts on the SFVAMC Historic District, SFVAMC will remove the temporary modular swing space following completion of the short-term project phase or after approximately 35 months.*

Implementation of Mitigation Measure CR-2 would reduce potentially adverse impacts resulting from the construction of modular (temporary) swing space within the SVAMC Historic District during Alternative 1 short-term projects to a minor level.

Impacts of Swing Space (Temporary) on the Fort Miley Historic District. Construction activities for temporary swing space would occur outside the boundaries of the Fort Miley Historic District; therefore, no direct impact would occur.

The Fort Miley Historic District would retain its character of location, design, feeling, and setting and continue to convey its significance. No direct impact on the Fort Miley Historic District would occur.

> **Mitigation Measure CR-3: Implement Stipulations III and IV of the PA to Reduce Impacts on the SFVAMC Historic District. This includes implementation of the following PA Mitigation Measures that are contained within Stipulation IV.**
>
> *SFVAMC will mitigate for the LRDP's adverse effects on historic properties, including the effects of demolition of Buildings 18 and 20, new construction within the SFVAMC Historic District, and the cumulative effects of the LRDP as a whole, by creating the following:*
>
> a. ***Historic District Design Guidelines (HDDG):*** *SFVAMC will prepare design guidelines for the SFVAMC Historic District, interpreting the SOISTHP and applicable guidelines in the context of the significance, integrity, and character-defining features of the SFVAMC Historic District and, as applicable to Category C projects, the Fort Miley Military Reservation Historic District. SFVAMC will ensure that all exterior projects occurring within the SFVAMC Historic District apply the design guidelines beginning with project planning and design development. The HDDG will cover both the architectural and landscape qualities of the SFVAMC Historic District, as well as provide advice for designing projects in the context of the Fort Miley Military Reservation Historic District. The HDDG*

will also consider vegetative screening along the boundaries, and determine whether such screening would improve the historical integrity of the SFVAMC Historic District and/or the Fort Miley Military Reservation Historic District.

i. *SFVAMC will provide a draft of the HDDG to Consulting Parties by September 8, 2014.*

ii. *SFVAMC will post the draft HDDG to its LRDP website and will notify Consulting Parties of this posting and their 30-day comment period.*

iii. *SFVAMC will consider comments received during this period as it finalizes the HDDG.*

iv. *SFVAMC will post the final HDDG to its LRDP website by April 3, 2015, and will notify Consulting Parties of this posting.*

b. ***Historic Landscape Study (HLS):*** *SFVAMC will prepare a Historic Landscape Study for the SFVAMC Historic District to document its landscape qualities, including the original design concept, the historical evolution of landscape characteristics, the significance of the landscape design, and the way in which the current landscape contributes to the eligibility of the SFVAMC Historic District.*

i. *By or about April 30, 2015, SFVAMC will prepare a draft work plan for development of an HLS; specifying the content, methods and standards for preparation process for review by Consulting Parties, timeline for completion, and estimated cost.*

ii. *SFVAMC will post the draft HLS work plan to its LRDP website and will notify Consulting Parties of this posting and their 30-day comment period.*

iii. *SFVAMC will consider comments received during this period as it finalizes the HLS work plan.*

iv. *SFVAMC will post the final HLS work plan to its LRDP website by October 1, 2015, and will notify Consulting Parties of this posting. SFVAMC will prepare the HLS in accordance with the final HLS work plan.*

c. ***Public Interpretation Program (PIP):*** *SFVAMC will design and implement a public interpretation program related to its history. The PIP shall include, but not be limited to, a permanent display in a publicly accessible space at the Medical Center.*

i. *By or about March 1, 2015, SFVAMC will prepare a draft work plan for the PIP defining the objectives of the PIP, specifying the media with which the program will be developed (with consideration of typical media such as displays in publically accessible places, oral history recordation, traveling exhibits, popular publications, and/or websites), and defining themes that will be conveyed by the program. In addition, the PIP work plan will specify the timeline and milestones for implementation of the program and preparation of the individual media and will provide an estimate of associated costs. The PIP work plan will specify how individual interpretive media will be funded and prepared in tandem with LRDP sub-phases that contribute to the adverse effect on historic properties.*

ii. *SFVAMC will post the draft PIP work plan to its LRDP website and will notify Consulting Parties of this posting and their 30-day comment period.*

iii. *SFVAMC will consider comments received during this period as it finalizes the PIP work plan.*

iv. *SFVAMC will post the final PIP work plan to its LRDP website by October 1, 2015, or before demolishing Buildings 18 and 20 – whichever is earlier, and will notify the Consulting Parties of this posting. SFVAMC will implement the PIP in accordance with the final work plan.*

d. ***Historic Preservation Treatment and Maintenance Plan (HPTMP):*** *SFVAMC will prepare a historic preservation treatment and maintenance plan applicable to the resources that contribute to the SFVAMC Historic District. The HPTMP will include procedures for cyclical, routine, and emergency treatment and maintenance activities to ensure that such activities are performed in accordance with federal guidelines and current best practices in the historic preservation industry.*

i. *By or about March 1, 2015, SFVAMC will prepare a draft work plan for the HPTMP to define the objectives, milestones, and timeline for the HPTMP.*

ii. *SFVAMC will post the draft HPTMP work plan to its LRDP website and will notify Consulting Parties of this posting and their 30-day comment period.*

iii. *SFVAMC will consider comments received during this period as it finalizes the HPTMP work plan*

iv. *SFVAMC will post the final HPTMP work plan to its LRDP website by October 1, 2015, and will notify the Consulting Parties of this posting. SFVAMC will prepare and implement the HPTMP in accordance with the final work plan.*

e. *As Mitigation Measures a, b, c, and d are being developed, SFVAMC may continue to consult on individual LRDP sub-phases, in accordance with Stipulation III.*

(Demonstration of adherence to this mitigation measure will occur primarily through design review with the SHPO and consulting parties for each project, per the PA.)

Implementing Mitigation Measure CR-3 would help reduce the severity of impacts of Alternative 1 short-term projects on the SFVAMC Historic District; however, the impact would remain adverse, because proposed construction would still result in demolition of contributors and densification of the SFVAMC Historic District.

Operation

Because operation of Alternative 1 short-term projects would not involve ground disturbance, vibrations, or permanent visual changes, no direct or indirect impacts on archaeological or historic resources would occur.

Long-Term Projects

Construction

Archaeological Resources or Human Remains

Ground disturbance activities for the Alternative 1 long-term project would have the same potential to damage or destroy presently undocumented significant archaeological resources and human remains as the short-term projects for this alternative. Therefore, construction activities for the Alternative 1 long-term project would result in the same direct adverse impacts on archaeological resources as those for Alternative 1 short-term projects. With implementation of Mitigation Measure CR-1, above, impacts would be reduced to a minor level.

Historic Properties

Alternative 1 long-term projects would involve the development of a clinical care facility on the existing SFVAMC Fort Miley Campus through 2023 (Table 2-1 and Figure 2-1). Table 3.4-2 lists the Alternative 1 long-term project and the anticipated impact on the SFVAMC and Fort Miley Historic Districts.

Table 3.4-2: Impacts of Alternative 1 Long-Term Projects on SFVAMC and Fort Miley Historic Districts

Phase	Project	Within SFVAMC District Boundary?	Impact on SFVAMC District?	Impact on Fort Miley District?
Long-Term Projects				
2.1 (under Alternative 1) and 2.4 (under Alternative 2)	Bldg 213 (Clinical Addition Building)	No	Indirect	No

Notes: Bldg = Building
Sources: VA, 2012 and 2014

Building 213 (Clinical Addition Building)

The planned construction of Building 213 would not occur within the boundary of the SFVAMC Historic District, but would occur adjacent to buildings that contribute to the SFVAMC Historic District. This would result in an indirect impact on the SFVAMC Historic District because it would introduce a new visual impact on the SFVAMC Historic District. This indirect impact would diminish the integrity of the district's setting, but the SFVAMC Historic District would continue to be able to convey its significance as an early standardized VA hospital, and as an example of a federal complex designed with seismically resistant buildings in the Mayan Art Deco style.

The Fort Miley Historic District would retain its character of location, design, feeling, and setting and continue to convey its significance. No indirect impact on the Fort Miley Historic District would occur.

Implementation of Mitigation Measure CR-3 would help reduce the severity of the adverse indirect impact of the Alternative 1 long-term project on the SFVAMC Historic District; however, the impact would remain adverse.

Operation

Operation of the Alternative 1 long-term project would not involve ground disturbance or vibration; therefore, no direct or indirect impacts on archaeological resources would occur. SFVAMC would seismically upgrade various historic buildings on the campus so they would be used and maintained. Through adoption of Alternative 1 and implementation of the PA, future planning at the Campus would take place in a manner that is sensitive to historic properties. The impact on historic properties would be beneficial.

Alternative 2: SFVAMC Fort Miley Campus Buildout Alternative

Short-Term Projects

Alternative 2 short-term projects at the SFVAMC Fort Miley Campus would be similar to short-term projects for Alternative 1, with one exception. Specifically, retrofitting of Buildings 1, 6, and 8 would not occur as part of Alternative 2 short-term projects (Table 2-3 and Figure 2-3), but would instead be accomplished in the long term. The difference in phasing does not change the potential for impairment of cultural resources. Therefore, the impacts of Alternative 2 short-term projects would be similar to the impacts anticipated for short-term projects under Alternative 1. These impacts would generally range in significance from beneficial to adverse with mitigation (Mitigation Measures CR-1,CR-2, and CR-3).

Long-Term Projects

Alternative 2 long-term projects at the SFVAMC Fort Miley Campus would be similar to the Alternative 1 long-term project, with one exception. Specifically, three additional buildings—Buildings 1, 6, and 8— would be retrofitted as part of Alternative 2 long-term projects (Table 2-4 and Figure 2-4). The difference in phasing does not change the potential for impairment of cultural resources. Therefore, the impacts of Alternative 2 long-term projects would be similar to the impact anticipated for the long-term project under Alternative 1.

Alternative 3: SFVAMC Fort Miley Campus Plus Mission Bay Campus Alternative

Short-Term Projects

Alternative 3 short-term projects would be the same as the short-term projects of Alternative 1 (Table 2-1 and Figure 2-1). Therefore, the impacts of Alternative 3 short-term projects would be the same as the impacts of Alternative 1 short-term projects. These impacts would generally range in significance from minor to adverse with mitigation (Mitigation Measures CR-1, CR-2, and CR-3).

Long-Term Projects

Alternative 3 long-term projects would be the same as the Alternative 1 long-term project, except that the ambulatory care center and an associated parking structure would be located at a potential new SFVAMC Mission Bay Campus under Alternative 3 (Table 2-5 and Figure 2-5).

Construction

Archaeological Resources or Human Remains

It is currently unknown whether any archaeological resources are located within the area of the potential new Mission Bay Campus. However, the NWIC records search, literature review, and consultation with the NAHC failed to indicate the presence of previously recorded archaeological resources within this area. Given the highly developed nature of this area, it is assumed to have a low sensitivity for subsurface prehistoric resources. The Mission Bay area's sensitivity for historic-era archaeological resources is also unknown. Should intact subsurface cultural deposits exist, project-related, ground-disturbing activities could result in direct adverse impacts.

The highly developed nature of the Mission Bay area makes pedestrian surveys and exploratory subsurface investigations difficult. To minimize effects on archaeological resources, Mitigation Measure CR-1 would be implemented. More specific mitigation measures would be developed in the future in consultation with the SHPO and other parties during site selection. Therefore, with implementation of Mitigation Measure CR-1 and (if necessary) other mitigation that may be developed during future consultation, the direct impact of construction activities at the potential new Campus on archaeological resources would be reduced to a minor level. No indirect impacts would occur.

Historic Properties

Alternative 3 long-term projects would involve developing a potential new SFVAMC Mission Bay Campus at an as-yet-unknown specific location. The NRHP eligibility of properties in the Mission Bay area is not currently known. Historic resources surveys of the site of a potential new Campus would be completed in conjunction with any future, project-level environmental review at the time a specific site or sites are identified.

Depending on where the project site would be located and the results of the historic resources surveys conducted for project-level review, proposed development associated with a potential new SFVAMC Mission Bay Campus under Alternative 3 long-term projects could occur close to historic properties. Proposed development could lead to physical demolition, destruction, relocation, or alteration of historic properties. Because the presence of historic properties is not currently known, the impact of a new Campus on historic properties would be potentially adverse.

To minimize potentially adverse effects on historic properties, in accordance with NHPA Section 110, VA should attempt to use the historic property first. If VA cannot use the building, then mitigation measures would include steps required to adhere to the *Secretary of Interior's Standards for Rehabilitation*, documentation, or interpretive programs. However, appropriate mitigation measures would need to be developed upon further consultation with the SHPO and other parties, if necessary, and in conjunction with any future, project-level environmental review.

Operation

Operation of Alternative 3 long-term projects would not involve ground disturbance or vibration, so no direct or indirect impacts on archaeological resources would occur. SFVAMC would seismically upgrade various historic properties on the Campus so they would be used and maintained. Through implementation of Alternative 3 long-

term projects and following the PA process, future planning at the Campus would take place in a manner that is sensitive to historic properties. Therefore, the impact on historic properties would be beneficial.

Alternative 4: No Action Alternative

Short-Term and Long-Term Projects

Construction

Under Alternative 4, no ground-disturbing activities would occur in previously undisturbed locations. Therefore, no impacts on archaeological resources would occur under this alternative. Under Alternative 4, no new building construction or retrofitting of buildings would occur. Structures on the Campus would not be seismically upgraded, which could lead to the destruction or damage of buildings located within the SFVAMC Historic District during a seismic event. This would be a direct adverse impact on the SFVAMC Historic District. As there would be no visual or atmospheric intrusion to the buildings or to the SFVAMC Historic District, no indirect impact on historic resources impact would occur.

Operation

Under Alternative 4, the LRDP would not be implemented. No impacts on archaeological resources would occur. Buildings on the campus would not be seismically upgraded, which could lead to the destruction or damage of contributors in the SFVAMC Historic District during a seismic event, which could result in the need to demolish the buildings. This would be a direct adverse impact on the SFVAMC Historic District. As there would be no visual or atmospheric intrusion to the buildings or to the SFVAMC Historic District, no indirect impact on historic resources would occur.

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3.5 FLOODPLAINS, WETLANDS, AND COASTAL MANAGEMENT

This section describes the existing physical and regulatory setting related to floodplains, wetlands, and coastal management and addresses the potential effects of the EIS Alternatives related to floodplains, wetlands, and coastal management.

3.5.1 Affected Environment

This section describes the local floodplains, wetlands, and coastal areas in the immediate vicinity of the existing SFVAMC Fort Miley Campus and in the Mission Bay area. The local climate, hydrology, water quality, and groundwater are discussed in Section 3.8, "Hydrology and Water Quality."

Floodplains

SFVAMC Fort Miley Campus

No creeks or open water bodies are located on or near the existing SFVAMC Fort Miley Campus; however, San Francisco Bay and the Pacific Ocean surround San Francisco. According to both the City and County of San Francisco's (City's) Interim Floodplain Maps[1] and the Federal Emergency Management Agency's (FEMA's) preliminary Flood Insurance Rate Map (FIRM), the Campus is not located within a flood hazard area (CCSF, 2008a). Note that the Campus is located at approximately 350 feet above sea level, and approximates the highest elevation in the general vicinity.

Mission Bay Area

Coastal portions of the Mission Bay area have been mapped in the City's Interim Floodplain Maps as part of the Special Flood Hazard Area (CCSF, 2008a). Those areas at higher risk are equivalent to FEMA Flood Zones A and V. Areas adjacent to San Francisco Bay, up to approximately 2,500 feet from the shoreline in some cases, have also been mapped as being "Lots in Hazard Area" (i.e., moderate- to low-risk areas equivalent to FEMA Flood Zones B, C, and X).

FEMA's preliminary FIRM for the City and County of San Francisco (completed September 21, 2007) identifies special flood hazard areas within San Francisco as follows:

- *Zone A:* Areas of coastal flooding with no wave hazard; or waves less than 3 feet in height
- *Zone V*: Areas of coastal flooding subject to the additional hazards associated with wave action

The Mission Creek Channel, which connects to San Francisco Bay, separates Mission Bay and China Basin. A Zone A area was identified surrounding the Mission Creek Channel in Mission Bay, and a Zone V area was identified along the entire shoreline of San Francisco Bay in the Mission Bay area. The Community Safety Element of the *City and County of San Francisco General Plan* (City General Plan) (1997) states that flooding as a result of dam or reservoir failure is unlikely; however, if such a failure were to occur, it would most likely occur

[1] Because the final FEMA FIRMs for the City and County of San Francisco have not been completed, the City Administrator's Office created an interim floodplain map in July 2008.

as a result of an earthquake. There are 12 active reservoirs, one inactive reservoir (Francisco), and one unfinished reservoir (Balboa) within the San Francisco city limits. Four of these reservoirs have aboveground sides that are considered to be dam faces and are under the jurisdiction of the California Division of Safety of Dams. Neither the existing SFVAMC Fort Miley Campus nor the Mission Bay area are located within a mapped dam inundation area.

Wetlands

Existing SFVAMC Fort Miley Campus

No wetlands or waters of the United States (streams, rivers, lakes) occur on or near the existing SFVAMC Fort Miley Campus (USFWS, 2010) (Figure 3.5-1).

Mission Bay Area

Several places in the Mission Bay area have been mapped by the U.S. Fish and Wildlife Service (USFWS) as having estuarine and marine wetlands (Figure 3.5-2). These sites are all located along San Francisco Bay and are considered waters of the United States under the Clean Water Act.

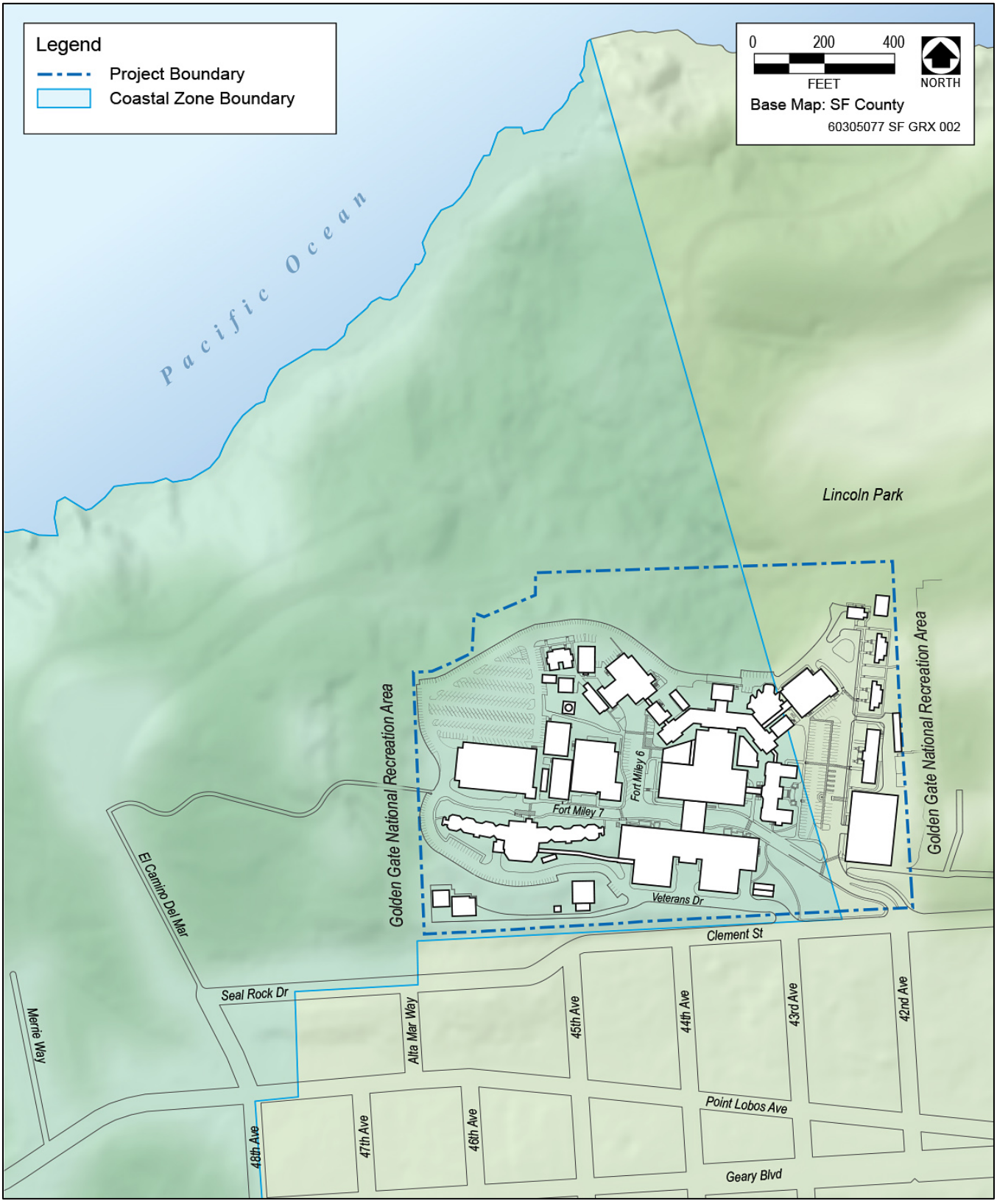
Coastal Management

Existing SFVAMC Fort Miley Campus

Most of the SFVAMC Fort Miley Campus, primarily the west side (approximately 24.4 acres, or 84 percent), is located within the boundaries of the California Coastal Zone (Figure 3.5-1). The California Coastal Zone is under the jurisdiction of the California Coastal Commission (CCC). However, the easternmost portion of the Campus, which includes existing Buildings 7, 8, 9, 10, 11, 32, 212, and part of Building 5, is not mapped within the coastal zone. The California Coastal Zone, which was established by the California Coastal Act, varies in width from several hundred feet in highly urbanized areas to up to 5 miles in certain rural areas of California. Offshore, the coastal zone includes a 3-mile-wide band of ocean.

Mission Bay Area

The coastal zone established by the California Coastal Act does not include San Francisco Bay. The San Francisco Bay Conservation and Development Commission (BCDC) is the federally designated State coastal management agency for the shoreline areas of the bay to the Golden Gate (Point Bonita–Point Lobos). This designation empowers BCDC to use the authority of the federal Coastal Zone Management Act to ensure that federal projects and activities are consistent with the policies of the *San Francisco Bay Plan* and State law. The coastal portions of the Mission Bay area are located within BCDC's area of jurisdiction, which includes the first 100 feet shoreward from the line of highest tidal action (mean high-tide line) around San Francisco Bay (Figure 3.5-2).



Note: No wetlands are located at the SFVAMC Fort Miley Campus.
Source: Base layer from City and County of San Francisco; coastal zone boundary layer from Caltrans, 2009; data compiled by AECOM in 2014

Figure 3.5-1: Locations of Wetlands and the Coastal Zone Boundary in the SFVAMC Fort Miley Campus Area



Source: USFWS, 2010; data provided by SFVAMC in 2010; data compiled by AECOM in 2012

Figure 3.5-2: Locations of Wetlands and the BCDC Jurisdiction Line in the Mission Bay Area

Regulatory Framework

Clean Water Act Section 404

Pursuant to Section 404 of the Clean Water Act, the U.S. Army Corps of Engineers (USACE) regulates temporary and permanent fill and disturbance of wetlands and waters of the United States. Waters of the United States are defined in the Code of Federal Regulations (CFR) (33 CFR 328.3[a], 40 CFR 230.3[s]) as follows:

(1) All waters that are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters that are subject to the ebb and flow of the tide;

(2) All interstate waters including interstate wetlands;

(3) All other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation or destruction of which could affect interstate or foreign commerce including such waters:

(i) Which are or could be used by interstate or foreign travelers for recreational or other purposes; or

(ii) From which fish or shellfish are or could be taken and sold in interstate or foreign commerce; or

(iii) Which are used or could be used for industrial purposes by industries in interstate commerce;

(4) All impoundments of waters otherwise defined as waters of the United States under the definition;

(5) Tributaries of waters identified in paragraphs (1)–(4) of this section;

(6) The territorial seas; and

(7) Wetlands adjacent to waters (other than waters that are themselves wetlands) identified in paragraphs (1)–(6) of this section.

USACE (47 *Federal Register* [FR] 31810, July 22, 1982) and the U.S. Environmental Protection Agency (45 FR 85344, December 24, 1980, as amended at 58 FR 45037, August 25, 1993) jointly define wetlands as follows:

> …those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas (33 CFR 328.3[b]; 40 CFR 230.3[t]).

Under Section 404, the discharge (temporary or permanent) of dredged or fill material into waters of the United States, including wetlands, typically must be authorized by USACE through either the Nationwide Permit (general categories of discharges with minimal effects) or the Individual Permit.

Because there are no streams or water bodies on the existing SFVAMC Fort Miley Campus, no federal permit would be required for Alternative 1 or Alternative 2 projects, or for Alternative 3 short-term projects. Waters of the United States have been mapped for the Mission Bay area; therefore, Alternative 3 long-term projects (the potential new SFVAMC Mission Bay Campus) may require a federal permit, depending on the locations of those projects. Compliance with Section 404 requirements also would be required. A Section 401 certification (or waiver) would be required for any discharge regulated under Section 404.

Executive Order 11988—Floodplain Management Act

Executive Order 11988 was issued in 1977 in furtherance of NEPA, the National Flood Insurance Act of 1968, and the Flood Disaster Protection Act of 1973. The intent of this executive order is to avoid to the extent possible the long- and short-term adverse impacts of the occupancy and modification of floodplains, and to avoid direct or indirect support of floodplain development wherever there is a practicable alternative.

Agencies are to use maps prepared by the Federal Insurance Administration of FEMA (FIRMs or Flood Hazard Boundary Maps) to determine whether a proposed action is located in or would likely affect a floodplain. If no floodplain impact is identified, the action may proceed without further consideration. If the agency determines that a proposed action is located in or would affect a floodplain, a floodplain assessment must be undertaken and included in the EIS. If there is no practicable alternative to locating in or affecting the floodplain, the agency must act to minimize potential harm to the floodplain. The agency also must act to restore and preserve the natural and beneficial values of floodplains as part of the analysis of all alternatives under consideration.

Alternative 3 long-term projects would be required to comply with Executive Order 11988 if construction would occur within the floodplain.

Executive Order 11990—Protection of Wetlands

Executive Order 11990 was issued in 1977 in furtherance of NEPA, to avoid to the extent possible the long- and short-term adverse impacts of the destruction or modification of wetlands, and to avoid direct or indirect support of new construction in wetlands wherever there is a practicable alternative.

Agencies are to use maps prepared by USFWS (National Wetlands Inventory Maps) to determine whether a proposed action is located in or would likely affect wetlands. If no wetlands impact is identified, the action may proceed without further consideration. If the agency determines that a proposed action is located in or would affect wetlands, a wetland assessment must be undertaken and included in the EIS. If there is no practicable alternative to locating in or affecting wetlands, the agency must act to minimize potential harm to the wetlands. The agency also must act to restore and preserve the natural and beneficial values of wetlands as part of the analysis of all alternatives under consideration.

Alternative 3 long-term projects would be required to comply with Executive Order 11990 if a portion of a selected site would be built within mapped estuarine or marine wetlands.

Coastal Zone Management Act

The U.S. Congress approved the Coastal Zone Management Act (CZMA) in 1972. The CZMA, administered by the National Oceanic and Atmospheric Administration's Office of Ocean and Coastal Resource Management, provides for management of the nation's coastal resources, including the Great Lakes, and balances economic development with environmental conservation.

The CZMA outlines two national programs, the National Coastal Zone Management Program and the National Estuarine Research Reserve System. The 34 coastal programs aim to balance competing land and water issues in the coastal zone, while estuarine reserves serve as field laboratories to provide a greater understanding of estuaries and how humans affect them. The overall program objectives of CZMA remain balanced to "preserve, protect, develop, and where possible, to restore or enhance the resources of the nation's coastal zone."

Coastal states prepare coastal management programs under the CZMA. After the federal government approves a state's coastal management program, that state gains federal consistency-review authority. California's Coastal Management Program, federally approved in 1977, designates two coastal zone management agencies to implement the federal consistency provisions: (1) CCC for all coastal areas outside San Francisco Bay; and (2) BCDC for the coastal areas along San Francisco Bay. CCC's mission is to "Protect, conserve, restore, and enhance environmental and human-based resources of the California coast and ocean for environmentally sustainable and prudent use by current and future generations." BCDC has jurisdiction over the open water, marshes, and mudflats of greater San Francisco Bay, including Suisun, San Pablo, Honker, Richardson, San Rafael, San Leandro, and Grizzly Bays and the Carquinez Strait, as well as the first 100 feet inland from the shoreline around San Francisco Bay. BCDC's mission statement states that BCDC "is dedicated to the protection and enhancement of San Francisco Bay and to the encouragement of the Bay's responsible use." Any portion of the Mission Bay area located within 100 feet from the San Francisco Bay shoreline is subject to the CZMA.

National Flood Insurance Program and Flood Disaster Protection Act

The National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973 were enacted to reduce the need for flood protection structures and to limit disaster relief costs by restricting development in floodplains. FEMA, created in 1979, is responsible for predicting hazards related to flooding events and forecasting the level of inundation under various conditions. As part of its duty to develop standards for delineating fluvial and coastal floodplains, FEMA provides information about flood hazard and inundation potential on FIRMs, and where appropriate, designates regions as special flood hazard areas. Special flood hazard areas are defined as areas that have a 1 percent chance of flooding in a given year. FEMA released a preliminary FIRM for the City and County of San Francisco on September 21, 2007, for review and technical comment only, and to provide the City with a tool for implementing a floodplain management program. FEMA is conducting a more detailed analysis of flood hazards associated with San Francisco Bay and will provide the City with a revised preliminary map based on that analysis (OCA, 2011).

FEMA also administers the National Flood Insurance Program (NFIP), a federal program that enables property owners in participating communities to purchase insurance as protection against flood losses in exchange for state and community floodplain management regulations that reduce future flood damages. The City applied to FEMA to join the NFIP in fall 2008; FEMA approved the application for participation in April 2010. The NFIP

requirements are relevant because preliminary FEMA flood zones may be established in the Mission Bay area where portions of the Alternative 3 long-term projects could be located.

San Francisco Floodplain Management Ordinance

Even though the San Francisco Floodplain Management Ordinance is not a federal requirement, it was adopted based on the fact that FEMA has not yet published a final FIRM for areas located within the City and County of San Francisco. Thus, this local floodplain management ordinance is applicable to the alternatives analyzed in this EIS.

The San Francisco Board of Supervisors adopted the Floodplain Management Ordinance (Ordinance No. 188-08) as a condition of the City joining the NFIP. The ordinance requires that new or substantially improved structures located in special flood hazard areas be protected against flood damage, and prohibits uses that would increase flood risks (CCSF, 2008b). In general, the Floodplain Management Ordinance requires that the first floor of structures in flood zones be constructed above the floodplain or be flood-proofed. The ordinance also incorporates FEMA's more stringent floodplain management requirements, which must be applied in areas where FIRMs show base flood elevations. If portions of the Alternative 3 long-term projects would be located within flood hazard areas in the Mission Bay area, the Floodplain Management Ordinance would be applicable. The Floodplain Management Ordinance is not applicable to Alternative 1, 2, or 3 short-term projects because such projects would occur at the existing SFVAMC Fort Miley Campus and would not be located in a special flood hazard area.

San Francisco Waterfront Special Area Plan

The *San Francisco Waterfront Special Area Plan* (Special Area Plan), last amended in February 2010, contains both general and geography-specific policies to facilitate nonmaritime, maritime, commercial, and recreational shoreline development along the San Francisco waterfront. The area covered by the Special Area Plan is the land and water area located along the existing shoreline of the City and County of San Francisco from the Hyde Street Pier through India Basin, including all areas within the jurisdiction of the Port of San Francisco. If portions of Alternative 3 long-term projects would be located within the area covered by the Special Area Plan, the Special Area Plan would be applicable. The policies contained in the Special Area Plan also apply to areas within BCDC jurisdiction for permit purposes. These policies are the basis for BCDC permit decisions and for federal consistency review under the federal Coastal Zone Management Act of 1972, as amended. The existing SFVAMC Fort Miley Campus is not located within the Special Area Plan or within BCDC jurisdiction. Therefore, the Special Area Plan is not applicable to the Alternative 1, 2, or 3 short-term projects.

Port of San Francisco Waterfront Land Use Plan

The *Port of San Francisco Waterfront Land Use Plan* (Waterfront Land Use Plan), adopted by the Port Commission in 1997, governs land use policy for waterfront lands under jurisdiction of the Port of San Francisco, a 7½-mile band that extends from Fisherman's Wharf to India Basin. The Waterfront Land Use Plan is intended to serve as a balanced and implementable land use plan for the use and development of the Port of San Francisco's waterfront. Since the Port Commission's adoption of the plan in 1997, the City has approved amendments to the City General Plan and San Francisco Planning Code to allow project implementation consistent with the Waterfront Land Use Plan. In addition, amendments to BCDC's plans and policies were

adopted. If portions of the Alternative 3 long-term projects would be located in the area covered by the Waterfront Land Use Plan, the Waterfront Land Use Plan would be applicable. The existing SFVAMC Fort Miley Campus is not located in the area covered by the Waterfront Land Use Plan. Therefore, the Waterfront Land Use Plan is not applicable to the Alternative 1, 2, and 3 short-term projects.

3.5.2 Environmental Consequences

Significance Criteria

A NEPA evaluation must consider the context and intensity of the environmental effects that would be caused by, or result from, the EIS Alternatives.

An Alternative analyzed in this EIS is considered to result in an adverse impact related to floodplains, wetlands, and coastal management if it would:

- result in substantive undesirable flooding impacts as a result of location within a floodplain;
- have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means; or
- have a substantial adverse effect, either directly or indirectly, on coastal resources through increased erosion or water quality degradation.

Assessment Methods

The aforementioned significance criteria were applied to determine impact significance using a qualitative approach. Specifically, the following is a discussion of impacts associated with potential wetland or coastal resource alterations and flooding hazards in the floodplain, as well as conformance with applicable regulatory standards for the construction and operation of the SFVAMC LRDP.

Alternative 1: SFVAMC Fort Miley Campus Buildout Alternative

Short-Term Projects

Construction

The construction of Alternative 1 short-term projects would occur in 17 projects over approximately 7 years. Alternative 1 short-term projects would involve construction of 600,992 gross square feet (gsf) (384,452 of which would be net new gsf) at the existing SFVAMC Fort Miley Campus (Table 2-1 and Figure 2-1). New construction and building demolition for Alternative 1 short-term projects would occur within the coastal zone, with the exception of construction of Buildings 22, 23, and 24 and demolition of Building 20. Retrofitting of existing Buildings 1, 5, and 6 would also occur within the coastal zone. Construction, demolition, and retrofitting activities could result in short-term degradation of coastal resources including water quality, scenic resources and views, parking and coastal access, and habitat.

Wetlands Alteration

There are no wetlands or waters of the United States on or near the existing SFVAMC Fort Miley Campus that could be disturbed. As a result, no construction-related wetlands impact would result from implementation of Alternative 1 short-term projects.

Degradation of Coastal Resources

As defined in Section 304 of the federal Coastal Zone Management Act of 1972, the term "coastal zone" does not include "lands the use of which is by law subject solely to the discretion of or which is held in trust by the federal government." The existing SFVAMC Fort Miley Campus is adjacent to the Golden Gate National Recreation Area (operated by the National Park Service). VA recognizes that actions outside the coastal zone may affect land or water uses or natural resources along the coast, and VA will make all reasonable attempts to achieve consistency with the provisions of the Coastal Zone Management Act.

Most of the SFVAMC Fort Miley Campus, primarily the west side (approximately 24.4 acres, or 84 percent), is located within the California Coastal Zone boundary (Figure 3.5-1); however, construction-related impacts of Alternative 1 short-term projects would be minimal and would not be expected to affect any coastal use or resource. For a discussion of construction-related impacts of short-term projects as they relate to additional coastal management topics (scenic resources and views, parking and coastal access, and habitat), see Section 3.1, "Aesthetics"; Section 3.13, "Transportation, Traffic, Circulation, and Parking"; and Section 3.15, "Wildlife and Habitat." For further discussion regarding coast resources, see Appendix H, which contains the Coastal Consistency Determination for the LRDP at the Fort Miley Campus as submitted to CCC as well as CCC concurrence on the Coastal Consistency Determination (CCC, 2015).

As described in Section 3.8, "Hydrology and Water Quality," Alternative 1 short-term projects would be required to comply with the requirements of Article 4.1 of the San Francisco Public Works Code, which regulates the quantity and quality of discharges to the combined sewer system. Most stormwater runoff from the project site would be collected and treated at the Oceanside Water Pollution Control Plant before discharge to the Pacific Ocean, and therefore would meet the effluent discharge limitations set by the plant's National Pollutant Discharge Elimination System permit. As stormwater from part of the project site discharges to the small separate storm drainage system on the north side of the existing SFVAMC Fort Miley Campus along the north-facing slope, the project would be required to apply for coverage under the Construction General Permit (Order 2009-0009-DWQ, as amended by 2010-0014-DWQ and 2012-006-DWQ), which requires the development and implementation of a storm water pollution prevention plan (SWPPP) to reduce project-related pollution of surface water throughout the construction period. The SFVAMC would also be required to apply for a Construction Site Runoff Control Permit from the SFPUC and submit a copy of the SWPPP. A separate erosion and sediment control plan (ESCP) would not be required by the SFPUC if a copy of the SWPPP is submitted.

Construction-related water quality impacts would be minor because Alternative 1 short-term projects would comply with required permits; SWPPPs would be prepared and implemented; and VA Specification Section 015719, "Temporary Environmental Controls," would be implemented. For additional discussion of water quality considerations during construction of Alternative 1 short-term projects, see Section 3.8, "Hydrology and Water Quality."

Operation

Flooding as a Result of Location within a Floodplain

Because the existing SFVAMC Fort Miley Campus is not situated within a designated floodplain, no flooding impact would result from locating short-term projects within a floodplain. See Section 3.8, "Hydrology and Water Quality," for a discussion of runoff and flooding.

Degradation of Wetlands

Because no wetlands or waters of the United States that could be degraded are located on or near the existing SFVAMC Fort Miley Campus, no impact related to wetlands alteration would result from implementation of short-term projects.

Degradation of Coastal Resources

Although most of the SFVAMC Fort Miley Campus, primarily the west side (approximately 24.4 acres, or 84 percent), is located within the California Coastal Zone boundary (see Figure 3.5-1), operational impacts of Alternative 1 short-term projects would be minimal. An increase in total or peak runoff volume from the site relative to existing conditions could contribute to the frequency or severity of combined sewer overflow (CSO) events discharged to the Pacific Ocean. Implementing Alternative 1 short-term projects is anticipated to result in a maximum increase in impervious area of approximately 0.69 acre (a 4 percent increase in impervious area compared to existing conditions) on the existing SFVAMC Fort Miley Campus. Implementing these proposed projects would result in minimal alterations to the site's runoff conditions as the vast majority (95 percent) would occur within the existing development footprint of the Campus, primarily on existing impervious sites (i.e., existing paved parking areas and buildings).

As described in Section 3.8, "Hydrology and Water Quality," implementing Management Measure HYD-1 at the existing SFVAMC Fort Miley Campus would ensure that infrastructure would be properly sized to handle stormwater and wastewater flows to protect from down-gradient flooding hazards that could affect the coastal zone. In addition, Low Impact Development (LID) techniques to infiltrate, evaporate, and detain stormwater would be used as required for compliance with Section 438 of the federal Energy Independence and Security Act and Article 4.2 of the San Francisco Public Works Code. Using LID techniques would ensure that predevelopment stormwater runoff conditions would be maintained. Thus, implementing Alternative 1 short-term projects would not contribute to the frequency or severity of CSO events and/or downstream flooding. This impact would be minor.

For a discussion of operational impacts of short-term projects as they relate to additional coastal management topics (scenic resources and views, parking and coastal access, and habitat), see Section 3.1, "Aesthetics"; Section 3.13, "Transportation, Traffic, Circulation, and Parking"; and Section 3.15, "Wildlife and Habitat." For further discussion regarding coast resources, see Appendix H, which contains the Coastal Consistency Determination for the LRDP at the Fort Miley Campus as submitted to CCC as well as CCC concurrence on the Coastal Consistency Determination (CCC, 2015).

Long-Term Projects

Construction

The Alternative 1 long-term project would involve one project for Building 213 (Clinical Addition Building) that would occur over 24 months. The Alternative 1 long-term project would involve construction of 170,000 gsf, which would all be net new gsf at the existing SFVAMC Fort Miley Campus (Table 2-2 and Figure 2-2). New construction associated with the Alternative 1 long-term project would occur within the coastal zone on the site of the existing Building 12, which would be demolished as part of this Alternative's short-term projects. Although construction activities associated with Building 213 would occur on a previously disturbed site (encompassing approximately 0.25 acre), such construction activities could result in short-term degradation of coastal resources including water quality, visual resources, traffic, and habitat.

Wetlands Alteration

There are no wetlands or waters of the United States on or near the existing SFVAMC Fort Miley Campus that could be disturbed. As a result, no construction-related wetlands impact would result from implementation of the Alternative 1 long-term project.

Degradation of Coastal Resources

Similar to the impacts of Alternative 1 short-term projects, construction-related impacts of the Alternative 1 long-term project would be minimal even though most of the SFVAMC Fort Miley Campus, primarily the west side (approximately 24.4 acres, or 84 percent), is located within the boundaries of the California Coastal Zone (Figure 3.5-1). Construction-related water quality impacts on the Pacific Ocean would be minor because the Alternative 1 long-term project would comply with the requirements of Articles 4.1 and 4.2 of the San Francisco Public Works Code and with required permits; SWPPPs would be prepared and implemented; and VA Specification Section 015719, "Temporary Environmental Controls," would be implemented. For additional discussion of water quality considerations during construction of the Alternative 1 long-term project, see Section 3.8, "Hydrology and Water Quality."

For a discussion of construction-related impacts of long-term projects as they relate to additional coastal management topics (scenic resources and views, parking and coastal access, and habitat), see Section 3.1, "Aesthetics"; Section 3.13, "Transportation, Traffic, Circulation, and Parking"; and Section 3.15, "Wildlife and Habitat." For further discussion regarding coast resources, see Appendix H, which contains the Coastal Consistency Determination for the LRDP at the Fort Miley Campus as submitted to CCC as well as CCC concurrence on the Coastal Consistency Determination (CCC, 2015).

Operation

Flooding as a Result of Location within a Floodplain

Because the existing SFVAMC Fort Miley Campus is not situated within a designated floodplain, no flooding impact would result from locating long-term projects within a floodplain. See Section 3.8, "Hydrology and Water Quality," for a discussion of runoff and flooding.

Degradation of Wetlands

Because no wetlands or waters of the United States that could be degraded are located on or near the existing SFVAMC Fort Miley Campus, no impact would result from implementation of the Alternative 1 long-term project.

Degradation of Coastal Resources

Implementing the Alternative 1 long-term project is not anticipated to result in any increase in impervious area on the existing SFVAMC Fort Miley Campus, because the proposed Building 213 would be constructed on the existing footprint of Building 12, which is planned for demolition as part of the short-term projects. Similar to the impacts of Alternative 1 short-term projects, implementing the Alternative 1 long-term project would result in minimal alterations to the site's runoff conditions because the project would occur within the existing development footprint of the Campus, on an existing impervious site.

In addition, as described in Section 3.8, "Hydrology and Water Quality," implementing Management Measure HYD-1 at the existing SFVAMC Fort Miley Campus would ensure that infrastructure would be properly sized to handle stormwater and wastewater flows to protect against down-gradient flooding hazards that could affect the coastal zone. Furthermore, LID techniques would be used to infiltrate, evaporate, and detain stormwater as required for compliance with Section 438 of the U.S. Energy Independence and Security Act. Using LID techniques would ensure that predevelopment stormwater runoff conditions would be maintained. Thus, implementing the Alternative 1 long-term project would not contribute to the frequency or severity of CSO events and/or downstream flooding. This impact would be minor.

For additional discussion of water quality considerations during operation of the Alternative 1 long-term project, see Section 3.8, "Hydrology and Water Quality." For a discussion of operational impacts of the long-term project as it relates to additional coastal management topics (scenic resources and views, parking and coastal access, and habitat), see Section 3.1, "Aesthetics"; Section 3.13, "Transportation, Traffic, Circulation, and Parking"; and Section 3.15, "Wildlife and Habitat." For further discussion regarding coast resources, see Appendix H, which contains the Coastal Consistency Determination for the LRDP at the Fort Miley Campus as submitted to CCC as well as CCC concurrence on the Coastal Consistency Determination (CCC, 2015).

Alternative 2: SFVAMC Fort Miley Campus Buildout Alternative

Short-Term Projects

Alternative 2 short-term projects at the existing SFVAMC Fort Miley Campus would be the same as Alternative 1 short-term projects, with one exception. Specifically, retrofitting of the existing Buildings 1, 6, and 8 would not occur as part of Alternative 2 short-term projects (Table 2-3 and Figure 2-3), but would instead be accomplished in the long term. The construction of Alternative 2 short-term projects would occur in 16 projects over 6 years. Alternative 2 short-term projects would involve construction of a total of 485,445 gsf, which is 115,547 gsf less than for Alternative 1 short-term projects. Therefore, impacts of Alternative 2 short-term projects would be similar to or less than those of Alternative 1 short-term projects. Any impacts on floodplains, wetlands, and coastal management would range from minor to no impact).

Construction

Wetlands Alteration

There are no wetlands or waters of the United States on or near the existing SFVAMC Fort Miley Campus that could be disturbed. As a result, no construction-related impact on wetlands would result from implementation of Alternative 2 short-term projects.

Degradation of Coastal Resources

Like the impacts of Alternative 1 short-term projects, construction-related impacts of Alternative 2 short-term projects would be minimal even though a portion of the site is located within the Coastal Zone Management Area. Construction-related water quality impacts on the Pacific Ocean would be minor because Alternative 2 short-term projects would comply with the requirements of Articles 4.1 and 4.2 of the San Francisco Public Works Code and with required permits; SWPPPs would be prepared and implemented; and VA Specification Section 015719, "Temporary Environmental Controls," would be implemented. For additional discussion of water quality considerations during construction of the Alternative 2 short-term projects, see Section 3.8, "Hydrology and Water Quality."

For a discussion of construction-related impacts of short-term projects as they relate to additional coastal management topics (scenic resources and views, parking and coastal access, and habitat), see Section 3.1, "Aesthetics"; Section 3.13, "Transportation, Traffic, Circulation, and Parking"; and Section 3.15, "Wildlife and Habitat." For further discussion regarding coastal resources, see Appendix H, which contains the Coastal Consistency Determination for the LRDP at the Fort Miley Campus as submitted to CCC as well as CCC concurrence on the Coastal Consistency Determination (CCC, 2015).

Operation

Flooding as a Result of Location within a Floodplain

Because the existing SFVAMC Fort Miley Campus is not situated within a designated floodplain, no flooding impact would result from locating short-term projects within a floodplain. See Section 3.8, "Hydrology and Water Quality," for a discussion of runoff and flooding.

Degradation of Wetlands

Because no wetlands or waters of the United States that could be degraded are located on or near the existing SFVAMC Fort Miley Campus, no impact would result from implementation of Alternative 2 short-term projects.

Degradation of Coastal Resources

Implementing Alternative 2 short-term projects is anticipated to result in a maximum increase in impervious area of approximately 0.69 acre (a 4 percent increase in impervious area compared to existing conditions) on the existing SFVAMC Fort Miley Campus. As with Alternative 1 short-term projects, implementing Alternative 2 short-term projects would result in minimal alterations to the site's runoff conditions because the projects would occur within the Campus's existing development footprint, primarily on existing impervious sites (i.e., paved

parking areas and buildings). For the same reasons as discussed above for Alternative 1 short-term projects, implementing Alternative 2 short-term projects would not contribute to the frequency or severity of CSO events and/or downstream flooding. This impact would be minor.

As described in Section 3.8, "Hydrology and Water Quality," implementing Management Measure HYD-1 at the existing SFVAMC Fort Miley Campus would ensure that infrastructure would be properly sized to handle stormwater and wastewater flows to protect from down-gradient flooding hazards that could affect the coastal zone. In addition, LID techniques to infiltrate, evaporate, and detain stormwater would be used as required for compliance with Section 438 of the federal Energy Independence and Security Act and Article 4.2 of the San Francisco Public Works Code. Using LID techniques would ensure that predevelopment stormwater runoff conditions would be maintained. Thus, implementing Alternative 2 short-term projects would not contribute to the frequency or severity of CSO events and/or downstream flooding. This impact would be minor.

For additional discussion of water quality considerations during operation of short-term projects for Alternative 2, see Section 3.8, "Hydrology and Water Quality." For a discussion of operational impacts of short-term projects as they relate to additional coastal management topics (scenic resources and views, parking and coastal access, and habitat), see Section 3.1, "Aesthetics"; Section 3.13, "Transportation, Traffic, Circulation, and Parking"; and Section 3.15, "Wildlife and Habitat." For further discussion of coastal resources, see Appendix H, which contains the Coastal Consistency Determination for the LRDP at the Fort Miley Campus as submitted to CCC as well as CCC concurrence on the Coastal Consistency Determination (CCC, 2015).

Long-Term Projects

Alternative 2 long-term projects at the existing SFVAMC Fort Miley Campus would be the same as the Alternative 1 long-term project, with one exception. Specifically, three additional existing buildings—Buildings 1, 6, and 8—would be retrofitted as part of Alternative 2 long-term projects (Table 2-4 and Figure 2-4). Alternative 2 long-term projects would involve construction of a total of 285,487 gsf, which is 115,487 gsf more than under the Alternative 1 long-term project, because Alternative 2 includes construction of Building 213 along with the seismic retrofit of Buildings 1, 6, and 8. Therefore, construction impacts of Alternative 2 long-term projects would be similar to, although slightly greater than, those of the Alternative 1 long-term project. Any impacts on floodplains, wetlands, and coastal management would range from minor to no impact.

Construction

Wetlands Alteration

There are no wetlands or waters of the United States on or near the existing SFVAMC Fort Miley Campus that could be disturbed. As a result, no construction-related impact on wetlands would result from implementation of Alternative 2 long-term projects.

Degradation of Coastal Resources

Like the impacts of Alternative 2 short-term projects, construction-related impacts of Alternative 2 long-term projects would be minimal even though most of the SFVAMC Fort Miley Campus, primarily the west side (approximately 24.4 acres, or 84 percent), is located within the California Coastal Zone boundary (Figure 3.5-1).

For the same reasons as discussed above for the Alternative 1 long-term project, construction-related water quality impacts of Alternative 2 long-term projects on the Pacific Ocean would be minor. For additional discussion of water quality considerations during construction of Alternative 2 long-term projects, see Section 3.8, "Hydrology and Water Quality."

For a discussion of construction-related impacts of long-term projects as they relate to additional coastal management topics (scenic resources and views, parking and coastal access, and habitat), see Section 3.1, "Aesthetics"; Section 3.13, "Transportation, Traffic, Circulation, and Parking"; and Section 3.15, "Wildlife and Habitat." For further discussion regarding coast resources, see Appendix H, which contains the Coastal Consistency Determination for the LRDP at the Fort Miley Campus as submitted to CCC as well as CCC concurrence on the Coastal Consistency Determination (CCC, 2015)

Operation

Flooding as a Result of Location within a Floodplain

Because the existing SFVAMC Fort Miley Campus is not situated within a designated floodplain, no flooding impact would result from locating long-term projects within a floodplain. See Section 3.8, "Hydrology and Water Quality," for a discussion of runoff and flooding.

Degradation of Wetlands

Because no wetlands or waters of the United States that could be degraded are located on or near the existing SFVAMC Fort Miley Campus, no impact would result from implementation of Alternative 2 long-term projects.

Degradation of Coastal Resources

Implementing Alternative 2 long-term projects is not anticipated to result in any increase in impervious area on the existing SFVAMC Fort Miley Campus because the proposed Building 213 would be constructed on the existing footprint of Building 12, which is planned for demolition as part of the short-term projects. In addition, seismic retrofitting of Buildings 1, 6, and 8 would not result in any increase in impervious area at the Campus. As under the Alternative 1 long-term project, implementing Alternative 2 long-term projects would result in minimal alterations to the site's runoff conditions because the projects would occur within the existing development footprint of the Campus, on existing impervious sites. Implementing Management Measure HYD-1 at the existing SFVAMC Fort Miley Campus would ensure that infrastructure would be properly sized to handle stormwater and wastewater flows to protect from down-gradient flooding hazards that could affect the coastal zone. In addition, LID techniques would be used to infiltrate, evaporate, and detain stormwater as required for compliance with Section 438 of the federal Energy Independence and Security Act. Using LID techniques would ensure that predevelopment stormwater runoff conditions would be maintained. Thus, implementing Alternative 2 long-term projects would not contribute to the frequency or severity of CSO events and/or downstream flooding. This impact would be minor.

For additional discussion of water quality considerations during operation of Alternative 2 long-term projects, see Section 3.8, "Hydrology and Water Quality." For a discussion of operational impacts of short-term projects as they relate to additional coastal management topics (scenic resources and views, parking and coastal access, and habitat), see Section 3.1, "Aesthetics"; Section 3.13, "Transportation, Traffic, Circulation, and Parking"; and Section 3.15,

"Wildlife and Habitat." For further discussion regarding coast resources, see Appendix H, which contains the Coastal Consistency Determination for the LRDP at the Fort Miley Campus as submitted to CCC as well as CCC concurrence on the Coastal Consistency Determination (CCC, 2015).

Alternative 3: SFVAMC Fort Miley Campus plus Mission Bay Campus Alternative

Short-Term Projects

Alternative 3 short-term projects (during both construction and operation) would be the same as Alternative 1 short-term projects (Table 2-1 and Figure 2-1). Therefore, the impacts of Alternative 3 short-term projects would be the same as the impacts of Alternative 1 short-term projects. These impacts would be minor.

Long-Term Projects

Alternative 3 long-term projects, including the ambulatory care center and associated parking structure uses, would be located at the potential new SFVAMC Mission Bay Campus on approximately 0.98 acre (Table 2-5 and Figure 2-5). No additional construction would occur at the existing SFVAMC Fort Miley Campus under the Alternative 3 long-term projects.

Construction

Wetlands Alteration

Several locations in the Mission Bay area along San Francisco Bay have been mapped by USFWS as having estuarine and marine wetlands (Figure 3.5-2). Because the precise location of the potential new SFVAMC Mission Bay Campus is unknown at this time, development of the Alternative 3 long-term projects in the Mission Bay area could result in adverse impacts on estuarine and marine wetlands. If Alternative 3 long-term projects would be implemented within or near wetlands, construction-related wetland impacts would comply with Articles 4.1 and 4.2 of the San Francisco Public Works Code; SWPPPs would be prepared and implemented; and VA Specification Section 015719, "Temporary Environmental Controls," would be implemented. If wetlands were to appear to be present within a proposed site, a qualified wetland biologist would conduct a wetlands assessment in compliance with Executive Order 11990, to determine the quantity and type that would be avoided or mitigated to the extent possible as part of a future project-level NEPA review. This impact would remain potentially adverse.

Degradation of Coastal Resources

Because the precise location of the Alternative 3 long-term projects at the potential new SFVAMC Mission Bay Campus is unknown at this time, development of projects in the Mission Bay area has the potential to result in adverse coastal management impacts. If development under Alternative 3 would occur on a site situated within 100 feet of San Francisco Bay, a consistency determination would be obtained from BCDC before commencement of construction and the construction contractor would attempt to avoid the BCDC jurisdictional line. If development were to be proposed along the water's edge of San Francisco Bay, an application would be submitted to BCDC for approval if any of the actions listed below would need to occur:

- placing solid material, building or repairing docks or pile-supported or cantilevered structures, disposing of material, or mooring a vessel for a long period in San Francisco Bay or in certain tributaries that flow into the bay;
- dredging or extracting material from the bay bottom;
- substantially changing the use of any structure or area;
- constructing, remodeling, or repairing a structure; or
- subdividing property or grading land.

If Alternative 3 is chosen for implementation, VA would coordinate with BCDC with regard to coastal resources if located within its jurisdiction. Through assumed compliance with the BCDC permit application and permitting requirements, impacts on coastal management are anticipated to be minor.

For a discussion of construction impacts of Alternative 3 long-term projects as they relate to additional coastal management topics, including scenic resources and views, parking and coastal access, and habitat, see Section 3.1, "Aesthetics"; Section 3.13, "Transportation, Traffic, Circulation, and Parking"; and Section 3.15, "Wildlife and Habitat." For further discussion regarding coast resources, see Appendix H, which contains the Coastal Consistency Determination for the LRDP at the Fort Miley Campus as submitted to CCC as well as CCC concurrence on the Coastal Consistency Determination (CCC, 2015). For development within the California Coastal Zone, a consistency determination has been obtained from CCC prior to commencement of construction.

Operation

Flooding as a Result of Location within a Floodplain

The Alternative 3 long-term projects may be implemented in areas mapped as special flood hazard areas if they would be located along the shoreline of San Francisco Bay. If Alternative 3 long-term projects would be situated within a special flood hazard area, the projects would be required to comply with the requirements of the San Francisco Floodplain Management Ordinance. Specifically, the first floor of structures would have to be located above the floodplain or be flood-proofed. Through assumed compliance with the requirements of the Floodplain Management Ordinance, the flooding impact resulting from potential location within a floodplain would be minor.

Degradation of Wetlands

Several locations in the Mission Bay area along San Francisco Bay have been mapped by USFWS as having estuarine and marine wetlands. The precise location of the Alternative 3 long-term projects is unknown at this time; therefore, as discussed in Section 3.8, "Hydrology and Water Quality," implementing Alternative 3 may result in adverse impacts on nearby estuarine and marine wetlands through downstream flooding or an increase in the frequency or severity of CSO events. However, implementing Management Measure HYD-1 at the potential new SFVAMC Mission Bay Campus would ensure that infrastructure would be properly sized to handle stormwater and wastewater flows to protect from down-gradient flooding hazards. In addition, LID or other techniques described in Management Measure HYD-1 would be used to infiltrate, evaporate, and detain stormwater, ensuring that predevelopment stormwater runoff conditions would be maintained. Thus, with implementation of Management Measure HYD-1, Alternative 3 long-term projects would not substantially

contribute to the frequency or severity of CSO events and/or downstream flooding. Implementing this management measure would reduce operational wetland impacts to a minor level.

Degradation of Coastal Resources

If Alternative 3 is chosen for implementation, VA would coordinate with BCDC and impacts on coastal resources would be avoided or mitigated as part of a future project-level NEPA review. Through assumed compliance with the BCDC permit application and permitting requirements, impacts of Alternative 3 long-term projects related to coastal management are anticipated to be minor.

For a discussion of operational impacts of Alternative 3 as they relate to additional coastal management topics, including scenic resources and views, parking and coastal access, and habitat, see Section 3.1, “Aesthetics”; Section 3.13, “Transportation, Traffic, Circulation, and Parking”; and Section 3.15, “Wildlife and Habitat.” For further discussion regarding coast resources, see Appendix H, which contains the Coastal Consistency Determination for the LRDP at the Fort Miley Campus as submitted to CCC as well as CCC concurrence on the Coastal Consistency Determination (CCC, 2015). For development within the California Coastal Zone, a consistency determination has been obtained from CCC prior to commencement of construction.

Alternative 4: No Action Alternative

Short-Term and Long-Term Projects

Construction

Under Alternative 4, there would be no new construction or retrofitting of existing buildings. Therefore, no construction-related wetlands or coastal management impacts would occur.

Operation

Under Alternative 4, the LRDP would not be implemented. Therefore, no operational flooding, wetlands, or coastal management impacts would occur.

3.5.3 References

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3.6 GEOLOGY, SOILS, AND PALEONTOLOGICAL RESOURCES

This section describes the geology, soils, and paleontological resources setting and regulatory framework and addresses the potential effects of the EIS Alternatives related to geology, soils, and paleontological resources.

3.6.1 Affected Environment

Regional Physiographic and Geologic Setting

The sites studied in this EIS are the existing SFVAMC Fort Miley Campus, adjacent to the Richmond District, and the Mission Bay area. Both of these areas are located within the northern portion of the San Francisco peninsula in the San Francisco North U.S. Geological Survey (USGS) 7.5-Minute Quadrangle. San Francisco is located within the Coast Ranges geomorphic province, a relatively young geologically and seismically active region on the western margin of the North American plate. In general, the Coast Ranges comprise a series of discontinuous northwest-southeast trending mountain ranges, valleys, and ridges (CGS, 2002). San Francisco rests on a foundation of Franciscan formation bedrock in a northwest-trending band that cuts diagonally across the city. This geologic formation known as the Franciscan Formation is composed of many different types of rock—greywacke, shale, greenstone (altered volcanic rock), basalt, chert (ancient silica-rich ocean deposits), and sandstone that originated as ancient sea floor sediments (CGS, 2002).

Faulting and Seismicity

Existing SFVAMC Fort Miley Campus and Mission Bay Area

Because faults and seismic activity are regional in nature, the discussion below relates to both the existing SFVAMC Fort Miley Campus and the Mission Bay area.

The San Francisco Bay Area is located in a seismically active region near the boundary between two major tectonic plates, the Pacific Plate to the southwest and the North American Plate to the northeast. These two plates move relative to each other in a predominantly lateral manner, with the San Andreas Fault Zone at the junction. The Pacific Plate, on the west side of the fault zone, is moving north relative to the North American Plate on the east. Since approximately 23 million years ago, about 200 miles of right-lateral slip has occurred along the San Andreas Fault Zone to accommodate the relative movement between these two plates (USGS, 2002). The relative movement between the Pacific and the North American Plates generally occurs across a 50-mile zone extending from the San Gregorio Fault in the southwest to the Great Valley Thrust Belt to the northeast. In addition to the right-lateral slip movement between tectonic plates, a compressional component of relative movement has developed between the Pacific Plate and a smaller segment of the North American Plate at the latitude of the San Francisco Bay during the last 3.5 million years. Strain produced by the relative motions of these plates is relieved by right-lateral strike-slip faulting on the San Andreas and related faults, and by vertical reverse-slip displacement on the Great Valley and other thrust faults in the central California area.

The region's seismic faults can be classified as historically active, active, sufficiently active and well defined, or inactive, as defined below (CGS, 2007).

- *Historically active faults* are faults that have generated earthquakes accompanied by surface rupture during historic time (approximately the last 200 years) or that exhibit a seismic fault creep (slow incremental movement along a fault that does not entail earthquake activity).

- *Active faults* show geologic evidence of movement within Holocene time (approximately the last 11,700 years).

- *Sufficiently active and well-defined faults* show geologic evidence of movement during the Holocene along one or more of their segments or branches, and their trace may be identified by direct or indirect methods.

- *Inactive faults* show direct geologic evidence of inactivity (that is, no displacement) during all of Quaternary time or longer.

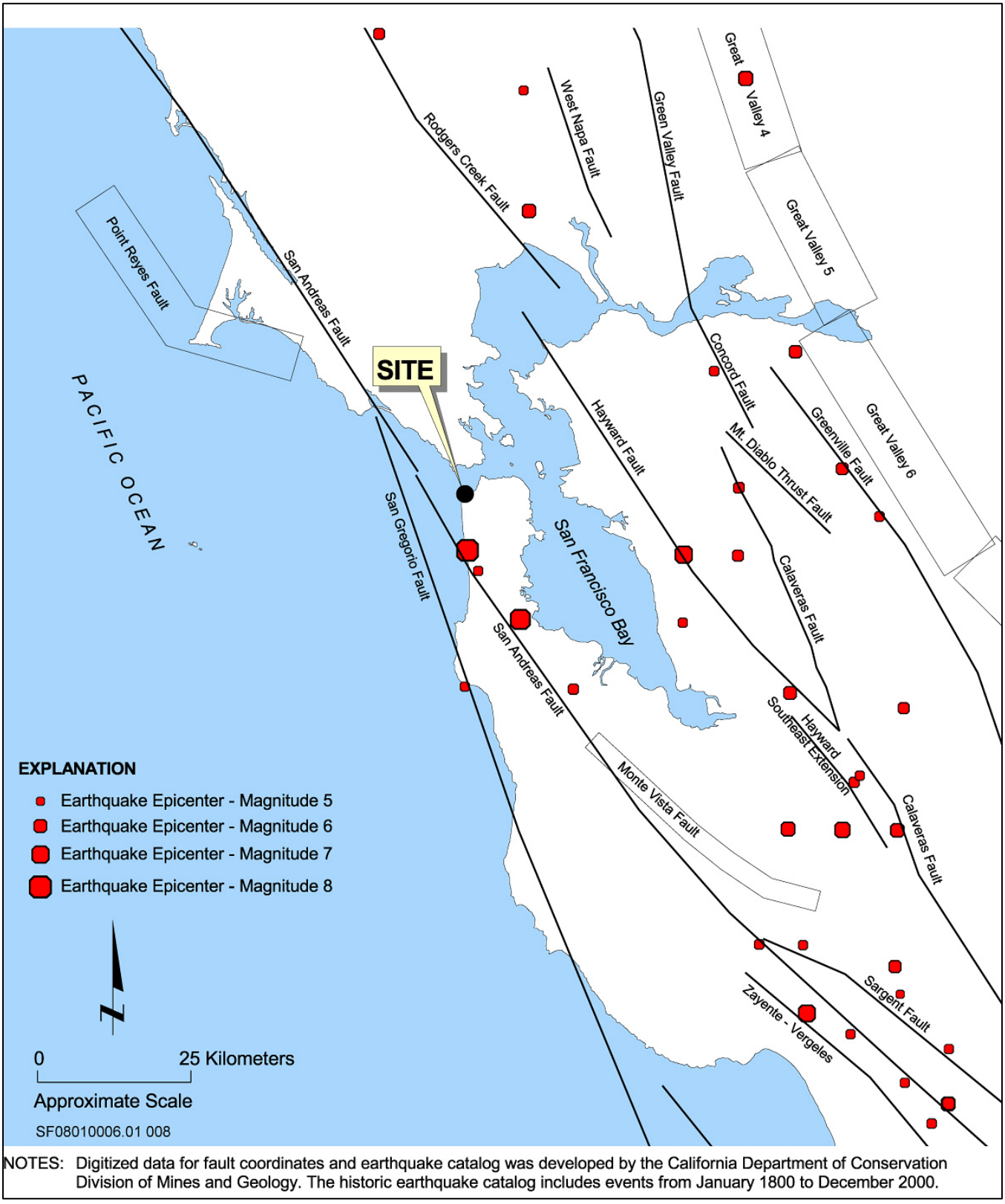
The existing SFVAMC Fort Miley Campus and the Mission Bay area both lie within a region of active faulting and high seismicity associated with the San Andreas Fault system. The San Andreas Fault system is a zone of major, northwest-trending active strike-slip faults consisting of, from east to west, the Calaveras, Hayward, San Andreas, and San Gregorio–Hosgri faults (Figure 3.6-1). The San Andreas Fault system has been the source of numerous moderate to large-magnitude historical earthquakes that caused strong ground shaking in the project area, including the 1906 San Francisco and 1989 Loma Prieta earthquakes. Future strong ground shaking from nearby large-magnitude earthquakes is a virtual certainty and should be a consideration in the design of the new project facilities and components.

The San Andreas Fault lies approximately 5.6 kilometers (3.5 miles) southwest of the existing SFVAMC Fort Miley Campus at its closest point. Several other active and potentially active faults occur within the project limits: the San Gregorio, Hayward, Point Reyes, Rodgers Creek, Calaveras, and others. Table 3.6-1 lists the distances of these and other active or potentially active[1] faults in the region (within 100 kilometers [62 miles]) from the existing Campus and their estimated maximum moment magnitudes.[2,3] The San Andreas Fault is approximately 9.6 kilometers (6.0 miles) from the center of the Mission Bay area. The existing Campus and the Mission Bay area are not located within an "Earthquake Fault Zone," as delineated by the California Geological Survey (CGS), and no active faults exist in either of these areas (Figure 3.6-1). (See "Alquist-Priolo Earthquake Fault Zoning Act," below.)

[1] Active faults are defined as those exhibiting either surface ruptures, topographic features created by faulting, surface displacements of geologically Recent (younger than about 11,700 years old) deposits, tectonic creep along fault lines, and/or close proximity to linear concentrations or trends of earthquake epicenters. Potentially active faults are those that have evidence of displacement of deposits of Quaternary age (the last 2 million years).

[2] Maximum magnitude earthquakes (moment magnitude) are defined in *Probabilistic Seismic Hazard Assessment for the State of California* by the California Department of Conservation, Division of Mines and Geology, Open File Report 96-08.

[3] Moment magnitude is an energy-based scale and provides a physically meaningful measure of the size of a faulting event. Moment magnitude is directly related to average slip and fault rupture area.



Source: Treadwell & Rollo, 2010

Figure 3.6-1: Major Faults and Earthquake Epicenters in the San Francisco Bay Area

Table 3.6-1: Regional Faults and Seismicity

Fault Name	Distance (km/mi) from SFVAMC Fort Miley Campus	Direction from SFVAMC Fort Miley Campus	Maximum Moment Magnitude
San Andreas—1906 Rupture	5.6/3.5	Southwest	7.9
San Andreas—Peninsula	5.6/3.6	Southwest	7.2
San Andreas—North Coast South	8.8/5.5	West	7.5
San Gregorio North	9.8/6.1	West	7.3
Hayward—Total	23.8/14.8	Northeast	7.1
Northern Hayward	23.8/14.8	Northeast	6.6
Southern Hayward	28.4/17.6	East	6.9
Point Reyes	34.0/21.1	Northwest	6.8
Rodgers Creek	36.8/22.9	Northeast	7.1
Mount Diablo Thrust	41.7/25.9	East	6.7
Northern Calaveras	42.0/26.1	East	7.0
Monte Vista	44.4/27.6	Southeast	6.8
Concord	46.2/28.7	Northeast	6.5
Southern Green Valley	47.4/29.5	Northeast	6.5
West Napa	48.0/29.8	Northeast	6.5
Northern Greenville	53.4/33.2	Northeast	6.6
Great Valley—Segment 6	59.4/36.9	Northeast	6.7
Central Greenville	61.5/38.2	East	6.7
Northern Green Valley	62.1/38.6	Northeast	6.3
Hayward—South East Extension	64.0/39.7	Southeast	6.4
Great Valley—Segment 5	64.1/39.8	Northeast	6.5
Great Valley—Segment 4	69.5/43.2	Northeast	6.6
Central Calaveras	71.9/44.7	Southeast	6.6
Southern Greenville	73.9/45.9	East	6.9
Hunting Creek—Berryessa	79.0/49.1	North	6.9
Great Valley—Segment 7	80.3/49.9	East	6.7
San Andreas—Santa Cruz Mts.	80.6/50.1	Southeast	7.2
Sargent	87.1/54.1	Southeast	6.8
Mayacama—South	89.5/55.6	North	6.9
Zayante—Vergeles	90.3/56.1	Southeast	6.8

Notes: km = kilometers; mi = miles; SFVAMC = San Francisco Veterans Administration Medical Center
Source: ENGEO, 2008

Ground Shaking

Existing SFVAMC Fort Miley Campus and Mission Bay Area

USGS has predicted that there is a 63 percent chance of a moment magnitude 6.7 earthquake or greater occurring in the San Francisco Bay Area over a period of 30 years, between 2003 and 2032 (USGS, 2008). The intensity of the seismic shaking during an earthquake depends on the distance and direction to the earthquake's epicenter, the magnitude of the earthquake, and the area's geologic conditions. The composition of underlying soils, even those relatively distant from faults, can intensify ground shaking. For this reason, earthquake intensities are also measured in terms of their observed effects at a given locality. Earthquakes occurring on faults closest to the existing SFVAMC Fort Miley Campus and other potential campus locations in the Mission Bay area would have the potential to generate the largest ground motions at those sites. A commonly used measure of earthquake intensity is the Modified Mercalli Intensity (MMI) scale, which is a subjective qualitative measure of the strength of an earthquake at a particular place as determined by its effects on objects and people at the Earth's surface. Table 3.6-2 describes the effects of earthquakes based on their level on the MMI scale. The MMI values for intensity range from I (earthquake not felt) to XII (damage nearly total), and an earthquake will vary over the region of a fault and generally decrease with distance from the epicenter of the earthquake.

Soils and Bedrock

Existing SFVAMC Fort Miley Campus

Information from previous subsurface investigations at the existing SFVAMC Fort Miley Campus indicates that the site is underlain by 1–6 feet of artificial fill consisting of stiff to hard sand with varying amounts of clay and gravel, which is underlain by bedrock (ENGEO, 2008; Treadwell & Rollo, 2010). Native soil, consisting of very stiff clay with bedrock fragments, underlies some of the fill at the Campus. Tests performed on the artificial fill indicate that it is nonexpansive; however, the native soil was found to be moderately to highly expansive (Treadwell & Rollo, 2010).

The existing SFVAMC Fort Miley Campus is underlain by intensely sheared rocks of the Franciscan Formation of Cretaceous age, described as a chaotic mixture of fragmented rock (USGS, 2002), which is shown on the geologic map of the San Francisco North USGS 7.5-Minute Quadrangle. This mapped unit generally includes rock fragments rounded by shearing and embedded in a soft matrix. The Campus is also adjacent to deposits of Holocene-age Dune Sand, which generally consist of clean, well-sorted, fine- to medium-grained sand. The Dune Sand is underlain by weathered Franciscan bedrock. The bedrock encountered locally at the site, from an elevation of 285–345 feet, consists of friable to moderately strong sandstone, claystone, and shale. Bedrock encountered at the site was closely fractured to crushed and highly to fully weathered (ENGEO, 2008; Treadwell & Rollo, 2010; VA, 2010).

Table 3.6-2: Modified Mercalli Intensity Scale

Intensity	Effect
I	Not felt. Marginal and long period effects of large earthquakes.
II	Felt by persons at rest, on upper floors, or favorably placed.
III	Felt indoors. Hanging objects swing. Vibration like passing of light trucks. Duration estimated. May not be recognized as an earthquake.
IV	Hanging objects swing. Vibration like passing of heavy trucks; or sensation of a jolt like a heavy ball striking the walls. Standing motor cars rock. Windows, dishes, doors rattle. Glasses clink. Crockery clashes. In the upper range of IV, wooden walls and frame creak.
V	Felt outdoors; direction estimated. Sleepers wakened. Liquids disturbed, some spilled. Small unstable objects displaced or upset. Doors swing, close, open. Shutters, pictures move. Pendulum clocks stop, start, change rate.
VI	Felt by all. Many frightened and run outdoors. Persons walk unsteadily. Windows, dishes, glassware broken. Knickknacks, books, etc., off shelves. Pictures off walls. Furniture moved or overturned. Weak plaster and masonry D cracked. Small bells ring (church, school). Trees, bushes shaken (visibly, or heard to rustle).
VII	Difficult to stand. Noticed by drivers of motor cars. Hanging objects quiver. Furniture broken. Damage to masonry D, including cracks. Weak chimneys broken at roof line. Fall of plaster, loose bricks, stones, tiles, cornices (also unbraced parapets and architectural ornaments). Some cracks in masonry C. Waves on ponds; water turbid with mud. Small slides and caving in along sand or gravel banks. Large bells ring. Concrete irrigation ditches damaged.
VIII	Steering of motor cars affected. Damage to masonry C; partial collapse. Some damage to masonry B; none to masonry A. Fall of stucco and some masonry walls. Twisting, fall of chimneys, factory stacks, monuments, towers, elevated tanks. Frame houses moved on foundations if not bolted down; loose panel walls thrown out. Decayed piling broken off. Branches broken from trees. Changes in flow or temperature of springs and wells. Cracks in wet ground and on steep slopes.
IX	General panic. Masonry D destroyed; masonry C heavily damaged, sometimes with complete collapse; masonry B seriously damaged. (General damage to foundations.) Frame structures, if not bolted, shifted off foundations. Frames racked. Serious damage to reservoirs. Underground pipes broken. Conspicuous cracks in ground. In alluvial areas sand and mud ejected, earthquake fountains, sand craters.
X	Most masonry and frame structures destroyed with their foundations. Some well-built wooden structures and bridges destroyed. Serious damage to dams, dikes, embankments. Large landslides. Water thrown on banks of canals, rivers, lakes, etc. Sand and mud shifted horizontally on beaches and flat land. Rails bent slightly.
XI	Rails bent greatly. Underground pipelines completely out of service.
XII	Damage nearly total. Large rock masses displaced. Lines of sight and level distorted. Objects thrown into the air.

Notes:
Masonry A: Good workmanship, mortar, and design; reinforced, especially laterally, and bound together by using steel, concrete, etc.; designed to resist lateral forces.
Masonry B: Good workmanship and mortar; reinforced, but not designed in detail to resist lateral forces.
Masonry C: Ordinary workmanship and mortar; no extreme weaknesses like failing to tie in at corners, but neither reinforced nor designed against horizontal forces.
Masonry D: Weak materials, such as adobe; poor mortar; low standards of workmanship; weak horizontally.
Source: ABAG, 2011

Mission Bay Area

The Mission Bay area is located within the San Francisco North USGS 7.5-Minute Quadrangle. Based on a review of the *Geologic Map of the San Francisco–San Jose Quadrangle* (Wagner et al., 1991), the Mission Bay area is underlain by the following geologic formations, discussed below: Alluvium, Artificial Fill, Dune Sand, and the Franciscan Assemblage (sandstone, shale, conglomerate, and serpentinized ultramafic rock).

Alluvium under the Mission Bay area consists of unconsolidated stream and basin deposits ranging from very small to boulder size; it is of Holocene age. Artificial Fill is also of Holocene age, and consists of nonnative materials placed at the edge of the San Francisco Bay to raise the land surface above sea level. Dune Sand in the Mission Bay area is of Holocene age.

The Franciscan Assemblage outcrops at the surface in two areas of the Mission Bay area. Immediately adjacent to the San Francisco–Oakland Bay Bridge, it is composed primarily of sandstone, shale, and conglomerate of marine origin and is Cretaceous in age (i.e., approximately 144 to 65 million years Before Present [B.P.]).

Southwest of the Bay Bridge, between Interstate 80/U.S. Highway 101 and Interstate 280, this formation outcrops as serpentinized ultramafic rocks of Jurassic age (i.e., approximately 206–144 million years B.P.). In addition to these two surface outcrops, the Franciscan Assemblage underlies all of the other formations described above.

Paleontological Resources

Paleontological Resource Inventory Methods

A stratigraphic inventory was completed to develop a baseline paleontological resource inventory of the existing SFVAMC Fort Miley Campus and the Mission Bay area and surrounding areas by rock unit, and to assess the potential paleontological productivity of each rock unit. Research methods included a review of published and unpublished literature and a search for recorded fossil sites at the University of California Museum of Paleontology (UCMP) (2011). These tasks complied with Society of Vertebrate Paleontology guidelines (SVP, 1995).

To better understand the stratigraphy of the existing SFVAMC Fort Miley Campus and the Mission Bay area, geologic maps and reports covering the geology of these areas were reviewed to determine the exposed rock units and to delineate their respective aerial distributions in the respective areas.

As part of the paleontological resource inventory, published and unpublished geological and paleontological literature was reviewed to document the number and locations of previously recorded fossil sites from rock units exposed in the San Francisco peninsula and vicinity, as well as the types of fossil remains that each rock unit has produced. The literature review was supplemented by an archival search conducted by AECOM at the UCMP in Berkeley, California, on March 17, 2011 (UCMP, 2011).

Because a review of aerial photographs indicates that at least 80 percent of the ground surface of the existing SFVAMC Fort Miley Campus and the Mission Bay area is obscured by buildings and pavement, a reconnaissance-level field survey was not performed.

Paleontological Resource Assessment Criteria

The potential paleontological importance of the existing SFVAMC Fort Miley Campus and the Mission Bay area can be assessed by identifying the paleontological importance of exposed rock units in these areas. Because the areal distribution of a rock unit can be easily delineated on a topographic map, this method is conducive to delineating parts of these areas that are of higher and lower sensitivity for paleontological resources.

A paleontologically important rock unit is one that has a high-potential paleontological productivity rating and is known to have produced unique, scientifically important fossils. The potential paleontological productivity rating of a rock unit exposed in the project locations refers to the abundance/densities of fossil specimens and/or previously recorded fossil sites in exposures of the unit in and near the project locations. Exposures of a specific rock unit on the existing SFVAMC Fort Miley Campus and in the Mission Bay area are most likely to yield fossil remains representing particular species in quantities or densities similar to those previously recorded from the unit in and near the project locations.

The tasks listed below were completed to establish the paleontological importance of each rock unit exposed at or near the existing SFVAMC Fort Miley Campus and the Mission Bay area.

- The potential paleontological productivity of each rock unit was assessed, based on the density of fossil remains previously documented within the rock unit.
- The potential for a rock unit exposed in the project area to contain a unique paleontological resource was considered.

Paleontologic Resource Inventory Results for the SFVAMC Fort Miley Campus and Mission Bay Area

Stratigraphic Inventory

Regional and local surficial geologic mapping and correlation of the various geologic units on the existing SFVAMC Fort Miley Campus and in the Mission Bay area and vicinity have been provided at a scale of 1:250,000 by Wagner, Bortugno, and McJunkin (Wagner et al., 1991).

Paleontological Resource Inventory and Assessment by Rock Unit

Based on a record search conducted at the UCMP, no previously recorded vertebrate fossil localities exist within the SFVAMC Fort Miley Campus (UCMP, 2011). The closest recorded vertebrate fossil was recovered from the Sutro Baths area, which is within the Golden Gate National Recreation Area, approximately one-third mile southwest of the existing SFVAMC Fort Miley Campus (Hay, 1927, as cited in Jefferson, 1991). In addition, a vertebrate fossil was recovered from Ocean Beach, approximately three-quarters mile southwest of the SFVAMC Fort Miley Campus (Savage, 1951, as cited in Jefferson, 1991). Both fossils were of Pleistocene age (i.e., approximately 1.8 million to 11,700 years B.P.).

The UCMP record search also indicated that there are no previously recorded vertebrate fossil localities within the Mission Bay area. However, UCMP sites V-3411 and V-69816 are located approximately 2,000 feet northeast of

the northeastern boundary of the Mission Bay area, at the San Francisco–Oakland Bay Bridge. These sites yielded specimens of Pleistocene-age mammoth and horse. UCMP site V-3410 is located approximately 1,000 feet south of the Mission Bay area's southern boundary, at the Islais Creek Channel. This site yielded a specimen from an unknown Pleistocene-age mammal.

Alluvium, Artificial Fill, Dune Sand

By definition, an object must be more than 11,700 years old to be considered a unique paleontological resource. Because the Alluvium, Artificial Fill, and Dune Sand deposits on the existing SFVAMC Fort Miley Campus and in the Mission Bay area and vicinity are younger than 11,700 years B.P., these formations are considered to be of low paleontological sensitivity.

Franciscan Assemblage

The Franciscan Assemblage consists of various types of rocks that formed along the Pacific Oceanic Plate and the North American Plate; these rocks were subsequently deformed and metamorphosed during subduction of the Pacific Oceanic Plate. Various authors have reported the presence of marine invertebrates in the Franciscan Assemblage throughout California (see, for example, Bailey et al., 1964); however, marine invertebrate fossil specimens are generally common, well developed, and well documented. They would generally not be considered a unique paleontological resource. Reports of vertebrate fossils from the Franciscan Assemblage are rare (e.g., only two localities have been recorded by the UCMP: one in San Joaquin County and one in San Luis Obispo County). Because of the nature of this rock assemblage (i.e., vertebrate fossils in the original parent material generally would have been destroyed during the subduction and metamorphosis process) and the general lack of previously recorded vertebrate fossil localities, this formation is considered to have a low paleontological sensitivity.

3.6.2 Regulatory Framework

Clean Water Act

The Clean Water Act (CWA) (33 U.S. Code [USC] 1251 et seq.) includes provisions for reducing soil erosion for the protection of water quality. The CWA makes the discharge of pollutants from a point source to navigable waters unlawful, unless a permit was obtained under the provisions of the CWA. Regulation of discharges under the CWA also pertains to construction sites where soil erosion and stormwater runoff and other pollutant discharges could affect downstream water quality. The CWA is described in greater detail in Section 3.8, "Hydrology and Water Quality."

Executive Order 12699

Executive Order 12699, "Seismic Safety of Federal and Federally Assisted or Regulated New Building Construction," was signed by President George H. W. Bush on January 5, 1990, to further the goals of Public Law 95-124, the Earthquake Hazards Reduction Act of 1977, as amended. The executive order applies to new construction of buildings owned, leased, constructed, assisted, or regulated by the federal government. Guidelines and procedures for implementing the order were prepared in 1992 by the federal Interagency Committee on Seismic Safety in Construction. The guidelines establish minimum acceptable seismic safety standards, provide

evaluation procedures for determining the adequacy of local building codes, and recommend implementation procedures. Each federal agency is independently responsible for ensuring that appropriate seismic design and construction standards are applied to new construction under its jurisdiction.

Under the original Executive Order 12699, the model code for the West Coast was the Uniform Building Code developed by the International Conference of Building Officials. In 1994, the International Conference of Building Officials joined with other similar organizations in the Southeast and on the East Coast to form the International Code Council (ICC). In 2000, the ICC published the first International Building Code (IBC) based on the reassessment of earlier codes and the combined updated experience of ICC member organizations. The current 2009 IBC is the result of nearly 100 years of building code improvement.

Executive Order 12941

Executive Order 12941, "Seismic Safety of Existing Federally Owned or Leased Buildings," was signed by President Bill Clinton on December 1, 1994, to mandate the seismic safety of existing federally owned or leased buildings by adopting RP4 Standards. The standards, developed by the Interagency Committee on Seismic Safety in Construction, were adopted as the minimum level acceptable for use by federal departments and agencies in assessing the seismic safety of their owned and leased buildings and in mitigating unacceptable seismic risk in those buildings. Executive Order 12941 mandates the seismic retrofitting of certain buildings at the existing SFVAMC Fort Miley Campus, which is described below in Section 3.6.3, "Environmental Consequences."

International Building Code

The IBC, which encompasses the former Uniform Building Code, is produced by the ICC to provide standard specifications for engineering and construction activities, including measures to address geologic and soil concerns. Specifically, these measures encompass issues such as seismic loading (e.g., classifying seismic zones and faults), ground motion, and engineered fill specifications (e.g., compaction and moisture content). The referenced guidelines, while not serving as formal regulatory requirements per se, are widely accepted by regulatory authorities and are routinely included in related standards such as grading codes. The IBC guidelines are updated regularly to reflect current industry standards and practices, including criteria from sources such as the American Society of Civil Engineers and ASTM International (formerly known as the American Society for Testing and Materials).

Earthquake Hazards Reduction Act

In October 1977, the U.S. Congress passed the Earthquake Hazards Reduction Act (42 USC 7701 et seq.) to "reduce the risks to life and property from future earthquakes in the United States through the establishment and maintenance of an effective earthquake hazards and reduction program" (42 USC 7702). To accomplish this, the act established the National Earthquake Hazards Reduction Program (NEHRP). The National Earthquake Hazards Reduction Program Act (NEHRPA) significantly amended this program in November 1990 by refining the description of agency responsibilities, program goals, and objectives. The NEHRPA designates the Federal Emergency Management Agency (FEMA) as the lead agency of the program and assigns FEMA several planning, coordinating, and reporting responsibilities. Other NEHRPA agencies include the National Institute of Standards and Technology, the National Science Foundation, and USGS.

Veterans Health Administration Directive 2005-019

The purpose of Veterans Health Administration (VHA) Directive 2005-019 is to establish a policy regarding the seismic safety of VHA buildings. Because facilities identified as essential must remain in operation after a seismic event, VHA Directive 2005-019 assists VA in providing adequate life-safety protection to Veterans, employees, and other building occupants. In compliance with Executive Order 12941, VA developed an inventory of its owned or leased buildings identifying their seismic risk. These data were reported to FEMA in January 1999. Under VHA Directive 2005-019, all new buildings must be structurally designed and constructed in compliance with VA Seismic Design Requirements H-18-8 and the IBC (VA, 2005). A major update of the VA Seismic Design Requirements H-18-8 (formerly known as H-08-8) was implemented in 1995. The current VA Seismic Design Requirements H-18-8 closely align with the IBC, and the VA Seismic Design Requirements would be applicable to proposed new SFVAMC buildings.

Alquist-Priolo Earthquake Fault Zoning Act

The California Alquist-Priolo Earthquake Fault Zoning Act (Alquist-Priolo Act) was enacted in December 1972 to mitigate the hazard of surface faulting to structures for human occupancy. Surface rupture is the most easily avoided seismic hazard. The Alquist-Priolo Act's main purpose is to prevent the construction of buildings used for human occupancy on the surface trace of active faults.

The Alquist-Priolo Act addresses only the hazard of surface fault rupture and is not directed toward other earthquake hazards. The California Seismic Hazards Mapping Act, enacted in 1990, addresses earthquake hazards caused by nonsurface fault rupture, including liquefaction and seismically induced landslides. The law requires the State Geologist to establish regulatory zones, known as earthquake fault zones, around the surface traces of active faults and to issue appropriate maps. The maps are distributed to all affected cities, counties, and State agencies for their use in planning and controlling new or renewed construction. Local agencies must regulate most development projects within the zones. Projects include all land divisions and most structures for human occupancy. Before a project can be permitted, cities and counties must require a geologic investigation to demonstrate that proposed buildings will not be constructed across active faults. An evaluation and written report of a specific site must be prepared by a licensed geologist. If an active fault is found, a structure for human occupancy cannot be placed over the trace of the fault and must be set back 50 feet from the fault trace.

Because no active fault zones are known to exist in San Francisco, no earthquake fault zones under the Alquist-Priolo Act are mapped in the City and County of San Francisco.

Archaeological Resources Protection Act

The Archaeological Resources Protection Act (ARPA) amended the Antiquities Act of 1906 (16 USC 431–433) and set a broad policy that archaeological resources are important to the nation and should be protected, and required special permits before the excavation or removal of archaeological resources from public or Indian lands. The purpose of ARPA was to secure, for the present and future benefit of the American people, the protection of archaeological resources and sites that are on public lands and Indian lands, and to foster increased cooperation and exchange of information between governmental authorities, the professional archaeological community, and private individuals having collections of archaeological resources and data that were obtained before October 31,

1979. Compliance with ARPA is required for Alternatives 1, 2, and 3 because the project site is located on public (federal) land; however, no actions are needed to comply with ARPA unless excavation of archaeological resources becomes necessary.

Society of Vertebrate Paleontology Guidelines

The Society of Vertebrate Paleontology (SVP, 1995, 1996), a national scientific organization of professional vertebrate paleontologists, has established standard guidelines that outline acceptable professional practices in the conduct of paleontological resource assessments and surveys, monitoring and mitigation, data and fossil recovery, sampling procedures, specimen preparation, analysis, and curation. Most practicing professional paleontologists in the nation adhere to the Society of Vertebrate Paleontology's assessment, mitigation, and monitoring requirements, as specifically spelled out in its standard guidelines.

3.6.3 Environmental Consequences

Significance Criteria

A NEPA evaluation must consider the context and intensity of the environmental effects that would be caused by, or result from, the EIS Alternatives. There is currently no Council on Environmental Quality guidance related to the analysis of geology and soils impacts. Therefore, other environmental assessment documents were reviewed and the following criteria were selected for evaluation.

Geology and Soils

An Alternative analyzed in this EIS is considered to result in an adverse impact related to geology and soils if it would:

- expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving strong seismic ground shaking, or seismic-related ground failure, including liquefaction or landslides;
- be located on a geologic unit or soil that is unstable, or would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse; or
- be located on expansive soil creating substantial risks to life or property.

Paleontological Resources

An Alternative analyzed in this EIS is considered to result in an adverse impact related to paleontological resources if it would:

- destroy a unique paleontological resource or site.

Assessment Methods

Geology and Soils

The significance of impacts associated with faulting, ground acceleration, and ground shaking was evaluated based on distance to known fault zones as well as the seismic characteristics of fault zones. Effects of the EIS Alternatives on soils that possess a moderate to severe potential for erosion and liquefaction could be adverse impacts. Soil erosion impacts are also discussed in Section 3.8, "Hydrology and Water Quality." As noted above, San Francisco is not located within an "Earthquake Fault Zone" as delineated by CGS, and no active faults exist either on the existing SFVAMC Fort Miley Campus or in the Mission Bay area; thus, exposure of people or structures to surface fault rupture is not evaluated below.

Paleontological Resources

In its standard guidelines for assessment and mitigation of adverse impacts on paleontological resources, the Society of Vertebrate Paleontology (SVP 1995) established three categories of sensitivity for paleontological resources: high, low, and undetermined. Areas where fossils have been previously found are considered to have a high sensitivity and a high potential to produce fossils. Areas that are not sedimentary in origin and that have not been known to produce fossils in the past typically are considered to have low sensitivity. Areas that have not had any previous paleontological resource surveys or fossil finds are considered to be of undetermined sensitivity until surveys and mapping are performed to determine their sensitivity. After reconnaissance surveys, observation of exposed cuts, and possibly subsurface testing, a qualified paleontologist can determine whether the area should be categorized as having high or low sensitivity. In keeping with the significance criteria of the Society of Vertebrate Paleontology (SVP 1995), all vertebrate fossils are generally categorized as being of potentially significant scientific value.

To assess the potential paleontological impacts associated with LRDP implementation, a "unique paleontological resource or site" was defined as an individual or collection of vertebrate fossil specimens that is identifiable and well preserved, and meets one or more of the following criteria:

- a type specimen (i.e., the individual from which a species or subspecies has been described);
- a member of a rare species;
- a species that is part of a diverse assemblage (i.e., a site where more than one fossil has been discovered) wherein other species are also identifiable, and important information regarding life history of individuals can be drawn;
- a skeletal element different from, or a specimen more complete than, those now available for its species; or
- a complete specimen (i.e., all or substantially all of the entire skeleton is present).

The value or importance of different fossil groups varies depending on the age and depositional environment of the rock unit that contains the fossils, their rarity, the extent to which they have already been identified and documented, and the ability to recover similar materials under more controlled conditions (such as for a research project). Marine invertebrates are generally common; the fossil record is well developed and well documented,

and they would generally not be considered a unique paleontological resource. Identifiable vertebrate marine and terrestrial fossils are generally considered scientifically important because they are relatively rare.

Alternative 1: SFVAMC Fort Miley Campus Buildout Alternative

Short-Term Projects

Construction

Alternative 1 short-term projects would involve new development and/or seismic retrofitting of patient care, research, administrative, hoptel, and parking structures on the existing 29-acre SFVAMC Fort Miley Campus through 2020, as mandated by Executive Order 12941. These projects would be constructed in 17 projects over 7 years. Alternative 1 short-term projects would involve construction of 600,992 gross square feet (gsf) (384,452 of which would be net new gsf) at the SFVAMC Fort Miley Campus (Table 2-1 and Figure 2-1). In addition to new development and associated demolition, buildings would be retrofitted according to VA seismic design requirements (VA Directive H-18-8) because VA has identified these buildings as Critical or Essential Facilities for the existing SFVAMC Fort Miley Campus. The seismic retrofitting of those buildings under Alternative 1 short-term projects would result in a minor impact or no impact related to geology and soils.

Erosion and Loss of Topsoil

Construction of Alternative 1 short-term projects would involve site grading and preparation of approximately 6.72 acres, which would disturb exposed subsurface soils, including fill and underlying native soils. Despite previous development of the existing SFVAMC Fort Miley Campus, loose and compacted soil exists on-site in landscaped and open space areas and areas that would undergo construction or maintenance. Exposed fill materials would be susceptible to erosion during project construction excavation. Erosion resulting from stormwater runoff could occur during the project construction process, although most loosened and eroded soil would remain within the excavation pits. A National Pollutant Discharge Elimination System (NPDES) general permit for stormwater discharges associated with construction activities (Construction General Permit; Order 2009-0009-DWQ, as amended by Order 2010-0014-DWQ) would be required for the implementation of short-term project components. Sites that disturb 1 acre or more and drain to the combined sewer-stormwater system must comply with the San Francisco Public Utilities Commission's Construction Site Runoff Control Program. Specifically, this requires the submittal of an erosion and sediment control plan and implementation of best management practices to prevent illicit discharge into the combined sewer systems.

In areas where excavation will be required, it will be necessary to construct a permanent basement wall along the western and northern sides of the building and provide temporary shoring or slopes for the excavations sides (Treadwell & Rollo, 2010). Although effects from excavation are not expected to be substantial enough to constitute an adverse impact, the following management measure is recommended to alleviate these effects.

> **Management Measure GEO-1: Implement Properly Designed Shoring Systems or Temporary Slopes during Construction to Avoid Unstable Excavations**
>
> *The proper shoring design or temporary excavation sides (slopes) will depend on the soil type, extent of groundwater seepage, the height or depth of the excavation, the inclination of the excavation, and the*

amount of time that the excavation will remain open. These factors will be taken into consideration by structural engineers responsible for the design and will reference the geotechnical recommendations made in Treadwell & Rollo (2010) and ENGEO (2008). When excavations are made adjacent to sensitive structures (i.e., buildings of historic significance, equipment with little tolerance to settlement, or critical facilities and utilities), monitoring of ground surface and structures will occur so that the amount of settlement or movement does not exceed acceptable levels.

In addition, VA would run any future stormwater and water storage plans that avoid contributing to geologic instability by the California Coastal Commission for review and concurrence (CCC, 2015).

With implementation of the Construction Site Runoff Control Program and Management Measure GEO-1, the construction of Alternative 1 short-term projects would result in a minor impact related to erosion and loss of topsoil.

Alteration of Topography

Alternative 1 short-term projects would result in below-grade development in the form of one level of basement for proposed Building 40 and proposed Building 23. In addition, as a conservative estimate, excavation of 24 feet below grade for each new structure is assumed in this EIS. Topography at the existing SFVAMC Fort Miley Campus would not be substantially altered and the proposed buildings would be constructed following applicable VA seismic design requirements (VA Directive H-18-8) and the IBC; therefore, the construction of Alternative 1 short-term projects would result in a minor impact or no impact related to alteration of topography.

Paleontological Resources

The existing SFVAMC Fort Miley Campus is underlain by Artificial Fill and the Franciscan Assemblage. Dune Sand may also be encountered. Because of the young age of the Artificial Fill and Dune Sand and the way in which the Franciscan Assemblage was formed, they are considered to be of low paleontological sensitivity. Furthermore, the result of a records search at the UCMP indicated that no fossils have been recovered from areas beneath the Campus. Therefore, construction activities at the existing Campus would have a direct minor impact or no impact on unique paleontological resources. No indirect impacts would occur.

Operation

Alternative 1 short-term projects would involve new development and/or retrofitting of patient care, research, administrative, hoptel, and parking structures on the existing 29-acre SFVAMC Fort Miley Campus. The seismic retrofit of existing buildings is mandated by Executive Order 12941. After the seismic retrofitting of Buildings 1, 5, 6, 8, 7, 9, and 10 (as part of the short-term projects), this alternative would result in a beneficial operational impact because the buildings would be built to current VA seismic standards.

Seismically Induced Ground Shaking and Ground Failure

Liquefaction typically occurs when saturated, clean, fine-grained loose sands near the surface (usually within the upper 50 feet), coupled with a shallow groundwater table, are subject to intense ground shaking. One of the major types of liquefaction-induced ground failures is lateral spreading of mildly sloping ground. Lateral spreading is a

failure within a nearly horizontal soil zone (possibly as a result of liquefaction) that causes the overlying soil mass to move toward a free face or down a gentle slope. The existing SFVAMC Fort Miley Campus is not located in an area that is mapped as a liquefaction hazard zone (CGS, 2000) and groundwater was not encountered during previous borings/geotechnical investigations (ENGEO, 2008; Treadwell & Rollo, 2010). Lateral spreading at the site is unlikely because no liquefaction hazard is present at the Campus (Treadwell & Rollo, 2010). Subsidence, the sinking or settling of land, is caused by compaction of unconsolidated soils during a seismic event, compaction by heavy structures, erosion of peat soils, or groundwater depletion. Subsidence usually occurs over a broad area and therefore is not detectable at the ground surface. This normally occurs in areas underlain by alluvial soils, which are not expected to be present at the existing Campus. Alternative 1 short-term projects would result in a minor impact or no impact related to induced seismic ground shaking and associated ground failure.

Seismically Induced Landslides or Slope Failures

Landslides and other slope failures are common occurrences during or soon after earthquakes. The existing SFVAMC Fort Miley Campus is not located in a designated landslide hazard zone (CGS, 2000), and no evidence of landslides was observed from a previous investigation (Treadwell & Rollo, 2010). However, there are two mapped landslide scarps to the north of the Campus and another previous landslide area on the northern slope of the Campus. The mapped landslides are outside the proposed development footprint and do not pose a risk to the development activities associated with Alternative 1 short-term projects (ENGEO, 2008; Treadwell & Rollo, 2010). Therefore, no impact related to seismically induced landslides or slope failures would result from the operation of Alternative 1 short-term projects.

Expansive or Corrosive Soils

Expansive soils generally result when specific clay minerals expand when saturated and shrink in volume when dry. Native soil on the existing SFVAMC Fort Miley Campus was found to be moderately to highly expansive (Treadwell & Rollo, 2010). Design and construction of the proposed facilities would address any potential expansive or corrosive soils through engineering and design recommendations for the proposed facilities. Therefore, a minor impact or no impact related to expansive or corrosive soils would result from facility operation for Alternative 1 short-term projects.

Paleontological Resources

Because operation of Alternative 1 short-term projects would not involve ground disturbance, no direct or indirect impacts on paleontological resources would occur.

Long-Term Projects

The Alternative 1 long-term projects would involve one project for the construction of Building 213 (Clinical Addition Building) over 24 months. The Alternative 1 long-term project would involve construction of 170,000 gsf, which would all be net new gsf, at the existing SFVAMC Fort Miley Campus (Table 2-2 and Figure 2-2).

Construction

Erosion and Loss of Topsoil

The erosion and topsoil effects of constructing the clinical and research buildings and administrative/mixed-use buildings under the Alternative 1 long-term project would be less than those described for Alternative 1 short-term projects. Construction of Building 213 would disturb 0 net acres of soil, because Building 12 demolition (on the footprint of proposed Building 213) would have already occurred during short-term projects. There would be no impact related to erosion and loss of topsoil.

Alteration of Topography

The topographical effects of constructing the clinical and research buildings and administrative/mixed-use buildings under the Alternative 1 long-term project would be similar to those described for Alternative 1 short-term projects. One basement level of excavation is anticipated for the proposed Building 213. Alteration of topography would result in a minor impact or no impact.

Paleontological Resources

The effects on paleontological resources from constructing the clinical and research buildings and administrative/mixed-use buildings under the Alternative 1 long-term project would be similar to those described for Alternative 1 short-term projects. There would be a minor impact or no impact related to paleontological resources.

Operation

Seismically Induced Ground Shaking and Ground Failure

The effects of operating the clinical and research buildings and administrative/mixed-use buildings under the Alternative 1 long-term project would be similar to those described for Alternative 1 short-term projects. There would be a minor impact or no impact related to seismically induced ground shaking and associated ground failure.

Seismically Induced Landslides or Slope Failures

The effects of operating the clinical and research buildings and administrative/mixed-use buildings under the Alternative 1 long-term project would be similar to those described for Alternative 1 short-term projects. No impact related to seismically induced landslides or slope failures would result from the operation of facilities proposed in the Alternative 1 long-term project.

Expansive or Corrosive Soils

The effects of operating the clinical and research buildings and administrative/mixed-use buildings under the Alternative 1 long-term project would be similar to those described for Alternative 1 short-term projects. There would be a minor impact or no impact related to expansive or corrosive soils.

Paleontological Resources

The effects of operating the clinical and research buildings and administrative/mixed-use buildings under the Alternative 1 long-term project would be similar to those described for Alternative 1 short-term projects. A minor impact or no impact on paleontological resources would result from the operation of the facilities proposed in the Alternative 1 long-term project.

Alternative 2: SFVAMC Fort Miley Campus Buildout Alternative

Short-Term Projects

Alternative 2 short-term projects at the existing SFVAMC Fort Miley Campus would be the same as Alternative 1 short-term projects, with one exception. Specifically, retrofitting of the existing Buildings 1, 6, and 8 would not occur as part of Alternative 2 short-term projects (Table 2-3 and Figure 2-3), but would instead be accomplished in the long term. Alternative 2 short-term projects would involve construction of a total of 485,445 gsf (384,452 of which would be net new gsf), which is 115,547 gsf less than for Alternative 1 short-term projects. Therefore, impacts of Alternative 2 short-term projects would be similar to or less than those of Alternative 1 short-term projects. Geology, soils, and paleontological resources impacts would range in significance from minor to no impact.

Construction

Erosion and Loss of Topsoil

Demolition, excavation, and grading activities associated with Alternative 2 short-term projects would disturb approximately 6.72 acres, which would expose subsurface soils, including fill and underlying native soils. Despite previous development of the existing SFVAMC Fort Miley Campus, loose and compacted soil exists on-site in landscaped and open space areas and areas that would undergo construction or maintenance. Exposed fill materials would be susceptible to erosion during excavation for project construction. Erosion resulting from stormwater runoff could occur during the project construction process, although most loosened and eroded soil would remain within the excavation pits. An NPDES general permit for stormwater discharges associated with construction activities (Construction General Permit; Order 2009-0009-DWQ, as amended by Order 2010-0014-DWQ) would be required for the implementation of short-term project components. Sites that disturb one acre or more and drain to the combined sewer-stormwater system must comply with the San Francisco Public Utilities Commission's Construction Site Runoff Control Program. Specifically, this would require the submittal of an erosion and sediment control plan and implementation of best management practices to prevent illicit discharge into the combined sewer systems. In addition, VA would run any future stormwater and water storage plans that avoid contributing to geologic instability by the California Coastal Commission for review and concurrence (CCC, 2015). With implementation of the Construction Site Runoff Control Program and Management Measure GEO-1, the impacts of construction of Alternative 2 short-term projects related to erosion and loss of topsoil would be similar to those of Alternative 1 short-term projects and would be minor.

Alteration of Topography

Similar to Alternative 1 short-term projects, Alternative 2 short-term projects would result in below-grade development in the form of one level of basement for proposed Building 40 and proposed Building 23. In addition, as a conservative estimate, excavation of 24 feet below grade for each new structure is assumed in this EIS. Topography at the existing SFVAMC Fort Miley Campus would not be substantially altered and the proposed buildings would be constructed following applicable VA seismic design requirements (VA Directive H-18-8) and the IBC; therefore, the construction of Alternative 2 short-term projects would result in a minor impact or no impact related to alteration of topography.

Paleontological Resources

The existing SFVAMC Fort Miley Campus is underlain by Artificial Fill and the Franciscan Assemblage. Dune Sand may also be encountered. Because of the young age of the Artificial Fill and Dune Sand and the way in which the Franciscan Assemblage was formed, they are considered to be of low paleontological sensitivity. Furthermore, the result of a records search at the UCMP indicated that no fossils have been recovered from areas beneath the Campus. Therefore, similar to the impact from Alternative 1, construction activities at the existing Campus under Alternative 2 short-term projects would have a minor impact or no impact on unique paleontological resources.

Operation

Seismically Induced Ground Shaking and Ground Failure

The existing SFVAMC Fort Miley Campus is not located in an area that is mapped as a liquefaction hazard zone (CGS, 2000) and groundwater was not encountered during previous borings/geotechnical investigations (ENGEO, 2008; Treadwell & Rollo, 2010). Lateral spreading at the site is unlikely because no liquefaction hazard is present at the Campus (Treadwell & Rollo, 2010). Subsidence, the sinking or settling of land, is caused by compaction of unconsolidated soils during a seismic event, compaction by heavy structures, erosion of peat soils, or groundwater depletion. Subsidence usually occurs over a broad area and therefore is not detectable at the ground surface. This normally occurs in areas underlain by alluvial soils, which are not expected to be present at the existing Campus. Alternative 1 short-term projects would result in a minor impact or no impact related to induced seismic ground shaking and associated ground failure.

Seismically Induced Landslides or Slope Failures

Landslides and other slope failures are common occurrences during or soon after earthquakes. The existing SFVAMC Fort Miley Campus is not located in a designated landslide hazard zone (CGS, 2000), and no evidence of landslides was observed from a previous investigation (Treadwell & Rollo, 2010). However, there are two mapped landslide scarps to the north of the Campus and another previous landslide area on the northern slope of the Campus. The mapped landslides are outside the proposed development footprint and do not pose a risk to the development activities associated with Alternative 2 short-term projects (ENGEO, 2008; Treadwell & Rollo, 2010). Therefore, no impact related to seismically induced landslides or slope failures would result from the operation of Alternative 2 short-term projects.

Expansive or Corrosive Soils

Expansive soils generally result when specific clay minerals expand when saturated and shrink in volume when dry. Native soil on the existing SFVAMC Fort Miley Campus was found to be moderately to highly expansive (Treadwell & Rollo, 2010). Design and construction of the proposed facilities would address any potential expansive or corrosive soils through engineering and design recommendations for the proposed facilities. Therefore, a minor impact or no impact related to expansive or corrosive soils would result from facility operation for Alternative 2 short-term projects.

Paleontological Resources

Because operation of Alternative 2 short-term projects would not involve ground disturbance, no direct or indirect impacts on paleontological resources would occur.

Long-Term Projects

Alternative 2 long-term projects at the existing SFVAMC Fort Miley Campus would be the same as the Alternative 1 long-term project, with one exception. Specifically, three additional existing buildings—Buildings 1, 6, and 8—would be retrofitted as part of Alternative 2 long-term projects (Table 2-2b and Figure 2-2b). The seismic retrofit is mandated by Executive Order 12941 and VA has identified these buildings as Critical or Essential Facilities for the existing SFVAMC Fort Miley Campus; therefore, those buildings would undergo retrofitting according to VA seismic design requirements (VA Directive H-18-8). Alternative 2 long-term projects would involve construction of a total of 285,487 gsf, which is 115,487 gsf more than for the Alternative 1 long-term project, because Alternative 2 would involve construction of Building 213 in addition to the seismic retrofit of Buildings 1, 6, and 8. Therefore, construction impacts of Alternative 2 long-term projects would be similar to, although slightly greater than, those of the Alternative 1 long-term project. Geology, soils, and paleontological impacts would range in significance from minor to no impact.

Construction

Erosion and Loss of Topsoil

The erosion and topsoil effects of constructing the clinical and research buildings and administrative/mixed-use buildings under Alternative 2 long-term projects would be less than those described for short-term projects under Alternatives 1 and 2. Constructing Building 213 and retrofitting Buildings 1, 6, and 8 would disturb 0 net acres of soil because demolition of Building 12 (on the footprint of proposed Building 213) would have already occurred during the short-term projects. No impact related to erosion and loss of topsoil would occur.

Alteration of Topography

The topographical effects of constructing the clinical and research buildings and administrative/mixed-use buildings under Alternative 2 long-term projects would be similar to those described for short-term projects under Alternatives 1 and 2. One basement level of excavation is anticipated for proposed Building 213, and no excavation would be necessary for retrofitting of Buildings 1, 6, and 8. The alteration of topography under Alternative 2 would result in a minor impact or no impact.

Paleontological Resources

The effects on paleontological resources from constructing the clinical and research buildings and administrative/mixed-use buildings under Alternative 2 long-term projects would be similar to those described for short-term projects under Alternatives 1 and 2. There would be a minor impact or no impact related to paleontological resources.

Operation

Seismically Induced Ground Shaking and Ground Failure

The effects of operating the clinical and research buildings and administrative/mixed-use buildings under Alternative 2 long-term projects would be similar to those described for short-term projects under Alternatives 1 and 2. There would be a minor impact or no impact related to seismically induced ground shaking and associated ground failure.

Seismically Induced Landslides or Slope Failures

The effects of operating the clinical and research buildings and administrative/mixed-use buildings under Alternative 2 long-term projects would be similar to those described for short-term projects under Alternatives 1 and 2. No impact related to seismically induced landslides or slope failures would occur.

Expansive or Corrosive Soils

The effects of operating the clinical and research buildings and administrative/mixed-use buildings under Alternative 2 long-term projects would be similar to those described for short-term projects under Alternatives 1 and 2. A minor impact or no impact related to expansive or corrosive soils would result from the operation of the facilities proposed in Alternative 2 long-term projects.

Paleontological Resources

The effects of operating the clinical and research buildings and administrative/mixed-use buildings under Alternative 2 long-term projects would be similar to those described for short-term projects under Alternatives 1 and 2. A minor impact or no impact on paleontological resources would occur.

Alternative 3: SFVAMC Fort Miley Campus Plus Mission Bay Campus Alternative

Short-Term Projects

Alternative 3 short-term projects (during both construction and operation) would be the same as short-term projects for Alternative 1; thus, all Alternative 3 short-term projects would be located at the SFVAMC Fort Miley Campus. See Table 2-1 for detailed square footage and phasing, and Figure 2-1 for the Footprint and Concept Plan for Alternative 3 short-term projects through mid-2020. Therefore, impacts of Alternative 3 short-term projects related to geology, soils, and paleontological resources would be the same as those described for short-term projects for Alternative 1. These impacts would be minor.

Long-Term Projects

Alternative 3 long-term projects (during both construction and operation) would involve developing 170,000 gsf for ambulatory care and parking structure uses at a potential new SFVAMC Mission Bay Campus. See Figure 2-5 for the location of the off-site portion of Alternative 3.

It is assumed that all off-site development in Mission Bay would consist of four-story buildings (or other multi-story buildings consistent with other proximate buildings) in a development area totaling approximately 0.98 acre. Alternative 3 long-term projects at the potential new Mission Bay Campus would be constructed roughly between 2024 and 2027. See Table 2-5 for detailed square footage and phasing for implementation of the Alternative 3 long-term projects at the potential new Mission Bay Campus. Note that the actual footprint and concept plan for and site location within Mission Bay has not been determined at this time.

Construction

Consistent with VHA Directive 2005-019, all new buildings would be structurally designed and constructed in compliance with VA Seismic Design Requirements H-18-8 and the IBC. Thus, before construction—specifically, at the time that a specific site is selected—a geotechnical report for development of the potential new SFVAMC Mission Bay Campus would be prepared with recommendations to protect against seismic impacts. However, construction would have no impact related to induced seismic activities.

Erosion and Loss of Topsoil

The effects of constructing new buildings, medical facilities, and parking structures at the potential new SFVAMC Mission Bay Campus under Alternative 3 long-term projects would be addressed at the time that a specific site is selected. Similar to the Alternative 1 long-term project, construction of the Alternative 3 long-term projects would require an NPDES general permit for stormwater discharges associated with construction activities (Construction General Permit; Order 2009-0009-DWQ, as amended by Order 2010-0014-DWQ). Sites that disturb one acre or more and drain to the combined sewer-stormwater system must comply with the San Francisco Public Utilities Commission's Construction Site Runoff Control Program. Specifically, this requires the submittal of an erosion and sediment control plan and implementation of best management practices to prevent illicit discharge into the combined sewer systems. With implementation of the Construction Site Runoff Control Program, the construction of Alternative 3 long-term projects at the potential new SFVAMC Mission Bay Campus would result in a minor impact or no impact.

Alteration of Topography

The effects of constructing new buildings, medical facilities, and parking structures at the potential new SFVAMC Mission Bay Campus under Alternative 3 long-term projects would be addressed at the time that a specific site is selected. The new buildings would be constructed in accordance with applicable VA Seismic Design Requirements H-18-8 and the IBC. Therefore, construction activities at the potential new Campus would result in a minor impact or no impact.

Paleontological Resources

The location of the potential new SFVAMC Mission Bay Campus is underlain by Artificial Fill, Alluvium, Dune Sand, and the Franciscan Assemblage. Because of the young age of the Artificial Fill, Alluvium, and Dune Sand and the way in which the Franciscan Assemblage was formed, they are considered to be of low paleontological sensitivity. The result of a records search at the UCMP indicated that no fossils have been recovered from areas beneath the Mission Bay area. Therefore, construction activities at the potential new Campus would have a direct minor impact on unique paleontological resources. No indirect impacts would occur.

Operation

Seismically Induced Ground Shaking and Ground Failure

Engineering and design recommendations for the proposed facilities would be followed during construction of Alternative 3 long-term projects to address the potential for seismically induced ground shaking and associated ground failure. The facilities would be designed and constructed to meet VA's seismic design requirements. Thus, operation of the facilities constructed under Alternative 3 long-term projects would result in a minor impact or no impact related to seismically induced ground shaking and associated ground failure.

Seismically Induced Landslides or Slope Failures

Given the generally flat topography of the Mission Bay area, it is likely that a potential new SFVAMC Mission Bay Campus would be developed in an area that is relatively flat with no slopes that are susceptible to landslides or other types of failure. Any new facilities built at a potential new Campus would be required to meet seismic code standards applicable to San Francisco. Thus, no operational impact related to seismically induced landslides or slope failures is anticipated with implementation of Alternative 3 long-term projects.

Expansive or Corrosive Soils

Expansive soils generally result when specific clay minerals expand when saturated and shrink in volume when dry. Engineering and design recommendations for the proposed facilities would be followed during construction of Alternative 3 long-term projects to address any potential expansive or corrosive soils. Therefore, facility operation for Alternative 3 long-term projects would result in a minor impact or no impact related to expansive or corrosive soils.

Paleontological Resources

Because operation of Alternative 3 long-term projects would not involve ground disturbance, no direct or indirect impacts on paleontological resources would occur.

Alternative 4: No Action Alternative

Short-Term and Long-Term Projects

Construction

Under Alternative 4, there would be no construction or seismic retrofitting. Therefore, no construction-related impacts on geology, soils, or paleontological resources would occur.

Operation

Under Alternative 4, the LRDP would not be implemented, and the existing SFVAMC Fort Miley Campus would continue to function at its current capacity. Buildings 1, 5, 6, 7, 8, 7, 9, and 10 at the existing Campus (all of which are Critical or Essential Facilities) would not undergo seismic retrofitting. Because these buildings would continue to operate below current VA seismic standards, selecting Alternative 4 could result in adverse geotechnical impacts on structures from seismically induced ground shaking and ground failure, seismically induced landslides, or slope failures. However, because operation of facilities under Alternative 4 would not involve ground disturbance, no impacts related to geology, soils, or paleontological resources could occur.

3.6.4 References

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3.7 GREENHOUSE GAS EMISSIONS AND CLIMATE CHANGE

This section describes the existing physical affected environment and regulatory framework related to climate change and greenhouse gas (GHG) emissions and discusses the potential effects of the EIS Alternatives related to GHG emissions and climate change.

3.7.1 Affected Environment

Greenhouse Effect, Global Warming, and Climate Change

Most of the energy that affects Earth's climate comes from the sun. Some solar radiation is absorbed by Earth's surface, and a smaller portion of this radiation is reflected by the atmosphere back toward space. As Earth absorbs high-frequency solar radiation, its surface gains heat and then re-radiates lower frequency infrared radiation back into the atmosphere.[1] Most solar radiation passes through gases in the atmosphere classified as GHGs; however, infrared radiation is selectively absorbed by GHGs. GHGs in the atmosphere play a critical role in maintaining the balance between earth's absorbed and radiated energy, earth's radiation budget,[2] by trapping some of the infrared radiation emitted from Earth's surface that otherwise would have escaped to space (Figure 3.7-1). Specifically, GHGs affect the radiative forcing of the atmosphere,[3] which in turn affects Earth's average surface temperature. This phenomenon, the *greenhouse effect*, keeps the earth's atmosphere near the surface warmer than it would be otherwise and allows successful habitation by humans and other forms of life.

The combustion of fossil fuels and deforestation release carbon that historically has been stored underground in sediments or in surface vegetation into the atmosphere, thus exchanging carbon from the geosphere and biosphere to the atmosphere within the carbon cycle. With the accelerated increase of fossil fuel combustion and deforestation since the industrial revolution of the 19th century, concentrations of GHGs have increased exponentially in the atmosphere. Such emissions of GHGs in excess of natural ambient concentrations contribute to the enhancement of the natural greenhouse effect. This enhanced greenhouse effect has contributed to *global warming*, an increased rate of warming of the earth's average surface temperature.[4] Specifically, increases in GHGs lead to increased absorption of infrared radiation by Earth's atmosphere and warm the lower atmosphere further, thereby increasing temperatures and evaporation rates near the surface. Variations in natural phenomena such as volcanoes and solar activity produced most of the global temperature increase during preindustrial times; however, increasing atmospheric GHG concentrations resulting from human activity have been responsible for most of the observed global temperature increase.[5]

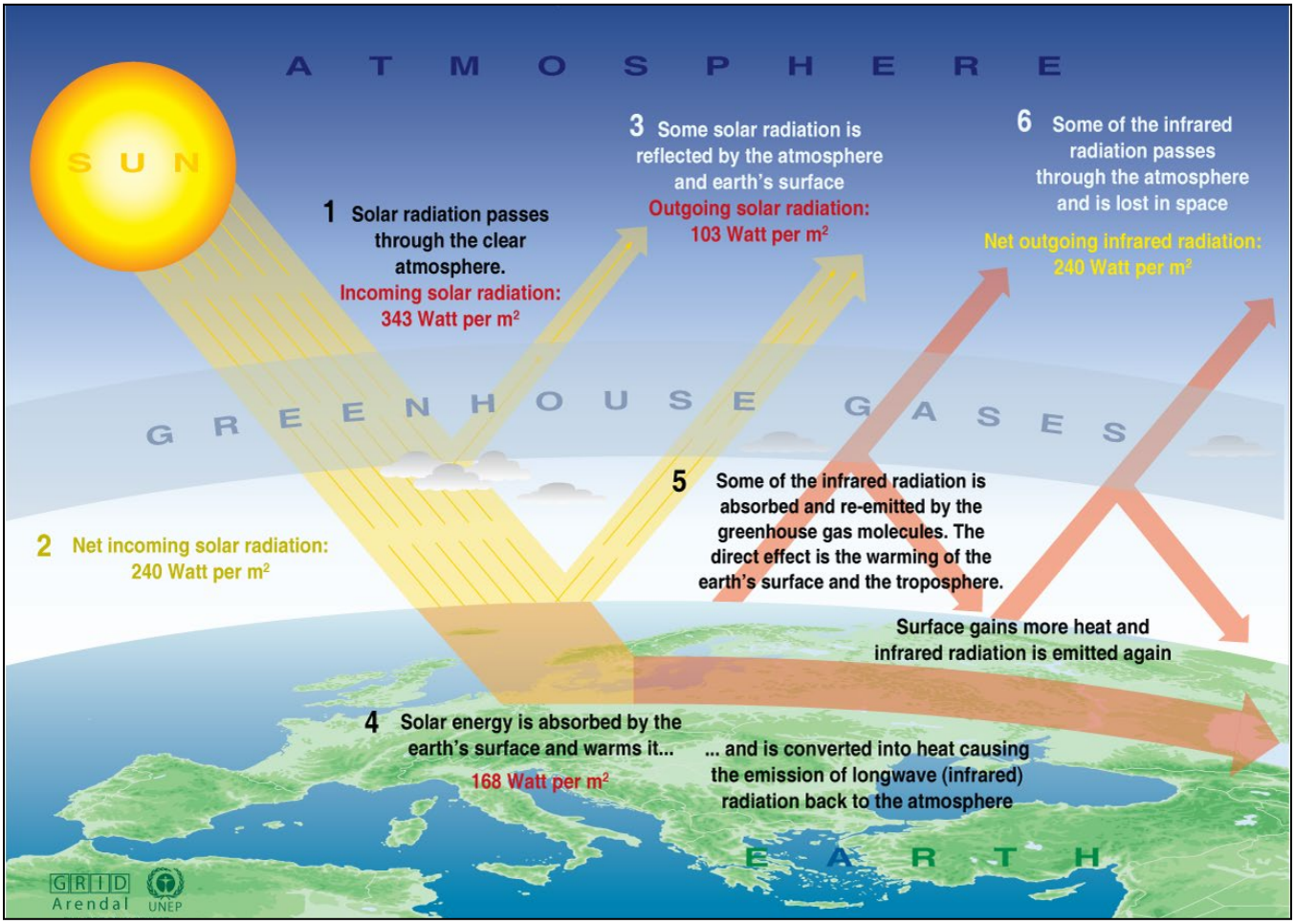
1 Frequencies at which bodies emit radiation are proportional to temperature. Earth has a much lower temperature than the sun and emits lower frequency (longer wavelength) radiation, compared to the high-frequency (short wavelength) solar radiation emitted by the sun.

2 This includes all gains of incoming energy and all losses of outgoing energy; the planet is always striving to be in equilibrium.

3 This is the change in net irradiance at the tropopause after allowing for stratospheric temperatures to readjust to radiative equilibrium, but with surface and tropospheric temperatures and state held fixed at the unperturbed values.

4 This is the result of Earth having to work harder to maintain its radiation budget, because (under the condition of more GHGs in the atmosphere) Earth must force emission of additional infrared radiation out into the atmosphere.

5 These basic conclusions have been endorsed by more than 45 scientific societies and academies of science, including all of the national academies of science of the major industrialized countries. Since 2007, no scientific body of national or international standing has maintained a dissenting opinion.



Source: UNEP/GRID-Arendal, 2005

Figure 3.7-1: The Greenhouse Effect

Global warming affects global atmospheric circulations and temperatures, oceanic circulations and temperatures, wind and weather patterns, average sea level, ocean acidification, chemical reaction rates, precipitation rates, timing, and form, snowmelt timing and runoff flow, water supply, wildfire risks, and other phenomena in a manner commonly referred to as *climate change.*

Intergovernmental Panel on Climate Change Temperature Prediction

The Intergovernmental Panel on Climate Change (IPCC) was established by the World Meteorological Organization and United Nations Environment Programme to assess scientific, technical, and socioeconomic information relevant to the understanding of climate change, its potential impacts, and options for adaptation and mitigation. Warming of the climate system is now considered to by unequivocal (IPCC, 2007a) with global surface temperature increasing approximately 1.33 degrees Fahrenheit (°F) over the last 100 years. The IPCC predicts increases in global average temperature globally of between 2° and 11°F over the next 100 years (depending on scenario) (IPCC, 2007b).

Greenhouse Gases and Global Emission Sources

Prominent naturally occurring GHGs in Earth's atmosphere are water vapor, carbon dioxide (CO_2), methane, nitrous oxide, and ozone. Anthropogenic (i.e., human-caused) emissions include additional release of these GHGs plus release of human-made, high-global-warming-potential gases (sulfur hexafluoride, perfluorocarbons [PFCs], hydrofluorocarbons [HFCs], and ozone-depleting substances) into Earth's atmosphere. The GHGs listed by the IPCC (CO_2, methane, nitrous oxide, HFCs, PFCs, and sulfur hexafluoride) are discussed below, in order of abundance in the atmosphere. Water vapor, despite being the most abundant GHG, is not discussed below because natural concentrations and fluctuations far outweigh anthropogenic influences, making it impossible to predict. Ozone is not included because it does not directly affect radiative forcing. Ozone-depleting substances, which include chlorofluorocarbons, halons, carbon tetrachloride, methyl chloroform, and hydrochlorofluorocarbons, are not included because they have been primarily replaced by HFCs and PFCs.

GHGs have different potentials for contributing to global warming. For example, methane is 21 times as potent as carbon dioxide, while sulfur hexafluoride is 22,200 times more potent than carbon dioxide. To simplify reporting and analysis, methods have been set forth to describe emissions of GHGs in terms of a single gas. The most commonly accepted method to compare GHG emissions is the global warming potential (GWP) methodology defined in the IPCC reference documents (IPCC, 2001). The IPCC defines the GWP of various GHG emissions on a normalized scale that recasts all GHG emissions in terms of carbon dioxide equivalents (CO_2e), which compares the gas in question to that of the same mass of CO_2 (CO_2 has a GWP of 1 by definition). As such, a high GWP represents high absorption of infrared radiation and a long atmospheric lifetime compared to CO_2. One must also select a time horizon to convert GHG emissions to equivalent CO_2 emissions to account for chemical reactivity and lifetime differences among various GHG species. The standard time horizon for climate change analysis is 100 years. Generally, GHG emissions are quantified in terms of metric tons (MT) of CO_2e ($MTCO_2e$) emitted per year.

The atmospheric residence time of a gas is equal to the total atmospheric abundance of the gas divided by its rate of removal (Seinfeld and Pandis, 2006). The atmospheric residence time of a gas is, in effect, a half-life measurement of the length of time a gas is expected to persist in the atmosphere when accounting for removal mechanisms such as chemical transformation and deposition.

Table 3.7-1 lists the GWP of each GHG, its lifetime, and abundance in the atmosphere in parts per trillion (ppT). Units commonly used to describe the concentration of GHGs in the atmosphere are parts per million (ppm), parts per billion (ppb), and ppT, referring to the number of molecules of the GHG in a sampling of 1 million, 1 billion, or 1 trillion molecules of air. Collectively, HFCs, PFCs, and sulfur hexafluoride are referred to as high-GWP gases. CO_2 is by far the largest component of worldwide CO_2e emissions, followed by methane, nitrous oxide, and high-GWP gases, in order of decreasing contribution to CO_2e.

The primary human processes that release GHGs include the burning of fossil fuels for transportation, heating, and electricity generation; agricultural practices that release methane, such as livestock grazing and crop residue decomposition; and industrial processes that release smaller amounts of high-GWP gases. Deforestation and land cover conversion have also been identified as contributing to global warming by reducing Earth's capacity to remove CO_2 from the air and altering Earth's albedo or surface reflectance, allowing more solar radiation to be absorbed. Specifically, CO_2 emissions associated with fossil fuel combustion are the primary contributors to

human-induced climate change. CO_2, methane, and nitrous oxide emissions associated with human activities are the next largest contributors to climate change. Table 3.7-2 lists the anthropogenic contribution of GHGs in terms of CO_2e for the year 2004.

Table 3.7-1: Lifetimes, Global Warming Potentials, and Abundances of Significant Greenhouse Gases

Gas	Global Warming Potential (100 years)	Lifetime (years)	1998 Atmospheric Abundance (ppT[1])
CO_2	1	50–200	365,000,000
CH_4	21	9–15	1,745
N_2O	310	120	314
HFC-23	11,700	264	14
HFC-134a	1,300	14.6	7.5
HFC-152a	140	1.5	0.5
CF_4	6,500	50,000	80
C_2F_6	9,200	10,000	3
SF_6	23,900	3,200	4.2

Notes:
C_2F_6 = hexafluoroethane; CF_4 = tetrafluoromethane; CH_4 = methane; CO_2 = carbon dioxide; HFC = hydrofluorocarbon; N_2O = nitrous oxide; SF_6 = sulfur hexafluoride
Tetrafluoromethane and hexafluoroethane are perfluorocarbons.
[1] ppT is a mixing ratio unit indicating the concentration of a pollutant in parts per trillion by volume.
Sources: IPCC, 2001

Table 3.7-2: Global Anthropogenic Greenhouse Gas Emissions in 2004 (CO_2 Equivalent)

Gas	Source	GHG Emissions (Gt CO_2e/year)	CO_2 Equivalent Percentage
CO_2	Deforestation, decay of biomass, etc.	8.5	17.3
CO_2	Fossil fuel use	27.7	56.6
CO_2	Other	1.4	2.8
CH_4	Agriculture, natural gas combustion, coal mining, etc.	7.0	14.3
N_2O	Agriculture, industry, transportation, etc.	3.9	7.9
High GWP gases (includes HFCs, PFCs, and SF_6)	Consumer products, refrigerants, aluminum production, semiconductor manufacturing	0.5	1.1
All GHGs		49.0	100

Notes:
CH_4 = methane; CO_2 = carbon dioxide; CO_2e = carbon dioxide equivalent; GHG = greenhouse gas; Gt = gigatonnes; GWP = global warming potential; HFC = hydrofluorocarbon; N_2O = nitrous oxide; PFC = perfluorocarbon; SF_6 = sulfur hexafluoride
Sources: IPCC, 2007c

Carbon Dioxide

CO_2 is the most important anthropogenic GHG and accounts for more than 75 percent of all anthropogenic GHG emissions. Its long atmospheric lifetime (on the order of decades to centuries) ensures that atmospheric concentrations of CO_2 will remain elevated for decades after GHG mitigation efforts to reduce GHG concentrations are promulgated (IPCC, 2007c).

Increasing concentrations of CO_2 in the atmosphere are largely attributable to emissions from the burning of fossil fuels, gas flaring, cement production, and land use changes. Three-quarters of the current radiative forcing is likely caused by anthropogenic CO_2 emissions that result from fossil fuel burning (and to a very small extent, from cement production); approximately one-quarter of radiative forcing results from land-use changes (IPCC, 2007d).

Anthropogenic emissions of CO_2 have increased concentrations in the atmosphere most notably since the Industrial Revolution; the concentration of CO_2 has increased from approximately 280 to 379 ppm, an increase of more than 35 percent, in the last 250 years (IPCC, 2007d). IPCC estimates that the present atmospheric concentration of CO_2 has not been exceeded in the last 650,000 years and is likely to be the highest ambient concentration in the last 20 million years (IPCC, 2007b).

Methane

Methane, the main component of natural gas, is the second largest contributor to anthropogenic GHG emissions and has a GWP of 21 (IPCC, 2007b).

Anthropogenic emissions of methane are the result of growing rice, raising cattle, combusting natural gas, and mining coal. Atmospheric methane has increased from a preindustrial concentration of 715 ppb to 1,775 ppb in 2005 (IPCC, 2001). Although the reason is unclear, atmospheric concentrations of methane have not risen as quickly as anticipated (NOAA, 2008).

Nitrous Oxide

Nitrous oxide is a powerful GHG, with a GWP of 310 (IPCC, 2007b). Anthropogenic sources of nitrous oxide include agricultural processes, nylon production, fuel-fired power plants, nitric acid production, and vehicle emissions. Nitrous oxide also is used in rocket engines and racecars, and as an aerosol spray propellant. Agricultural processes that result in anthropogenic emissions of nitrous oxide are fertilizer use and microbial processes in soil and water.

Nitrous oxide concentrations in the atmosphere have increased from preindustrial levels of 270 ppb to 319 ppb in 2005, an 18 percent increase (IPCC, 2007b).

Hydrofluorocarbons

HFCs are human-made chemicals used in commercial, industrial, and consumer products and have high GWPs (EPA, 2010). HFCs generally are used as substitutes for ozone-depleting substances in automobile air conditioners and refrigerants. As seen in Table 3.7-1, the most abundant HFCs, in order from most abundant to least, are HFC-134a (35 ppT), HFC-23 (17.5 ppT), and HFC-152a (3.9 ppT).

Concentrations of HFCs have risen from zero to current levels (Table 3.7-2). Because these chemicals are human-made, they do not exist naturally in ambient conditions.

Perfluorocarbons

The most abundant PFCs are tetrafluoromethane (PFC-14) and hexafluoroethane (PFC-116). These human-made chemicals are emitted largely from aluminum production and semiconductor manufacturing processes. PFCs are extremely stable compounds that are destroyed only by very high-energy ultraviolet rays, which results in the very long lifetimes of these chemicals (EPA, 2010).

PFCs have large GWPs and have risen from zero to current levels (Table 3.7-2).

Sulfur Hexafluoride

Sulfur hexafluoride, another human-made chemical, is used as an electrical insulating fluid for power distribution equipment, in the magnesium industry, and in semiconductor manufacturing and also as a trace chemical for study of oceanic and atmospheric processes (EPA, 2010). In 1998, atmospheric concentrations of sulfur hexafluoride were 4.2 ppT and steadily increasing in the atmosphere.

Sulfur hexafluoride is the most powerful of all GHGs listed in IPCC studies, with a GWP of 23,900 (IPCC, 2007b).

Global Climate Change Issue

Climate change is a global problem because GHGs are global pollutants, unlike criteria air pollutants and hazardous air pollutants (also called toxic air contaminants), which are pollutants of regional and local concern. Pollutants with localized air quality effects have relatively short atmospheric lifetimes (approximately 1 day); by contrast, GHGs have long atmospheric lifetimes (several years to several thousand years). GHGs persist in the atmosphere for a long enough time to be dispersed around the globe.

Although the exact lifetime of any particular GHG molecule depends on multiple variables and cannot be pinpointed, more CO_2 is currently emitted into the atmosphere than is sequestered. Carbon dioxide sinks, or reservoirs, include vegetation and the ocean, which absorb CO_2 through photosynthesis and dissolution, respectively. These are two of the most common processes of CO_2 sequestration. Of the total annual human-caused CO_2 emissions, approximately 54 percent is sequestered through ocean uptake, Northern Hemisphere forest regrowth, and other terrestrial sinks within a year, whereas the remaining 46 percent of human-caused CO_2 emissions is stored in the atmosphere (Seinfeld and Pandis, 1998).

Similarly, effects of GHGs are borne globally, as opposed to the localized air quality effects of criteria air pollutants and hazardous air pollutants. The quantity of GHGs that it takes to ultimately result in climate change is not precisely known; the quantity is enormous, and no single project would be expected to measurably contribute to a noticeable incremental change in the global average temperature, or to global or local climates or microclimate.

Emissions of GHGs have the potential to adversely affect the environment because such emissions contribute, on a cumulative basis, to global climate change. A cumulative discussion and analysis of project impacts on global climate change is presented in this EIS because, although it is unlikely that a single project will contribute significantly to climate change, cumulative emissions from many projects affect global GHG concentrations and the climate system.

Global climate change has the potential to result in sea level rise (resulting in flooding of low-lying areas), to affect rainfall and snowfall (leading to changes in water supply), to affect temperatures and habitats (affecting biological resources and public health), and to result in many other adverse environmental consequences.

Although the international, national, State, and regional communities are beginning to address GHGs and the potential effects of climate change, it is expected that worldwide GHG emissions will continue to rise over the next decades.

Climate and Topography

Climate is the accumulation of daily and seasonal weather events over a long period of time, whereas weather is defined as the condition of the atmosphere at any particular time and place. For a detailed discussion of climate and topography, see Section 3.2, “Air Quality.”

Existing Greenhouse Gas Emissions

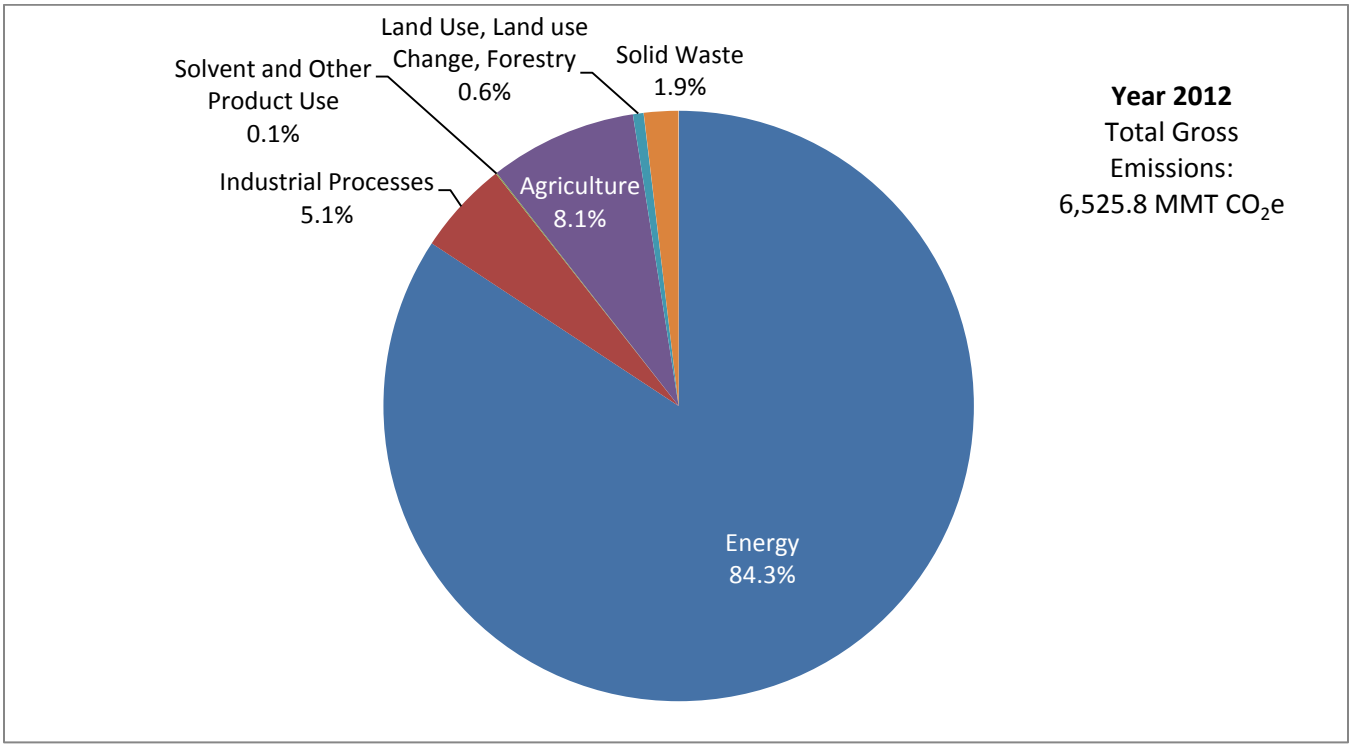
U.S. Greenhouse Gas Inventory

Total U.S. GHG emissions in 1990 were approximately 4 percent less than the 2012 total (EPA, 2014). Figure 3.7-2 presents 2012 U.S. GHG emissions by emissions sector.

Total emissions growth of 292.4 million metric tons of carbon dioxide equivalent (MMT CO_2e) per year between 1990 and 2012 (from 6,233.2 MMT CO_2e in 1990 to 6,525.6 MMT CO_2e in 2012) was largely the result of an increase in CO_2e emissions associated with the Energy sector (i.e., increase of 238.8 MMT CO_2e). Most other emissions sectors experienced an increase in GHG emissions during this time, except for the Waste sector, which decreased by approximately 25 percent from 1990 to 2012 (EPA, 2014).

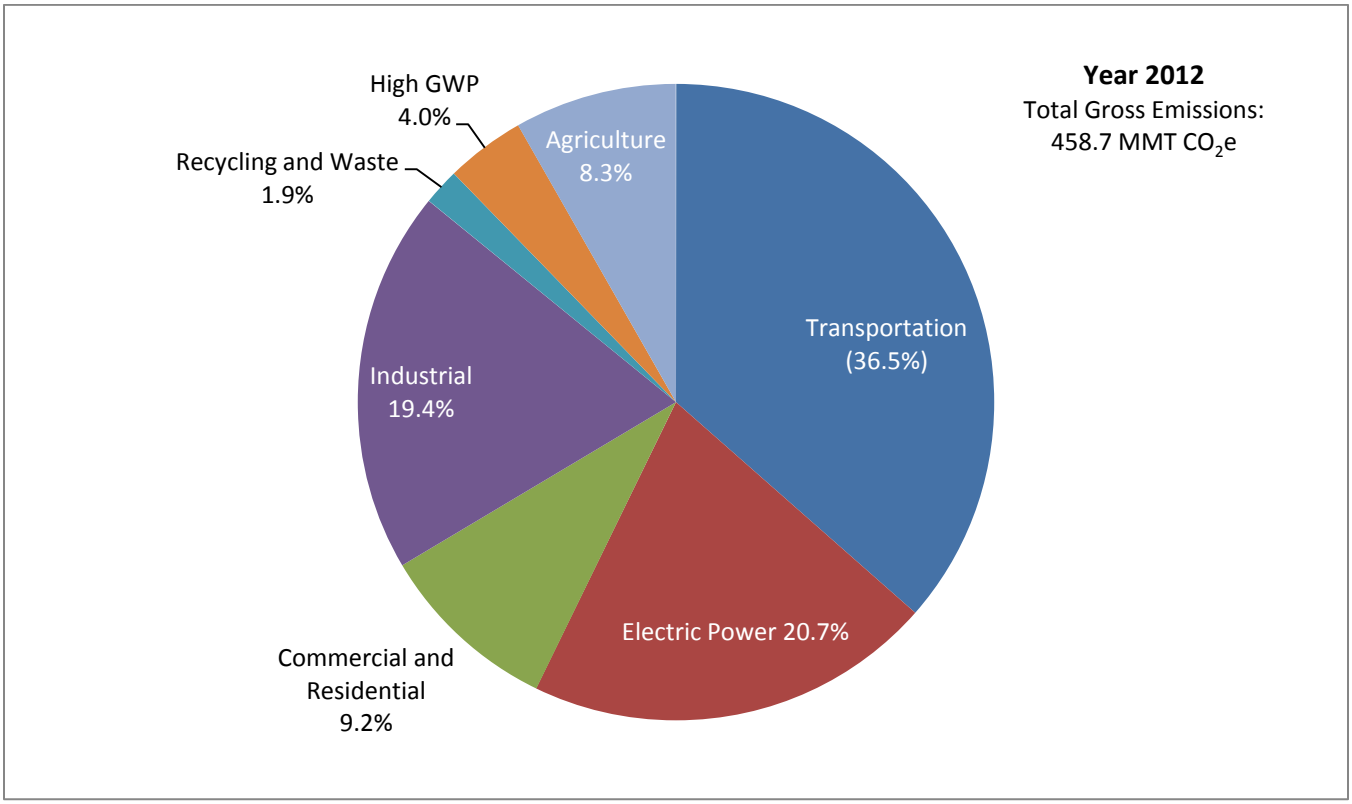
California Greenhouse Gas Inventory

As the second largest emitter of GHGs in the U.S. and 12th to 16th largest GHG emitter in the world, California contributes a significant quantity of GHGs to the atmosphere (CEC, 2006). Emissions of CO_2 are byproducts of fossil-fuel combustion and are attributable in large part to human activities associated with transportation, industry/manufacturing, electricity and natural gas consumption, and agriculture (ARB, 2014). In California, the transportation sector is the largest emitter of GHGs, followed by electricity generation (ARB, 2014) (Figure 3.7-3).



Source: EPA, 2014
Note: Emissions shown do not include carbon sinks such as change in land uses and forestry.

Figure 3.7-2: 2012 U.S. Greenhouse Gas Emissions by Gas



Source: ARB, 2014

Figure 3.7-3: 2012 California Greenhouse Gas Emissions by Sector

Emissions of methane and nitrous oxide are generally much lower than those of CO_2 and are associated with anaerobic microbial activity resulting from agricultural practices, flooded soils, and landfills. The respective GWPs of these two compounds, methane and nitrous oxide, are approximately 23 and 296 times the GWP of CO_2.

Bay Area Air Quality Management District Greenhouse Gas Inventory

The Bay Area Air Quality Management District (BAAQMD) published a GHG inventory for the Bay Area, which provides an estimate of GHG emissions in the base year 2007 for all seven counties located in the jurisdiction of BAAQMD: Alameda, Contra Costa, Marin, San Francisco, San Mateo, Santa Clara, Napa, and the southern portions of Solano and Sonoma Counties (BAAQMD, 2010). This GHG inventory is based on the standards for criteria pollutant inventories and is intended to support BAAQMD's climate protection activities.

Table 3.7-3 shows the 2007 GHG emissions from existing direct and indirect sources in the region (Bay Area) and the local area (San Francisco County, project location). The estimated GHG emissions are presented in CO_2e, which weights each GHG by its global warning potential. The GWPs used in the BAAQMD inventory are from the Second Assessment Report of the IPCC.

In 2007, San Francisco's GHG emissions accounted for approximately 7.5 percent of the Bay Area's total GHG emissions (BAAQMD, 2010). Transportation is the largest GHG emissions sector in the Bay Area and in San Francisco proper, followed by industrial/commercial, electricity generation and cogeneration, and residential fuel usage.

Table 3.7-3: 2007 Estimated Bay Area and San Francisco Greenhouse Gas Emissions

Emissions Source	Emissions in Metric Tons of CO_2e per Year (2007)	
	Bay Area	**San Francisco**
Transportation	34,870,000 (36.41%)	2,700,000
Industrial/Commercial	34,860,000 (36.40%)	1,900,000
Electricity/Cogeneration[1]	15,200,000 (15.87%)	1,300,000
Residential Fuel Usage	6,820,000 (7.12%)	900,000
Off-Road Equipment	2,920,000 (3.05%)	400,000
Agricultural/Farming	1,110,000 (1.16%)	0
Total Emissions	**95,780,000 (100%)**	**7,200,000**

Note:
CO_2e = carbon dioxide equivalent
[1] Includes imported electricity emissions of 7,100,000 metric tons of carbon dioxide equivalent.
Source: BAAQMD, 2010

Existing SFVAMC Fort Miley Campus

In the vicinity of the existing SFVAMC Fort Miley Campus, most GHG emissions are generated by vehicle use and residential uses. At the Campus, GHG emissions are generated by operation of hospital and research buildings and by employee and patient vehicles accessing the Campus.

Specifically, stationary-source emissions related to activities at the existing SFVAMC Fort Miley Campus currently total 23,615 metric tons of carbon dioxide equivalent ($MTCO_2e$) per year. However, with implementation of the *Department of Veterans Affairs Strategic Sustainability Performance Plan* (VA SSPP) and its related sustainability measures (VA, 2010), stationary-source emissions at the Campus currently total approximately 19,137 $MTCO_2e$ per year (Table 3.7-4).

Table 3.7-4: Existing SFVAMC Greenhouse Gas Emissions (Metric Tons of CO_2e per Year)

	Transportation Emissions	Stationary-Source Emissions				Total Emissions
		Area	Energy (Electricity and Natural Gas)	Water	Solid Waste	
Baseline (2012) without VA SSPP Applied	5,086	<1	7,548	454	5,896	18,984
Baseline (2012) with VA SSPP Applied	5,086	<1	5,314	454	5,896	16,750

Notes:
CO_2e = carbon dioxide equivalent; VA SSPP = *Department of Veterans Affairs Strategic Sustainability Performance Plan*
Source: Data compiled by AECOM in 2012 (see Appendix B)

Mobile-source emissions related to activities at the existing SFVAMC Fort Miley Campus currently total approximately 5,548 $MTCO_2e$ per year.

Thus, GHG emissions related to Campus activities currently total 18,984 $MTCO_2e$ per year. However, with implementation of the VA SSPP and its related sustainability measures, GHG emissions at the Campus total 16,750 $MTCO_2e$ per year.

Mission Bay Area

In the Mission Bay area, GHG emissions are generated by vehicles and by industrial, commercial, and residential uses. However, because there are no existing SFVAMC uses in the Mission Bay area,[6] no stationary-source or mobile-source emissions are generated by SFVAMC activities in this area.

Climate Change Trends and Effects

CO_2 accounts for more than 75 percent of all anthropogenic GHG emissions, the atmospheric residence time of CO_2 is decades to centuries, and the global atmospheric concentrations of CO_2 continue to increase and at a faster rate than ever previously recorded. Thus, the warming impacts of CO_2 will persist for hundreds of years after the implementation of mitigation efforts to reduce GHG concentrations. Substantially higher temperatures, more extreme wildfires, and rising sea levels are just some of the direct effects experienced in California (CNRA, 2009; CEC, 2012). As reported by the California Natural Resources Agency in 2009, despite annual variations in weather patterns, California has seen a trend of increased average temperatures, more extreme hot days, fewer cold nights, longer growing seasons, less winter snow, and earlier snowmelt and rainwater runoff. Statewide average temperatures increased by about 1.7°F from 1895 to 2011, and a larger proportion of total precipitation is

[6] The VA Downtown Clinic is located at the corner of Third and Harrison Streets. It is not considered part of SFVAMC.

falling as rain instead of snow (CEC, 2006). Sea levels rose by as much as 7 inches along the California coast over the last century, leading to increasing erosion and adding pressure to the State's infrastructure, water supplies, and natural resources.

These observed trends in California's climate are projected to continue in the future. Research indicates that California will experience overall hotter and drier conditions with a continued reduction in winter snow (with concurrent increases in winter rains), as well as increased average temperatures and accelerating sea level rise. In addition to these changes in average temperatures, sea level, and precipitation patterns, the frequency, intensity, and duration of extreme weather events such as heat waves, wildfires, droughts, and floods will change (CNRA, 2009). Following is a summary of climate change factors and predicted trends specific to the San Francisco Bay Area, using the latest information available as of 2014.

Temperature/Heat

The San Francisco Bay Area is expected to experience warming over the rest of the 21st century. Consistent with statewide projections, the annual average temperature in the Bay Area will likely increase by 2.7°F between 2000 and 2050, based on GHGs that have already been emitted into the atmosphere. By the end of the century, the increase in the Bay Area's annual average temperature may range from approximately 3.5°F to 11°F relative to the average annual temperature simulated for the 1961–1990 baseline period used for the study, depending on the GHG emissions scenarios (CEC, 2009). The projected rate of warming, especially in the latter half of the 21st century, is considerably greater than warming rates derived from historical observed data.

Specific factors related to temperature/heat are summarized below.

- The annual average temperature in the Bay Area has been increasing over the last several decades.
- The Bay Area is expected to see an increase in average annual temperature of 2.7°F by 2050, and 3.5°F to 11°F by 2100. Projections show a greater warming trend during the summer season. The coastal parts of the Bay Area will experience the most moderate warming trends. Locally, San Francisco is expected to see an increase of approximately 2.2°F by 2050, and 3.3°F to 5.5°F by 2100 (Cal-Adapt, 2013).
- Extreme heat events are expected to increase in duration, frequency, and severity by 2050. Extreme freeze events are expected to decrease in frequency and severity by 2100, but occasional colder-than-historical events may occur by 2050 (Cal-Adapt, 2013).

Precipitation/Rainfall/Extreme Events

Recent studies of the effect of climate change on the long-term average precipitation for the state of California show some disagreement (CEC, 2009). Considerable variability exists across individual models, and examining the average changes can mask more extreme scenarios that project much wetter or drier conditions. California is expected to maintain a Mediterranean climate through the next century, with dry summers and wet winters that vary between seasons, years, and decades. Wetter winters and drier springs are also expected, but overall annual precipitation is not projected to change significantly. By mid-century, more precipitation is projected to occur in winter in the form of less frequent but larger events. By 2100, the majority of global climate models predict drying trends across the state (CNRA, 2009).

Specific factors related to precipitation/rainfall/extreme events are summarized below.

- Historical precipitation in the Bay Area has experienced no significant changes in rainfall depth or intensities over the past 30 years.
- The Bay Area will continue to experience a Mediterranean climate, with little change projected in annual precipitation by 2050, although a high degree of variability may persist.
- By 2100, an annual drying trend in annual precipitation is projected. The greatest decline is expected to occur during the spring months, while minimal change is expected during the winter months.
- Increases in drought duration and frequency coupled with higher temperatures, as experienced in 2012, 2013, and 2014, increase the likelihood of wildfires.
- California is expected to see increases in the magnitude of extreme events, including increased precipitation delivered from atmospheric river events, which would bring high levels of rainfall during short time periods—increasing the chance of flash floods. The Bay Area is also expected to see an increase in precipitation intensities, but possibly through less frequent events (CEC, 2009).

Sea Level Rise

This summary draws on the best available data for climate science and the potential effects of sea level rise in California as of August 2014. In March 2013, the Ocean Protection Council (OPC) adopted the 2012 National Research Council (NRC) report *Sea-level Rise for the Coasts of California, Oregon, and Washington: Past Present and Future* as the best available science on sea level rise for the state (NRC, 2012). The California Coastal Commission also supported the use of the NRC 2012 report as best available current science. The commission noted that the science of sea level rise is continually advancing, and that future research may enhance the scientific understanding of how the climate is changing, resulting in updating sea-level-rise projections (CCC, 2013.) The NRC report includes discussions of historic sea-level-rise observations, three projections of sea level rise for the coming century, and insight into the potential impacts of a rising sea on the California coast.

Additional resources provide information about sea level rise and impacts specific to California and the Bay Area. These include peer-reviewed academic articles, the California Coastal Commission's *Draft Sea-Level Rise Policy Guidance* (public review draft released on October 14, 2013), and globally relevant information from the latest release of the IPCC Fifth Assessment Report, for which the summary for policymakers was released on September 27, 2013.

Records from satellite altimeters, tide gauges, and ocean temperature measurements infer a long-term increase in sea levels of the Pacific Coast. It is estimated that on average, the coast of California has experienced 8 inches (20 centimeters) of sea level rise over the past century, which is comparable to the global average (CCC, 2013).

The most recent climate science report, *Sea Level Rise for the Coasts of California, Oregon, and Washington: Past, Present, and Future*, has estimated that sea levels along the U.S. Pacific Coast would increase up to 66 inches by 2100 (NRC, 2012).

Specific factors related to precipitation/rainfall/extreme events are summarized below.

- Global sea level has risen 8 inches over the past century.[7]
- Based on the latest IPCC report, the Fifth Assessment Report, global sea level is now expected to rise an additional 11–39 inches by 2100.

According to the latest NRC report, the Bay Area is expected to see 11 additional inches (range of 5–24 inches) of sea level rise by 2050, and approximately 36 inches (range of 17–66 inches) by 2100 (NRC, 2012). The likelihood of sea level rise to occur by certain time frames is described as follows (NRC, 2012):

- 12 inches of sea level rise is "most likely" by 2050.
- 24 inches of sea level rise by 2050 represents the upper uncertainty boundary.
- 36 inches of sea level rise is "most likely" by 2100.
- 48 inches of sea level rise by 2100 is within the upper 85 percent confidence interval.
- 66 inches of sea level rise by 2100 represents the upper uncertainty boundary.

See Figure 3.7-4 for a map of the worst-case scenario, a projected sea level rise of 66 inches in the Mission Bay portion of San Francisco. The water levels on the inundation map show an increase in future mean higher high water (MHHW)[8] to 66 inches (sea level rise above existing MHHW) and areas that could be inundated permanently on a regular basis by tidal action. In contrast, temporary flooding can occur when an area is exposed to episodic, short-duration, extreme tide events of greater magnitude than normal tide levels. The inundation resulting from various combined sea level rise/storm surge[9] scenarios are shown in Figure 3.7-4 and listed below the "permanent inundation" scenario. This inundation map for extreme tide and storm surge scenarios does not consider the duration of flooding, or the potential mechanism for draining the floodwaters from the inundated land once the extreme high-tide levels recede.

In addition, hydraulically disconnected low-lying areas are displayed in green in Figure 3.7-4. These areas do not have an effective overland flow path to allow water to reach the area, although they have topographic elevations below the inundated water surface. It is possible that the low-lying areas are connected through culverts, storm drains, or other hydraulic features that are not captured within the topographic digital elevation model.[10] Therefore, there may be an existing or future flood risk within these areas.

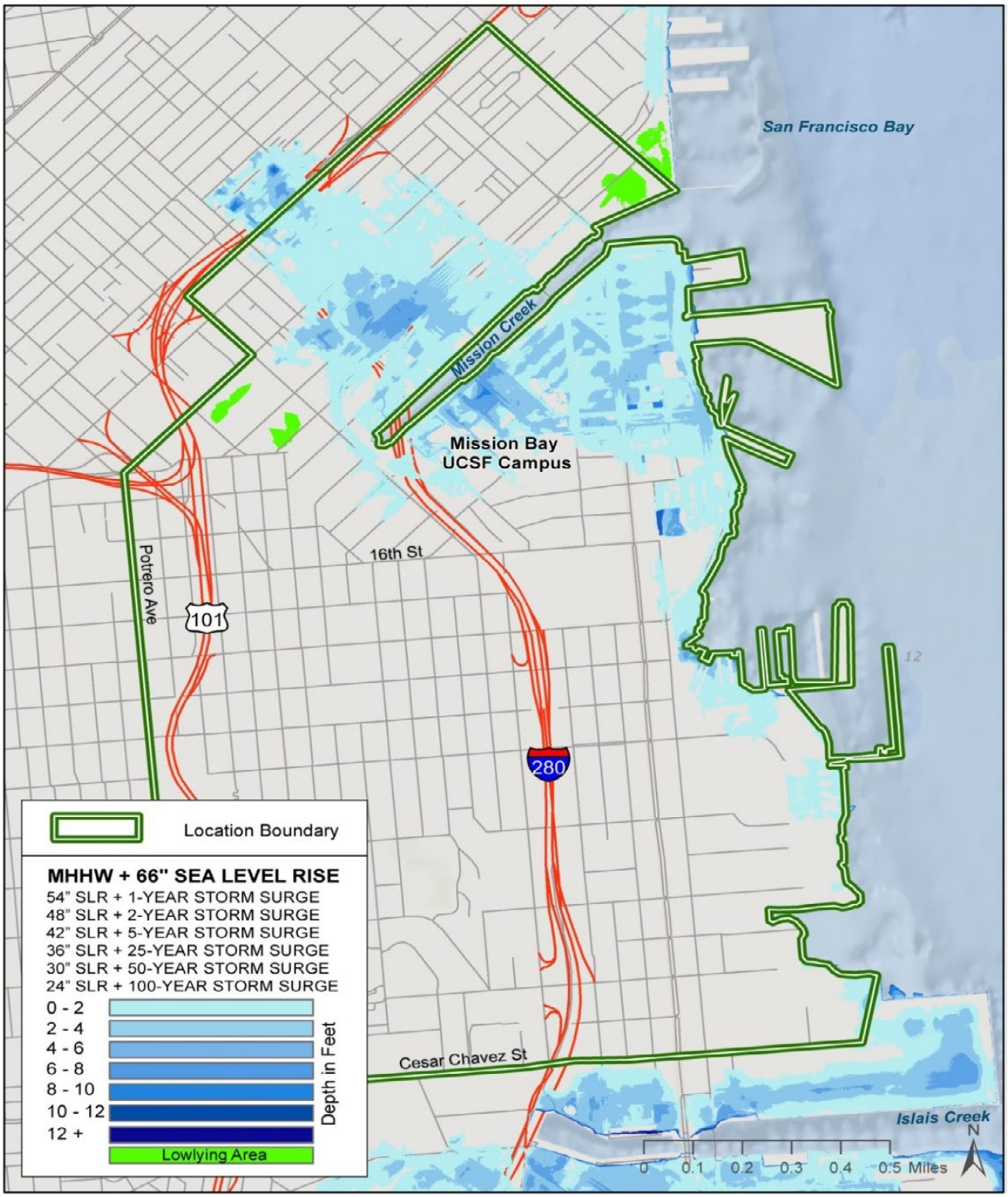
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7 For trends in mean sea level as captured at San Francisco's tide gauge (NOAA 2013a).

8 MHHW is the average of the higher high-water height of each tidal day observed over the National Tidal Datum Epoch, a specific 19-year period adopted by the National Ocean Service as the official time segment over which tide observations are taken and reduced to obtain mean values (e.g., mean lower low water) for tidal datums. It is necessary for standardization because of periodic and apparent secular trends in sea level (NOAA, 2013b).

9 Storm surge is an abnormal rise of water generated by a storm, over and above the predicted astronomical tides. Storm surge should not be confused with storm tide, which is defined as the water level rise due to the combination of storm surge and the astronomical tide. This rise in water level can cause extreme flooding in coastal areas, particularly when storm surge coincides with normal high tide, resulting in storm tides reaching up to 20 feet or more in some cases. (NOAA, 2013c.)

10 The inundation map uses a 1-meter horizontal grid resolution digital elevation model based on the 2010/2011 California Coastal Mapping Program Light Detection and Ranging (i.e., LiDAR). The water level analysis leverages data from the Federal Emergency Management Agency's California Coastal Mapping and Analysis Project. The inundation maps consider static sea level rise on top of MHHW, as well as a range of storm surge and wave hazard events ranging from the 1-year to the 100-year extreme tide. The methods and the associated digital data that were used to develop these inundation maps can be found in *the Climate Stressors and Impacts: Bayside Sea Level Rise Mapping Technical Memorandum* (SFPUC, 2014).



Source: SFPUC, 2014
Note: MHHW = mean higher high water; SLR = sea level rise.
The sea level rise inundation mapping and supporting technical information were developed by AECOM for the San Francisco Public Utilities Commission (SFPUC) Wastewater Enterprise as part of its Sewer System Improvement Program. SFPUC provided the mapping to VA for use in this EIS. Low-lying areas depicted in green are hydraulically disconnected but have topographic elevations below the inundated water surface.

Figure 3.7-4 Permanent Inundation Areas in the Mission Bay Area with Sea Level Rise of 66 Inches by the End of the 21st Century (or Earlier Temporary Inundation during Storm Surge Events)

All inundation maps are associated with caveats and uncertainties. Inundation maps and the underlying associated analyses are intended as planning-level tools to illustrate the potential for flooding under future sea-level-rise and storm-surge scenarios. Although this information is appropriate for conducting vulnerable and risk impact assessments, finer-grained information may be needed for detailed engineering design and implementation.

Existing SFVAMC Fort Miley Campus

The existing SFVAMC Fort Miley Campus sits at an elevation of 300–350 feet relative to mean sea level (msl).

Mission Bay Area

The Mission Bay area ranges in site elevation from 95 to 111 feet (this elevation references the San Francisco City Datum[11] plus 100 feet), which is roughly equivalent to 6–22 feet above msl.

3.7.2 Regulatory Framework

In November 2007 and August 2008, the Ninth Circuit U.S. Court of Appeals ruled that a NEPA document must contain a detailed GHG analysis. The ruling, in *Center for Biological Diversity v. National Highway Safety Administration*, 508 F. 3d 508 (2007), was vacated and replaced by *Center for Biological Diversity v. National Highway Safety Administration*, 2008 DJDAR 12954 (August 18, 2008).

Massachusetts et al. v. Environmental Protection Agency (2007)

Twelve U.S. states and cities, including California, in conjunction with several environmental organizations, sued in *Massachusetts et al. v. Environmental Protection Agency* to force the U.S. Environmental Protection Agency (EPA) to regulate GHGs as a pollutant pursuant to the Clean Air Act (CAA). On April 2, 2007, the U.S. Supreme Court held that EPA has the authority to regulate GHG emissions as a pollutant pursuant to the CAA. However, the court did not decide whether EPA is required to regulate GHG emissions at this time, or may exercise discretion to not regulate at this time.

Despite the Supreme Court ruling and the EPA proposal, there are no promulgated federal regulations to date limiting GHG emissions that are applicable to the SFVAMC LRDP.

U.S. Environmental Protection Agency Finding of Endangerment (2007)

On April 17, 2009, EPA issued a Proposed Endangerment and Cause or Contribute Finding for GHGs under the CAA. Through this Finding of Endangerment, the EPA Administrator proposed that current and projected concentrations of CO_2, methane, nitrous oxide, HFCs, PFCs, and sulfur hexafluoride threaten the public health and welfare of current and future generations. Additionally, the Administrator proposed that combined emissions of CO_2, methane, nitrous oxide, and HFCs from motor vehicles contribute to the atmospheric concentrations, and thus to the threat of climate change. Although the Endangerment Finding in itself does not place requirements on industry (including the SFVAMC LRDP), it is an important step in EPA's process to develop regulation.

[11] The San Francisco City Datum is a reference datum that has been used by San Francisco for surveying purposes since the early 1900s. To convert to the North American Vertical Datum of 1988 (approximately msl), add 11.37 feet to the City Datum.

U.S. Environmental Protection Agency Advance Notice of Proposed Rulemaking (2008)

In June 2008, EPA issued an Advance Notice of Proposed Rulemaking inviting comments on options and questions regarding regulation of GHGs under the CAA; however, EPA has not yet proposed or adopted regulations in response to the decision in *Massachusetts et al. v. Environmental Protection Agency*. Thus, there are no promulgated federal regulations to date limiting GHG emissions that are applicable to the SFVAMC LRDP.

U.S. Environmental Protection Agency Rule: Mandatory Reporting of GHGs (2009)

On September 22, 2009, the EPA Administrator signed a rule requiring mandatory reporting of emissions of GHGs from large sources in the United States. The rule was published in the *Federal Register* on October 30, 2009, and went into effect December 29, 2010. The rule applies to emissions of CO_2, methane, nitrous oxide, HFCs, PFCs, sulfur hexafluoride, nitrogen trifluoride, hydrofluorinated ethers, and select other fluorinated compounds. Under the rule, suppliers of fossil fuels or industrial GHGs, manufacturers of vehicles and engines, and facilities that emit 25,000 MT or more per year of GHGs are required to report annual emissions to EPA. The first annual reports for the largest emitting facilities, covering calendar year 2010, were submitted to EPA in 2011.

For purposes of this EIS, facilities proposed under Alternative 1 would not be considered a large GHG emissions source. However, facilities operating under Alternative 2 would be considered a large source. Thus, if VA were to proceed with Alternative 2, it would be required to report annual GHG emissions to EPA.

Energy Independence and Security Act

The Energy Policy Act of 2005 created the Renewable Fuel Standard program. The Energy Independence and Security Act (EISA) of 2007 expanded this program by:

- expanding the Renewable Fuel Standard program to include diesel in addition to gasoline;
- increasing the volume of renewable fuel required to be blended into transportation fuel from 9 billion gallons in 2008 to 36 billion gallons by 2022;
- establishing new categories of renewable fuel, and setting separate volume requirements for each one; and
- requiring EPA to apply life-cycle GHG performance threshold standards to ensure that each category of renewable fuel emits fewer GHGs than the petroleum fuel it replaces.

This expanded Renewable Fuel Standard program lays the foundation for achieving significant reductions of GHG emissions from the use of renewable fuels, reducing the use of imported petroleum, and encouraging the development and expansion of the nation's renewable-fuels sector.

For purposes of the SFVAMC LRDP, implementation of the EISA Renewable Fuel Standard program would take place in the form of compliance with the VA SSPP.

California Low Carbon Fuel Standard

The purpose of the California Low Carbon Fuel Standard (Title 17, California Code of Regulations, Sections 95480–95490) is to reduce GHG emissions by reducing the full fuel-cycle, carbon intensity of the transportation fuel pool used in California. The California Low Carbon Fuel Standard generally applies to any transportation fuel that is sold, supplied, or offered for sale in California, and to any person responsible for a transportation fuel in a calendar year. The Low Carbon Fuel Standard applies to the following types of transportation fuels:

- California reformulated gasoline
- California diesel fuel
- Fossil compressed natural gas (CNG) or fossil liquefied natural gas (LNG)
- Biogas CNG or biogas LNG
- Electricity
- Compressed or liquefied hydrogen
- A fuel blend containing hydrogen
- A fuel blend containing greater than 10 percent ethanol by volume
- A fuel blend containing biomass-based diesel
- Denatured fuel ethanol (also known as E100)
- Neat biomass-based diesel (also known as B100)
- Any other liquid or nonliquid fuel

The mobile-source GHG emissions associated with the SFVAMC LRDP were modeled by taking into account the Low Carbon Fuel Standard, which aims for a 10 percent reduction in life-cycle GHG emissions from increased use of renewable fuels in California by 2020.

U.S. Environmental Protection Agency and National Highway Traffic Safety Administration Light-Duty Vehicle Greenhouse Gas Emission Standards and Corporate Average Fuel Economy Standards Final Rule

The final combined EPA and National Highway Traffic Safety Administration (NHTSA) standards that make up the first phase of this national program apply to passenger cars, light-duty trucks, and medium-duty passenger vehicles, covering model years 2012–2016. They require these vehicles to meet an estimated combined average emissions level of 250 grams of CO_2 per mile, equivalent to 35.5 miles per gallon, if the automobile industry were to meet this CO_2 level solely through fuel economy improvements. Together, these standards will cut GHG emissions by an estimated 960 MMT and 1.8 billion barrels of oil over the lifetime of the vehicles sold under the program.

The State of California has received a waiver from EPA to have separate, stricter Corporate Average Fuel Economy standards. Thus, for purposes of the SFVAMC LRDP, EPA's NHTSA GHG Emissions and Corporate Average Fuel Economy standards would be implemented through compliance with Assembly Bill (AB) 1493, described below.

California Assembly Bill 1493 "Pavley"—Light Duty Vehicle Greenhouse Gas Emissions Standards

On June 30, 2009, EPA granted California the authority to implement GHG emission reduction standards for new passenger cars, pickup trucks, and sport utility vehicles. With this waiver, it was expected that implementing California's AB 1493 "Pavley" regulations would reduce GHG emissions from California passenger vehicles by approximately 22 percent in 2012 and 30 percent in 2016, all while improving fuel efficiency and reducing motorists' costs.

The California Air Resources Board has adopted a new approach to passenger vehicles—cars and light trucks—by combining the control of smog-causing pollutants and GHG emissions into a single coordinated package of standards. The new approach also includes efforts to support and accelerate the numbers of plug-in hybrids and zero-emission vehicles in California.

The mobile-source GHG emissions associated with the SFVAMC LRDP were modeled by taking into account the Pavley GHG emissions standards, which require model year 2009–2016 passenger cars, light-duty trucks, and medium-duty passenger vehicles to reduce their GHG emissions from an average 0.45 percent reduction in 2009 to an average 29.7 percent reduction by 2016.

Executive Order 13514, "Federal Leadership in Environmental, Energy, and Economic Performance"

GHG management is required by Executive Order (EO) 13514. The terms of EO 13514 required each federal agency to do all of the following:

- Within 90 days, establish and report to the Chair of the Council on Environmental Quality (CEQ) and the Director of the Office of Management and Budget (OMB) a fiscal year (FY) 2020 percentage reduction target of agencywide scope 1 and scope 2 GHG emissions in absolute terms relative to a FY 2008 baseline.

- In establishing the target, consider reductions associated with the following actions:
  - Reducing the energy intensity of agency buildings
  - Increasing the agency's use of renewable energy and on-site projects
  - Reducing the agency's use of fossil fuels by:
    - using low-GHG-emitting and alternative-fuel vehicles,
    - optimizing vehicle numbers across agency fleets, and
    - reducing petroleum consumption in agency fleets of 20 or more 2 percent annually through FY 2020 relative to a FY 2005 baseline.

    Where appropriate, this target excludes direct emissions from excluded vehicles and equipment as well as electric power produced and sold commercially to other parties in the course of regular business.
  - Within 240 days, establish and report to the CEQ Chair and OMB Director an FY 2020 percentage reduction target for agencywide scope 3 GHG emissions in absolute terms relative to an FY 2008 baseline.

- In establishing the target, consider reductions associated with:
  - pursuing opportunities with vendors and contractors to address and incentivize GHG emission reductions;
  - implementing strategies and accommodations for transit, travel, training, and conferences that actively reduce carbon emissions associated with commuting and travel by agency staff members;
  - meeting GHG emissions reductions associated with other federal government sustainability goals; and
  - implementing innovative policies and practices that address agency-specific scope 3 GHG emissions.
- Within 15 months, establish and report to the CEQ Chair and OMB Director a comprehensive inventory of absolute GHG emissions across all three scopes for FY 2010. Comprehensive inventories must be submitted annually thereafter at the end of each January.

VA has completed the aforementioned EO 13514 requirements in the form of the VA SSPP. This VA SSPP Plan would be adhered to with implementation of the SFVAMC LRDP.

Department of Veterans Affairs Strategic Sustainability Performance Plan

The VA SSPP responds to Section 8 of EO 13514, which requires federal agencies to "develop, implement, and annually update an integrated Strategic Sustainability Performance Plan that will prioritize agency actions" for meeting sustainability goals identified in statutes, regulations, and executive orders. The VA SSPP identifies VA's sustainability goals and defines VA's policy and strategy for achieving these goals. It provides a means to review and evaluate VA's performance and progress toward achieving the sustainability goals (VA, 2010).

VA is targeting a 29.6 percent reduction in Scope 1 (direct) and Scope 2 (indirect) GHG emissions by FY 2020 below the FY 2008 baseline. A 26.2 percent reduction in emissions is projected to come from meeting the FY 2015 alternative fuel use, petroleum reduction, energy intensity reduction, and on-site renewable electricity targets as set forth in the Energy Policy Act of 2005. VA plans to meet these targets through a combination of initiatives funded at the facility, regional, and department levels. Facility-level and regional strategies include energy conservation measures, retro-commissioning, installation of alternative fueling stations, and on-site generation of renewable electricity. Projects funded at the department level include additional alternative fueling stations as well as additional on-site generation of renewable electricity through technologies such as solar and renewably fueled combined heat and power.

VA's current plan to achieve further reductions after FY 2015 is to leverage renewably fueled combined heat and power. Based on a preliminary inventory, 99 percent of VA Scope 1 and Scope 2 emissions come from Veterans Health Administration operations, and 90 percent of those emissions are from purchased electricity and on-site energy generation. In addition, the large thermal loads at VA medical centers make them good candidates for combined heat and power. VA has identified renewably fueled combined heat and power projects at VA medical centers that would produce an estimated 170,000 megawatt-hours per year. These projects are projected to provide the additional 3.4 percent reduction required to meet VA's FY 2020 GHG goal.

VA has set an FY 2020 Scope 3 GHG emissions reduction target of 10 percent below the FY 2008 baseline. VA considers this target to be aggressive but achievable, despite its limited ability to control the sources of Scope 3 emissions. VA's emissions from employee commuting are a particular challenge, given the current size of VA and its potential for growth to meet the demand for Veterans care and services. To meet its target, VA is relying

on a combination of strategies and technology advances that include meeting existing targets (such as energy intensity and pollution prevention); improving fuel economy based on Corporate Average Fuel Economy standards; implementing innovative commuting strategies; and developing an action plan that will address noncommuting emissions, such as telework and alternate work schedules.

This VA SSPP would be adhered to with implementation of the SFVAMC LRDP. Specifically, direct and indirect (Scope 1 and 2) GHG emissions related to electricity and natural gas use under the SFVAMC LRDP take into account the 29.6 percent reduction through compliance with the VA SSPP. Mobile-source (Scope 3) GHG emissions related to individual vehicle commutes under the SFVAMC LRDP did not take into account the 10 percent reduction target, because SFVAMC does not have direct control over such sources of emissions.

3.7.3 Environmental Consequences

Significance Criteria

A NEPA evaluation must consider the context and intensity of the environmental effects that would be caused by, or result from, the EIS Alternatives.

CEQ's national guidance suggests that federal agencies consider opportunities to reduce GHG emissions caused by proposed federal actions and adapt their actions to climate change impacts throughout the NEPA process and address these issues in their agency NEPA procedures. According to CEQ's draft national guidance, there are two main considerations when addressing climate change in environmental documentation: (1) the GHG emissions effects of a proposed action and alternative actions and (2) the impacts of climate change on a proposed action or alternatives. Therefore, this analysis discloses both the proposed LRDP's contribution to climate change and the effects that climate change may have on implementation of the LRDP Alternatives.

CEQ national guidance refers to a quantitative significance threshold of 25,000 $MTCO_2e$ per year in GHG emissions for including a GHG analysis in a NEPA document. Therefore, absent established quantitative thresholds, an Alternative analyzed in this EIS is considered to result in an adverse impact related to GHG emissions if it would:

- make a considerable contribution to cumulative GHG emissions and global climate change. Annual GHG emissions totaling more than 25,000 $MTCO_2e$ per year are considered a cumulatively considerable contribution to GHG emissions for the purposes of this EIS.

No quantitative climate change significance thresholds have been set for the effect of climate change on the region/project. However, absent guidance and established quantitative thresholds, an Alternative analyzed in this EIS is considered to result in an adverse impact if it would:

- result in development or ongoing operations in a region that is unprepared for environmental changes that would occur from climate change, and thus, would harm persons/property or degrade natural resources/ ecosystems.

Assessment Methods

Greenhouse Gas Emissions

The magnitude of project emissions was quantified. Therefore, numerical GHG emissions associated with the proposed LRDP are included as part of the impact discussion.

California Emissions Estimator Model (CalEEMod) Version 2013.2.2 was used to estimate GHG emissions associated with construction of individual development projects and operational GHG emissions. CalEEMod is designed to model construction emissions for land use development projects based on building size, land use and type, and disturbed acreage and allows for the input of project-specific information. CalEEMod also calculates operational GHG emissions associated with a project at buildout, including those emissions resulting from transportation (trip generation), electricity use, natural gas use, solid waste generation, water and wastewater use, and other area sources (hearth and landscaping).

Construction-generated GHG emissions were modeled based on general information provided in Chapter 2.0, "Alternatives," and default BAAQMD-recommended settings and parameters attributable to the proposed land use type and site location. CalEEMod estimates construction-related GHG emissions (i.e., CO_2e) resulting from off-road construction equipment, haul trucks, and construction worker commute trips.

Global Climate Change

The impacts of global climate change and scientific findings are summarized and discussed in terms of implications for the LRDP. Thus, this section includes an overview of the potential impacts of the EIS Alternatives in the context of global climate change, and the potential impact associated with the effect of an Alternative in the context of global climate change is determined in a qualitative manner. See Appendix G for the climate risk screening study prepared for the LRDP.

Alternative 1: SFVAMC Fort Miley Campus Buildout Alternative

Short-Term Projects

Construction

Under Alternative 1 short-term projects, construction emissions at the existing SFVAMC Fort Miley Campus would total 5,802 $MTCO_2e$. No VA sustainability measures are relevant to construction-related GHG emissions; thus, no sustainability measures were applied to determine total construction-related GHG emissions. However, these construction-related GHGs would be emitted only once and the emissions would be spread out over a time period of approximately 6 years. Thus, construction-related GHG emissions associated with Alternative 1 short-term projects would be substantially less than the 25,000 $MTCO_2e$ per year threshold and would not make a considerable contribution to cumulative GHG emissions and global climate change. This impact would be minor.

Operation

Table 3.7-5 presents the GHG emissions related to operation of Alternative 1 short-term projects at the existing SFVAMC Fort Miley Campus. As shown, these operational GHG emissions would total 1,767 $MTCO_2e$ per year. Of this total, mobile-source emissions would total 434 $MTCO_2e$ per year and energy-source emissions would total 548 $MTCO_2e$ per year. However, with implementation of the VA SSPP and its related sustainability measures, operational GHG emissions at the Campus under the Alternative 1 short-term projects would be reduced to 1,605 $MTCO_2e$ per year (Table 3.7-5).

Table 3.7-5: Operational Greenhouse Gas Emissions of Alternative 1 Short-Term Projects (Metric Tons of CO_2e per Year)

	Transportation Emissions	Stationary-Source Emissions				Total Emissions
		Area	Energy (Electricity and Natural Gas)	Water	Solid Waste	
Short-Term Projects (2020) without VA SSPP Applied	434	<1	548	56	729	1,767
Short-Term Projects (2020) with VA SSPP Applied	434	<1	386	56	729	1,605

Notes:
CO_2e = carbon dioxide equivalent; VA SSPP = *Department of Veterans Affairs Strategic Sustainability Performance Plan*
Source: Data compiled by AECOM in 2014 (see Appendix B)

Because operations of Alternative 1 short-term projects would result in GHG emissions well below 25,000 $MTCO_2e$ per year, implementing these projects would not make a considerable contribution to cumulative GHG emissions and global climate change. This impact would be minor.

Impacts of Climate Change on Alternative 1 Short-Term Projects

Extreme Heat Events

Extreme heat events related to climate change that could affect SFVAMC could occur. New buildings included in Alternative 1 short-term projects would be constructed to achieve a minimum Leadership in Energy and Environmental Design (LEED®) Silver rating, and other sustainability measures would be implemented in accordance with the VA SSPP. Thus, future operational GHG emissions associated with these new buildings would be less than emissions associated with non-LEED® buildings. However, without thermoregulated environments in patient-care buildings, sick, injured, and elderly Veterans could be vulnerable to extreme heat conditions. SFVAMC would likely require a high energy load while the rest of San Francisco would have similar energy demand, which could add stress to the overall system (i.e., lead to brownouts). Thus, under Alternative 1 short-term projects, the ongoing medical center operation designed for long-term use could still be unprepared for the results of climate change, and persons, property, and operations could be harmed. This would represent a potentially adverse effect.

However, SFVAMC keeps its fire sprinkler systems, heating, ventilation, and air conditioning (HVAC) systems, and geothermal cooling systems up to date. These systems undergo quarterly maintenance to ensure that they are sufficient to handle additional loads, including those related to potential extreme heat events. In addition, SFVAMC provides quarterly maintenance of its backup electricity and water supply systems to ensure the availability of air conditioning and water for its patients and employees during heat waves or other potential natural or human-caused disasters. Because SFVAMC's existing sprinkler and HVAC systems would be kept up to date and backup electricity and water supplies would be maintained, this impact would be minor.

Wildfire Threat

The SFVAMC Fort Miley Campus is located at the wildland urban interface (ABAG, 2015) and surrounded on three sides by forested public land belonging to the National Park Service's Golden Gate National Recreation Area (GGNRA), with an identified wildfire threat of "high" and "very high" (City, 2008). This existing wildfire threat could intensify if droughts and extreme temperature events were to increase in severity. Thus, under Alternative 1 short-term projects, the ongoing medical center operation designed for long-term use could be unprepared for the results of climate change, and persons, property, and operations could be harmed. This would represent a potentially adverse effect. However, with implementation of Mitigation Measure GHG-1, even in the short term (considering current drought conditions), attention would be paid to the potential wildfire risk near the SFVAMC Fort Miley Campus, thus reducing this impact to a minor level.

> **Mitigation Measure GHG-1: Maintain Foliage on Campus and Coordinate with Other Jurisdictions to Maintain Foliage Adjacent to Campus**
>
> *SFVAMC will maintain its foliage on the SFVAMC Fort Miley Campus by conducting an annual foliage survey and then conducting appropriate pruning and/or removal actions. In addition, SFVAMC will coordinate with GGNRA and the City and County of San Francisco to ensure those agencies maintain foliage on their adjacent properties to minimize fuel load for potential wildfires that could affect the SFVAMC Fort Miley Campus.*

Sea Level Rise

Based on the worst-case sea-level-rise predictions discussed above in Section 3.7.1, "Affected Environment," sea level rise could cause flooding in some of the low-lying coastal areas of San Francisco. However, because the existing SFVAMC Fort Miley Campus is situated at a much higher elevation than the Pacific Ocean (approximately 300–350 feet above msl), no climate change–related sea-level-rise impacts would occur at the Campus under Alternative 1 short-term projects by mid-2020. Therefore, short-term development under Alternative 1 would not be unprepared for environmental changes that would occur from climate change, and thus, those changes would not result in harm to persons or property or degradation of natural resources or ecosystems. No impact would occur.

Long-Term Projects

Construction

Greenhouse Gas Emissions

Under the Alternative 1 long-term project, construction emissions at the existing SFVAMC Fort Miley Campus would total 1,198 $MTCO_2e$. No VA sustainability measures are relevant to construction-related GHG emissions; thus, no sustainability measures were applied to determine total construction-related GHG emissions. However, these construction-related GHGs would be emitted only once and emissions would be spread out over a time period of approximately 2 years. Thus, construction-related GHG emissions associated with the Alternative 1 long-term project would be substantially less than the 25,000 $MTCO_2e$ per year threshold and would not make a considerable contribution to cumulative GHG emissions and global climate change. This impact would be minor.

Operation

Greenhouse Gas Emissions

Table 3.7-6 presents the GHG emissions related to operation of the Alternative 1 long-term project. Operational GHG emissions for the Alternative 1 long-term project would total 2,944 $MTCO_2e$ per year. Of this total, mobile-source emissions would total 1,417 $MTCO_2e$ per year and energy-source emissions would total 628 $MTCO_2e$ per year. However, with implementation of the VA SSPP and its related sustainability measures, operational emissions at the Campus under the Alternative 1 long-term project would total 2,758 $MTCO_2e$ per year (Table 3.7-6). This would result in a total net increase in GHG emissions under Alternative 1 short-term and long-term projects of 4,363 $MTCO_2e$.

Because operations of Alternative 1 short- and long-term projects would result in GHG emissions well below 25,000 $MTCO_2e$ per year, implementing Alternative 1 projects would not make a considerable contribution to cumulative GHG emissions and global climate change. This impact would be minor.

Table 3.7-6: Operational Greenhouse Gas Emissions of the Alternative 1 Long-Term Project (Metric Tons of CO_2e per Year)

	Transportation Emissions	Stationary-Source Emissions				Total Emissions
		Area	Energy (Electricity and Natural Gas)	Water	Solid Waste	
Long-Term Project (2026) without VA SSPP Applied	1,417	<1	628	64	835	2,944
Long-Term Project (2026) with VA SSPP Applied	1,417	<1	442	64	835	2,758

Notes:
CO_2e = carbon dioxide equivalent; VA SSPP = *Department of Veterans Affairs Strategic Sustainability Performance Plan*
Source: Data compiled by AECOM in 2014 (see Appendix B)

Impacts of Climate Change on the Alternative 1 Long-Term Project

Climate change–related impacts on the Alternative 1 long-term project would be similar to those assessed for Alternative 1 short-term projects. These impacts would range in significance from minor with mitigation to no impact.

Alternative 2: SFVAMC Fort Miley Campus Buildout Alternative

Short-Term Projects

Construction

Greenhouse Gas Emissions

Under Alternative 2 short-term projects, construction emissions at the existing SFVAMC Fort Miley Campus would total 5,089 $MTCO_2e$, which is slightly less than construction emissions under Alternative 1 short-term projects. No VA sustainability measures are relevant to construction-related GHG emissions; thus, no sustainability measures were applied to determine total construction-related GHG emissions. However, these construction-related GHGs would be emitted only once and the emissions would be spread out over a time period of approximately 6 years. Thus, construction-related GHG emissions associated with Alternative 2 short-term projects would be substantially less than the 25,000 $MTCO_2e$ per year threshold and would not make a considerable contribution to cumulative GHG emissions and global climate change. This impact would be minor.

Operation

Greenhouse Gas Emissions

Table 3.7-7 presents the GHG emissions related to operation of Alternative 2 short-term projects at the existing SFVAMC Fort Miley Campus. As shown, these operational GHG emissions would total 1,767 $MTCO_2e$ per year, identical to the emissions associated with Alternative 1 short-term projects. Of this total, mobile-source emissions would total 434 $MTCO_2e$ per year and energy-source emissions would total 548 $MTCO_2e$ per year. However, with implementation of the VA SSPP and its related sustainability measures, operational GHG emissions at the Campus under the Alternative 2 short-term projects would be reduced to 1,605 $MTCO_2e$ per year (Table 3.7-7).

Because operations of Alternative 2 short-term projects would result in GHG emissions well below 25,000 $MTCO_2e$ per year, implementing these projects would not make a considerable contribution to cumulative GHG emissions and global climate change. This impact would be minor.

Impacts of Climate Change on Alternative 2 Short-Term Projects

The climate change–related impacts on Alternative 2 short-term projects would be similar to those assessed for Alternative 1 short-term projects. These impacts would be minor.

Table 3.7-7: Operational Greenhouse Gas Emissions of Alternative 2 Short-Term Projects (Metric Tons of CO_2e per Year)

	Transportation Emissions	Stationary-Source Emissions				Total Emissions
		Area	Energy (Electricity and Natural Gas)	Water	Solid Waste	
Short-Term Projects (2020) without VA SSPP Applied	434	<1	548	56	729	1,767
Short-Term Projects (2020) with VA SSPP Applied	434	<1	386	56	729	1,605

Notes:
CO_2e = carbon dioxide equivalent; VA SSPP = *Department of Veterans Affairs Strategic Sustainability Performance Plan*
Source: Data compiled by AECOM in 2014 (see Appendix B)

Long-Term Projects

Construction

Greenhouse Gas Emissions

Under Alternative 2 long-term projects, construction emissions at the existing SFVAMC Fort Miley Campus would total 3,153 $MTCO_2e$. No VA sustainability measures are relevant to construction-related GHG emissions; thus, no sustainability measures were applied to determine total construction-related GHG emissions. However, these construction-related GHGs would be emitted only once and emissions would be spread out over a time period of approximately 5 years. Thus, construction-related GHG emissions associated with Alternative 2 long-term projects would be substantially less than the 25,000 $MTCO_2e$ per year threshold and would not make a considerable contribution to cumulative GHG emissions and global climate change. This impact would be minor.

Operation

Greenhouse Gas Emissions

Table 3.7-8 presents the GHG emissions related to operation of Alternative 2 long-term projects. Operational GHG emissions for Alternative 2 long-term projects would total 2,944 $MTCO_2e$ per year. Of this total, mobile-source emissions would total 1,417 $MTCO_2e$ per year and energy-source emissions would total 628 $MTCO_2e$ per year. However, with implementation of the VA SSPP and its related sustainability measures, operational emissions at the Campus under Alternative 2 long-term projects would total 2,758 $MTCO_2e$ per year (Table 3.7-8). This would result in a total net increase in GHG emissions under Alternative 2 short- and long-term projects of 4,363 $MTCO_2e$.

Because operations of Alternative 2 short- and long-term projects would result in GHG emissions well below 25,000 $MTCO_2e$ per year, implementing Alternative 2 projects would not make a considerable contribution to cumulative GHG emissions and global climate change. This impact would be minor.

Table 3.7-8: Operational Greenhouse Gas Emissions of Alternative 2 Long-Term Projects (Metric Tons of CO_2e per Year)

	Transportation Emissions	Stationary-Source Emissions				Total Emissions
		Area	Energy (Electricity and Natural Gas)	Water	Solid Waste	
Long-Term Projects (2027) without VA SSPP Applied	1,417	<1	628	64	835	2,944
Long-Term Projects (2027) with VA SSPP Applied	1,417	<1	442	64	835	2,758

Notes:
CO_2e = carbon dioxide equivalent; VA SSPP = *Department of Veterans Affairs Strategic Sustainability Performance Plan*
Source: Data compiled by AECOM in 2014 (see Appendix B)

Impacts of Climate Change on Alternative 2 Long-Term Projects

Climate change–related impacts on Alternative 2 long-term projects would be similar to those assessed for Alternative 1 short-term projects. These impacts would range in significance from minor to no impact.

Alternative 3: SFVAMC Fort Miley Campus plus Mission Bay Campus Alternative

Short-Term Projects

Alternative 3 short-term projects (during both construction and operation) would be the same as short-term projects for Alternative 1 (Table 2-1 and Figure 2-1). Therefore, the impacts of Alternative 3 short-term projects related to GHG emissions would be the same as the impacts of short-term projects for Alternative 1. These impacts would range in significance from no impact to minor.

Long-Term Projects

Alternative 3 long-term projects (during both construction and operation) located at the SFVAMC Fort Miley Campus would be the same as the Alternative 1 long-term project, except that the ambulatory care center would be located at the potential new SFVAMC Mission Bay Campus under Alternative 3 (Table 2-1 and Figure 2-1).

Construction

Under Alternative 3 long-term projects, construction emissions would total 1,109 $MTCO_2e$. It should be noted that under Alternative 3 long-term projects, the ambulatory care center would be constructed at the potential new SFVAMC Mission Bay Campus rather than at the existing SFVAMC Fort Miley Campus. Therefore, projected emissions at the existing SFVAMC Fort Miley Campus would be less under Alternative 3 than under Alternative 1. No VA sustainability measures are relevant to construction-related GHG emissions; thus, no sustainability measures were applied to determine total construction-related GHG emissions. However, these construction-related GHGs would be emitted only once and emissions would be spread out over a time period of approximately 3 years. Thus, construction-related GHG emissions associated with Alternative 3 long-term projects would be

substantially less than the 25,000 $MTCO_2e$ per year threshold and would not make a considerable contribution to cumulative GHG emissions and global climate change. This impact would be minor.

Operation

Table 3.7-9 presents the GHG emissions related to operation of Alternative 3 long-term projects at the potential new SFVAMC Mission Bay Campus. Operational GHG emissions during these projects would total 3,247 $MTCO_2e$ per year. Of this total, mobile-source emissions associated with the potential new Campus would total 878 $MTCO_2e$ per year and energy-source emissions would total 517 $MTCO_2e$ per year. However, with implementation of the VA SSPP and its related sustainability measures, energy-source emissions at the potential new Campus under Alternative 3 long-term projects would total 364 $MTCO_2e$ per year (Table 3.7-9). It should be noted that the difference in emissions at the existing SFVAMC Fort Miley Campus between Alternatives 1 and 3 is based on the difference in overall square footage that would occur under Alternative 3 versus Alternative 1.

Table 3.7-9: Operational Greenhouse Gas Emissions of Alternative 3 Long-Term Projects (Metric Tons of CO_2e per year)

	Transportation Emissions	Stationary-Source Emissions				Total Emissions
		Area	Energy (Electricity and Natural Gas)	Water	Solid Waste	
Long-Term Projects (2027) without VA SSPP Applied	878	<1	517	132	1,720	3,247
Long-Term Projects (2027) with VA SSPP Applied	878	<1	364	132	1,720	3,094

Notes:
CO_2e = carbon dioxide equivalent; VA SSPP = *Department of Veterans Affairs Strategic Sustainability Performance Plan*
Source: Data compiled by AECOM in 2014 (see Appendix B)

Therefore, with implementation of the VA SSPP and its related sustainability measures under Alternative 3 long-term operational GHG emissions would total 3,094 $MTCO_2e$ per year. Taken into consideration with the projected emissions of Alternative 3 short-term projects, implementation of Alternative 3 would generate GHG emissions of 5,014 $MTCO_2e$ per year without the VA SSPP and 4,699 $MTCO_2e$ with the VA SSPP.

Because operations of Alternative 3 short- and long-term projects at the potential new SFVAMC Mission Bay Campus would result in GHG emissions below 25,000 $MTCO_2e$ per year, operation of Alternative 3 long-term projects would not make a considerable contribution to cumulative GHG emissions and global climate change. This impact would be minor.

Impacts of Climate Change on Alternative 3 Long-Term Projects

Extreme Heat Events

Climate change–related impacts on Alternative 3 long-term projects related to extreme heat events would be similar to those assessed for Alternative 1 short-term projects, with a minor impact.

Wildfire Threat

The potential SFVAMC Mission Bay Campus would not be located at a wildland urban interface or adjacent to forested land. Thus, no impact related to wildfire risk would occur.

Sea Level Rise

Based on the worst-case sea-level-rise predictions of 66 inches by 2099 as discussed above in Section 3.7.1, "Affected Environment," sea level rise could cause flooding in the low-lying urbanized areas of San Francisco. Because a specific location for the potential new SFVAMC Mission Bay Campus has not been identified and the elevation of the site of the potential new Campus relative to San Francisco Bay is unknown, an adverse climate change–related sea level rise impact could occur at the potential new Campus by the year 2027. The potential new SFVAMC Mission Bay Campus could be located on fill on previous marshland at such a low elevation that it would be vulnerable to sea level rise, particularly in combination with a potential storm surge and/or extreme rainfall events by the middle and end of the century. Figure 3.7-4 shows a detailed worst-case sea-level-rise analysis map for the Mission Bay area through the end of the century. However, as part of construction of VA facilities at the potential new SFVAMC Mission Bay Campus, the ground elevation would be raised to a level that would avoid sea level rise–related inundation of VA structures and of the roadways and infrastructure that would serve the new facilities. In addition, VA facilities would be thoroughly assessed as a part of the design and approval process to satisfy building code and geotechnical requirements. Furthermore, a project-level environmental review would be conducted in the future when more specific project details are available. Thus, no climate change–related sea level rise impact would occur at the potential new SFVAMC Mission Bay Campus.

Alternative 4: No Action Alternative

Short-Term Projects

Construction

Greenhouse Gas Emissions

No short-term, construction-related GHG emissions impacts would occur under Alternative 4.

Operation

Greenhouse Gas Emissions

Under Alternative 4, there would be no LRDP-related operational GHG emissions above current conditions. Table 3.7-10 shows mid-2020 (i.e., future without project) conditions for GHG emissions. It should be noted that the decrease in total mobile-source GHG emissions shown with implementation of Alternative 4 is attributed to efficiencies in vehicle emissions rates that would occur by mid-2020. Furthermore, the decrease in energy-related emissions can be attributed to the implementation of the VA SSPP, and not part of Alternative 4. Therefore, no impact would occur.

Table 3.7-10: Mid-2020 Operational Emissions without Project Greenhouse Gas Emissions (Metric Tons of CO_2e per year)

	Transportation Emissions	Stationary-Source Emissions				Total Emissions
		Area	Energy (Electricity and Natural Gas)	Water	Solid Waste	
Baseline (mid-2020) without VA SSPP Applied	4,093	<1	7,548	454	5,896	17,991
Baseline (mid-2020) with VA SSPP Applied	4,093	<1	5,314	454	5,896	15,757

Notes:
CO_2e = carbon dioxide equivalent; VA SSPP = *Department of Veterans Affairs Strategic Sustainability Performance Plan*
Source: Data compiled by AECOM in 2014 (see Appendix B)

Short-Term Impacts of Climate Change under Alternative 4

Extreme Heat Events

The short-term climate change–related impacts under Alternative 4 related to extreme heat events would be similar to those assessed for Alternative 1 short-term projects, with a minor impact.

Wildfire Threat

The SFVAMC Fort Miley Campus is located at the wildland urban interface (ABAG, 2015) and surrounded on three sides by forested public land belonging to the National Park Service's GGNRA, with an identified wildfire threat of "high" and "very high" (City, 2008). This existing wildfire threat could intensify if droughts and extreme temperature events were to increase in severity. This would represent a potentially adverse effect.

Sea Level Rise

The short-term climate change–related impacts under Alternative 4 related to sea level rise would be similar to those assessed for Alternative 1 short-term projects, with no impact.

Long-Term Projects

Construction

No long-term, construction-related impacts related to GHG emissions would occur under Alternative 4.

Operation

Under Alternative 4, there would be no LRDP-related operational GHG emissions above current conditions. However, Table 3.7-11 shows 2027 (i.e., future without project) conditions for GHG emissions. As with short-term conditions identified above for Alternative 4, the decrease in total mobile-source GHG emissions shown with implementation of this alternative are attributed to efficiencies in vehicle emissions rates that would occur by

2027,[12] and the decrease in energy-related emissions can be attributed to the implementation of the VA SSPP and not part of Alternative 4. Therefore, no impact would occur.

Table 3.7-11: 2027 Future without Project Greenhouse Gas Emissions (Metric Tons of CO_2e per year)

	Transportation Emissions	Stationary-Source Emissions				Total Emissions
		Area	Energy (Electricity and Natural Gas)	Water	Solid Waste	
Future Alt 4 (2027) without VA SSPP Applied	3,905	<1	7,548	454	5,896	17,803
Future Alt 4 (2027) with VA SSPP Applied	3,905	<1	5,314	454	5,896	15,568

Notes:
CO_2e = carbon dioxide equivalent; VA SSPP = *Department of Veterans Affairs Strategic Sustainability Performance Plan*
Source: Data compiled by AECOM in 2014 (see Appendix B)

Long-Term Impacts of Climate Change under Alternative 4

The climate change–related impacts under Alternative 4 would be similar to those assessed for the short term under Alternative 3. Impacts would range in significance from minor with mitigation to no impact.

3.7.4 References

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[12] This is in accordance with a new national fuel economy program that adopts uniform federal standards to regulate both fuel economy and greenhouse gas emissions, covers model year 2012 to model year 2016, and requires an average fuel economy standard of 35.5 miles per U.S. gallon in 2016 (specifically, 39 miles per gallon for cars and 30 miles per gallon for trucks). This is a jump from the current average for all vehicles of 25 miles per gallon.

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3.8 HYDROLOGY AND WATER QUALITY

This section describes the existing physical and regulatory setting related to hydrology and water quality and discusses the potential effects of the EIS Alternatives on hydrology and water quality.

3.8.1 Affected Environment

This section describes the local climate, hydrology, water quality, and groundwater in the immediate vicinity of the existing SFVAMC Fort Miley Campus and in the Mission Bay area. Floodplains, wetlands, and coastal management are discussed in Section 3.5.

Climate

The potential project sites are located in San Francisco, which is considered semiarid with a moderate, Mediterranean climate characterized by cool, dry summers and mild, wet winters. The approximate annualized average high temperature is 64 degrees Fahrenheit (ºF); the average low temperature is 51ºF. Annual rainfall for the project area during the period between 1948 and 2010 averaged approximately 20 inches, 95 percent of which occurred during the winter rainy season (October–April), with the heaviest rainstorms typically occurring in December, January, and February (WRCC, 2011).

Regional Hydrologic Setting

Historically, numerous streams and creeks provided drainage channels from San Francisco's hills and valleys to San Francisco Bay and the Pacific Ocean. Today, most of San Francisco's creeks are buried underground in culverts or are filled, so watersheds are intimately linked to San Francisco's sewer system.

The San Francisco Public Utilities Commission (SFPUC) is the public agency charged with the management and treatment of San Francisco's sewage and stormwater runoff. SFPUC's approach to managing flows in combined sewer areas is to capture, store, and treat all wet-weather flows, thereby providing a high level of protection to San Francisco Bay and the Pacific Ocean. All street runoff during dry weather receives full secondary treatment; most storm flows receive full secondary treatment; and all storm flows receive treatment to wet-weather primary effluent equivalence before being discharged through a designated outfall (SFPUC, 2010).

Combined sewers serve most of San Francisco. The combined system carries stormwater and wastewater together through San Francisco's underground pipes to one of two main wastewater treatment plants. The topography of San Francisco naturally divides the system into two watersheds: the Oceanside and the Bayside.

During wet weather when the combined flows exceed system capacity and available storage, the combined flows on the east side of San Francisco are discharged to San Francisco Bay through 29 combined sewer overflow (CSO) structures, and the combined flows on the west side of San Francisco are discharged to the Pacific Ocean through seven CSO structures. These overflows are subject to "flow-through treatment" consisting of removal of settleable and floating solids. Discharge occurs in accordance with the terms of the National Pollutant Discharge Elimination System (NPDES) permits described below under "Section 402—NPDES Permits." Discharges during heavy rain events typically comprise 94 percent treated stormwater and 6 percent treated sanitary flow (SFPUC, 2012). Up to 10 CSO events per year are permitted by the State Water

Resources Control Board (SWRCB) from the CSO outfalls at and north of Islais Creek in the central basin area of San Francisco; one CSO event per year is permitted from the area of Yosemite Slough south to the San Francisco boundary; four events per year are permitted along the city's north shore area; and eight events per year are permitted on the west side area of San Francisco (San Francisco Bay RWQCB, 2008).

Local Hydrologic Features

Existing SFVAMC Fort Miley Campus

No watercourses are located within the existing SFVAMC Fort Miley Campus, which is mostly developed with 1.2 million square feet of facilities in addition to parking areas, walkways, and roads, and occupies an approximately 29-acre site. The Campus contains primarily impermeable surfaces (approximately 62 percent) that allow little infiltration of rainfall into the soil and generate high levels of runoff. Most of the permeable area is located in the north slope area and in the southwest corner of the Campus.

The SFVAMC Fort Miley Campus is bordered by the Golden Gate National Recreation Area to the north, east, and west, and by the residential Richmond District to the south. The original sanitary sewer and storm drainage system for the Campus was completed in 1934, with several expansions completed since that time. The majority of the stormwater collected from Campus parking lots, streets, pedestrian walkways, landscaped areas, and building roofs is conveyed via a storm drainage system consisting of drainage inlets and stormwater piping to the SFPUC combined sewer interceptor on Clement Street. The combined sewer system collects both sanitary sewage and stormwater. Combined sewer flows from the city's west side, including the SFVAMC Fort Miley Campus, are then treated at the City's Oceanside Water Pollution Control Plant before being discharged to the Pacific Ocean.

A small separate storm drainage system conveys stormwater off-site on the north side of the existing SFVAMC Fort Miley Campus along the north-facing slope. The drainage area being served by this separated system is relatively small. This separate system appears to have adequate capacity for its current drainage area and no known drainage problems (HGA, 2010).

Major and minor landslides and surface slumping have historically occurred on the slope below the northern portion of the SFVAMC Fort Miley Campus as a result of high rainfall, seismic movement, and land erosion. The North Slope Seismic/Geologic Stabilization Project recently completed at the Campus included replacement of the storm drain system that discharges stormwater onto the north slope.

The impacts of discharging stormwater onto the north slope were included in geotechnical investigations performed for the North Slope Seismic/Geologic Stabilization Project, and the recommendations were incorporated into the design of the outfalls to reduce the potential for slope failure on both VA and National Park Service properties (VA, 2010a). The geotechnical investigation that was completed in March 2010 identified the discharge of surface water onto the northern slope as a major destabilizing factor contributing to on-going slope failure, which could result in the potential for on- and off-site erosion, an increased risk of localized landsliding downslope from the proposed retaining walls, and the potential for undermining the proposed retaining walls because of continued landslide movement. Storm drain improvements as part of this project included replacement of the existing catch basins, manholes, and storm drain piping to the north slope, which were old and damaged. The new pipelines were placed above ground to allow monitoring for potential damage or movement of the pipe

over time and to facilitate maintenance. The pipelines discharge to energy dissipaters that reduce the erosional forces of the water. The energy dissipaters consist of rock riprap embedded in concrete and underlain by overlapping sheets of a puncture-resistant vapor barrier. The project also reduced the slope gradient, which reduced slide potential and eliminated areas where water previously ponded. Two retaining walls were installed as part of the project; native shrubs and trees were planted below the retaining walls after construction. A long-term monitoring and maintenance plan has been put into effect to maintain the drainage system in good repair so that it is effective in controlling localized erosion (VA, 2010a). The management measure states the following (VA, 2010a:27):

> A long-term monitoring and maintenance program shall be established for continued stormwater discharge to the north slope. The program shall include periodic monitoring and maintenance of the aboveground stormwater outfall pipes for movement and damage, as well as the discharge areas for erosion.

Mission Bay Area

Historically, the Mission Bay area was part of San Francisco Bay, with the bay waters at ordinary high tide being roughly bounded by Townsend Street on the north, Eighth Street on the west, and 16th 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, which drains into China Basin.

Stormwater from the Mission Bay area is part of the Bayside Drainage and is collected in the combined sewer system and treated at the City's Southeast Water Pollution Control Plant before being discharged to San Francisco Bay. Combined sewer transport and storage structures are located underground around the Mission Creek Channel and up the shoreline, and connecting pipes, tunnels, and force mains are used to transport flows to the Southeast Water Pollution Control Plant. As part of the Mission Bay redevelopment plans, a separate stormwater system is being developed in this area to handle flows generated by larger storms.

Water Quality

The quality of surface water in San Francisco is affected by past and current land uses. Surface water pollution is expected to contain typical constituents of urban areas such as oil, grease, petroleum, metals (nickel, lead, and copper), dirt, bacteria, coliforms, solvents, trash, and other chemicals. The first flash events of rainstorms generate high loads of these pollutants, which are carried into the combined sewer and treated before disposal; subsequent rainfall generates smaller pollutant loads.

In a cooperative effort between SFPUC and the San Francisco Department of Public Health, shoreline bacteria are monitored weekly year round at 14 stations on San Francisco's perimeter where water contact recreation may occur. Beach water quality information is then made available to the public via a toll-free hotline and on the Internet. Additional monitoring is conducted whenever a treated discharge from San Francisco's combined sewer

system occurs and affects a monitored beach. Monitoring locations consist of three stations in the Candlestick Point State Recreation Area, two stations at Aquatic Park, two stations along Crissy Field Beach, three stations at Baker Beach, one at China Beach, and three stations along Ocean Beach.

Water quality in the San Francisco estuarine system is under the jurisdiction of the San Francisco Bay Regional Water Quality Control Board (San Francisco Bay RWQCB). The San Francisco Bay RWQCB's *San Francisco Bay Basin (Region 2) Water Quality Control Plan (Basin Plan)*, referred to as the Basin Plan, identifies uses for surface water bodies in the San Francisco estuarine system that are critical to management of water quality in California. Water quality objectives and effluent limitations from the SWRCB's *Water Quality Control Plan for Ocean Waters of California* (California Ocean Plan) and *Water Quality Control Plan for Control of Temperature in the Coastal and Interstate Waters and Enclosed Bays and Estuaries of California* (also referred to as the Thermal Plan) apply to ocean waters. Discharges that extend beyond the 3-mile limit of State waters into federal waters are regulated by the U.S. Environmental Protection Agency (EPA).

Existing SFVAMC Fort Miley Campus

San Francisco Bay

The Basin Plan identifies the following beneficial uses for the Golden Gate Channel, which is generally located between the Pacific Ocean (Point Bonita–Point Lobos) and the Golden Gate Bridge: commercial, marine habitat, fish migration, preservation of rare and endangered species, fish spawning, wildlife habitat, water contact recreation, noncontact water recreation, and navigation. In addition, the Basin Plan identifies the following existing beneficial uses for the Central Bay[1]: industrial service supply; ocean, commercial, and sport fishing; shellfish harvesting; estuarine habitat; fish migration; preservation of rare and endangered species; wildlife habitat; water contact recreation; noncontact water recreation; and navigation. The Basin Plan also identifies fish spawning as a potential beneficial use of the Central Bay (San Francisco Bay RWQCB, 2010).

EPA has identified the Central Bay as an impaired water body in compliance with Section 303(d) of the Clean Water Act (CWA). (For further information about CWA Section 303[d], see "Clean Water Act Section 303" in Section 3.8.2, "Regulatory Framework.") The pollutants that have been identified as causing impairment in the Central Bay include chlordane, dichloro-diphenyl-trichloroethane (better known as DDT), dieldrin, dioxin compounds, exotic species, furan compounds, mercury, selenium, and polychlorinated biphenyls (PCBs). The potential sources of pollutants identified in the Central Bay are nonpoint sources, atmospheric deposition, ballast water, industrial and municipal point sources, resource extraction, natural sources, and unknown sources (EPA, 2007). The 2009 Final Staff Report on proposed changes to the CWA Section 303(d) list also listed the Central Bay as impaired for trash (San Francisco Bay RWQCB, 2009). A total maximum daily load (TMDL) for mercury in San Francisco Bay has been developed, and on February 12, 2008, EPA approved a Basin Plan amendment incorporating the mercury TMDL into the Basin Plan. A TMDL for PCBs has also been developed for San Francisco Bay and was approved by EPA on March 29, 2010. The TMDLs for mercury and PCBs include numeric targets for concentrations in suspended sediment and/or fish tissue.

[1] The Basin Plan refers to the portion of San Francisco Bay adjacent to the Pacific Ocean and Golden Gate Channel, as well as east of the Mission Bay area, as the San Francisco Bay Central (Central Bay).

In compliance with CWA Section 303(d), EPA has identified the waters off of Baker Beach at Lobos Creek, Horseshoe Cove northwest and northeast, as an impaired water body for indicator bacteria from an unknown source (EPA, 2007). This area is located approximately 4,500 feet northeast of the existing SFVAMC Fort Miley Campus. Indicator bacteria are surrogates used to measure the potential presence of fecal material and associated fecal pathogens. This listing was made by EPA in 2006, and a TMDL is expected in 2019.

Pacific Ocean

The Basin Plan identifies the following beneficial uses for the Pacific Ocean in San Francisco County: industrial service supply; ocean, commercial, and sport fishing; shellfish harvesting; marine habitat; fish migration; preservation of rare and endangered species; fish spawning; wildlife habitat; water contact recreation; noncontact water recreation; and navigation.

The California Ocean Plan is used by EPA as the set of guidelines addressing the criteria listed under CWA Section 403(c). The California Ocean Plan outlines the following beneficial uses for ocean waters of California: industrial water supply; water contact and noncontact recreation, including aesthetic enjoyment; navigation; commercial and sport fishing; mariculture; preservation and enhancement of designated Areas of Special Biological Significance; rare and endangered species; marine habitat; fish migration; and fish spawning and shellfish harvesting (SWRCB, 2009).

Mission Bay Area

The beneficial uses and Section 303(d) impairments described previously for the Central Bay also apply to the shoreline of the Mission Bay area. Because of historic industrial activity, urban uses, and the start of development under the Mission Bay redevelopment plans, surface water runoff from the Mission Bay area commonly contains pollutants consisting of heavy metals, oil and grease, suspended solids, asbestos, cyanide, and phenols (UCSF, 2005).

Mission Creek, which empties into the Mission Creek Channel in Mission Bay, has also been identified by the EPA as an impaired water body for ammonia, hydrogen sulfide, and polycyclic aromatic hydrocarbons. Sediment has also been identified as impaired for chlordane, dieldrin, lead, mercury, PCBs, silver, and zinc from CSO and industrial point sources (EPA, 2007). A TMDL for PCBs has been developed for San Francisco Bay and Mission Creek and was approved by EPA on March 29, 2010. This TMDL includes numeric targets for concentrations in suspended sediment and/or fish tissue.

Groundwater

San Francisco has seven underlying groundwater basins: Westside, Downtown, Lobos, Marina, Islais Valley, South, and Visitacion Valley. The larger Bay Area is all part of the approximately 2.88-million-acre (4,500-square-mile) San Francisco Bay Hydrologic Region. Groundwater recharge in urban areas such as San Francisco is affected by the extent of impervious surfaces such as paved roads and buildings, which inhibit the natural recharge of groundwater. Recharge of San Francisco’s groundwater basins is hindered not only by the vast extent of impervious surfaces citywide, but also by the historic channelization of nearly all surface water drainages into the combined sewer system.

Existing SFVAMC Fort Miley Campus

The Westside Groundwater Basin (Westside Basin) underlies the existing SFVAMC Fort Miley Campus, incorporates Lake Merced, and extends farther south along the east side of the peninsula to South San Francisco Bay. The Westside Basin is the largest groundwater basin underlying San Francisco. Before the 1930s, water from the Westside Basin was used for San Francisco's drinking supply and for nonpotable purposes. Since the 1930s, groundwater has been used only for nonpotable purposes; however, SFPUC is developing plans to use groundwater from the Westside Basin for municipal supply again (SFPUC, 2009).

The Westside Basin incorporates a total surface area of 25,400 acres (40 square miles) in both San Francisco and San Mateo Counties. The Westside Basin is separated from the Lobos Basin to the north by northwest-trending bedrock ridge, the San Bruno Mountains bound the Westside Basin on the east, the San Andreas Fault and Pacific Ocean form its western boundary, and the southern limit of the Westside Basin is defined by a bedrock high that separates it from the San Mateo Plain Groundwater Basin (DWR, 2006).

Sources of groundwater recharge to the Westside Basin include infiltration of rainfall and irrigation water and leakage from water and sewer pipes. Average groundwater recharge in the Westside Basin for water years 1987 and 1988 was estimated to be 4,846 acre-feet per year (DWR, 2006). A study conducted by the U.S. Geological Survey covering the period of 1987 to 1992 showed declining water levels in the Westside Basin that were attributed to the drought during that period. Existing beneficial uses identified in the Basin Plan for the portion of the Westside Basin underlying the existing SFVAMC Fort Miley Campus include agriculture and municipal and domestic supply. Industrial service supply and industrial process supply have also been identified in the Basin Plan as potential beneficial uses of the Westside Basin (San Francisco Bay RWQCB, 2010). The existing SFVAMC Fort Miley Campus is covered by approximately 18.1 acres of impervious surface, with the remaining 11.2 acres being pervious.

Mission Bay Area

The Mission Bay area is underlain by both the Downtown San Francisco Groundwater Basin (Downtown Basin) and the Islais Valley Groundwater Basin (Islais Basin). The Downtown Basin has a surface area of 7,600 acres (12 square miles) and is located on the northeastern portion of the San Francisco peninsula, separated from the five other basins in the eastern portion of San Francisco by bedrock ridges. In general, groundwater flow is northeast, following the topography, and the basin is made up of shallow, unconsolidated alluvium underlain by less permeable bedrock (DWR, 2004). Existing beneficial uses that have been identified in the Basin Plan for the Downtown Basin include agriculture and municipal and domestic supply. Industrial service supply and industrial process supply have also been identified in the Basin Plan as potential beneficial uses of the Downtown Basin (San Francisco Bay RWQCB, 2010).

The Islais Basin has a surface area of 5,930 acres (9.2 square miles) in both San Francisco and San Mateo Counties. The San Bruno Mountains bound the Islais Basin on the west; the basin is separated from the Downtown Basin to the north and the Visitacion Valley and South San Francisco Groundwater Basins to the south by bedrock topographic highs; and San Francisco Bay forms the Islais Basin's boundary along its entire eastern extent. Existing beneficial uses that have been identified in the Basin Plan for the portion of the Islais Basin underlying the Mission Bay area include agriculture and municipal and domestic supply, industrial service supply,

and industrial process supply. Agriculture and municipal and domestic supply have also been identified in the Basin Plan as potential beneficial uses of the Islais Basin (San Francisco Bay RWQCB, 2010).

Sources of groundwater recharge to the Downtown and Islais Groundwater Basins include infiltration of rainfall, landscape irrigation, and leakage of water and sewer pipes. Recharge to the Downtown Basin was estimated to be 5,900 acre-feet per year, with about half of it attributed to leakage from municipal water and sewer pipes (DWR, 2004). Groundwater levels in the Downtown and Islais Basins have remained relatively stable. The depth to groundwater in the area ranges from 3.5 to 9 feet below ground surface (bgs) (ESA, 2005).

Groundwater quality in the east side of the San Francisco peninsula is a mixed cation bicarbonate type, and considered generally "hard." Concentrations of most major dissolved constituents are within the guidelines recommended by EPA, with total dissolved solids (TDS) varying from about 200 parts per million to more than 700 parts per million (DWR, 2004). Elevated concentrations of nitrate and chloride are common, especially at shallower depths, and high concentrations of boron and TDS have been found. High nitrate levels are attributed to groundwater recharge from sewer pipe leakage, and possibly to fertilizer introduced by irrigation return flows. Elevated chloride and TDS levels are most likely caused by a combination of leaky sewer pipes, historic and current seawater intrusion, and connate water that is found in the pores of sedimentary rocks.

3.8.2 Regulatory Framework

Clean Water Act

The CWA (33 U.S. Code [USC] Section 1251 et seq.) is the major federal legislation governing the water quality aspects associated with the construction and operation of VA facilities. The CWA established the basic structure for regulating discharges of pollutants into waters of the United States (not including groundwater) and waters of the State of California. The objective of the act is "to restore and maintain the chemical, physical, and biological integrity of the nation's waters." The CWA establishes the basic structure for regulating the discharge of pollutants into waters of the United States.

The CWA authorizes EPA to implement pollution control programs. Under the CWA, it is unlawful for any person to discharge any pollutant from a point source into navigable waters, unless an NPDES permit is obtained. In addition, the CWA requires each state to adopt water quality standards for receiving water bodies and to have those standards approved by EPA. Water quality standards consist of designated beneficial uses for a particular receiving water body (e.g., wildlife habitat, agricultural supply, fishing), along with water quality objectives necessary to support those uses.

Responsibility for the protection of water quality in California resides with the SWRCB and nine RWQCBs. The SWRCB establishes statewide policies and regulations for the implementation of water quality control programs mandated by federal and State water quality statutes and regulations. The RWQCBs develop and implement water quality control plans (more commonly known as basin plans) that consider regional beneficial uses, water quality characteristics, and water quality problems. The San Francisco Bay RWQCB implements several federal laws, the most important of which is the federal CWA.

Water Quality Control Plan for the San Francisco Bay Basin

The Basin Plan was first adopted by the San Francisco Bay RWQCB and approved by the SWRCB in 1975. The Basin Plan identifies the beneficial uses of water bodies and provides water quality objectives and standards for waters of the San Francisco Bay Hydrologic Region. Federal and State laws mandate protection of designated "beneficial uses" of water bodies. State law defines beneficial uses as "domestic; municipal; agricultural and industrial supply; power generation; recreation; aesthetic enjoyment; navigation; and preservation and enhancement of fish, wildlife, and other aquatic resources or preserves."

The beneficial uses of any specifically identified water body generally apply to all tributary streams to that water body. Those water bodies not specifically designated for beneficial uses in the Basin Plan are assigned the municipal and domestic supply (MUN) use, in accordance with SWRCB Resolution No. 88-63. Unless otherwise designated by the San Francisco Bay RWQCB, all groundwater is considered suitable or potentially suitable for MUN, agricultural supply, and industrial process supply and these beneficial uses must not be adversely affected by development of the SFVAMC LRDP.

Clean Water Act Section 303

Section 303(c)(2)(b) of the CWA requires states to adopt water quality standards for all surface waters of the United States based on the water body's designated beneficial use. Where multiple uses exist, water quality standards must protect the most sensitive use. Water quality standards are typically numeric, although narrative criteria based on biomonitoring methods may be employed where numerical standards cannot be established or where they are needed to supplement numerical standards. Water quality standards applicable to the SFVAMC LRDP are listed in the Basin Plan.

Section 303(d) of the CWA requires states and authorized Native American tribes to develop a list of water quality–impaired segments of waterways. The list includes waters that do not meet water quality standards necessary to support a waterway's beneficial uses even after the minimum required levels of pollution control technology have been installed. Listed water bodies are to be priority ranked for development of a TMDL. A TMDL is a calculation of the total maximum daily load (or "amount") of a pollutant that a water body can receive on a daily basis and still safely meet water quality standards. The TMDLs include waste load allocations for urban stormwater runoff as well as municipal and industrial wastewater discharges, with allocations apportioned for individual municipal separate storm sewer systems (MS4s)[2] and wastewater treatment plants, including those in San Francisco. For stormwater, load reductions would be required to meet the TMDL waste load allocations within the 20 years required by the TMDLs.

The SWRCB, RWQCBs, and EPA are responsible for establishing TMDL waste load allocations and incorporating approved TMDLs into water quality control plans, NPDES permits, and waste discharge requirements (WDRs) in accordance with a specified schedule for completion. The San Francisco Bay RWQCB develops TMDLs for the San Francisco Bay area.

[2] An MS4 is a conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, human-made channels, or storm drains) that is designed or used to collect or convey stormwater; is not a combined sewer; and is not part of a publicly owned treatment works. The term "MS4" also refers to the jurisdiction that operates such a system.

Section 401—Water Quality Certification

Section 401 of the CWA requires states to certify that any activity subject to a permit issued by a federal agency, such as the U.S. Army Corps of Engineers (USACE), meets all state water quality standards. In California, the SWRCB and the nine RWQCBs are responsible for certifying activities subject to permits issued by USACE under Section 404 (or other USACE permits, such as permits issued under Section 10 of the Rivers and Harbors Act of 1899). In practice, most RWQCBs rely on applications for Section 401 certification to evaluate whether WDRs would also need to also be issued for a project. The RWQCB must review final NEPA documentation before taking an action on an application for water quality certification and/or WDRs.

Section 401 certification requirements are established for effluent discharges from San Francisco's water pollution control plant, to which the existing SFVAMC Fort Miley Campus and the Mission Bay area contribute flows. Because there are no streams, wetlands, or other permanent water bodies on the existing Campus and a federal permit is not required for the project, compliance with Section 401 requirements would not be required for Alternative 1 or Alternative 2. However, because waters of the United States, including wetlands, have been mapped for the Mission Bay area, a federal permit may be required for Alternative 3, depending on the project location, and compliance with Section 404 requirements would be required. A Section 401 certification (or waiver) is required for any discharge regulated under Section 404.

Section 402—NPDES Permits

The NPDES stormwater permitting program, under Section 402(d) of the federal CWA, is administered by the RWQCBs on behalf of EPA. Section 402(d) of the CWA establishes a framework for regulating nonpoint-source stormwater discharges (33 USC 1251). The objective of the NPDES program is to control and reduce levels of pollutants in water bodies from surface water discharges, which include municipal and industrial wastewater as well as stormwater runoff. Under the CWA, discharges of pollutants to receiving water are prohibited unless the discharge complies with an NPDES permit. The NPDES permit specifies discharge prohibitions, effluent limitations, and other provisions, such as monitoring deemed necessary to protect water quality based on criteria specified in the National Toxics Rule, the California Toxics Rule, and the Basin Plan.

The SWRCB has adopted a statewide NPDES general permit for stormwater discharges associated with construction activities (Construction General Permit; SWRCB Order 2009-0009-DWQ, as amended by Orders 2010-0014-DWQ and 2012-0006-DWQ). For sites that disturb 1 acre or more, the project proponent must comply with the Construction General Permit and prepare and implement a storm water pollution prevention plan (SWPPP) that meets the conditions of the Construction General Permit. Coverage under the NPDES Construction General Permit is not required for projects in areas of San Francisco that drain to the combined sewer system (Ilejay, 2015). For sites served by the combined sewer system in San Francisco, construction stormwater discharges are subject to the requirements of Article 4.2 of the San Francisco Public Works Code, which incorporates and implements the City's NPDES permits[3] and minimum controls described in the federal CSO

[3] The City has two wastewater NPDES permits. The 2008 Bayside Permit (NPDES Permit No. CA0037664) is issued and enforced by the San Francisco Bay RWQCB for the Southeast Water Pollution Control Plant, North Point Wet-Weather Facility, and other bayside facilities that discharge into San Francisco Bay. The 2009 Oceanside Permit (NPDES Permit No. CA0037681) is issued and enforced by both the San Francisco Bay RWQCB and EPA because the Oceanside Water Pollution Control Plant discharges through the Southwest Ocean Outfall into federally regulated waters of the Pacific Ocean.

Policy. As described in more detail under San Francisco Public Works Code, Article 4.2, all projects disturbing more than 5,000 square feet are subject to the City's Construction Site Runoff Control Ordinance and must apply for a Construction Site Runoff Control Permit, submit an erosion and sediment control plan (ESCP) or SWPPP to the SFPUC, and implement best management practices (BMPs) to prevent illicit discharges into the combined sewer (SFPUC, 2010).

All project proponents must comply with requirements to ensure that the City's Construction Site Runoff Control Program reduces potential impacts of site runoff from construction. The following pollution prevention measures are typically implemented at construction sites:

- Develop a SWPPP or ESCP.
- Identify all storm drains and catch basins near the construction site and ensure that all workers are aware of their locations to prevent pollutants from entering them.
- Protect all storm drain and catch basin inlets.
- Develop spill response and containment procedures.
- Inspect the site regularly to ensure that BMPs are intact.
- Conduct daily site cleanings as needed.
- Educate employees and subcontractors about BMPs.
- Regularly maintain all BMPs at the project site.

Under the NPDES permits issued to the City and County of San Francisco to operate the Southeast and Oceanside Water Pollution Control Plants, the City is required to implement a pretreatment program. This program must comply with the regulations incorporated in the CWA and the General Pretreatment Regulations (Code of Federal Regulations [CFR] Title 40, Part 403). Regulations governing nondomestic discharges are contained in Article 4.1 of the City's Sewer Use Ordinance.

Excavation at the existing SFVAMC Fort Miley Campus under Alternative 1, Alternative 2, or Alternative 3 short-term projects is not anticipated to reach the water table because the excavation is not expected to exceed 24 feet below grade and dewatering activities are not expected. Should dewatering be required, however, SFVAMC would obtain the Batch Wastewater Discharge Permit from SFPUC no later than 45 days before discharge.

It can be assumed that the site of any particular Alternative 3 long-term project in the Mission Bay area would have shallow groundwater (Simpson, 2006; UCSF, 2005); therefore, temporary dewatering activities would likely be needed for construction activities. Under Article 4.1 of the San Francisco Public Works Code, the Batch Wastewater Discharge Permit issued by SFPUC regulates discharges to the combined sewer system from temporary dewatering of construction sites. Therefore, this permit must be obtained from SFPUC before the beginning of groundwater dewatering to the combined sewer system. SFPUC imposes specific permit terms and conditions to maintain its compliance with its own wastewater discharge permit issued by the San Francisco Bay RWQCB. Under the Batch Wastewater Discharge Permit, the discharge must meet specific numeric effluent limitations for toxic and conventional pollutants, and monitoring must be conducted to ensure compliance. Any dewatering that would take place during construction would be temporary and would not deplete groundwater resources.

San Francisco Public Works Code, Article 4.1

In accordance with Article 4.1 of the San Francisco Public Works Code, the existing SFVAMC Fort Miley Campus operates under an Industrial Class I Wastewater Permit issued by SFPUC (Permit No. 10-06550). This permit requires the implementation of a site-specific SWPPP that describes SFVAMC's stormwater management program and includes procedures to reduce or eliminate pollution related to stormwater runoff. Measures include protecting all storm drain and catch basin inlets, establishing perimeter controls, covering construction materials and mounds, maintaining wash-out areas for wet construction materials, conducting inspections, and completing regular maintenance.

San Francisco Public Works Code, Article 4.2

Article 4.2 of the San Francisco Public Works Code establishes requirements to "protect and enhance the water quality in the City and County of San Francisco's sewer system, stormwater collection system and receiving waters pursuant to, and consistent with federal and state laws, lawful standards and orders applicable to stormwater and urban runoff control, and the City's authority to manage and operate its drainage systems." Article 4.2 requires submittal of a stormwater control plan for development projects that meets guidelines adopted by SFPUC. Projects disturbing 5,000 square feet or more of ground surface are subject to the guidelines.

These guidelines contain requirements pertaining to the type, design, sizing, and maintenance of postconstruction stormwater BMPs. For project sites in combined sewer areas with existing imperviousness of greater than 50 percent, the stormwater runoff rate and volume must be decreased by 25 percent from the 2-year, 24-hour design storm. In separate sewer areas, the requirement is to capture and treat the rainfall from a design storm of 0.75 inch. The stormwater control plan must be approved by SFPUC. The project must also develop a maintenance plan for all proposed stormwater controls and submit it as part of the preliminary and final stormwater control plan. Although it is a federal facility, SFVAMC would be required to comply with Article 4.2 because of CWA requirements (Section 313[a][2]) (Webster, pers. comm., 2015).

In November 2013, the Board of Supervisors approved and the Mayor signed the Construction Site Runoff Control Ordinance (Ord. 260-13), which amended Article 4.2 of the Public Works Code to add pollution prevention controls for construction site runoff discharges into the sewer system citywide. Under the ordinance, any construction project that disturbs 5,000 square feet or more of land must apply to the SFPUC for a Construction Site Runoff Control Permit prior to the start of work and to submit an ESCP that sets forth BMPs intended to control erosion control and sediment. The ESCP must include a vicinity map showing the location of the site in relationship the surrounding area's water courses, water bodies, and other significant geographic features; a site survey; suitable contours for the existing and proposed topography, area drainage, proposed construction and sequencing, proposed drainage channels: proposed erosion and sediment controls; dewatering controls where applicable: soil stabilization measures where applicable; maintenance controls; sampling, monitoring, and reporting schedules; and any other information deemed necessary by SFPUC (SFPUC, 2015). The ordinance requires that permittees perform daily inspections and maintain and repair all graded surfaces and erosion and sediment controls, drainage structures, or other protective devices, plantings, and ground cover installed while construction is active. The ordinance also provides for enforcement of violations. Any project requiring a SWPPP under the Construction General Permit may submit the SWPPP in lieu of an ESCP in order to comply with the Construction Site Runoff Control Program at the SFPUC.

In addition to the Construction Site Runoff Control Ordinance, as described previously, construction stormwater controls are mandated by Article 4.1 of the Public Works Code and the Industrial Waste Ordinance.

Ocean Discharge Criteria

San Francisco's treated effluent from the Oceanside Water Pollution Control Plant discharges beyond the 3-mile California water boundary into federal waters. Federal requirements (40 CFR 125) specify that discharges must not cause unreasonable degradation of marine environments, although no specific receiving-water standards have been established for ocean discharges. EPA uses the California Ocean Plan as the set of guidelines to address the criteria listed under Section 403(c) of the CWA. The existing SFVAMC Fort Miley Campus drains to the Pacific Ocean directly via a small separate storm drainage system that conveys stormwater off-site on the north side of the Campus; therefore, ocean discharge criteria in 40 CFR 125 are applicable to the EIS Alternatives.

Section 438 of the Energy Independence and Security Act

The Energy Independence and Security Act (EISA) of 2007 was enacted in December 2007. Section 438 of the EISA establishes new stormwater design requirements for federal development and redevelopment projects to reduce the impacts of stormwater runoff associated with new construction and help to sustain water resources. Federal facility development or redevelopment projects that have a footprint greater than 5,000 square feet must "maintain or restore, to the maximum extent technically feasible, the predevelopment hydrology of the property with regard to the temperature, rate, volume, and duration of flow" (EPA, 2009). Section 438 of the EISA is to be implemented using Low Impact Development (LID) techniques to mimic the site's predevelopment stormwater runoff conditions by using site design techniques that store, infiltrate, evaporate, and detain runoff. The "maximum extent technically feasible" criterion requires full employment of accepted and reasonable stormwater retention and reuse technologies (e.g., bioretention areas, permeable pavements, cisterns/recycling, and green roofs), subject to site and applicable regulatory constraints. Among these constraints are site size, soil types, vegetation, demand for recycled water, existing structural limitations, and State or local prohibitions on water collection.

Executive Order 13514, "Federal Leadership in Environmental, Energy, and Economic Performance," signed by President Barack Obama on October 5, 2009, required EPA to issue guidance on the implementation of Section 438 of the EISA. The technical guidance was issued in December 2009 in document EPA 841-B-09-0001, *Technical Guidance on Implementing the Stormwater Runoff Requirements for Federal Projects under Section 438 of the Energy Independence and Security Act*.

EPA's technical guidance creates two options for complying with the EISA. The first option is to design, construct, and maintain stormwater management practices that control rainfall on-site and prevent runoff from all precipitation events less than or equal to the 95th-percentile rainfall event to the "maximum extent technically feasible." Where technically feasible, 100 percent of the volume of stormwater from storms less than or equal to the 95th percentile event should not be discharged to surface waters, but rather, should be infiltrated or captured and reused. The second option is to rely on site-specific hydrologic conditions and investigations to design, construct, and maintain stormwater management practices that preserve predevelopment runoff conditions after construction. After the appropriate studies have been completed, this goal can be achieved through the use of infiltration, evapotranspiration, and/or rainwater harvesting and use. The EIS Alternatives involve a footprint of greater than 5,000 square feet, whether implemented at the existing SFVAMC Fort Miley Campus or at the

potential new SFVAMC Mission Bay Campus. Therefore, Section 438 of the EISA would be applicable to the SFVAMC LRDP.

U.S. Department of Veterans Affairs Site Utility Design Manual

VA's *Site Utility Design Manual* (July 2010) (Design Manual) includes hydrologic and hydraulic design requirements for drainage and storm sewer systems. The Design Manual requires that a hydrologic assessment be conducted for the 2-, 5-, 10-, 50- and 100-year storm events, and that the system be sized for a minimum 10-year, 1-hour storm event. Stormwater systems must also comply with the requirements of the off-site receptor of stormwater. The Design Manual "conveys the general and specific VA design philosophy for medical and support facilities" (page 1-1), including SFVAMC.

3.8.3 Environmental Consequences

Significance Criteria

A NEPA evaluation must consider the context and intensity of the environmental effects that would be caused by, or result from, the EIS Alternatives. Other environmental assessment documents were reviewed and the criteria listed below were selected as relevant to this evaluation.

An Alternative analyzed in this EIS is considered to result in an adverse impact related to hydrology and water quality if it would:

- violate existing water quality standards or otherwise substantially degrade water quality,
- result in substantial water quality changes that would adversely affect beneficial uses,
- result in substantive undesirable flooding impacts as a result of drainage alteration or increase in impervious area, or
- result in substantive groundwater depletion.

Assessment Methods

The aforementioned significance criteria were applied to determine impact significance using a qualitative approach. Specifically, the following is a discussion of hydrology and water quality impacts associated with potential project-related drainage alterations, increased impervious areas, or water quality degradation. This analysis focuses on the effects of both the construction and facility operations proposed in the SFVAMC LRDP.

Alternative 1: SFVAMC Fort Miley Campus Buildout Alternative

Short-Term Projects

Construction

Water Quality Degradation Caused by Erosion, Sedimentation, or Construction Contaminants

Construction activities for Alternative 1 short-term projects would include development or retrofitting of buildings and parking structures at the existing SFVAMC Fort Miley Campus. Demolition, excavation, grading, and construction on the project site would require temporary disturbance of surface soils and removal of existing on-site pavements and subsurface structures (Table 2-1 and Figure 2-1). All construction staging would occur on-site. During the construction period, excavation and grading activities would expose soil to water runoff and entrain sediment in the runoff. If dewatering would be necessary during construction, the water would likely contain sediments and could require settling before conveyance to the combined sewer system.

Sediment in discharge water and deposits of soil and debris from haul truck tires on local streets could cause increased sediment to be carried off-site in the storm drain/sewer, clogging inlets and reducing the functional capacity of the pipes to convey flows. Mobilized sediment could accumulate in new locations as runoff occurs and could block flows, potentially resulting in increased localized ponding or flooding.

The delivery, handling, and storage of construction materials and waste and the use of construction equipment could introduce a risk of stormwater contamination that could adversely affect water quality. Spills or leaks from heavy equipment and machinery could also adversely affect water quality through contamination by oil, grease, and hydrocarbons. The on-site construction staging area could also be a source of pollution because of the use of paints, solvents, cleaning agents, and metals during construction. If improperly handled, these pollutants could be transported in stormwater runoff that ultimately leads to the Pacific Ocean and/or groundwater.

As part of the Fort Miley Campus is located in the separate sewer system, SFVAMC would apply for coverage under the Construction General Permit (SWRCB Order 2009-0009-DWQ, as amended by Orders 2010-0014-DWQ and 2012-0006-DWQ), which requires the development and implementation of a SWPPP. The SWPPP would be prepared for the entire project site to minimize potential water quality degradation throughout the projects' construction period under Alternative 1 short-term projects. The SWPPP would include specific and detailed BMPs designed to reduce the amount of sediment and other construction-related pollutants in discharges associated with construction activities. At a minimum, BMPs would include practices to minimize the contact of construction materials, equipment, and maintenance supplies (e.g., fuels, lubricants, paints, solvents, adhesives) with stormwater. The SWPPP would specify the use of properly designed, centralized storage areas to keep these materials from flowing into the combined sewer system. The SWPPP would identify and specify:

- the pollutants that are likely to be used during construction that could be present in stormwater drainage and nonstormwater discharges, including fuels, lubricants, and other types of materials used for equipment operation;

- the means of waste disposal;

- spill prevention and contingency measures, including measures to prevent or clean up spills of hazardous waste and of hazardous materials used for equipment operation, and emergency procedures for responding to spills;

- personnel training requirements and procedures that must be used to ensure that workers are aware of permit requirements and proper installation methods for BMPs specified in the SWPPP;

- the appropriate personnel responsible for supervisory duties related to implementation, inspection, and maintenance of BMPs; and

- the effective combination of robust erosion and sediment-control BMPs and construction techniques, accepted by local jurisdictions for use in the project area, that would reduce the potential for runoff and the release, mobilization, and exposure of pollutants from project construction sites. These may include temporary erosion control and soil stabilization measures, coir logs, sedimentation ponds, stormwater inlet protection, and silt fences. Drainage swales, ditches, and/or earth dikes/berms would be used to control erosion and runoff by conveying surface runoff down sloping land, preventing sheet flow over sloped surfaces, preventing an accumulation of runoff at the base of a grade, and avoiding flood damage along roadways and facility infrastructure. Where applicable, BMPs identified in the SWPPP would be in place throughout site work and construction activities. Permanent vegetative cover would be established to reduce erosion in areas disturbed by construction by slowing runoff velocities, trapping sediment, and enhancing filtration and transpiration.

The stormwater runoff from the portion of the project site that drains to the combined sewer system would be collected and treated at the Oceanside Water Pollution Control Plant before being discharged to the Pacific Ocean. Treatment would be provided to the effluent discharge limitations set by the plant's NPDES permit. The SFVAMC would also be required to apply for a Construction Site Runoff Control Permit from the SFPUC and submit a copy of the SWPPP. A separate ESCP would not be required by the SFPUC if a copy of the SWPPP is submitted.

In addition, SFVAMC would be required to comply with the requirements of Article 4.1 of the San Francisco Public Works Code, which regulates the quantity and quality of discharges to the combined sewer system. (See SFPUC Industrial User Class I Wastewater Permit No. 10-06550 [effective June 18, 2010] for the existing SFVAMC Fort Miley Campus.) These requirements include controlling sediments and erosion and implementing BMPs for construction materials and waste management and handling.

SFPUC's Bureau of Systems Planning, Environment, and Compliance must be notified about projects necessitating dewatering, and may require a water analysis before discharge. Dewatering is not anticipated to be required during construction under Alternative 1. Should dewatering be required, SFVAMC would obtain the Batch Wastewater Discharge Permit from SFPUC no later than 45 days before discharge. The permit would contain numeric effluent limitations for toxic and conventional pollutants and other appropriate requirements that must be achieved before discharge into the combined sewer system may commence. As a condition of the Batch Wastewater Discharge Permit, monitoring would also be conducted to ensure compliance.

SFVAMC would also minimize potential construction impacts by implementing the requirements for land resource protection outlined in VA Specification Section 015719, "Temporary Environmental Controls." These include requirements such as setting work area limits, protecting the landscape, reducing exposure of unprotected

soils, protecting disturbed areas, installing erosion and sediment-control devices, managing spoil areas, and following good-housekeeping procedures.

SFVAMC would comply with the aforementioned stormwater requirements to avoid or minimize water quality degradation to the maximum extent practicable. Therefore, impacts of Alternative 1 short-term projects on water quality during construction would be minor.

Depletion of Groundwater Resources

Groundwater, which fluctuates with the seasons, was measured in 2004 and 2009 at depths of approximately 32.2 and 34.2 feet bgs, respectively, on the southeast side of the existing SFVAMC Fort Miley Campus, where a groundwater monitoring well is located (VA, 2010b). Further soil sampling also indicates that the depth-to-groundwater levels are about 16 feet bgs on the north end of the site and 32 feet bgs on the south end. Should groundwater be encountered during construction, temporary dewatering would be necessary to keep the work area dry. Dewatering could result in lowering of local groundwater levels; however, any changes in groundwater levels would be temporary and minimal.

More than half (approximately 62 percent) of the existing 29-acre SFVAMC Fort Miley Campus is covered by the impervious surfaces of the existing SFVAMC buildings, parking areas, roads, and other developed areas, which effectively prevent infiltration of surface water into the soil. Stormwater runoff generated at the Campus that does not drain to the north slope is also directed to the combined sewer system, which further reduces the amount of water that infiltrates into the soil on-site. The amount of impervious surfaces at the Campus would increase by a maximum of approximately 4 percent (0.69 acre) as a result of construction of Alternative 1 short-term projects. New buildings may be designed to drain runoff to landscaped areas such as bioswales for infiltration before entering the combined sewer system. Therefore, although the impervious surface area on the project site would increase slightly, this would not noticeably affect the overall infiltration and groundwater recharge quantities in the project area because areas of infiltration would increase over current levels. Thus, no measureable change in infiltration characteristics would result from implementation of Alternative 1 short-term projects.

In addition, groundwater would not be used as a water supply during project construction (e.g., for potable uses, dust suppression, or other nonpotable uses). Implementation of Alternative 1 short-term projects would not result in groundwater extraction for consumptive uses. Therefore, construction-related impacts of Alternative 1 short-term projects on groundwater would be minor.

Operation

Downstream Flooding or Increase in the Frequency or Severity of Combined Sewer Overflow Events as a Result of Altered Drainage Patterns or an Increase in Impervious Surfaces

Operation of Alternative 1 short-term projects would not alter the course of a stream or river because none are present on or near the existing SFVAMC Fort Miley Campus.

The surface drainage pattern of the site (that is, the urban condition dominated by impermeable surfaces of buildings, streets, and sidewalks) would remain similar to the existing pattern with construction of Alternative 1 short-term projects. Flows would be directed toward the existing combined sewer system, or in the case of the

north slope area, to the recently reconfigured discharge points. However, total or peak runoff volume from the site could increase as the locations and configurations of infrastructure and open space change. In addition, the wastewater flows contributing to the combined sewer system would increase because of the larger number of hospital employees, staff, and patients associated with project operation. An increase in total or peak runoff volume from the site compared to existing conditions could contribute to the frequency or severity of CSO events and/or downstream flooding.

Construction of Alternative 1 short-term projects would result in an increase of approximately 0.69 acre in impervious area (a 4 percent increase compared to existing conditions) on previously disturbed land at the existing SFVAMC Fort Miley Campus. As described in Chapter 2.0, "Alternatives," design considerations for stormwater facilities would include methods of reducing impervious area and improving on-site stormwater treatment facilities to manage stormwater quality before off-site discharge. The SFVAMC LRDP also states that stormwater design would incorporate vegetation in stormwater management strategies. These strategies would serve to maintain the site's predevelopment stormwater discharge rates and volumes by using design techniques that infiltrate, filter, store, evaporate, and detain runoff close to the source, such as green roofs and bioswales, as well as energy dissipaters to prevent concentrated flows. Site drainage would flow via at-grade catch basins and area drains to landscaped areas, and to underground gravity lines. In addition, the building and site contours would be designed to minimize stormwater runoff. However, total or peak runoff volume from the Campus could increase without implementation of stormwater management controls. An increase in stormwater runoff volume from the Campus could contribute to the frequency or severity of CSO events and/or downstream flooding.

SFVAMC would be required to comply with Section 438 of the EISA because construction at this federal facility would have a new footprint greater than 5,000 square feet. LID techniques (e.g., bioretention areas, permeable pavements, cisterns/recycling, and green roofs) must mimic predevelopment stormwater runoff conditions by using site design techniques that store, infiltrate, evaporate, and detain runoff. SFVAMC also would be required to comply with Article 4.2 of the San Francisco Public Works Code, which requires submittal of a stormwater control plan that meets SFPUC guidelines. For compliance with Article 4.2, the stormwater runoff rate and volume from the portion of the project site that drains to the combined sewer would be required to decrease by 25 percent from the 2-year, 24-hour design storm.

The area of the project site located in the separate sewer areas would be required to capture and treat the rainfall from a design storm of 0.75 inch. Stormwater that drains to the north slope would be conveyed via surface piping that was constructed as part of the North Slope Seismic/Geologic Stabilization Project (completed in 2011). As part of that project, discharge points were armored and constructed to spread out the flows and dissipate energy, reducing erosion risk. Discharge piping is surface-mounted and was designed to remain effective under minor slope movements. The project also regraded a large portion of the slope, eliminating areas where water previously ponded.

Technical guidance from EPA's *Technical Guidance on Implementing the Stormwater Runoff Requirements for Federal Projects under Section 438 of the Energy Independence and Security Act* would be used to either (1) design, construct, and maintain stormwater management practices that control rainfall on-site and prevent runoff from all precipitation events less than or equal to the 95th-percentile rainfall event to the "maximum extent technically feasible"; or (2) use site-specific hydrologic conditions and investigations to design, construct, and

maintain stormwater management practices that preserve predevelopment runoff conditions after construction through the use of infiltration, evapotranspiration, and/or rainwater harvesting and use.

Through assumed compliance with stormwater runoff requirements and implementation of LID or other techniques to infiltrate, evaporate, and detain stormwater to maintain predevelopment stormwater runoff conditions, impacts related to downstream flooding or increase in the frequency or severity of CSO events would be minor. In addition, implementation of Management Measure HYD-1 at the existing SFVAMC Fort Miley Campus would confirm the proper sizing of infrastructure to handle stormwater and wastewater flows to protect against down-gradient flooding hazards.

Management Measure HYD-1: Prepare and Submit Final Drainage Plans and Implement Requirements Contained in Those Plans

Before the approval of grading plans and building permits, SFVAMC will submit final drainage plans to SFPUC for all projects demonstrating that off-site up-gradient runoff would be appropriately conveyed through the project site, and that project-related on-site runoff would be appropriately contained to reduce flooding impacts. The plans will include but will not be limited to the following items:

1. *SFVAMC will conduct a utility investigation before and during project design to ensure that combined sewer infrastructure is properly sized to handle stormwater and wastewater flows. An accurate calculation of preproject and postproject runoff scenarios will be obtained using appropriate engineering methods that accurately evaluate potential changes to runoff, including increased surface runoff. This investigation will estimate stormwater and sanitary sewer peak flows and identify potential conflicts between proposed new buildings and existing sanitary sewer and storm drain pipes.*

2. *The system capacity of the separate storm drain system that drains areas to the north of the SFVAMC Fort Miley Campus will be determined as part of a hydrologic and hydraulic analysis of stormwater flows during project design.*

   Drainage and storm sewer systems will be designed in accordance with VA's Site Utility Design Manual, which requires that a hydrologic assessment be conducted for the 2-, 5-, 10-, 50- and 100-year storm events, and that the system be sized for a minimum 10-year, 1-hour storm event.

3. *Sustainable stormwater design BMPs, which may include but will not be limited to LID techniques to eliminate stormwater runoff at the point of origination, will be implemented to infiltrate, evaporate, and detain stormwater and achieve predevelopment stormwater runoff conditions at the site after construction. These BMPs may include but will not be limited to the following:*

   - *Bioretention and rain gardens*
   - *Rooftop green roof gardens*
   - *Sidewalk storage*
   - *Vegetated swales, buffers, and strips*
   - *Rain barrels and cisterns*
   - *Permeable pavement*

- *Soil amendments*

Implementing Management Measure HYD-1 at the existing SFVAMC Fort Miley Campus would confirm the proper sizing of infrastructure to handle stormwater and wastewater flows to protect against down-gradient flooding hazards. In addition, LID or other techniques would be used to infiltrate, evaporate, and detain stormwater, thus maintaining predevelopment stormwater runoff conditions. Furthermore, VA would run any future stormwater and water storage plans that avoid contributing to geologic instability by CCC for review and concurrence (CCC, 2015). Thus, with implementation of Management Measure HYD-1, Alternative 1 short-term projects would not substantially contribute to the frequency or severity of CSO events and/or downstream flooding, and this impact would be minor.

Water Quality Degradation Caused by Changes in the Intensity of Land Use and Increases in Impervious Surfaces

Development of Alternative 1 short-term projects could result in long-term increases in pollutant concentrations in stormwater, because of the 0.69-acre increase in impervious surfaces at the site and because the potential increases in vehicular traffic or the size of parking facilities could cause a larger amount of pollutants to reach stormwater. Leaks of fuel or lubricants, tire wear, and fallout from exhaust contribute petroleum hydrocarbons, heavy metals, and sediment, increasing the pollutant load in runoff. This could result in direct adverse impacts on water quality under Alternative 1.

All sanitary wastewater from the proposed buildings and most stormwater runoff from the existing SFVAMC Fort Miley Campus would flow into the City's combined sewer system, to be treated at the Oceanside Water Pollution Control Plant before being discharged into the Pacific Ocean. Treatment would be provided pursuant to the effluent discharge limitations set by the plant's NPDES permit; therefore, the plant would comply with all local wastewater discharge requirements. Stormwater runoff from the north slope of the Campus would flow to the small separate storm drainage system and would be conveyed off-site through piping equipped with energy dissipaters.

In addition, Management Measure HYD-1 would be implemented to minimize potential degradation of water quality during project operations. Implementing this management measure could result in improvements in water quality compared to existing conditions because sustainable stormwater-design BMPs (e.g., green roofs, vegetated swales, stormwater detention) would be installed to provide on-site stormwater treatment before off-site discharge. In addition, SFVAMC would monitor stormwater runoff to the separate storm drain system that drains areas north of the SFVAMC Fort Miley Campus, pursuant to requirements in the Industrial Class I Wastewater Permit issued by SFPUC (Permit No. 10-06550). Furthermore, VA would run any future stormwater and water storage plans that avoid contributing to geologic instability by CCC for review and concurrence (CCC, 2015). Overall, implementing Alternative 1 short-term projects would not provide substantial additional sources of polluted runoff or otherwise degrade water quality; therefore, with implementation of Management Measure HYD-1, the impact of Alternative 1 short-term projects related to water quality degradation would be minor.

Long-Term Projects

Construction

Water Quality Degradation Caused by Erosion, Sedimentation, or Construction Contaminants

Like the activities for the short-term projects under Alternative 1, demolition, excavation, and grading activities associated with the Alternative 1 long-term project (Table 2-2 and Figure 2-2) would expose soil to water runoff and entrain sediment in the runoff. In addition, the delivery, handling, and storage of construction materials and waste and the use of construction equipment could introduce a risk of stormwater contamination that could adversely affect water quality.

To minimize potential water quality degradation during construction of the Alternative 1 long-term project, SFVAMC would be required to comply with the requirements of Article 4.1 of the San Francisco Public Works Code for runoff into the combined sewer system. SFVAMC would be required to apply for coverage under the Construction General Permit (SWRCB Order 2009-0009-DWQ, as amended by Orders 2010-0014-DWQ and 2012-0006-DWQ). This would require SFVAMC to prepare and implement a SWPPP to reduce pollution of surface water throughout the projects' construction period. At a minimum, the SWPPP would include specific and detailed BMPs designed to reduce the amount of sediment and other construction-related pollutants in discharges associated with construction activities. The SFVAMC would also be required to apply for a Construction Site Runoff Control Permit from the SFPUC and submit a copy of the SWPPP. A separate ESCP would not be required by the SFPUC if a copy of the SWPPP is submitted.

In addition, the stormwater runoff from most of the project site would be collected and treated at the Oceanside Water Pollution Control Plant before being discharged to the Pacific Ocean. Treatment would be provided to the effluent discharge limitations set by the plant's NPDES permit. SFVAMC would also minimize potential construction impacts by implementing the requirements for land resource protection outlined in VA Specification Section 015719, "Temporary Environmental Controls."

Through assumed compliance with these stormwater requirements, construction-related impacts of the Alternative 1 long-term project on water quality would be minor.

Depletion of Groundwater Resources

Any dewatering that would take place during construction of the Alternative 1 long-term project would be temporary and would not deplete groundwater resources. Implementing these projects would not result in an increase in impervious surfaces. Infiltration characteristics at the SFVAMC Fort Miley Campus would not measurably change because the proposed Building 213 would be constructed on the footprint of existing Building 12, which is planned for demolition as part of Alternative 1 short-term projects. In addition, groundwater would not be used as a source of drinking water or consumptive water supply during construction. Therefore, construction-related impacts of the Alternative 1 long-term project on groundwater resources would be minor.

Operation

Downstream Flooding or Increase in the Frequency or Severity of Combined Sewer Overflow Events as a Result of Altered Drainage Patterns or an Increase in Impervious Surfaces

As under the short-term projects for Alternative 1, the surface drainage pattern on the site of the Alternative 1 long-term project would remain similar to the existing pattern. Most flows would be directed toward the existing combined sewer system. The site's runoff volume and wastewater flows could increase as the locations and configurations of infrastructure and open space change; however, the Alternative 1 long-term project consists only of the construction of one building on the footprint of existing Building 12, which is planned for demolition as part of Alternative 1 short-term projects. Construction of the Alternative 1 long-term project would not result in an increase in impervious area.

To minimize potential downstream flooding or an increase in the frequency or severity of CSO events during project operation, LID techniques would be used to infiltrate, evaporate, and detain stormwater in compliance with Section 438 of the EISA. Using these techniques would maintain predevelopment stormwater runoff conditions to the maximum extent technically feasible. LID techniques also would be used to achieve compliance with Article 4.2 of the San Francisco Public Works Code. Thus, the Alternative 1 long-term project would not contribute to the frequency or severity of CSO events and/or downstream flooding, and this impact would be minor.

Water Quality Degradation Caused by Changes in the Intensity of Land Use and Increases in Impervious Surfaces

As with the short-term projects for Alternative 1, with implementation of the Alternative 1 long-term project, sanitary wastewater from the proposed buildings and most stormwater runoff from the existing SFVAMC Fort Miley Campus would flow into the City's combined sewer system and would be treated before discharge in accordance with the effluent discharge limitations set by the plant's NPDES permit. The building constructed for the Alternative 1 long-term project (Building 213) would be constructed on previously disturbed and impervious areas and therefore would not result in an increase in impervious surfaces. Thus, the Alternative 1 long-term project would comply with all local wastewater discharge requirements. Stormwater runoff from the north slope of the Campus would flow to the small separate storm drainage system and would be conveyed off-site through piping equipped with energy dissipaters. Therefore, impacts related to water quality degradation would be minor.

Alternative 2: SFVAMC Fort Miley Campus Buildout Alternative

Short-Term Projects

Alternative 2 short-term projects at the existing SFVAMC Fort Miley Campus would be the same as Alternative 1 short-term projects, with one exception. Specifically, retrofitting of the existing Buildings 1, 6, and 8 would not occur as part of Alternative 2 short-term projects (Table 2-3 and Figure 2-3), but would instead be accomplished in the long term. Construction under Alternative 2 would involve 16 projects that would occur over 6 years. Construction under Alternative 2 includes construction of a total of 485,445 gross square feet (gsf), which is 115,547 gsf less than for short-term projects under Alternative 1. Therefore, impacts of Alternative 2 short-term projects would be similar to or less than those of Alternative 1 short-term projects. Any impacts on water quality and hydrology would be minor.

Construction

Water Quality Degradation Caused by Erosion, Sedimentation, or Construction Contaminants

Like the activities for Alternative 1 short-term projects, demolition, excavation, and grading activities for Alternative 2 short-term projects would expose soil to water runoff and entrain sediment in the runoff. In addition, the delivery, handling, and storage of construction materials and waste and the use of construction equipment could introduce a risk of stormwater contamination that could adversely affect water quality.

To minimize potential water quality degradation during construction of Alternative 2 short-term projects, SFVAMC would be required to comply with the same stormwater requirements as described above for Alternative 1 short-term projects. Through assumed compliance with these stormwater requirements, construction-related impacts of Alternative 2 short-term projects on water quality would be minor.

Depletion of Groundwater Resources

As described for Alternative 1 short-term projects, any dewatering that would take place during construction of Alternative 2 short-term projects would be temporary and would not deplete groundwater resources. The amount of impervious surfaces at the SFVAMC Fort Miley Campus would increase by a maximum of approximately 4 percent as a result of construction of Alternative 2 short-term projects. Although the impervious surface area on the project site would increase slightly, this would not noticeably affect the overall infiltration and groundwater recharge quantities in the project area because areas of infiltration would increase over current levels with the addition of stormwater management areas such as bioswales. Thus, no measureable change in infiltration characteristics would result from implementation of Alternative 2 short-term projects. In addition, groundwater would not be used as a source of drinking water or consumptive water supply during construction. Therefore, construction-related impacts of Alternative 2 short-term projects on groundwater resources would be minor.

Operation

Downstream Flooding or Increase in the Frequency or Severity of Combined Sewer Overflow Events as a Result of Altered Drainage Patterns or an Increase in Impervious Surfaces

As under the short-term projects for Alternative 1, the surface drainage pattern of the site of the Alternative 2 short-term projects would remain similar to the existing pattern. Most flows would be directed toward the existing combined sewer system. However, the site's runoff volume and wastewater flows could increase as the locations and configurations of infrastructure and open space change, and these increases could contribute to the frequency or severity of CSO events and/or downstream flooding.

Also identical to short-term projects under Alternative 1, construction of Alternative 2 short-term projects would result in an increase of approximately 0.69 acre in impervious area (a 4 percent increase compared to existing conditions) on previously disturbed land at the existing SFVAMC Fort Miley Campus. Unlike Alternative 1 short-term projects, however, Alternative 2 short-term projects would not include the seismic retrofit of existing Buildings 1, 6, and 8. Still, without the information necessary to demonstrate that all stormwater criteria and standards are being met, it cannot be assumed that potentially adverse impacts would not occur. Therefore,

implementing Alternative 2 short-term projects could result in an adverse impact related to downstream flooding or an increase in the frequency or severity of CSO events.

To minimize potential downstream flooding or an increase in the frequency or severity of CSO events during project operation, LID techniques would be used to infiltrate, evaporate, and detain stormwater in compliance with Section 438 of the EISA, thus maintaining predevelopment stormwater runoff conditions. LID techniques would also be used to achieve compliance with Article 4.2 of the San Francisco Public Works Code. In addition, Management Measure HYD-1 would be implemented at the Campus so that infrastructure would be properly sized to handle stormwater and wastewater flows to protect against down-gradient flooding hazards. Furthermore, VA would run any future stormwater and water storage plans that avoid contributing to geologic instability by CCC for review and concurrence (CCC, 2015). Thus, with implementation of Management Measure HYD-1, implementation of Alternative 2 short-term projects would not contribute to the frequency or severity of CSO events and/or downstream flooding, and this impact would be minor.

Water Quality Degradation Caused by Changes in the Intensity of Land Use and Increases in Impervious Surfaces

As with the short-term projects for Alternative 1, implementation of Alternative 2 short-term projects would result in a net addition of 0.69 acre of impervious area and a potential increase in the pollutant load in runoff. This could result in direct adverse impacts on water quality under Alternative 2. Sanitary wastewater from the proposed buildings and most stormwater runoff from the existing SFVAMC Fort Miley Campus would flow into the City's combined sewer system, would be treated before discharge in accordance with the effluent discharge limitations set by the plant's NPDES permit, and would comply with all local wastewater discharge requirements. Stormwater runoff from the north slope of the Campus would flow to the small separate storm drainage system and would be conveyed off-site through piping equipped with energy dissipaters. Incorporation of LID or other techniques described in Management Measure HYD-1 would also serve to protect water quality during project operation. In addition, VA would run any future stormwater and water storage plans that avoid contributing to geologic instability by CCC for review and concurrence (CCC, 2015). Therefore, with implementation of Management Measure HYD-1, impacts related to water quality degradation would be minor.

Long-Term Projects

Alternative 2 long-term projects at the existing SFVAMC Fort Miley Campus would be the same as the Alternative 1 long-term project, with one exception. Specifically, three additional existing buildings—Buildings 1, 6, and 8—would be retrofitted as part of Alternative 2 long-term projects (Table 2-4 and Figure 2-4). Alternative 2 long-term projects include construction of a total of 285,487 gsf, which is 115,487 gsf more than under the Alternative 1 long-term project, because Alternative 2 includes construction of Building 213 along with the seismic retrofit of Buildings 1, 6, and 8. Therefore, construction impacts of Alternative 2 long-term projects would be similar to, although slightly greater than, those of the Alternative 1 long-term project. Impacts on water quality and hydrology would be minor.

Construction

Water Quality Degradation Caused by Erosion, Sedimentation, or Construction Contaminants

Like the activities for Alternative 2 short-term projects, demolition, excavation, and grading activities associated with Alternative 2 long-term projects would expose soil to water runoff and entrain sediment in the runoff. In addition, the delivery, handling, and storage of construction materials and waste and the use of construction equipment could introduce a risk of stormwater contamination that could adversely affect water quality. To minimize potential water quality degradation during construction of Alternative 2 long-term projects, SFVAMC would be required to comply with the same stormwater requirements as described above for short-term projects under Alternatives 1 and 2. Through assumed compliance with these stormwater requirements, construction-related impacts of Alternative 2 long-term projects on water quality would be minor.

Depletion of Groundwater Resources

Any dewatering that would take place during construction of Alternative 2 long-term projects would be temporary and would not deplete groundwater resources. Implementing these projects would not result in an increase in impervious surfaces. Infiltration characteristics at the SFVAMC Fort Miley Campus would not measurably change because the proposed Building 213 would be constructed on the footprint of existing Building 12, which is planned for demolition as part of Alternative 2 short-term projects. Other activities associated with Alternative 2 long-term projects include seismic retrofits of existing Buildings 1, 6, and 8, which would not result in an associated increase in impervious area or a change in Campus infiltration characteristics. In addition, groundwater would not be used as a source of drinking water or consumptive water supply during construction. Therefore, construction-related impacts of Alternative 2 long-term projects on groundwater resources would be minor.

Operation

Downstream Flooding or Increase in the Frequency or Severity of Combined Sewer Overflow Events as a Result of Altered Drainage Patterns or an Increase in Impervious Surfaces

As under the long-term projects for Alternative 1, the surface drainage pattern on the site of Alternative 2 long-term projects would remain similar to the existing pattern. Most flows would be directed toward the existing combined sewer system. The site's runoff volume and wastewater flows could increase as the locations and configurations of infrastructure and open space change; however, Alternative 2 long-term projects consist only of the seismic retrofit of three existing buildings and the construction of one building on the footprint of existing Building 12, which is planned for demolition as part of Alternative 2 short-term projects. Construction of the Alternative 2 long-term projects would not result in an increase in impervious area. As under the Alternative 1 long-term project, LID techniques would be used to infiltrate, evaporate, and detain stormwater in compliance with Section 438 of the EISA, thus maintaining predevelopment stormwater runoff conditions to the maximum extent technically feasible. LID techniques would also be used to achieve compliance with Article 4.2 of the San Francisco Public Works Code. Thus, Alternative 2 long-term projects would not contribute to the frequency or severity of CSO events and/or downstream flooding, and this impact would be minor.

Water Quality Degradation Caused by Changes in the Intensity of Land Use and Increases in Impervious Surfaces

As with the short-term projects for Alternative 2, with implementation of Alternative 2 long-term projects, sanitary wastewater from the proposed buildings and most stormwater runoff from the existing SFVAMC Fort Miley Campus would flow into the City's combined sewer system and would be treated before discharge in accordance with the effluent discharge limitations set by the plant's NPDES permit. Thus, Alternative 2 long-term projects would comply with all local wastewater discharge requirements. The building constructed for the Alternative 2 long-term projects (Building 213) would be constructed on previously disturbed and impervious areas and therefore would not result in an increase in impervious surfaces. Likewise, the seismic retrofit of three buildings would not result in an increase in impervious surfaces. Stormwater runoff from the north slope of the Campus would flow to the small separate storm drainage system and would be conveyed off-site through piping equipped with energy dissipaters. Incorporating LID would also serve to protect water quality during project operation. Therefore, implementing Alternative 2 long-term projects would not provide substantial additional sources of polluted runoff or otherwise degrade water quality. Impacts related to water quality degradation would be minor.

Alternative 3: SFVAMC Fort Miley Campus Plus Mission Bay Campus Alternative

Short-Term Projects

Alternative 3 short-term projects (during both construction and operation) would be the same as Alternative 1 short-term projects (see Table 2-1 and Figure 2-1). Therefore, the impacts of Alternative 3 short-term projects would be the same as the impacts of Alternative 1 short-term projects. These impacts would be minor.

Long-Term Projects

Alternative 3 long-term projects, including the ambulatory care center and associated parking structure uses, would be located at the potential new SFVAMC Mission Bay Campus (Table 2-5 and Figure 2-5).

Construction

Water Quality Degradation as a Result of Erosion, Sedimentation, or Construction Contaminants

Alternative 3 would entail excavation and grading activities for construction of the potential new SFVAMC Mission Bay Campus in the Mission Bay area on an approximately 0.98-acre site. These construction activities would expose soil to water runoff and entrainment of sediment in the runoff. The delivery, handling, and storage of construction materials and waste and the use of construction equipment could introduce a risk of stormwater contamination that could adversely affect water quality.

Soil and groundwater underlying the site of the potential new SFVAMC Mission Bay Campus may also be contaminated by historic fill from industrial and commercial activities. Potential water quality impacts from contaminated soil and groundwater at the potential new Campus are discussed and analyzed in Section 3.12, "Solid and Hazardous Materials and Hazards."

If portions of the site drain to a separate storm system, SFVAMC would apply for coverage under the Construction General Permit (SWRCB Order 2009-0009-DWQ, as amended by Orders 2010-0014-DWQ and 2012-0006-DWQ), and would implement a SWPPP to reduce pollution of surface water throughout the project's construction period. The SFVAMC would also be required to apply for a Construction Site Runoff Control Permit from the SFPUC and submit a copy of the SWPPP, if prepared. If a SWPPP is not required by the Regional Board, an ESCP would be prepared and submitted to the SFPUC that sets forth BMPs to reduce potential runoff and erosion impacts. A separate ESCP would not be required by the SFPUC if a copy of the SWPPP is submitted. SFVAMC would also minimize potential construction impacts by implementing the requirements for land resource protection outlined in VA Specification Section 015719, "Temporary Environmental Controls."

Should dewatering be required, SFVAMC would obtain the Batch Wastewater Discharge Permit from SFPUC no later than 45 days before discharge, and monitoring would be conducted to ensure compliance. Because groundwater from the specified reclaimed area may have been exposed to hazardous-waste contamination, any groundwater encountered during temporary dewatering for construction of the potential new SFVAMC Mission Bay Campus may require special analysis to comply with Article 4.1 of the San Francisco Public Works Code.

In addition, the stormwater runoff from the site of the potential new SFVAMC Mission Bay Campus would be collected and treated at the Southeast Water Pollution Control Plant before discharge to the San Francisco Bay. Treatment would be provided to the effluent discharge limitations set by the plant's NPDES permit. SFVAMC would also minimize potential construction impacts by implementing the requirements for land resource protection outlined in VA Specification Section 015719, "Temporary Environmental Controls." SFVAMC would comply with the aforementioned stormwater requirements to avoid or minimize water quality degradation to the maximum extent practicable. Therefore, impacts of constructing the potential new Campus under Alternative 3 long-term projects would be minor.

Depletion of Groundwater Resources

Any dewatering that would take place during construction of the potential new SFVAMC Mission Bay Campus under Alternative 3 long-term projects would be temporary and would not deplete groundwater resources. In addition, the increase in impervious surfaces resulting from construction of the potential new Campus would not cause a measurable change in infiltration characteristics at the site, because much of the Mission Bay area is already covered by impervious surfaces. Groundwater would not be used as a source of drinking water or consumptive water supply during construction. Therefore, impacts on groundwater resources from constructing the potential new Campus under Alternative 3 long-term projects would be minor.

Operation

Downstream Flooding or Increase in the Frequency or Severity of Combined Sewer Overflow Events as a Result of Altered Drainage Patterns or an Increase in Impervious Surfaces

Construction of Alternative 3 long-term projects would take place on approximately 0.98 acre. However, because the precise location of the potential new SFVAMC Mission Bay Campus is unknown at this time, the extent to which the existing surface drainage pattern of the project site would change is also unknown. It is therefore assumed that the total or peak runoff volume from the site and wastewater flows would increase as the locations and configurations of infrastructure and open space change, and these increases could contribute to the frequency

or severity of CSO events and/or downstream flooding. Without the necessary information to demonstrate that all stormwater criteria and standards are being met, it cannot be assumed that potentially adverse impacts would not occur. Therefore, implementing Alternative 3 long-term projects could result in an adverse impact related to downstream flooding or increase in the frequency or severity of CSO events.

To minimize potential downstream flooding or an increase in the frequency or severity of CSO events during project operation, LID or other techniques would be used to infiltrate, evaporate, and detain stormwater, thus maintaining predevelopment stormwater runoff conditions, and aiding SFVAMC in its compliance with Section 438 of the EISA and Article 4.2 of the San Francisco Public Works Code. In addition, Management Measure HYD-1 would be implemented at the potential new SFVAMC Mission Bay Campus so that infrastructure would be properly sized to handle stormwater and wastewater flows to protect against down-gradient flooding hazards. Furthermore, VA would run any future stormwater and water storage plans that avoid contributing to geologic instability by CCC for review and concurrence (CCC, 2015). Thus, with implementation of Management Measure HYD-1, operation of the potential new Campus under Alternative 3 would not substantially contribute to the frequency or severity of CSO events and/or downstream flooding. Any resulting impact would be minor.

Water Quality Degradation Caused by Changes in the Intensity of Land Use and Increases in Impervious Surfaces

Because the precise location of the potential new SFVAMC Mission Bay Campus is unknown at this time, the extent to which the potential new Campus would intensify land use and cause increases in impervious surfaces is unknown. Given the unknown extent of additional impervious area, as well as a potential increase in the pollutant load in runoff resulting from the intensified use of the project site, Alternative 3 could have an adverse impact on water quality.

It can be assumed that all sanitary wastewater from the proposed buildings and stormwater runoff from the project site would flow into the City's combined sewer system and would be treated before discharge to San Francisco Bay, in accordance with the effluent discharge limitations set by the NPDES permit for the City's Southeast Water Pollution Control Plant. Incorporating LID or other techniques required for compliance with Section 438 of the EISA and Article 4.2 of the San Francisco Public Works Code would also serve to protect water quality during operation of Alternative 3 long-term projects. As described in Management Measure HYD-1, above, sustainable stormwater design (e.g., green roofs, vegetated swales, stormwater detention) would provide on-site stormwater treatment before off-site discharge.

If stormwater runoff from the potential new SFVAMC Mission Bay Campus would flow into a separate stormwater system, runoff must comply with SFPUC's Stormwater Design Guidelines, which would incorporate LID or other practices to protect water quality. In addition, VA would run any future stormwater and water storage plans that avoid contributing to geologic instability by CCC for review and concurrence (CCC, 2015). By complying with all local wastewater discharge requirements and with implementation of Management Measure HYD-1, impacts related to water quality degradation would be minor.

Alternative 4: No Action Alternative

Short-Term and Long-Term Projects

Construction

Under Alternative 4, there would be no new construction or retrofitting of existing buildings. Therefore, no construction-related water quality or groundwater impacts would occur.

Operation

Under Alternative 4, the LRDP would not be implemented. Therefore, no operational water quality or flooding impacts would occur.

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3.9 LAND USE

This section describes the existing physical and regulatory setting related to land use and discusses the potential effects of the EIS Alternatives related to land use and planning.

3.9.1 Affected Environment

This section describes the land uses in the immediate vicinity of the existing SFVAMC Fort Miley Campus and in the Mission Bay area.

Existing and Adjacent Land Uses

The sites studied in this EIS are the existing SFVAMC Fort Miley Campus and the Mission Bay area in San Francisco, both located in developed areas. San Francisco is located at the northernmost portion of the San Francisco peninsula and is generally surrounded by the Pacific Ocean to the west, Marin County to the north, San Mateo County to the south, and San Francisco Bay to the east (see Figure 1-2 in Chapter 1.0, "Introduction"). Mission Bay is located in the southeastern portion of San Francisco (see Figure 2-5 in Chapter 2.0, "Alternatives").

Existing SFVAMC Fort Miley Campus

The existing SFVAMC Fort Miley Campus is a 29-acre site located in the northwestern corner of San Francisco, adjacent to the outer Richmond District neighborhood. The outer Richmond District is characterized by its low-rise residential land use. The SFVAMC Fort Miley Campus land is federal land owned by VA and is exempt from planning regulations of the City and County of San Francisco. The Campus is bounded by Clement Street/Seal Rock Drive and the outer Richmond District neighborhood to the south, City and County of San Francisco property (Lincoln Park) to the east, and property owned by the National Park Service (NPS) to the north, east, and west (see Figure 1-2). The current uses of the existing Campus include a hospital, hoptel facilities, medical clinics, research facilities, administration/office buildings, childcare facilities, and parking facilities.

The existing SFVAMC Fort Miley Campus was formerly part of the Fort Miley Military Reservation on Point Lobos, which the U.S. Army acquired in 1893. In 1932, the U.S. Army transferred 25 acres (eventually 29 acres total) of land to VA for the Campus. The remaining portion of Fort Miley, east and west of the existing Campus, contains buildings and artillery bunkers and was not included in the land transfer to VA. These Fort Miley lands near the Campus, East Fort Miley and West Fort Miley, are owned by NPS and are part of the Golden Gate National Recreation Area (NPS, 2011). East Fort Miley and West Fort Miley were listed in the National Register of Historic Places in 1980.

Mission Bay Area

For purposes of this EIS, the Mission Bay area consists of an approximately 2.5-square-mile area bounded by Market Street on the north, Second Street and San Francisco Bay on the east, Cesar Chavez Street on the south, and Seventh/Brannan/Potrero Streets on the west (Figure 2-5). This area of San Francisco is commonly known as a combination of the South of Market Area (SOMA), Potrero Hill, and Mission Bay. SOMA is an area with a mix of residential, office, institutional, commercial, retail, entertainment, and public uses. Potrero Hill is a

neighborhood that is bordered by freeways (Interstate 280 to the east and U.S. Highway 101 and Interstate 80 to the west) and contains a mix of residential, retail, and industrial uses. Mission Bay is a major redevelopment area of San Francisco with a mix of vacant land, biotech research facilities (including the University of California, San Francisco Mission Bay Campus), residential, and warehouse uses.

Land Use Designations

Existing SFVAMC Fort Miley Campus

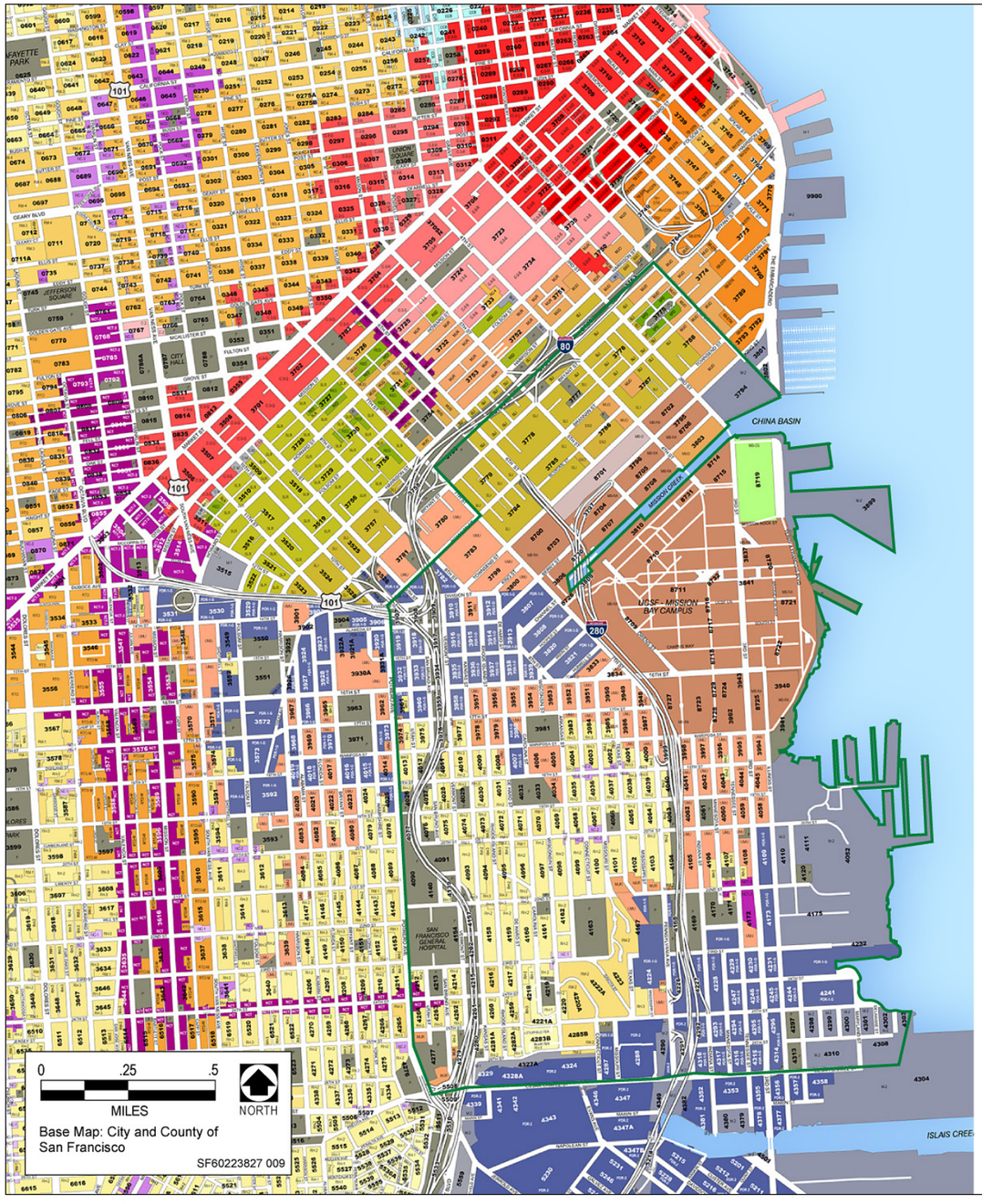
The existing SFVAMC Fort Miley Campus is zoned "Public Use" on the City's Zoning Map (City, 2014). The outer Richmond District is a residential neighborhood composed of medium-density development, with a mix of single-family homes and apartment buildings. The residential area immediately south of the Campus is zoned RH-1 (Residential, House Districts, One-Family) and RH-2 (Residential, House Districts, Two-Family).

Most of the SFVAMC Fort Miley Campus, primarily the west side (approximately 24.4 acres, or 84 percent), is located within the California Coastal Zone boundary (Figure 3.5-2 in Section 3.5, "Floodplains, Wetlands, and Coastal Management"), within the California Coastal Commission (CCC) designated area (City, 2011). The easternmost portion of the Campus, which includes existing Buildings 7, 8, 9, 10, 11, 32, 212, and part of Building 5, is not within the coastal zone. The California Coastal Zone, which was established by the California Coastal Act, varies in width from several hundred feet in highly urbanized areas to up to 5 miles in certain rural areas of California. Offshore, the coastal zone includes a 3-mile-wide band of ocean. SFVAMC has a history of coordination with CCC.

Mission Bay Area

The Mission Bay area, as defined in this EIS, is an approximately 2.5-square-mile area with various land uses. This area includes City zoning designations from the following districts: SOMA Mixed Use Districts, Eastern Neighborhoods Mixed Use Districts, Commercial Districts, Production, Distribution and Repair Districts, Industrial Districts, Mission Bay Districts, Redevelopment Agency Districts, Public, Residential, House Character District, Residential, Mixed Districts, Residential-Commercial Districts, and Downtown Residential Districts (Figure 3.9-1).

The coastal portions of the Mission Bay area, like all land that borders San Francisco Bay, are under the jurisdiction of the San Francisco Bay Conservation and Development Commission (BCDC), the federally designated State coastal management agency. This designation empowers BCDC to use the authority of the federal Coastal Zone Management Act (CZMA) to ensure that federal projects and activities are consistent with the policies of the *San Francisco Bay Plan* and State law. BCDC has jurisdiction over the open water, marshes, and mudflats of greater San Francisco Bay, including Suisun, San Pablo, Honker, Richardson, San Rafael, San Leandro, and Grizzly Bays and the Carquinez Strait, as well as the first 100 feet shoreward from the line of highest tidal action (mean high-tide line) around San Francisco Bay.



ZONING USE DISTRICTS

Public
- P — Public

Residential, House Character Districts
- RH-1(D) — One Unit Per Lot, Detached
- RH-1 — One Unit Per Lot
- RH-1(S) — One Unit Per Lot, Minor Secondary Unit
- RH-2 — Two Units Per Lot
- RH-3 — Three Units Per Lot

Residential, Mixed (Houses & Apartments) Districts
- RM-1 — Low Density (1 Unit per 800 sf)
- RM-2 — Moderate Density (1 Unit per 600 sf)
- RM-3 — Medium Density (1 Unit per 400 sf)
- RM-4 — High Density (1 Unit per 200 sf)

Residential-Commercial Combined Districts
- RC-3 — Medium Density (1 Unit per 400 sf)
- RC-4 — High Density (1 Unit per 200 sf)

Residential Transit Oriented Districts
- RTO — Residential Transit Oriented
- RTO-M — Residential Transit Oriented, Mission

Downtown Residential Districts
- RH-DTR — Rincon Hill
- SB-DTR — South Beach
- TB-DTR — Transbay

Neighborhood Commercial Districts
- NC-1 — Cluster (1 Commercial Story)
- NC-2 — Small-Scale (2 Commercial Stories)
- NC-3 — Moderate-Scale (3+ Commercial Stories)
- NC-S — Shopping Center (2 Commercial Stories)
- NCD — Individual (Named, Controls Vary)

Neighborhood Commercial Transit Districts
- NCT-1 — Cluster
- NCT-2 — Small Scale
- NCT-3 — Moderate Scale
- NCT — Individual (Named, Controls Vary)

Chinatown Mixed Use Districts
- CRNC — Residential/Neighborhood Commercial
- CVR — Visitor Retail
- CCB — Community Business

South of Market Mixed Use Districts
- SPD — South Park
- RED — Residential Enclave
- RSD — Residential/Service
- SLR — Service/Light Industrial/Residential
- SLI — Service/Light Industrial
- SSO — Service/Secondary Office

Eastern Neighborhoods Mixed Use Districts
- MUG — Mixed Use, General
- MUO — Mixed Use, Office
- MUR — Mixed Use, Residential
- UMU — Urban Mixed Use

Commercial Districts
- C-2 — Community Business
- C-3-S — Downtown Support
- C-3-R — Downtown Retail
- C-3-G — Downtown General
- C-3-O — Downtown Office
- C-3-O(SD) — Downtown Office (Special Development)

Industrial Districts
- C-M — Heavy Commercial
- M-1 — Light Industrial
- M-2 — Heavy Industrial

Production, Distribution & Repair Districts
- PDR-1-B — Buffer
- PDR-1-D — Design
- PDR-1-G — General
- PDR-2 — Core

Mission Bay Districts
- MB-OS — Open Space
- MB-O — Office

Redevelopment Agency Districts
- MB-RA — See Mission Bay Redevelopment Plans
- HP-RA — See Hunters Point Redevelopment Plans

Location Boundary

Source: Data provided by the San Francisco Planning Department in 2010; data compiled by AECOM in 2012

Figure 3.9-1: Mission Bay Area Zoning Map

3.9.2 Regulatory Framework

No federal regulations related to land use are directly applicable to development on the existing SFVAMC Fort Miley Campus or the potential new SFVAMC Mission Bay Campus. Furthermore, federal lands, including the existing SFVAMC Fort Miley Campus and the potential new SFVAMC Mission Bay Campus, are exempt from planning regulations. However, VA makes all practical attempts to ensure that its Fort Miley Campus and potential new Mission Bay Campus uses are compatible with adjacent uses, zoning codes, and local land use plans.

Coastal Zone Management Act

The U.S. Congress passed the CZMA in 1972. The CZMA, administered by the National Oceanic and Atmospheric Administration's Office of Ocean and Coastal Resource Management, provides for management of the nation's coastal resources and balances economic development with environmental conservation. See Section 3.5, "Floodplains, Wetlands, and Coastal Management," for a description of the CZMA.

As described above, most of the SFVAMC Fort Miley Campus, primarily the west side (approximately 24.4 acres, or 84 percent), is located within the California Coastal Zone, which is under the jurisdiction of the CCC. In addition, the coastal portions of the Mission Bay area are located within the area of jurisdiction of BCDC, which includes the first 100 feet shoreward from the line of highest tidal action (mean high-tide line) around San Francisco Bay. Therefore, for the purpose of this analysis, the CZMA is applicable to the EIS Alternatives. CCC and BCDC would issue either a negative determination or a federal consistency determination for the selected EIS Alternative.

Also see Section 3.5, "Floodplains, Wetlands, and Coastal Management," for a discussion of the *San Francisco Waterfront Special Area Plan* (Special Area Plan). If portions of Alternative 3 projects would be located within the area covered by the Special Area Plan, the Special Area Plan would be applicable.

City and County of San Francisco General Plan

The *City and County of San Francisco General Plan* (City General Plan) sets forth the comprehensive, long-term land use policy for San Francisco. One of the basic goals of the City General Plan is "coordination of the growth and development of the City with the growth and development of adjoining cities and counties and of the San Francisco Bay region." The City General Plan provides general policies and objectives to guide land-use decisions and contains policies that relate to physical environmental issues. The City General Plan consists of 10 issue-oriented plan elements: Air Quality, Arts, Commerce and Industry, Community Facilities, Community Safety, Environmental Protection, Housing, Recreation and Open Space, Transportation, and Urban Design. Area plans include Bayview–Hunters Point, Central Waterfront, Chinatown, Civic Center, Downtown, Northeastern Waterfront, Rincon Hill, South of Market, Van Ness Avenue, and Western Shoreline. Under Alternative 3, a potential new SFVAMC Mission Bay Campus would be developed in the Mission Bay area, and relevant policies from the City General Plan are included in this section.

Western Shoreline Area Plan

The *Western Shoreline Area Plan* is part of the City General Plan, and with policies of the Local Coastal Program, this plan provides the City with objectives and policies to protect the coast of California. The existing SFVAMC Fort Miley Campus lies within the boundaries of this area plan (City, 2012). The *Western Shoreline Area Plan* does not specifically mention SFVAMC, but an objective of the plan for the Richmond District neighborhood is to "preserve the scale of residential and commercial development along the coastal zone area."

San Francisco Planning Code and Zoning Ordinance

The San Francisco Planning Code (Planning Code), which incorporates by reference the City's zoning maps, implements the City General Plan and governs permitted uses, densities, and configuration of buildings in San Francisco. Permits to construct new buildings (or to alter or demolish existing ones) may not be issued unless (1) the proposed project conforms to the Planning Code, (2) allowable exceptions are granted pursuant to provisions of the Planning Code, or (3) amendments to the Planning Code are approved as part of the project. The Planning Code provides location-specific development and use regulations that govern density and configuration of buildings (City, 2009). Because the existing SFVAMC Fort Miley Campus is located and the potential new SFVAMC Mission Bay Campus would be located on federal land, relevant sections of the San Francisco Zoning Ordinance are included in this land use discussion as a reference for the surrounding land uses and zoning.

3.9.3 Environmental Consequences

Significance Criteria

A NEPA evaluation must consider the context and intensity of the environmental effects that would be caused by, or result from, the EIS Alternatives. There is no standard federal guidance or established threshold pertaining to land use. Therefore, other environmental assessment documents were reviewed and the following criteria were selected for the evaluation.

An Alternative analyzed in this EIS is considered to result in an adverse impact related to land use if it would:

- conflict with established recreational, educational, or scientific uses;
- conflict with land use goals of the community; or
- be associated with the incompatibility of physical development to adjacent existing and planned uses.

Assessment Methods

Land use impacts are related to the level of consistency with federal plans and policies and local land use plans (such as general plans, zoning ordinances, master plans, and other specific land use policies). A significant impact would occur if proposed land uses would not be consistent with relevant federal plans and policies. As noted above, no federal or VA land use regulations are directly applicable to development of the existing SFVAMC Fort Miley Campus or a potential new SFVAMC Mission Bay Campus.

Impacts related to the California Coastal Zone are discussed in Section 3.5, "Floodplains, Wetlands, and Coastal Management." Impacts related to recreational uses are discussed in Section 3.3, "Community Services."

Alternative 1: SFVAMC Fort Miley Campus Buildout Alternative

Short-Term Projects

Construction

Alternative 1 would involve 17 projects that would occur over approximately 7 years. Alternative 1 short-term projects would involve construction (approximately 384,000 gsf of net new space) at the existing SFVAMC Fort Miley Campus. These short-term projects would involve construction on 0.69 acre in previously disturbed areas of the existing SFVAMC Fort Miley Campus. All construction staging would occur within the SFVAMC Fort Miley Campus, in previously disturbed areas.

The analyses of construction-related noise, vibration, and dust generation associated with Alternative 1 are found in Section 3.2, "Air Quality," and Section 3.10, "Noise and Vibration."

Operation

Land Uses

Alternative 1 would not substantially alter the existing land uses at the existing SFVAMC Fort Miley Campus, because short-term projects would involve retrofitting patient care buildings and developing research, administrative, hoptel, and parking structures, all of which represent a continuation of existing land uses already in place at the Campus. Development of Alternative 1 short-term projects would be compatible with existing SFVAMC uses. The same activities and land operational uses at the existing SFVAMC Fort Miley Campus would continue; thus, no on-site or surrounding land use conflicts would occur as a result of operating Alternative 1 short-term projects.

Plans, Policies, and Ordinances

As noted above, no federal land use plans or policies currently apply to the proposed LRDP. The existing SFVAMC Fort Miley Campus is zoned "Public Use" on the City's Zoning Map and recognized as an area with an institutional facility plan (City, 2014). Therefore, the operation of Alternative 1 short-term projects would not conflict with federal or local land use plans, policies, or ordinances, and as a result, no impacts would occur.

Long-Term Projects

Construction

The Alternative 1 long-term project would involve one project for Building 213 (Clinical Addition Building), for which construction would occur over 24 months. The Alternative 1 long-term project would involve constructing 170,000 net new gsf at the existing SFVAMC Fort Miley Campus. Implementing the Alternative 1 long-term project could result in temporary impacts on adjacent land uses because construction activities would generate noise and dust (see the analyses found in Section 3.2, "Air Quality," and Section 3.10, "Noise and Vibration"). These temporary, short-term activities would not significantly affect adjacent land uses, because BMPs would be implemented during construction to reduce the potential for adverse air quality and noise impacts. Construction-related land use impacts of the Alternative 1 long-term project would be minor.

Operation

Land Uses

Like Alternative 1 short-term projects, the Alternative 1 long-term project, including operation of clinical and research buildings and administrative/mixed-use buildings, would represent a continuation of existing land uses already in place at the SFVAMC Fort Miley Campus. This would involve complementary uses consistent with existing VA medical research and patient care. Development of the Alternative 1 long-term project would be compatible with existing Campus uses. Activities and land uses at the Campus would continue in their current form; thus, no on-site or surrounding land use conflicts would occur as a result of implementation of the Alternative 1 long-term project.

Plans, Policies, and Ordinances

As noted above, no federal land use plans or policies currently apply to the proposed LRDP. The existing SFVAMC Fort Miley Campus is zoned "Public Use" on the City's Zoning Map and recognized as an area with an institutional facility plan (City, 2014). Therefore, operation of the Alternative 1 long-term project would not conflict with federal or local land use plans, policies, or ordinances, and as a result, no impacts would occur.

Alternative 2: SFVAMC Fort Miley Campus Buildout Alternative

Short-Term Projects

Alternative 2 short-term projects at the existing SFVAMC Fort Miley Campus would be the same as short-term projects for Alternative 1, with one exception. Specifically, retrofitting of the existing Buildings 1, 6, and 8 would not occur as part of Alternative 2 short-term projects (Table 2-3 and Figure 2-3), but would instead be accomplished in the long term. Alternative 2 short-term projects include construction of a total of 485,445 gsf, which is 115,547 gsf less than for short-term projects under Alternative 1. Therefore, impacts of Alternative 2 short-term projects would be similar to or less than those of Alternative 1 short-term projects. Land use impacts would range in significance from no impact to minor.

Construction

Alternative 2 would involve 16 projects that would occur over approximately 6 years. These projects would involve construction of 384,000 net new gsf at the existing SFVAMC Fort Miley Campus. Implementing Alternative 2 short-term projects would result in similar or less construction impacts relative to Alternative 1 short-term projects. Therefore, construction-related land use impacts of Alternative 2 short-term projects would be minor.

Operation

Land Uses

Like the short-term projects for Alternative 1, Alternative 2 short-term projects would not substantially alter the existing land uses at the SFVAMC Fort Miley Campus. These short-term projects would involve retrofitting patient care buildings and developing research, administrative, hoptel, and parking structures, all of which

represent a continuation of land uses already in place at the Campus. Development of the short-term projects under Alternative 2 would be compatible with existing SFVAMC uses. The same activities and land uses at the existing SFVAMC Fort Miley Campus would continue; thus, no on-site or surrounding land use conflicts would occur as a result of operation of the short-term projects under this alternative.

Plans, Policies, and Ordinances

As with Alternative 1 short-term projects, no federal land use plans or policies currently apply to the proposed Alternative 2 short-term projects. Therefore, there would be no impacts as a result of Alternative 2 short-term projects.

Long-Term Projects

Alternative 2 long-term projects at the existing SFVAMC Fort Miley Campus would be the same as Alternative 1 long-term projects, with one exception. Specifically, three additional existing buildings—Buildings 1, 6, and 8—would be retrofitted as part of Alternative 2 long-term projects (Table 2-4 and Figure 2-4). Alternative 2 long-term projects include construction of a total of 285,487 gsf, which is 115,487 gsf more than under the Alternative 1 long-term project, because Alternative 2 includes construction of Building 213 along with the seismic retrofit of Buildings 1, 6, and 8. Therefore, construction impacts of Alternative 2 long-term projects would be similar to, although slightly greater than, those of Alternative 1 long-term projects. Land use impacts would range in significance from no impact to minor.

Construction

Alternative 2 long-term projects would involve construction of 285,487 gsf (170,000 of which would be net new) at the existing SFVAMC Fort Miley Campus. As with long-term projects under Alternative 1, temporary impacts on adjacent land uses could occur because construction activities would generate noise and dust (see the analyses found in Section 3.2, “Air Quality,” and Section 3.10, “Noise and Vibration”). Construction-related land use impacts of Alternative 2 long-term projects would be minor.

Operation

Land Uses

Like Alternative 2 short-term projects, Alternative 2 long-term projects, including operation of clinical and research buildings and administrative/mixed-use buildings, would represent a continuation of land uses already in place at the existing SFVAMC Fort Miley Campus. They would involve complementary uses consistent with existing VA medical research and patient care. Development of Alternative 2 long-term projects would be compatible with existing Campus uses. Activities and land uses at the Campus would continue in their current form; thus, no on-site or surrounding land use conflicts would result from implementation of Alternative 2 long-term projects.

Plans, Policies, and Ordinances

As noted above, no federal land use plans or policies currently apply to the proposed LRDP. The existing SFVAMC Fort Miley Campus is zoned "Public Use" on the City's Zoning Map and recognized as an area with an institutional facility plan (City, 2014). Therefore, the operation of Alternative 2 long-term projects would not conflict with federal or local land use plans, policies, or ordinances.

Alternative 3: SFVAMC Fort Miley Campus plus Mission Bay Campus Alternative

Short-Term Projects

Alternative 3 short-term projects (during both construction and operation) would be the same as short-term projects under Alternative 1; thus, all Alternative 3 short-term projects would be located at the SFVAMC Fort Miley Campus. See Table 2-1 and Figure 2-1 for Alternative 3 short-term projects. Therefore, land use impacts of Alternative 3 short-term projects would be the same as those described for short-term projects for Alternative 1. These impacts would range in significance from no impact to minor.

Long-Term Projects

Alternative 3 long-term projects (during both construction and operation) would involve developing 170,000 gsf for ambulatory care and parking structure uses at a potential new SFVAMC Mission Bay Campus. See Figure 2-5 for the location of the off-site portion of Alternative 3.

It is assumed that all off-site development in Mission Bay would consist of four-story buildings in a development area totaling approximately 0.98 acre. Alternative 3 long-term projects at the potential new Mission Bay Campus would be constructed roughly between 2024 and 2027. See Table 2-5 for detailed square footage and phasing for implementation of the long-term projects of Alternative 3 at the potential new Mission Bay Campus. Note that the actual footprint and concept plan and site location within Mission Bay has not been determined at this time.

Construction

Alternative 3 long-term projects would involve construction of 170,000 gsf of new construction, including an ambulatory care center and associated parking structure uses, at the potential new SFVAMC Mission Bay Campus. This alternative would involve constructing new facilities on approximately 0.98 acre at the potential new Campus. Thus, implementation of Alternative 3 long-term projects could result in temporary impacts on adjacent land uses, because construction activities would generate noise and dust. These temporary, short-term activities would not significantly affect adjacent land uses because BMPs would be implemented during construction to reduce the potential for adverse air quality and noise impacts (see the analyses found in Section 3.2, "Air Quality," and Section 3.10, "Noise and Vibration"). Construction-related land use impacts of Alternative 3 long-term projects would be minor.

Operation

Land Uses

Alternative 3 long-term projects would involve operation of an ambulatory care center and associated parking structure uses, at the potential new SFVAMC Mission Bay Campus. Because of the size of the potential new Campus, it is assumed that this off-site portion of Alternative 3 long-term projects would be located on vacant or partially vacant land in the Mission Bay area. It is anticipated that the available land in the Mission Bay area would be compatible with a new medical campus, because such land is located near biotech research facilities and the University of California, Mission Bay Campus, interspersed with residential and other office uses. Therefore, implementation of Alternative 3 long-term projects is anticipated to be compatible with on-site and surrounding land uses. Land use impacts of Alternative 3 long-term projects would range in significance from no impact to minor, depending on the final site selected.

Plans, Policies, and Ordinances

Assuming that Alternative 3 long-term projects at a potential new SFVAMC Mission Bay Campus would be implemented on VA-purchased—and thus federal—land in the Mission Bay area, no federal plans or policies would apply to operation of long-term projects at the potential new Campus under this alternative. Therefore, the operation of Alternative 3 long-term projects in the Mission Bay area would not conflict with federal land use plans, policies, or ordinances.

Alternative 4: No Action Alternative

Short-Term and Long-Term Projects

Construction

Under Alternative 4, there would be no new construction or retrofitting of existing buildings. Therefore, no construction-related land use impacts would occur.

Operation

Under Alternative 4, the LRDP would not be implemented and there would be no change in land uses, and no new land uses or operational changes of existing uses would occur. Therefore, no impacts on on-site or surrounding land uses would occur. In addition, the existing SFVAMC Fort Miley Campus is zoned “Public Use” on the City’s Zoning Map and recognized as an area with an institutional facility plan (City, 2014). As a result, the continued operation of the existing Campus under Alternative 4 would not conflict with federal or local land use plans, policies, or ordinances. Thus, no impacts related to plans, policies, and ordinances would occur.

3.9.4 References

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3.10 NOISE AND VIBRATION

This section describes the existing physical and regulatory setting for noise and vibration and discusses the potential effects of the EIS Alternatives related to noise and vibration.

3.10.1 Affected Environment

Noise Properties, Effects, and Sources

Noise is generally defined as unwanted or objectionable sound. The effects of noise on people can include general annoyance, interference with speech communication, sleep disturbance, and in the extreme, hearing impairment. Noise effects can be caused by its pitch or loudness. Pitch is the height of a tone; higher pitched sounds are louder to humans than lower pitched sounds. Loudness is intensity or amplitude of sound.

Noise levels are measured as decibels (dB) on a logarithmic scale that quantifies sound intensity in a manner similar to the Richter scale used for earthquake magnitudes. Thus, a doubling of the energy of a noise source, such as doubling of traffic volume, would increase the noise level by 3 dB; a halving of the energy would result in a 3-dB decrease.

The human ear is not equally sensitive to all frequencies within the sound spectrum. Therefore, sound can be characterized by several methods. The most common method is the "A-weighted" sound level (dBA), which gives greater weight to the frequencies audible to the human ear by filtering out noise frequencies not audible to the human ear. Human judgments of the relative loudness or annoyance of a sound correlate well with the dBA levels of those sounds. Therefore, the dBA scale is used for measurements and standards involving the human perception of noise. Noise levels from aircraft and small-arms firing are measured in dBA.

Impulse noise (high-amplitude noise resulting from armor, artillery, and demolition activities) is measured in C-weighted decibels (dBC). The C-weighting scale measures more of the low-frequency components of noise than the A-weighting scale. The dBC scale is considered to better represent community response to impulse noise. The low-frequency sound components can cause buildings and windows to rattle and shake.

Human perception of noise has no simple correlation with acoustical energy. The perception of noise is not linear in terms of dBA or acoustical energy. Two noise sources do not sound twice as loud as one source. It is widely accepted that the average healthy ear can barely perceive either increases or decreases of 3 dBA; that a change of 5 dBA is readily perceptible; and that an increase (decrease) of 10 dBA sounds twice (half) as loud (Caltrans, 1998). Table 3.10-1 provides common indoor and outdoor activities and the corresponding sound levels to demonstrate human perception of the correlation of noise with acoustical energy.

In addition to instantaneous noise levels, the duration or magnitude of noise over time is important for the assessment of potential noise disturbance. Average noise levels over a period of time are usually expressed as dBA L_{eq}, or the equivalent noise level for that period. For example, $L_{eq(3)}$ would be a 3-hour average; when no period is specified, a 1-hour average is assumed.

Table 3.10-1: Representative Environmental Noise Levels

Common Outdoor Activities	Noise Level (dBA)	Common Indoor Activities
Power Saw	—110—	Rock Band
Jet Fly-over at 100 feet		Crying Baby
Subway	—100—	
Gas Lawn Mower at 3 feet		
Tractor	—90—	
		Food Blender at 3 feet
Diesel Truck going 50 mph at 50 feet	—80—	Garbage Disposal at 3 feet
Noisy Urban Area during Daytime		
Gas Lawn Mower at 100 feet	—70—	Vacuum Cleaner at 10 feet
Commercial Area		Normal Speech at 3 feet
Heavy Traffic at 300 feet	—60—	Sewing Machine
Air Conditioner		Large Business Office
Quiet Urban Area during Daytime	—50—	Dishwasher in Next Room
		Refrigerator
Quiet Urban Area during Nighttime	—40—	Theater, Large Conference Room (background)
Quiet Suburban Area during Nighttime		
	—30—	Library
Quiet Rural Area during Nighttime		Bedroom at Night, Concert Hall (background)
	—20—	
		Broadcast/Recording Studio
	—10—	
Lowest Threshold of Human Hearing	—0—	Lowest Threshold of Human Hearing

Source: Data Compiled by AECOM in 2012

The time of day is also an important factor for noise assessment; noise levels that may be acceptable during the day may interfere with the ability to sleep during evening or nighttime hours. Therefore, there are 24-hour noise level descriptors that incorporate noise penalties (in decibels) for evening and night periods. The community noise equivalent level (CNEL) is the cumulative noise exposure in a community during a 24-hour period, with a 5-dBA penalty added to evening sound levels (between 7 p.m. and 10 p.m.), and a 10-dBA penalty added to the night sound levels (between 10 p.m. and 7 a.m.). The day/night average sound level (L_{dn}) is similar to CNEL, except that the 3-hour evening period is considered with the daytime period.

The construction and operation of new facilities generate noise. Construction noise is generated by the operation of construction equipment and vehicles, and by the transport of material and workers to and from the site. Construction noise levels are a function of the type of equipment used and the timing and duration of the noise-generating activities. Table 3.10-2 provides a list of noise generation levels for various types of equipment that could be used for the construction of site facilities.

Table 3.10-2: Noise Levels of Typical Construction Equipment

Equipment Type	Typical Noise Level (dB) @ 50 feet	Usage Factor (%)
Air compressor	78	40
Backhoe	78	40
Concrete pump truck	81	20
Crane, mobile	81	16
Dozer	82	40
Drill rig truck	79	20
Excavator	81	40
Front-end loader	79	40
Generator	81	50
Jackhammer	89	20
Lift	75	20
Mounted impact hammer (hoe ram)	90	20
Pneumatic tools	85	50
Pumps	81	50
Roller	80	20
Soil mix drill rig	80	50
Welder	74	40
Trucks	74–81	

Notes:
dB = (A-weighted) decibels; usage factor = the percent per hour equipment is in use.
All equipment is fitted with a properly maintained and operational noise control device, per manufacturer specifications. Noise levels listed are manufacturer-specified noise levels for each piece of heavy construction equipment.
Source: FHWA, 2006:Table 1

As shown in Table 3.10-2, maximum noise levels from construction equipment range from approximately 70 to 90 dBA at 50 feet from the equipment. These noise levels vary for individual pieces of equipment, as equipment may come in different sizes and with different engines. Equipment noise levels also vary as a function of the activity level, or duty cycle. In a typical construction project, the loudest short-term noise generators tend to be earthmoving equipment under full load at approximately 85–90 dBA at a distance of 50 feet from the source. In addition to these maximum instantaneous noise levels, the magnitude of construction noise can be defined by the type of construction activity, the various pieces of equipment operating, and the duration of the activity. Typically, construction noise is averaged over time and expressed as dBA L_{eq}.

Noise levels from construction activities are typically considered as point sources. These noise levels attenuate with distance at rates of 6 dBA per doubling of distance over hard site surfaces, such as streets and parking lots, and 7.5 dBA per doubling of distance for soft site surfaces, such as grass fields and open terrain with vegetation (FTA, 2006).

Operational noise from constructed facilities includes equipment operation (e.g., pumps, generators, fans), vehicle trips to and from facilities for operation and maintenance, and facility worker trips.

Vibration Properties, Effects, and Sources

Vibration is the periodic oscillation of a medium or object. The rumbling sound caused by the vibration of room surfaces is called structureborne noise. Both natural phenomena (e.g., earthquakes, volcanic eruptions, sea waves, landslides) and human-made causes (e.g., explosions, machinery, traffic, trains, construction equipment) can result in groundborne vibration. Some vibration sources, such as factory machinery, are continuous; others, such as explosions, are transient. As is the case with airborne sound, groundborne vibration may be described by its amplitude and frequency.

Vibration amplitude is typically expressed in peak particle velocity (PPV) or root mean square (RMS), as in RMS vibration velocity. The PPV and RMS velocity are normally described in inches per second (in/sec). PPV is defined as the maximum instantaneous positive or negative peak of a vibration signal. PPV is the metric often used to describe blasting vibration and other vibration sources that result in structural stresses in buildings (FTA, 2006:7-3). Although PPV is appropriate for evaluating the potential for building damage, it is not always suitable for evaluating human response. It takes some time for the human body to respond to vibration signals. In a sense, the human body responds to average vibration amplitude. The RMS of a signal is the average of the squared amplitude of the signal, typically calculated over a period of 1 second. As with airborne sound, the RMS velocity is often expressed in decibel notation as vibration decibels (VdB), which serves to compress the range of numbers required to describe vibration (FTA, 2006:7-4). This vibration-decibel scale is based on a reference value of 1 microinch per second (µin/sec). The background vibration-velocity level typical of residential areas is approximately 50 VdB.

Groundborne vibration is normally perceptible to humans at approximately 65 VdB. For most people, a vibration-velocity level of 75 VdB is the approximate dividing line between barely perceptible and distinctly perceptible levels. Table 3.10-3 summarizes the general human response to different levels of groundborne vibration.

Table 3.10-3: Human Response to Different Levels of Groundborne Vibration

Vibration-Velocity Level (VdB)	Human Reaction
65	Approximate threshold of perception.
75	Approximate dividing line between barely perceptible and distinctly perceptible. Many people find that transportation-related vibration at this level is unacceptable.
85	Vibration acceptable only if there is an infrequent number of events per day.

Note:
VdB = vibration decibels referenced to 1 microinch per second and based on the root mean square vibration velocity.
Source: FTA, 2006:7-8

Existing Noise and Vibration Sources

Existing SFVAMC Fort Miley Campus

The predominant noise sources at the existing SFVAMC Fort Miley Campus include mobile sources, such as personal-occupancy and delivery vehicles, and stationary equipment, such as heating, ventilation, and air conditioning (HVAC). Vehicle traffic on the Campus includes personal-occupancy vehicle and bus traffic along

the main Campus driveway, which is accessed via the intersection of Clement Street and 42nd Avenue. In addition, secondary on-Campus traffic occurs on Veterans Drive, which is accessed via the intersection of Clement Street and 43rd Avenue. The majority of the perceivable stationary-source equipment noise is located immediately east of the northwestern surface parking lot on the Campus. The existing equipment is shielded. Other stationary-source noise on Campus is located largely on the rooftops of existing structures and shielded from view by the existing structures.

Mission Bay Area

The predominant noise sources in the Mission Bay area are related to mobile-source noise along local streets. Portions of Interstate 80, Interstate 280, and U.S. Highway 101 traverse this area and are considered to represent a substantial portion of the overall ambient noise in the area. Other noise generators in this area are AT&T Park during special events (e.g., baseball games) and various commercial and industrial activities, including marine activities.

Noise Measurements

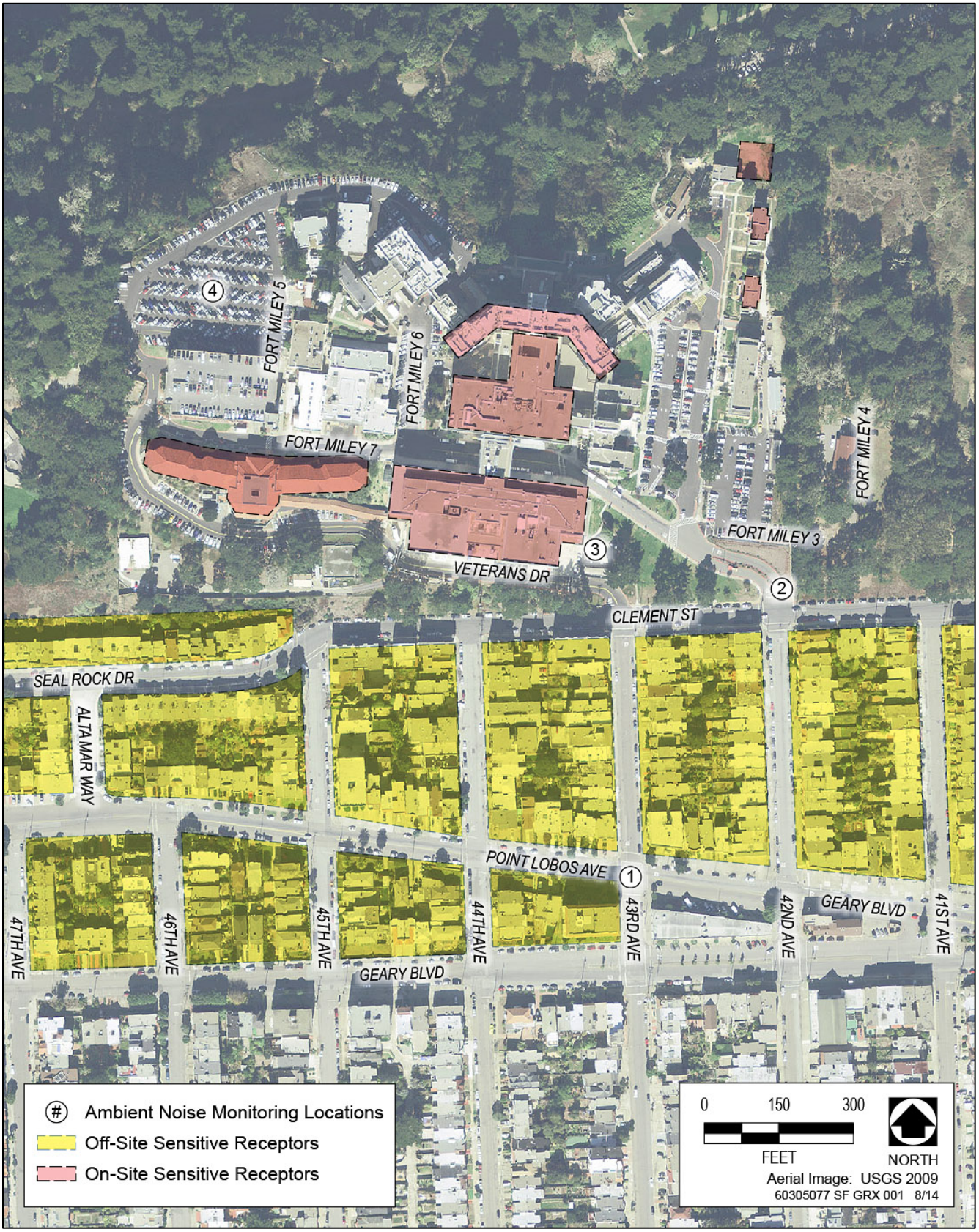
To identify representative noise levels in the vicinity of the existing SFVAMC Fort Miley Campus, existing daytime noise levels were monitored at four locations around the Campus, one off-site and three on-site (Figure 3.10-1).[1] Noise levels were measured using a Larson-Davis Model 821 precision sound level meter, which satisfies the American National Standards Institute's requirements for general environmental noise measurement instrumentation. The average noise levels and sources of noise measured at each location are identified in Table 3.10-4. These daytime noise levels are characteristic of a typical urban area.

Table 3.10-4: Existing Ambient Noise Levels in the SFVAMC Fort Miley Campus Area

Site	Location	Date/Time	Audible Noise Sources	A-Weighted Sound Level (dBA)			
				L_{eq}	L_{max}	L_{50}	L_{90}
1	43rd Avenue and Point Lobos Avenue (off-site)	12:20 p.m.–12:35 p.m.	Birds, construction (distant), vehicles (buses and personal-occupancy vehicles)	62.2	74.5	60.3	56.3
2	42nd Avenue and Clement Street (on-site)	10:15 a.m.–10:30 a.m.	Birds, pedestrian traffic, vehicles (buses and personal-occupancy vehicles)	61.8	82.4	56.5	51.1
3	Front lawn area southeast of main medical center structure (on-site)	11:10 a.m.–11:25 a.m.	Birds, pedestrian traffic, vehicles (buses and personal-occupancy vehicles)	62.1	76.7	55.0	51.3
4	Northwest on-site surface parking lot (on-site)	11:10 a.m.–11:25 a.m.	HVAC, birds, construction (distant)	51.8	61.3	51.5	50.7

Notes:
dBA = A-weighted decibels; HVAC = heating, ventilation, and air conditioning; L_{eq} = equivalent noise level; L_{max} = maximum noise level; L_n = noise level exceeded n% of a specific period of time
Monitoring locations correspond to those depicted in Figure 3.10-1.
Source: Data collected by AECOM on March 22 and March 25, 2011

[1] Measurements were not taken in the Mission Bay area because of two factors: uncertainty about where SFVAMC facilities might be located in this approximately 2.5-square-mile area, and the variability of noise levels.



Source: Data compiled by AECOM in 2012

Figure 3.10-1: Locations of Sensitive Receptors and Ambient Noise Monitoring

Existing Sensitive Receptors

Land uses that are sensitive to noise and vibration are those uses where exposure would result in adverse effects (i.e., injury or annoyance) and uses where lack of noise and vibration is an essential element of their intended purpose. In San Francisco, residences of all types are of primary concern because of the potential for increased, prolonged exposure of individuals to both interior and exterior noise and vibration. Other noise-sensitive land uses include schools, preschools, hospitals, convalescent facilities, hotels, motels, churches, libraries, and other uses where low interior noise levels are essential. Public parks are also typically considered sensitive receptors. The Cheryl Andersen-Sorensen Childcare Center (childcare center), occupied patient rooms, and the nursing home (Building 208) are the primary facilities on Campus with sensitive receptors. Existing on- and off-site sensitive receptors are depicted in Figure 3.10-1.

Residences, education buildings, and places of worship are also vibration-sensitive receptors because people can experience annoyance and fragile buildings may experience damage from groundborne vibration. People typically experience annoyance when exposed to vibration that exceeds certain thresholds. These thresholds are generally lower than threshold levels for vibration-related building damage. Buildings that are normally occupied by people are considered sensitive to groundborne vibration. Historic or lightweight buildings are considered most vulnerable to vibration damage; thus, more stringent vibration-damage thresholds are recommended for these building types. Buildings used for research, manufacturing, or health care operations that are sensitive to very low thresholds of vibration to function effectively (e.g., magnetic resonance imaging [MRI] or microelectronics manufacturing facilities) are also considered vibration sensitive; groundborne vibration can result in structural damage and/or interfere with the intended functions of such buildings (FTA, 2006).

Existing SFVAMC Fort Miley Campus

The childcare center, occupied patient rooms, and the Community Living Center (nursing home, Building 208) are the primary sensitive receptors on the SFVAMC Fort Miley Campus. The area immediately south of the Campus is largely residential, with a mix of single-family and multifamily buildings extending south toward Point Lobos Avenue. Some commercial uses also exist close by along Clement Street, Geary Boulevard, and Point Lobos Avenue. The areas north, east, and west of the Campus include Golden Gate National Recreation Area (GGNRA) open space and trails as well as Lincoln Park, a 112-acre facility owned and maintained by the San Francisco Recreation and Park Department that includes the Lincoln Park Golf Course and the Legion of Honor museum.

Mission Bay Area

Sensitive receptors in the Mission Bay area are largely residential. However, several places of worship and primary and secondary schools are located in the area. In addition, the University of California, San Francisco Medical Center at Mission Bay is located in this area, and certain uses associated with its operation would be considered sensitive receptors.

3.10.2 Regulatory Framework

Noise Control Act

The U.S. Environmental Protection Agency (EPA) Office of Noise Abatement and Control was originally established to coordinate federal noise control activities. The Office of Noise Abatement and Control subsequently established programs and guidelines under the Federal Noise Control Act of 1972 to identify and address the effects of noise on public health and welfare and the environment. Table 3.10-5 presents a summary of recommended guidelines for noise levels considered safe for community exposure without the risk of adverse health or welfare effects (EPA, 1974). To prevent hearing loss over the lifetime of a receptor, the yearly average L_{eq} should not exceed 70 dBA, and the L_{dn} should not exceed 55 dBA in outdoor activity areas or 45 dBA indoors to prevent interference and annoyance.

Table 3.10-5: Summary of U.S. Environmental Protection Agency–Recommended Noise Level Standards for Yearly Exposure

Effect	Level	Area
Hearing loss	$L_{eq(24)} \leq 70$ dB	All areas
Outdoor activity interference and annoyance	$L_{dn} \leq 55$ dB	Outdoor in residential areas and farms and other outdoor areas where people spend widely varying amounts of time and other places in which quiet is a basis for use.
	$L_{eq(24)} \leq 55$ dB	Outdoor areas where people spend limited amounts of time, such as school yards, playgrounds, etc.
Indoor activity interference and annoyance	$L_{eq} \leq 45$ dB	Indoor residential areas.
	$L_{eq(24)} \leq 45$ dB	Other indoor areas with human activities, such as schools.

Notes:
dB = decibels; L_{dn} = day-night noise level (L_{eq} with a 10-dB nighttime weighting); $L_{eq(24)}$ = equivalent noise level (the sound energy averaged over a 24-hour period)
The exposure period for the potential hearing loss at the identified level is a period of 40 years.
Source: EPA, 1974:3

EPA administrators determined in 1981 that subjective issues such as noise would be better addressed at lower levels of government. Consequently, in 1982 responsibilities for regulating noise control policies were transferred to state and local governments. However, noise control guidelines and regulations contained in the rulings by EPA in prior years are still upheld by designated federal agencies, allowing more individualized control for specific issues by designated federal, state, and local government agencies. The Noise Control Act is applicable to the EIS Alternatives because it establishes general guidelines for what would be considered acceptable noise levels generated by an EIS Alternative and perceived by adjacent or on-site receptors.

Federal Transit Administration Groundborne Vibration Guidelines

To address the human response to groundborne vibration, the Federal Transit Administration (FTA) has guidelines for maximum-acceptable vibration criteria for different types of land uses. Maximum-acceptable vibration criteria based on the frequency of an event are applied to different types of land uses to address the human response to groundborne vibration (FTA, 2006). These guidelines recommend 65 VdB, referenced to

1 µin/sec and based on the velocity amplitude for land uses where low ambient vibration is essential for interior operations (e.g., hospitals, high-tech manufacturing, laboratory facilities); 80 VdB for residential uses and buildings where people normally sleep; and 83 VdB for institutional land uses with primarily daytime operations (e.g., schools, churches, clinics, offices) (FTA, 2006). Table 3.10-6 shows the project contributions to noise level increases that have been determined to be acceptable.

Table 3.10-6: Summary of Federal Transit Administration–Recommended Groundborne Vibration Impact Criteria

Land Use Category	Impact Levels (VdB; relative to 1 microinch per second)		
	Frequent Events[1]	Occasional Events[2]	Infrequent Events[3]
Category 1: Buildings where vibration would interfere with interior operations	65[4]	65[4]	65[4]
Category 2: Residences and buildings where people normally sleep	72	75	80
Category 3: Institutional land uses with primarily daytime uses	75	78	83

Notes:
VdB = vibration decibels
1 Defined as more than 70 vibration events of the same source per day. Most rapid transit projects fall into this category.
2 Defined as between 30 and 70 vibration events of the same source per day. Most commuter trunk lines have this many operations.
3 Defined as fewer than 30 vibration events of the same kind per day. This category includes most commuter rail branch lines.
4 This criterion limit is based on levels that are acceptable for most moderately sensitive equipment such as optical microscopes. Vibration-sensitive manufacturing or research will require detailed evaluation to define the acceptable vibration levels. Ensuring lower vibration levels in a building often requires special design of the heating, ventilation, and air conditioning systems and stiffened floors.
Source: FTA, 2006:8-3

Standards also have been established to address the potential for construction-caused vibration annoyance or interference. The primary concern regarding construction vibration is the potential for the operation of heavy-duty construction equipment to cause structural damage to buildings. Varying criteria have been developed to address the appropriate level of vibration considered acceptable before it may result in damage to structures or varying building types (FTA, 2006). Table 3.10-7 shows the project contributions to vibration-level thresholds that have been determined to be acceptable for different building types.

Table 3.10-7: Summary of Federal Transit Administration–Recommended Vibration Damage Criteria

Building Category	PPV (in/sec)	Approximate L_v[1]
Reinforced concrete, steel, or timber (no plaster)	0.5	102
Engineered concrete and masonry (no plaster)	0.3	98
Nonengineered timber and masonry buildings	0.2	94
Buildings extremely susceptible to vibration damage	0.12	90

Notes:
in/sec = inches per second; PPV = peak particle velocity
1 Root mean square velocity in decibels (VdB) referenced to 1 microinch per second.
Source: FTA 2006:12-13

The criteria established by FTA and noted above are applicable to the EIS Alternatives because they provide the basis for what would be considered acceptable noise levels generated by an EIS Alternative and perceived by adjacent or on-site receptors.

Department of Veterans Affairs Environmental Protection Specifications

Section 01568, EP-5 (F) of the *VA Environmental Protection Specifications* (VA Specifications) includes specific mitigating actions that would be required of any development on VA property to reduce construction-related noise. In particular, construction activities would mainly be limited to between the hours of 7:30 a.m. and 6:00 p.m. and would abide by City noise ordinances, unless otherwise permitted. In addition, all equipment is required to be properly maintained and muffled such that noise levels of specific equipment would not exceed those shown in Table 3.10-8. VA also requires monitoring of noise levels at least once every 5 days during high-noise-generating construction activities.

Table 3.10-8: Maximum Permissible Construction Equipment Noise Levels

Earthmoving Equipment	Maximum Permissible Noise Level (L_{max})	Materials Handling Equipment	Maximum Permissible Noise Level (L_{max})
Front-end loader	75	Concrete mixer	75
Backhoe	75	Concrete pump truck	75
Dozer	75	Crane	75
Tractor	75	Derrick, impact	75
Scraper	80	Pile driver	95
Grader	75	Jackhammer	75
Truck	75	Rock drill	80
Paver, stationary	80	Pneumatic tools	80
Pumps	75	Concrete saw	75
Generator	75	Vibrator	75
Air compressor	75		

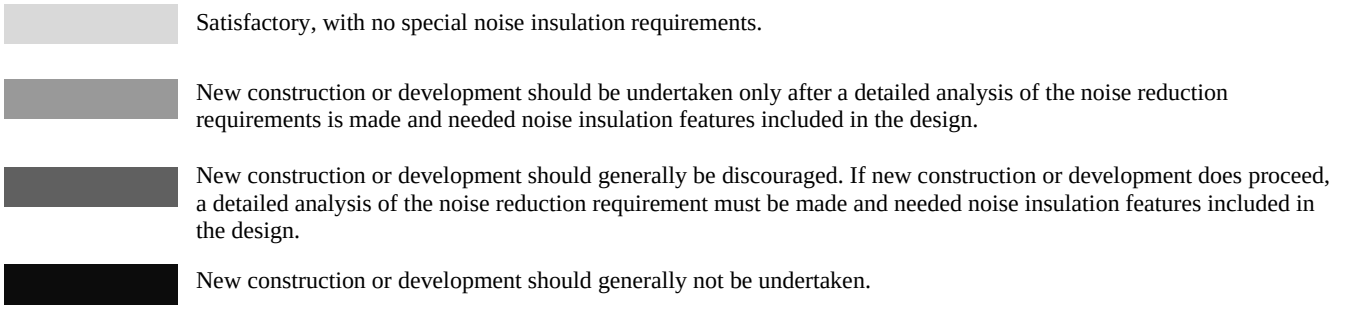
Source: VA, n.d.

San Francisco General Plan

The *San Francisco General Plan* focuses on the effect on the community of noise from ground-transportation noise sources and includes a land use compatibility chart for community noise. This chart (Table 3.10-9) identifies a range of noise levels considered generally compatible or incompatible with various land uses. The chart also indicates when to consider or analyze special noise reduction requirements, such as providing sound insulation for affected properties. Residential and hotel uses are considered compatible in areas where the noise level is 60 dBA L_{dn} or less; schools, classrooms, libraries, churches, and hospitals are compatible in areas where the noise level is 65 dBA L_{dn} or less; and playgrounds, parks, offices, retail commercial uses, and noise-sensitive manufacturing and communication uses are considered compatible in areas where the noise level is 70 dBA L_{dn} or less. Because the EIS Alternatives would generate noise levels that would be perceivable off-site and within the jurisdiction of the City and County of San Francisco, the noise criteria established in the *San Francisco General Plan* are appropriate to consider when assessing effects of the EIS Alternatives.

Table 3.10-9: City and County of San Francisco Land Use Compatibility Chart for Community Noise

Land Use Category	Community Noise Exposure L_{dn}, dB
	55 60 65 70 75 80
Residential, All Dwellings	
Transient Lodging: Hotels, Motels	
Schools, Libraries, Churches, Hospitals, Nursing Homes	
Auditoriums, Concert Halls, Amphitheaters, Music Shells	
Sports Arenas, Outdoor Spectator Sports	
Playgrounds, Parks	
Golf Courses, Riding Stables, Water Recreation, Cemeteries	
Office Buildings, Personal, Business, and Professional	
Commercial Retail, Movie Theaters, Restaurants	
Commercial Wholesale, Some Retail, Industrial/Manufacturing, Transportation, Communications, Utilities	
Manufacturing, Communications	



Satisfactory, with no special noise insulation requirements.

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

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

New construction or development should generally not be undertaken.

Notes: dB = decibels; L_{dn} = day-night noise level
Source: SF Planning, 1996

San Francisco Noise Control Ordinance

The San Francisco Noise Control Ordinance regulates both construction noise and stationary-source noise within the city limits, such as transportation, construction, mechanical equipment, entertainment, and human or animal behavior. Found in Article 29, "Regulation of Noise," of the San Francisco Police Code, the ordinance addresses noise from construction equipment, nighttime construction work, and noise from stationary mechanical equipment and waste processing activities (City, 2014). The following is the purpose of the San Francisco Noise Control Ordinance:

Sec. 2900, "Declaration of Policy"

(a) Building on decades of scientific research, the World Health Organization and the U.S. Environmental Protection Agency have determined that persistent exposure to elevated levels of community noise is responsible for public health problems including, but not limited to: compromised speech, persistent annoyance, sleep disturbance, physiological and psychological stress, heart disease, high blood pressure, colitis, ulcers, depression, and feelings of helplessness.

(b) The General Plan for San Francisco identifies noise as a serious environmental pollutant that must be managed and mitigated through the planning and development process. But given our dense urban environment, San Francisco has a significant challenge in protecting public health from the adverse effects of community noise arising from diverse sources such as transportation, construction, mechanical equipment, entertainment, and human and animal behavior.

(c) In order to protect public health, it is hereby declared to be the policy of San Francisco to prohibit unwanted, excessive, and avoidable noise. It shall be the policy of San Francisco to maintain noise levels in areas with existing healthful and acceptable levels of noise and to reduce noise levels, through all practicable means, in those areas of San Francisco where noise levels are above acceptable levels as defined by the World Health Organization's Guidelines on Community Noise.

(d) It shall be the goal of the noise task force described in this Article to determine if there are additional adverse and avoidable noise sources not covered in this statute that warrant regulation and to report to the Board of Supervisors and recommend amendments to this Article over the next three years. In addition, the noise task force shall develop interdepartmental mechanisms for the efficient disposition and any enforcement required in response to noise complaints.

(Added by Ord. 274-72, App. 9/20/72; Ord. 278-08, File No. 081119, App. 11/25/2008)

Section 2907, "Construction Equipment," and Section 2908, "Construction Work at Night"

These sections of the ordinance establish noise levels for construction equipment. Section 2907(a) limits noise levels from construction equipment as specified under the ordinance to 80 dB L_{eq} at 100 feet (or other equivalent noise level at another distance) from construction equipment between 7 a.m. and 8 p.m. According to Section 2908, construction work at night (from 8 p.m. to 7 a.m.) may not exceed the ambient level by 5 dB at the nearest property plane unless the Director of Public Works or the Director of Building Inspection grants a special permit before the start of such work.

The provisions of Section 2907(a) do not apply to impact tools and equipment that have intake and exhaust mufflers as recommended by the manufacturers and are approved by the Director of Public Works or the Director of Building Inspection as accomplishing maximum noise attenuation. The noise exemption also does not apply to pavement breakers and jackhammers that are equipped with acoustically attenuating shields or shrouds as recommended by the manufacturers and are approved by the Director of Public Works or the Director of Building Inspection as accomplishing maximum noise attenuation.

Section 2909, "Noise Limits"

This section of the ordinance regulates noise from on-site stationary noise sources (e.g., stationary mechanical and electrical equipment) within specific land uses. Section 2909 states that the noise levels from equipment operating on the project property shall not exceed the ambient noise levels at the property line by:

- 5 dBA if the noise source is on residential property,
- 8 dBA if the noise source is on a commercial/industrial properties, and
- 10 dBA if the noise source is on a public property.

In addition, Section 2909 states that no fixed (permanent) noise source, as defined by the ordinance, may cause the noise level inside any sleeping or living room in a residential dwelling unit to exceed 45 dB between 10 p.m. and 7 a.m. or 55 dB between 7 a.m. and 10 p.m. when windows are open, except where building ventilation is achieved through mechanical systems that allow windows to remain closed.

Because the project would generate noise levels that would be perceivable off-site and within the jurisdiction of the City and County of San Francisco, the noise limits established in the San Francisco Noise Control Ordinance are appropriate to consider when assessing potential effects of the EIS Alternatives.

3.10.3 Environmental Consequences

Significance Criteria

A NEPA evaluation must consider the context and intensity of the environmental effects that would be caused by, or result from, the EIS Alternatives. There are no standard federal policies applicable to noise. Therefore, other environmental assessment documents were reviewed and the following criteria were selected for the evaluation.

An Alternative analyzed in this EIS is considered to result in an adverse impact related to noise if it would:

- result in the temporary exposure of on- and off-site sensitive receptors to construction noise levels in excess of EPA standards—as stated above in Table 3.10-5, this threshold is either:
  - 55 dBA hourly L_{eq}, if the existing ambient noise level is less than 55 dBA hourly L_{eq}; or
  - the ambient noise level plus 5 dBA, if the existing ambient noise level is greater than 55 dBA hourly L_{eq};
- result in the temporary exposure of the on-site childcare center to construction noise levels in excess of EPA standards—as stated above in Table 3.10-5, the standard is 45 dBA hourly L_{eq} at the interior of the childcare center;

- result in the temporary exposure of off-site sensitive receptors to construction noise levels in excess of the standards established in the San Francisco Noise Control Ordinance (maximum 80 dBA at 100 feet distance), as outlined above;

- result in a substantial permanent increase in ambient noise levels on- and off-site, with the following increases in 24-hour ambient noise levels considered substantial (FICON, 1992):
  - 5 dB if preproject conditions are determined to be less than 60 dBA L_{dn},
  - 3 dB if preproject conditions are greater than 60 dBA L_{dn} but less than 65 dBA L_{dn}, or
  - 1.5 dB if preproject conditions are greater than 65 dBA L_{dn};
- be implemented when preproject (existing) ambient noise conditions are less than 65 dBA L_{dn}, based on the measured ambient noise levels on- and off-site (Table 3.10-4) and the predicted off-site existing traffic noise levels (Table 3.10-12). Therefore, the applicable 3-dB and 5-dB thresholds utilized for the impact analysis would result in exposure of persons or structures to excessive groundborne vibration or groundborne noise levels in excess of FTA standards, as stated above in Tables 3.10-6 and 3.10-7; or

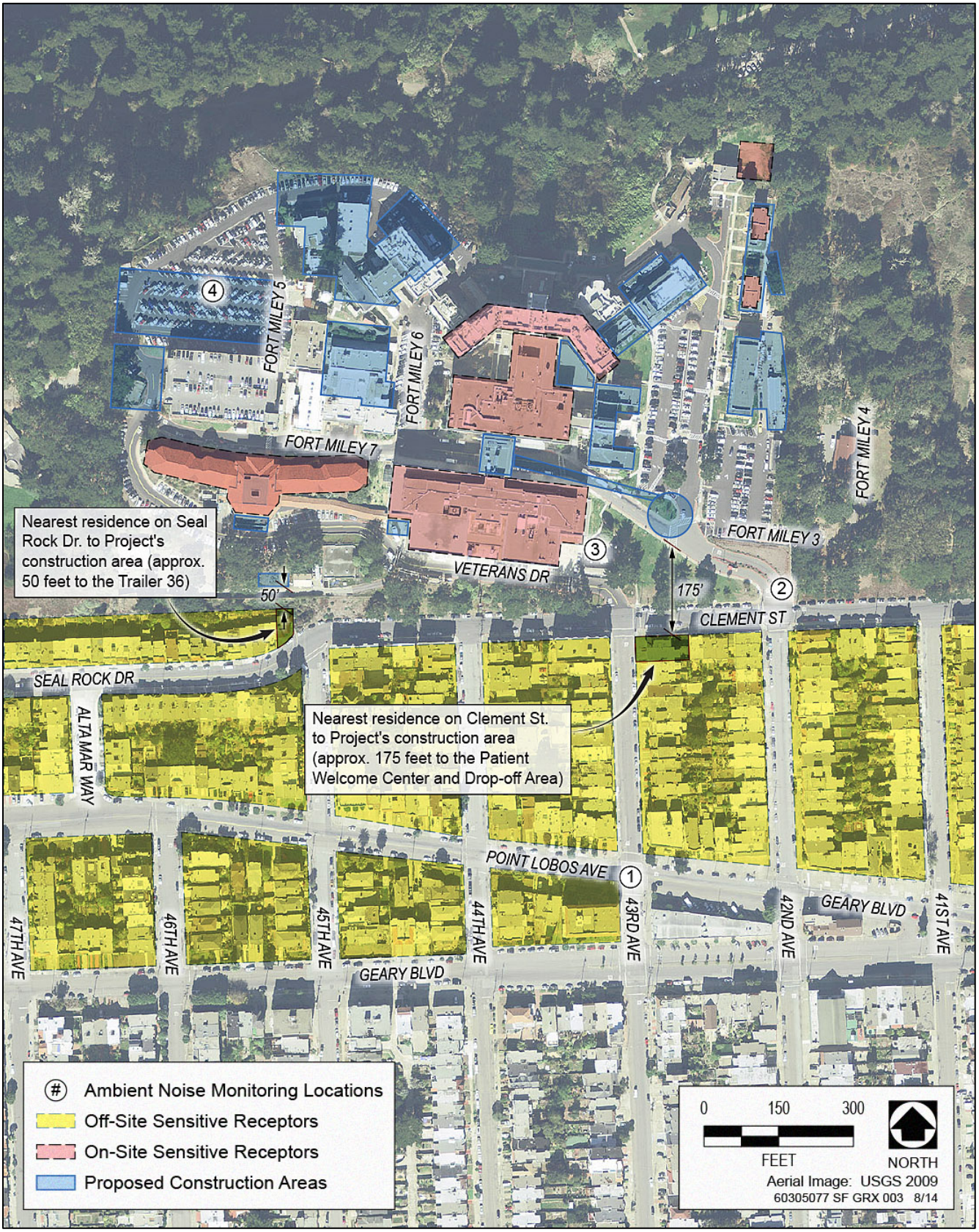
- be substantially affected by existing noise levels.

Assessment Methods

Noise-sensitive land uses and major noise sources were identified based on existing documentation (e.g., equipment noise levels and attenuation rates) and site reconnaissance data. Baseline ambient noise levels that were compared with noise generated by the EIS Alternatives were generated from a combination of sources:

- the existing-noise survey conducted for this project,
- data from previous noise measurements,
- predictions from traffic noise modeling,
- stationary-source noise levels based on manufacturers' specifications, and
- noise surveys for other types of stationary noise sources.

To assess the potential short-term noise impacts from construction, sensitive receptors and their relative levels of exposure were identified. Construction noise generated by the proposed short-term and long-term projects was predicted using the *Transit Noise and Vibration Impact Assessment* methodology for predicting construction noise (FTA, 2006). The noise emission levels and usage factors are based on the Federal Highway Administration's (FHWA's) Roadway Construction Noise Model (FHWA, 2006). Noise levels of specific construction equipment and the resulting noise levels at the locations of sensitive receptors were calculated. Figure 3.10-2 provides the general locations of the proposed construction areas and of on- and off-site sensitive receptors. The potential noise impact of the on-site childcare center was analyzed by estimating the construction-related noise level at the interior of the childcare center and evaluating the noise level against the interior-noise impact criterion applicable to the childcare center. The interior-noise impact criterion provided by EPA for the interior of classrooms is 45 dBA (L_{eq}) (Table 3.10-5).



Source: Compiled by AECOM in 2014.

Figure 3.10-2: Proposed Construction Areas

The FHWA Traffic Noise Prediction Model (FHWA RD 77-108) was used to model traffic noise levels along affected local roadways, based on daily volumes and their distribution, from the traffic analysis prepared for the short-term and long-term projects in 2020 and 2027, respectively. The contribution of traffic noise levels along area roadways was determined by comparing the modeled noise levels at 50 feet from the centerline of the roadway under various conditions: existing, short-term without project, short-term with project, long-term without project, and long-term with project.

Potential long-term (operational) noise impacts from stationary sources, such as HVAC, were assessed based on existing documentation (equipment noise levels) and site reconnaissance data. This analysis also evaluates the proposed noise-generating uses that could affect noise-sensitive receptors near SFVAMC facilities. See Appendix F for calculations of construction noise levels from on- and off-site sources and calculations of operational noise levels from off-site sources.

Groundborne vibration impacts were assessed quantitatively based on existing documentation (e.g., vibration levels produced by specific operations of construction equipment) and the distance of sensitive receptors from the given source. Short-term and long-term vibration sources and levels were calculated using the FTA methodology for construction and transportation vibration sources, and evaluating impacts against the established thresholds presented above in Tables 3.10-6 and 3.10-7 (FTA, 2006).

Alternative 1: SFVAMC Fort Miley Campus Buildout Alternative

Short-Term Projects

Construction

Noise

During construction activities for Alternative 1 short-term projects, construction noise would be perceivable at multiple locations on- and off-site, depending on the project currently under construction. Construction activities would generally include demolition, site preparation, grading/excavation, building construction and retrofitting, and paving/landscaping. Various types of construction equipment would be used during each stage of construction. Because of space restrictions at the existing SFVAMC Fort Miley Campus, the amount of construction that could occur simultaneously would be limited.

Table 3.10-10 lists the estimated construction noise levels at various distances from construction activities for Alternative 1 short-term projects. As indicated in the table, construction of these projects would generate noise levels ranging from 80.1 dBA L_{eq} during building construction to 84.5 dBA during site demolition and grading/ excavation, at a distance of 50 feet from the construction area (Location 4). The construction noise levels would attenuate by 6 dBA at a distance of 100 feet, which would reduce the construction noise level to a maximum level of 78.5 dBA L_{eq}, less than the 80-dBA significance threshold.

Any construction activities conducted as part of the EIS Alternatives would adhere to the requirements for noise control outlined in Section 01568, “Environmental Protection,” of the VA Specifications. These controls include such requirements as providing sound-deadening devices on equipment, using shields or other physical barriers to restrict noise transmission, providing soundproof coverings or enclosures for noise-producing machinery, and

Table 3.10-10: Predicted Short-Term Construction Noise Levels—Alternative 1 Short-Term Projects

Location	Distance to Construction Area, feet	Estimated Noise Levels by Construction Activity,[1] dBA L_{eq}					Significance Threshold,[2] dBA L_{eq}
		Demolition	Site Preparation	Grading/ Excavation	Building Construction	Paving	
1—43rd Avenue and Point Lobos Avenue (off-site)	600	52.9	50.2	52.9	48.5	51.4	67.2
2—42nd Avenue and Clement Street (off-site)[3]	300	68.9	66.2	68.9	64.5	67.4	66.8
3—Front lawn area southeast of Building 203 (on-site)	100	78.5	75.8	78.5	74.1	76.9	67.1
4—Northwest on-site parking lot (on-site)	50	84.5	81.8	84.5	80.1	83.0	55.0

Notes:
dBA = A-weighted decibels; L_{eq} = equivalent noise level
[1] Construction equipment used for the various construction stages:
- Demolition: One loader, one concrete saw, and two backhoes
- Site Preparation: One grader and one backhoe
- Grading/Excavation: One loader, one concrete saw, and two backhoes
- Building Construction: One crane, two forklifts, ad two backhoes
- Paving: One paver, four cement mixers, one roller, and one backhoe

[2] Significance threshold is equal to 55 dBA L_{eq} (if the existing ambient noise level is less than 55 dBA L_{eq}) or the existing ambient noise level plus 5 dBA. See Table 3.10-4 for the existing ambient noise levels.
[3] Represent the off-site residence on the south side of Clement Street and 42nd Avenue.
Source: Data compiled by AECOM in 2014

monitoring construction noise levels once a week when construction noise may exceed 55 dBA. Construction activities would mainly be limited to between the hours of 7:30 a.m. and 6:00 p.m. and would abide by City noise ordinances, unless otherwise permitted.

On-Site Receptors

As indicated in Figure 3.10-2, on-site sensitive receptors at the existing SFVAMC Fort Miley Campus would include occupied patient rooms, the Community Living Center (nursing home, Building 208), and the childcare center. Based on the anticipated phasing and locations of the Alternative 1 short-term projects, construction activities on the Campus may be located as close as 50 feet to a sensitive receptor. At a distance of 50 feet, exterior construction noise could reach as high as 84.5 dBA L_{eq}, thus exceeding existing L_{eq} noise levels by approximately 32 dBA (see Table 3.10-4, above).

The existing on-site childcare center is located inside Building 32 at the northeast boundary of the project site (Figure 2-1). The nearest construction areas would be for construction of Building 22 and retrofitting of Building 10, respectively located approximately 110 feet and 50 feet from the childcare center. The construction-related noise level at the exterior of the childcare center would be up to 75.0 dBA (L_{eq}). The building's façade would provide noise reduction of approximately 25 dBA with the windows closed and 15 dBA with the windows open

(EPA, 1974: Table B-4), thus resulting in an interior noise level of 50.0 dBA (L_{eq}) with windows closed or 60.0 dBA with windows open. Therefore, noise impacts at the interior of the childcare center would be adverse during construction hours for Alternative 1 short-term projects.

The childcare center's outdoor play area would be shielded from the construction activities by the existing Buildings 11 and 32. Retrofitting of Building 10 and construction of Building 32 would generate noise levels up to 60.0 dBA (L_{eq}) at the outdoor play area, which would exceed EPA's daycare significance threshold of 55 dBA (L_{eq}) before mitigation.

Therefore, impacts would be short term but noticeable. Although Section 01568, "Environmental Protection," of the VA Specifications would be implemented as part of Alternative 1 short-term projects, the potential exists for on-site receptors to be exposed to 24-hour (L_{dn}) noise levels exceeding the noise standards established by EPA and identified above in Table 3.10-5. Therefore, impacts would be potentially adverse.

Mitigation Measure NOI-1: Monitor Construction Noise Levels and Implement Additional Noise-Attenuating Features

VA will monitor exterior noise levels at on-site receptors located closest to a particular construction site for a 24-hour period at the onset of each major phase of construction (e.g., demolition, trenching, structure erection). If noise levels are found to exceed 55 dBA L_{dn}, VA will implement additional measures to reduce noise levels at affected on-site receptors as a result of construction noise. These additional measures may include but are not limited to relocating occupied patient beds to other areas of the SFVAMC Fort Miley Campus, installing temporary acoustic attenuating features/barriers, preventing the line of sight between the receptor in question and noise source, and providing in-room sound-masking equipment (e.g., white noise).

Management Measure NOI-1: Manage and Monitor Noise Disturbance

VA will manage and monitor noise disturbance during construction activities conducted on-site. The project engineer will be responsible for responding to and addressing complaints received by hospital or clinic staff members and nearby residences with respect to construction noise. Contact information will be available in the Engineering Office and will be provided to the community. When complaints are received, the project engineer will notify SFVAMC's Environmental Health & Safety Office, Engineering Office, and/or Green Environmental Management Systems Coordinator to conduct necessary surveys and determine the necessary actions needed to lessen the disturbance.

With implementation of Mitigation Measure NOI-1 and Management Measure NOI-1, VA would continually monitor construction noise levels and make provisions for receptors that may be exposed to noise levels exceeding EPA standards. In addition, implementing Mitigation Measure NOI-1 would reduce construction-related noise impacts at the childcare center's outdoor play area by a minimum of 5 dBA; thus, childcare-specific impacts would be reduced to a minor level. Impacts would also be temporary (approximately 13 months for the construction of Building 22 and retrofitting of Building 10). Therefore, with implementation of Mitigation Measure NOI-1 and Management Measure NOI-1, the temporary construction-related noise impact of Alternative 1 short-term projects on on-site receptors would be reduced to a minor level. No indirect impacts would occur.

Off-Site Receptors

Installation of the modular building Trailer 36 and construction of the Patient Welcome Center and Drop-off Area would result in the greatest potential increase in ambient noise levels caused by construction equipment operating near residences along the southern boundary of the existing SFVAMC Fort Miley Campus. The nearest off-site sensitive receptor to the Trailer 36 construction area is the existing residential use located on the north side of Seal Rock Drive, west of 45th Avenue, approximately 50 feet south of this construction area (Figure 3.10-2). The installation of Trailer 36 would generate noise levels up to 75.2 dBA L_{eq} at the nearest off-site residence, thus exceeding the significance threshold of 65 dBA L_{eq} (based on an ambient noise level of 60 dBA plus 5 dBA) and resulting in a temporary (approximately 3 months for Trailer 36 installation) adverse impact. However, implementing Mitigation Measure NOI-1 (i.e., installing a temporary noise barrier between the construction equipment and the sensitive receptor) would reduce the construction noise level by a minimum of 10 dBA, and the impact would be reduced to a minor level.

The nearest off-site sensitive receptor to the Patient Welcome Center and Drop-off Area construction area is the existing residence located on the south side of Clement Street (east of 43rd Avenue), approximately 175 feet south of the anticipated limits of construction (Figure 3.10-2). The estimated maximum construction noise level at this off-site receptor would be 73.6 dBA L_{eq}, about 12 dBA above the measured daytime ambient noise level of 61.8 dBA L_{eq}. The construction noise would exceed the significance threshold of 66.8 dBA L_{eq} (ambient plus 5 dBA) by 7 dBA before mitigation, resulting in an adverse impact. However, implementing Mitigation Measure NOI-1 (such as by installing a temporary acoustics-attenuating barrier, as described above) would reduce the construction noise level by a minimum of 10 dBA, and the impact would be reduced to a minor level.

All other construction activities that would occur as part of Alternative 1 short-term projects would be conducted at locations farther from nearby off-site sensitive receptors, including GGNRA visitors. Anticipated noise levels would be less than those identified above (for Trailer 36 and the Patient Welcome Center and Drop-off Area). Therefore, potential impacts at off-site sensitive receptors resulting from construction of Alternative 1 short-term projects would be noticeable and adverse but temporary, and implementation of mitigation measures would reduce these impacts to a minor level.

Construction of Alternative 1 short-term projects would extend up to 85 months. However, the noise impacts at the individual sensitive receptors would last for a much shorter time. Construction for most individual projects would last less than 24 months, and the construction noise would be reduced when construction activities move to another project farther away and are shielded by existing on-site building structures. In addition, if determined necessary, other noise-attenuating features and barriers would be implemented in accordance with Mitigation Measure NOI-1.

In addition to the on-site construction activities, traffic associated with Alternative 1 short-term projects (construction worker vehicles and vendor and haul trucks) would generate noise along the truck traffic routes established by the San Francisco Municipal Transportation Agency. The truck routes leading to the project site include 42nd Avenue, 43rd Avenue, Point Lobos Avenue, and Geary Boulevard. Based on the project's Transportation Impact Study, vendor and haul trucks would peak at 36 vehicles (72 trips) per day and construction worker vehicles would peak at 72 each way (144 trips) per day (VA, 2014). Based on an 8-hour work day and uniform distribution, it is estimated that there would be up to nine truck trips per hour. For a worst-case

analysis, construction workers have been assumed to arrive at the project site within a 1-hour period. The highest hourly noise level attributable to construction traffic for Alternative 1 short-term projects along the construction traffic routes would be 58.6 dBA L_{eq}. The estimated construction traffic noise level would be consistent with the existing ambient noise in the project vicinity of approximately 62 dBA (measured at Sites 1 and 2; see Table 3.10-4 and Figure 3.10-1). Therefore, noise impacts from off-site construction traffic related to Alternative 1 short-term projects would be minor.

Vibration

Construction activities for Alternative 1 short-term projects would include vibration-producing construction activities (e.g., demolition, excavation, grading, basement excavation, and clearing). No pile driving or rock blasting is anticipated. Depending on the specific construction equipment used and operations involved, short-term demolition and construction activities at the existing SFVAMC Fort Miley Campus may temporarily increase ground vibration. It is anticipated that the highest levels of construction-related groundborne noise and vibration would be generated during the demolition phase, because the equipment used during that phase generates the highest ground vibration levels.

On-Site Receptors

Alternative 1 short-term projects would require construction activities immediately adjacent to existing medical facilities and overnight patient rooms. As noted in Section 3.4, "Cultural Resources," several structures on the existing SFVAMC Fort Miley Campus are more than 50 years old. Because of their age and the potential for degradation of building integrity over time, these structures are considered susceptible to damage from construction-related vibration.

Based on the equipment listed in Table 3.10-11, the potential exists for construction-related vibration from Alternative 1 short-term projects to exceed 0.12 in/sec PPV, the threshold established by FTA for potential damage to older structures. Specifically, a vibratory roller (used for compaction) could generate anticipated vibration levels of up to 0.21 in/sec PPV at adjacent structures. In addition, the potential exists for construction-related vibration to interfere with the operation of sensitive medical equipment used on-site. As noted by FTA, a standard of 65 VdB is recommended for facilities where vibration could interfere with operations. Based on the data shown in Table 3.10-11, construction of Alternative 1 short-term projects could result in interference with the use of sensitive medical equipment at the SFVAMC Fort Miley Campus.

Furthermore, in terms of potential human annoyance about construction vibration, on-site sensitive receptors (i.e., patients) could experience vibration levels up to 94 VdB at a distance of 25 feet, which would be considered noticeable.[2] However, construction activities would be limited to daytime hours (7:30 a.m. to 6:00 p.m.) and would not be anticipated to disturb sleeping patients. As a result, this impact would be short-term, noticeable, and potentially adverse.

[2] As noted above in Table 3.10-3, 75 VdB is considered distinctly perceptible/noticeable.

Table 3.10-11: Representative Vibration Source Levels for Construction Equipment

Equipment	PPV at 25 feet (in/sec)[1]	Approximate L_v (VdB) at 25 feet[2]
Vibratory roller	0.210	94
Large bulldozer	0.089	87
Hoe ram	0.089	87
Caisson drilling	0.089	87
Trucks	0.076	86
Concrete breaker	0.059	83
Jackhammer	0.035	79
Small bulldozer	0.003	58

Notes:
in/sec = inches per second; VdB = vibration decibels
1 Where PPV is the peak particle velocity.
2 Where Lv is the root mean square velocity expressed in vibration decibels (VdB), assuming a crest factor of 4.
Source: FTA, 2006:12-2

Mitigation Measure NOI-2: Conduct a Preconstruction Survey of Buildings in the Vicinity of Proposed Construction

The preexisting condition of all buildings within a 50-foot radius of construction areas (where large construction equipment would be utilized) will be recorded in the form of a preconstruction survey. The preconstruction survey will determine conditions that exist before construction begins and will be used to evaluate damage caused by construction activities. Fixtures and finishes within a 50-foot radius of construction activities susceptible to damage will be documented photographically and in writing before construction. All buildings damaged will be repaired to their preexisting condition.

Mitigation Measure NOI-3: Monitor Vibration-Sensitive Equipment during Construction

Vibration levels will be monitored at the nearest interior location of adjacent medical structures containing vibration-sensitive equipment to monitor potential impacts from construction related to this alternative. In the event that measured vibration levels exceed 65 VdB and would disturb the operation of sensitive medical equipment, additional measures will be implemented to the extent necessary and feasible. These measures include providing notice to equipment operators to coordinate regarding the timing of construction activities showing vibration levels above 65 VdB, possibly temporarily relocating the sensitive equipment, and/or installing isolation equipment (i.e., vibration-dampening mounts).

Implementing Mitigation Measures NOI-2 and NOI-3 would ensure that any potential damage to existing on-site structures or interference with on-site equipment caused by the construction of Alternative 1 short-term projects would be documented and repaired, and that construction activities would be limited to daytime hours (7:30 a.m. to 6:00 p.m.), which would minimize the potential for sleep disturbance. Therefore, with implementation of Mitigation Measures NOI-2 and NOI-3, the potential impact on on-site receptors, including structures (building damage) and vibration-sensitive equipment use, would be limited and impacts would be reduced to minor. However, vibration from construction equipment would be noticeable (i.e., above 75 VdB) if operating within

60 feet of the affected building, which would be potentially adverse with respect to sleep disturbance. This impact would be short term and would remain adverse even with mitigation.

Off-Site Receptors

To evaluate vibration impacts at sensitive receptors near the existing SFVAMC Fort Miley Campus, the use of the construction equipment was analyzed at the nearest off-site sensitive receptors. As noted above and identified in Figure 3.10-2, the residences located along the south side of the project site—specifically, the residence on Seal Rock Drive west of 45th Avenue and the residence on Clement Street east of 43rd Avenue—are the closest off-site sensitive receptors to any of the short-term projects proposed under Alternative 1. These residences are located approximately 50 feet and 175 feet, respectively, from the limits of the construction area. Visitors traversing the adjacent recreational trails also may also be temporary sensitive receptors, depending on their location.

Predicted groundborne noise and vibration levels at these residences could be as high as 78 VdB (0.031 PPV) at the residence on Seal Rock Drive and 69 VdB (0.011 PPV) at the residence on Clement Street (Figure 3.10-2). All other off-site residences are located farther from the limits of construction for Alternative 1 short-term projects, and construction-related vibration would be less than 78 VdB (0.031 PPV). As a result, attenuated vibration-inducing construction activities at off-site locations would not exceed FTA's threshold for building damage (0.12 PPV) or FTA's standard (80 VdB) for human response at off-site vibration-sensitive uses. Further, because construction activities would mainly be limited to weekday daytime hours (7:30 a.m. to 6:00 p.m.) and would avoid typical sleeping periods (nighttime), the potential for construction-related vibration at the existing SFVAMC Fort Miley Campus to result in human annoyance would be minimal. Therefore, based on established criteria, this direct impact would be minor. No indirect impacts would occur.

In addition to the on-site construction equipment, construction-related trucks traveling to and from the project site for Alternative 1 short-term projects would generate groundborne vibration along the designated construction truck routes. Based on FTA data, trucks traveling on typical roads would generate groundborne vibration levels of approximately 63 VdB or 0.006 in/sec PPV at a distance of 50 feet (FTA, 2006: Figure 7-3). Existing residential buildings are located approximately 25 feet from the truck travel lane, which would be exposed to groundborne vibration up to 72 VdB or 0.016 in/sec PPV. The groundborne vibration generated by construction-related truck trips for Alternative 1 short-term projects would be well below the most stringent significance threshold applicable for old building structures, 0.12 in/sec. Therefore, adverse building-damage impacts on the residential buildings along the construction truck route would not be expected. In addition, the estimated groundborne vibration level of 72 VdB would be less than the standard of 80 VdB for human annoyance. Therefore, groundborne vibration impacts on off-site sensitive receptors from truck traffic related to Alternative 1 short-term projects would be minor.

Operation

Noise

Mobile-Source Noise

Anticipated traffic-related increases in noise levels with implementation of Alternative 1 short-term projects were evaluated to determine whether they would result in a substantial increase in traffic noise at on- and off-site sensitive receptors. The FHWA Traffic Noise Prediction Model (FHWA-RD-77-108) was used to model traffic noise levels along affected roadways, based on daily traffic volumes and their distribution, from the traffic analysis prepared for full buildout of Alternative 1 short-term projects as predicted for the year 2020.

To determine the contribution of the Alternative 1 short-term projects to existing traffic noise along area roadways, modeled noise levels at 50 feet from the roadway centerline under no-project conditions were compared to those under plus-project conditions. The modeling assumed flat topography and did not include offsets to account for site-specific roadway conditions. The analyses below evaluate only the permanent change in traffic noise levels caused by the increase in daily traffic volumes. The use of emergency sirens, horns, and lights could temporarily and intermittently elevate ambient noise levels at nearby noise-sensitive land uses.

Operation of Alternative 1 short-term projects could result in an increase in average daily vehicle trips in the vicinity of the SFVAMC Fort Miley Campus. To examine the effect of project-generated traffic increases, traffic noise levels associated with the Campus were calculated for nearby roadway segments. Traffic volumes for each study segment were derived from p.m. peak intersection turning movements (see Section 3.13, "Transportation, Traffic, Circulation, and Parking"), using a K Factor of 10 to compute the average daily trips on roadway segments. (A K Factor is a multiplication factor used to compute average daily traffic.) Vehicle speeds and truck volumes on local roadways were determined based on field observations conducted on and around the Campus. Table 3.10-12 summarizes the modeled traffic noise levels at 50 feet from the centerline of affected roadway segments near the Campus.

Table 3.10-12: Predicted Short-Term Future Traffic Noise Levels (Alternative 1 Short-Term Projects)

Roadway	Segment		L_{dn} at 50 Feet, dBA			
	From	To	Existing	Short-Term (2020) Plus Alt. 1	Net Change	Substantial Increase?
Clement Street	43rd Avenue	42nd Avenue	62.0	62.4	0.4	No
Clement Street	42nd Avenue	34th Avenue	63.3	63.6	0.3	No
Clement Street	43rd Avenue	48th Avenue	60.7	61.0	0.3	No
43rd Avenue	Clement Street	Point Lobos Avenue	60.7	61.2	0.5	No
42nd Avenue	Clement Street	Point Lobos Avenue	57.5	57.9	0.4	No

Notes:
dB = (A-weighted) decibels; L_{dn} = day-night average noise level
Traffic noise levels are predicted at a standard distance of 50 feet from the roadway centerline and do not account for shielding from existing noise barriers or intervening structures. Traffic noise levels may vary depending on actual setback distances and localized shielding.
Source: Data modeled by AECOM in 2014

Based on the modeling conducted, the largest potential change in ambient roadway noise levels under short-term (2020) conditions under Alternative 1 would occur along 43rd Avenue between Clement Street and Point Lobos Avenue. This potential change would be approximately 0.5 dBA L_{dn}, which would be less than the more stringent threshold of 3.0 dBA for future roadway noise levels.

The increase in daily vehicle operations at the existing SFVAMC Fort Miley Campus with implementation of Alternative 1 short-term projects would not result in a noticeable increase in ambient traffic noise along local roadways. Therefore, this direct impact would be minor. No indirect impacts would occur.

Siren Noise

In general, the use of emergency sirens can temporarily and intermittently elevate ambient noise levels at noise-sensitive land uses adjacent to an ambulance's chosen route. Emergency vehicle sirens can generate intermittent L_{max} noise levels up to 106 dB. However, emergency services are prevalent throughout the project area under existing conditions, and siren use is common in the urban noise environment of San Francisco, including the neighborhoods around the existing SFVAMC Fort Miley Campus. Alternative 1 short-term projects would not alter the manner in which emergency vehicles access the Campus. Furthermore, none of the short-term projects for Alternative 1 would involve expanding the Campus's existing emergency department. In addition, the use of emergency medical services is determined based on need. Therefore, implementing Alternative 1 would not be anticipated to increase the potential for siren noise in the project area. Implementing this alternative would not increase capacity for accepting emergency transport or result in a substantial increase in local population (see Section 3.11, "Socioeconomics and Environmental Justice") that could reasonably be considered to have a secondary effect on the need for emergency services. As a result, this direct impact would be minor. No indirect impacts would occur.

Stationary-Source Noise

Receptors on and off the SFVAMC Fort Miley Campus could be exposed to stationary-source noise generated by on-site stationary equipment (especially HVAC) that would be installed during Alternative 1 short-term projects. On-Campus receptors of concern would be the SFVAMC patients, and off-site receptors would include the residences located immediately south of the Campus. Visitors traversing the adjacent recreational trails also may be temporary sensitive receptors, depending on their location.

Stationary equipment would be largely located on the rooftops of proposed structures and shielded from on-site receptors. Furthermore, any stationary equipment located on-site would be shielded to prevent a direct line of sight to any patient rooms or other noise-sensitive areas on Campus. To maintain exterior-to-interior noise levels within the Campus, including patient rooms, at 45 dBA L_{dn}, the following best management practice (BMP) regarding noise levels in relation to patient rooms would be implemented:

- VA will monitor noise levels in the SFVAMC patient rooms located closest to stationary equipment installed as part of the LRDP. Should noise levels from the operation of stationary equipment result in interior noise levels in patient rooms exceeding 45 dBA L_{dn}, VA will implement additional measures to reduce interior noise levels, such as replacing existing windows with double- or triple-paned windows, applying a sound-deadening window film, or installing additional acoustic shielding of the stationary source.

With implementation of this BMP, operation of Alternative 1 short-term projects would result in a minor direct impact. No indirect impacts would occur.

In terms of off-site receptors, stationary equipment must comply with Section 2909, "Noise Limits," of Article 29 of the San Francisco Noise Control Ordinance. The noise levels from the project's proposed on-site stationary equipment should not exceed the ambient noise levels at the project property line by 5 dB or exceed the fixed residential interior noise limits (45 dB between 10 p.m. and 7 a.m. and 55 dB between 7 a.m. and 10 p.m.). The design of the new stationary equipment (e.g., mechanical HVAC equipment) would include standard noise control features, such as barriers, acoustical louvers, and silencers, in compliance with the San Francisco Noise Ordinance. Therefore, the proposed project stationary equipment would not exceed the existing ambient noise level at the project property line by more than 5 dB. Assuming a conservative exterior-to-interior noise level reduction of 25 dB for modern residential wood construction and accounting for distance to the nearest off-site sensitive receptor façade, off-site sensitive receptors would not be exposed to interior noise levels exceeding 45 dB L_{eq} or experience a substantial increase in interior ambient noise levels with windows closed or open. Impacts would be minor.

Vibration

In general, the potential for operational vibration impacts is limited to areas subject to substantial heavy-truck traffic or rail operations, neither of which would occur in the vicinity of the existing SFVAMC Fort Miley Campus. Furthermore, on-site equipment would be appropriately installed, padded, and mounted to minimize the potential for perceivable on-site vibration during equipment operation. As a result, impacts would be minor. No indirect impacts would occur.

Long-Term Projects

Construction

Noise

The Alternative 1 long-term project would involve construction activities for the new Clinical Addition Building (Building 213) within the existing SFVAMC Fort Miley Campus. The nearest off-site sensitive receptors would be a minimum of 400 feet from the construction area and would be shielded by existing SFVAMC buildings and land topography. Based on the distance and intervening structures between the proposed structures and off-site receptors, the predicted construction noise level at the nearest off-site sensitive receptor would be 56.4 dBA L_{eq}, less than the existing ambient noise level of approximately 62 dBA L_{eq}. Therefore, impacts of on-site construction noise from the Alternative 1 long-term project on off-site receptors are not anticipated.

However, on-site receptors, including the Community Living Center (Building 208), could experience elevated noise levels during construction of the Alternative 1 long-term project. Construction activities would occur approximately 50 feet from Building 208. As noted above, exterior construction noise could reach levels as high as 84.5 dBA L_{eq} at a distance of 50 feet, thus exceeding existing L_{eq} noise levels by approximately 32 dBA (see Table 3.10-4, above). Also as described above, the building façade would provide noise reduction of approximately 25 dBA with the windows closed and 15 dBA with the windows open, resulting in an interior noise level of approximately 59.5 dBA (L_{eq}) with windows closed or 69.5 dBA with windows open. As a result, impacts

would be short term and noticeable. The on-site childcare center would be approximately 750 feet from construction activities for the Alternative 1 long-term project. During this project, the construction-related noise level at the on-site childcare center would be approximately 51.0 dBA L_{eq}, less than EPA's daycare significance threshold of 55 dBA. Section 01568, "Environmental Protection," of the VA Specifications would be implemented as part of the Alternative 1 long-term project, as under the short-term projects for this alternative, but on-site receptors could be exposed to noise levels exceeding the noise standards established by EPA (identified above in Table 3.10-5). Therefore, impacts would be potentially adverse.

However, with Mitigation Measure NOI-1 and Management Measure NOI-1 as discussed above, VA would continually monitor construction noise levels and make provisions for receptors that may be exposed to noise levels exceeding EPA standards. Therefore, with implementation of Mitigation Measure NOI-1 and Management Measure NOI-1, construction-related noise impacts of the Alternative 1 long-term project on on-site receptors would be noticeable but short term and would be reduced to a minor level. No indirect impacts would occur.

Like the short-term projects for this alternative, the long-term project for Alternative 1 would generate off-site traffic from construction worker vehicles and haul and vendor trucks. Based on the project's Transportation Impact Study, vendor and haul truck traffic would peak at 36 vehicles (72 trips) per day and construction worker vehicles would peak at 44 (88 trips) per day (VA, 2014). Based on an 8-hour workday and uniform distribution, it is estimated that there would be up to nine truck trips per hour. The highest hourly noise level associated with construction traffic for the Alternative 1 long-term project along the construction traffic routes would be 58.1 dBA L_{eq}. The estimated construction traffic noise level would be consistent with the existing ambient noise level in the project vicinity, approximately 62 dBA (measured at Sites 1 and 2; see Table 3.10-4). Therefore, noise impacts associated with the off-site construction traffic for the Alternative 1 long-term project would be minor.

Vibration

The proposed facility to be constructed as part of the Alternative 1 long-term project (Building 213) would be located within the existing SFVAMC Fort Miley Campus, farther from the existing off-site residences than the facilities proposed for the Alternative 1 short-term projects. Construction activities at the site would be located farther from these residences than the activities evaluated above for short-term projects, and would result in vibration levels of approximately 58 VdB at the nearest residential structures located to the south. This would be well below the FTA-established thresholds for structural damage and human annoyance (80 VdB); therefore, impacts would be minor.

With respect to on-site receptors, construction could occur within 50 feet of existing medical facilities, including patient beds. Similar to the impacts identified for short-term projects of Alternative 1, the potential exists for construction-related vibration from the Alternative 1 long-term project to exceed 0.12 PPV (the threshold established by FTA for potential damage to older structures). Specifically, a vibratory roller (used for compaction) could generate anticipated vibration levels of up to 0.21 PPV at adjacent structures. In addition, the operation of heavy construction equipment could interfere with the operation of existing medical equipment on-site if vibration levels were to exceed FTA's 65-VdB standard.

Furthermore, in terms of potential human annoyance as a result of construction vibration, on-site sensitive receptors could experience vibration levels up to 94 VdB at a distance of 25 feet, which would be considered noticeable (i.e., exceeding 75 VdB). However, construction activities would be limited to daytime hours

(7:30 a.m. to 6:00 p.m.) and would not be anticipated to disturb sleeping patients. As a result, this impact would be short term, noticeable, and potentially adverse.

With Mitigation Measures NOI-2 and NOI-3, potential damage to existing on-site structures or interference with on-site equipment caused by construction of the Alternative 1 long-term project would be documented and repaired. In addition, construction activities would be limited to daytime hours (7:30 a.m. to 6:00 p.m.), minimizing the potential for sleep disturbance. As a result, the potential impact on on-site receptors, including structures, would be limited. Therefore, with implementation of Mitigation Measures NOI-2 and NOI-3, direct impacts would be noticeable but would be short term and reduced to a minor level. No indirect impacts would occur.

As with the short-term projects for Alternative 1, construction-related trucks traveling to and from the site for the Alternative 1 long-term project would generate groundborne vibration along the designated construction truck routes. Therefore, as during the short-term projects, existing residential buildings along the construction truck routes would be exposed to groundborne vibration up to 72 VdB or 0.016 in/sec PPV. The groundborne vibration generated by the construction-related truck trips for the Alternative 1 long-term project would be well below the most stringent significance threshold applicable for old building structures (0.12 in/sec) and the 80-VdB standard for human annoyance. Therefore, groundborne vibration impacts from the project's construction truck traffic at the off-site sensitive receptors would be minor.

Operation

Noise

Mobile-Source Noise

Operation of the Alternative 1 long-term project would result in an increase in average daily vehicle trips in the vicinity of the SFVAMC Fort Miley Campus. Like short-term conditions, long-term (2027) conditions were modeled based on the anticipated average daily traffic on local roadways surrounding the Campus. As shown in Table 3.10-13, the largest potential change in ambient roadway noise levels under long-term (2027) conditions would occur along 42nd Avenue between Clement Street and Point Lobos Avenue and would be approximately 1.9 dBA L_{dn} above existing conditions. This would be less than the more stringent threshold of 3.0 dBA identified above for future roadway noise levels. As a result, the increase in daily vehicle operations at the Campus caused by implementing the Alternative 1 long-term project would not result in a noticeable increase in ambient traffic noise along local roadways. Therefore, this direct, operational mobile-source noise impact would be minor. No indirect impacts would occur.

Siren Noise

As noted above for Alternative 1 short-term projects, the Alternative 1 long-term project would not alter the manner in which emergency vehicles access the existing SFVAMC Fort Miley Campus. Furthermore, the long-term project would not involve expanding the existing SFVAMC emergency department. The Alternative 1 long-term project would not be anticipated to increase the potential for siren noise in the project area because it would not increase capacity for accepting emergency transport or result in a substantial increase in local population (see Section 3.11, "Socioeconomics and Environmental Justice") that could reasonably be considered to have a secondary effect on the need for emergency services. Therefore, this direct, operational impact related to siren noise would be minor. No indirect impacts would occur.

Table 3.10-13: Predicted Long-Term Future Traffic Noise Levels (Alternative 1 Long-Term Project)

Roadway	Segment		L_{dn} at 50 Feet, dBA			
	From	To	Existing	Long-Term (2027) Plus Alt. 1	Net Change	Substantial Increase?
Clement Street	43rd Avenue	42nd Avenue	62.0	62.8	0.8	No
Clement Street	42nd Avenue	34th Avenue	63.3	64.1	0.8	No
Clement Street	43rd Avenue	48th Avenue	60.7	61.3	0.6	No
43rd Avenue	Clement Street	Point Lobos Avenue	60.7	61.8	1.1	No
42nd Avenue	Clement Street	Point Lobos Avenue	57.5	59.4	1.9	No

Notes:
dB = (A-weighted) decibels; L_{dn} = day-night average noise level
Traffic noise levels are predicted at a standard distance of 50 feet from the roadway centerline and do not account for shielding from existing noise barriers or intervening structures. Traffic noise levels may vary depending on actual setback distances and localized shielding.
Source: Data modeled by AECOM in 2014

Stationary-Source Noise

As with short-term projects for Alternative 1, on- and off-Campus receptors could be exposed to stationary-source noise generated by on-site stationary equipment (especially HVAC) that would be installed as part of the Alternative 1 long-term project. On-Campus receptors of concern would include SFVAMC patients, and off-site receptors would include the residences located immediately to the south and temporary visitors to recreation land adjacent to the Campus. Stationary equipment would be largely located on the rooftops of proposed structures and shielded from on-site receptors. Furthermore, any stationary equipment located on-site would be shielded to prevent a direct line of sight to any patient rooms or other noise-sensitive areas on Campus. To maintain exterior-to-interior noise levels within the Campus, including patient rooms, at 45 dBA L_{dn}, the BMP regarding noise levels in relation to patient rooms would be implemented. Therefore, operation of the Alternative 1 long-term project would represent a minor direct impact. No indirect impacts would occur.

In terms of off-site receptors, stationary equipment must comply with Section 2909, “Noise Limits,” of Article 29 of the San Francisco Noise Control Ordinance. The noise levels from the project’s proposed on-site stationary equipment should not exceed the ambient noise levels at the project property line by 5 dB or exceed the fixed residential interior noise limits (45 dB between 10 p.m. and 7 a.m. and 55 dB between 7 a.m. and 10 p.m.). Based on the noise monitoring conducted at the Campus, noise levels attributable to exterior equipment would not exceed 55 dB at a distance of 100 feet. Therefore, the project’s stationary equipment would not exceed the existing ambient noise level at the project property line by more than 5 dB. Assuming a conservative exterior-to-interior noise-level reduction of 25 dB for modern residential wood construction, and accounting for distance to the nearest off-site sensitive receptor’s façade, off-site sensitive receptors would not be exposed to interior noise levels exceeding 45 dB L_{eq} or experience a substantial increase in interior ambient noise levels with windows closed or open. Operational impacts of the Alternative 1 long-term project related to stationary-source noise would be minor. No indirect impacts would occur.

Vibration

In general, the potential for operational vibration impacts is limited to areas subject to substantial heavy-truck traffic or rail operations, neither of which would occur in the area of the existing SFVAMC Fort Miley Campus. Furthermore, on-site equipment would be appropriately installed, padded, and mounted to minimize the potential for perceivable on-site vibration during equipment operation. Therefore, the direct operational vibration impacts of the Alternative 1 long-term project would be minor. No indirect impacts would occur.

Alternative 2: SFVAMC Fort Miley Campus Buildout Alternative

Short-Term Projects

Alternative 2 short-term projects at the existing SFVAMC Fort Miley Campus would be the same as Alternative 1 short-term projects, with one exception. Specifically, retrofitting of the existing Buildings 1, 6, and 8 would not occur as part of Alternative 2 short-term projects (Table 2-3 and Figure 2-3), but would instead be accomplished in the long term. Alternative 2 short-term projects include construction of a total of 485,445 gross square feet (gsf), which is 115,547 gsf less than for short-term projects under Alternative 1. Therefore, impacts of Alternative 2 short-term projects would be similar to or less than those of Alternative 1 short-term projects.

Construction

Noise

As described above, Alternative 2 short-term projects would be similar to short-term projects under Alternative 1, except that the existing Buildings 1, 6, and 8 would not be retrofitted. Buildings 1, 6, and 8 are located at the interior of the Campus. Like Alternative 1 short-term projects, Alternative 2 short-term projects would include buildings at the southern portion of the Campus, which would generate the highest noise levels to the off-site sensitive receptors. Therefore, construction noise levels generated by Alternative 2 short-term projects at the off-site sensitive receptors would be similar to those of Alternative 1 short-term projects, as provided in Table 3.10-14. Noise impacts on the on-site receptors would also be similar to those of the short-term projects for Alternative 1 because construction activities from the short-term projects under either alternative would occur within 50 feet of the on-site sensitive buildings (e.g., nursing home and childcare center). Therefore, noise impacts related to construction activities on the Campus of Alternative 2 short-term projects would be minor with mitigation (see Mitigation Measure NOI-1 and Management Measure NOI-1).

Like the Alternative 1 short-term projects, the short-term projects for Alternative 2 would generate off-site traffic from construction worker vehicles and construction trucks. The number of vendor and haul trucks would be similar to those for Alternative 1, which would peak at 36 vehicles (72 trips) per day. Although Buildings 1, 6, and 8 would not be retrofitted under Alternative 2 short-term projects, the peak number of vendor and haul trucks would be similar to that under Alternative 1 short-term projects. The construction worker trips would be slightly less than under Alternative 1, peaking at 64 vehicles (128 trips) (VA, 2014). Therefore, the highest hourly noise level from traffic for Alternative 2 short-term projects along the construction traffic routes would be approximately 58.5 dBA L_{eq}, similar to Alternative 1, and would be consistent with the existing ambient noise in the project vicinity. Therefore, noise impacts from off-site construction traffic on off-site receptors for Alternative 2 short-term projects would be minor with mitigation (see Mitigation Measure NOI-1).

Table 3.10-14: Predicted Short-Term Construction Noise Levels—Alternative 2 Short-Term Projects

Location	Distance to Construction Area, feet	Estimated Noise Levels by Construction Activity,[1] dBA L_{eq}					Significance Threshold,[2] dBA L_{eq}
		Demolition	Site Preparation	Grading/ Excavation	Building Construction	Paving	
1—43rd Avenue and Point Lobos Avenue (off-site)	600	52.9	50.2	52.9	48.5	51.4	67.2
2—42nd Avenue and Clement Street (off-site)[3]	300	68.9	66.2	68.9	64.5	67.4	66.8
3—Front lawn area southeast of Building 203 (on-site)	100	78.5	75.8	78.5	74.1	76.9	67.1
4—Northwest on-site parking lot (on-site)	50	84.5	81.8	84.5	80.1	83.0	55.0

Notes:
dBA = A-weighted decibels; L_{eq} = equivalent noise level
[1] Construction equipment used for the various construction stages:
- Demolition: One loader, one concrete saw, and two backhoes
- Site Preparation: One grader and one backhoe
- Grading/Excavation: One loader, one concrete saw, and two backhoes
- Building Construction: One crane, two forklifts, ad two backhoes
- Paving: One paver, four cement mixers, one roller, and one backhoe

[2] Significance threshold is equal to 55 dBA L_{eq} (if the existing ambient noise level is less than 55 dBA L_{eq}) or the existing ambient noise level plus 5 dBA. See Table 3.10-4 for the existing ambient noise levels.
[3] Represent the off-site residence on the south side of Clement Street and 42nd Avenue.
Source: Data compiled by AECOM in 2014

Vibration

As described above, construction for the Alternative 2 short-term projects would be similar to construction for short-term projects of Alternative 1, except that the existing Buildings 1, 6, and 8 would not be retrofitted. Because Buildings 1, 6, and 8 are located at the interior of the Campus, the vibration levels at the off-site residential structures would be influenced by the construction activities nearest to the Campus's southern property line. Therefore, construction activities at the site would result in vibration levels of approximately 58 VdB at the nearest residential structures located to the south. The estimated vibration level would be well below the FTA-established thresholds for structural damage and human annoyance (80 VdB). Therefore, construction-related vibration impacts at the off-site sensitive receptors would be similar to impacts of Alternative 1 short-term projects and would be minor.

As under Alternative 1 short-term projects, construction under Alternative 2 short-term projects could occur within 50 feet of on-site receptors, including existing medical facilities with patient beds. The potential exists under Alternative 2 short-term projects for construction-related vibration to exceed 0.12 PPV (the threshold established by FTA for potential damage to older structures). Specifically, a vibratory roller (used for compaction) could generate anticipated vibration levels of up to 0.21 PPV at adjacent structures. In addition, the operation of

heavy construction equipment could interfere with the operation of existing medical equipment on-site if vibration levels were to exceed FTA's 65-VdB standard. On-site sensitive receptors could experience vibration levels up to 94 VdB at a distance of 25 feet (because of the vibratory roller, if used), which would be considered noticeable (i.e., exceeding 75 VdB). However, construction activities would be limited to daytime hours (7:30 a.m. to 6:00 p.m.) and would therefore not be anticipated to disturb sleeping patients. Because Buildings 1, 6, and 8 would not be retrofitted under the Alternative 2 short-term projects, potential vibration impacts at the on-site receptors (close to Buildings 1, 6, and 8) would be less than under the Alternative 1 short-term projects. Nevertheless, potential vibration impacts on on-site receptors would be short-term, noticeable, and potentially adverse.

As under Alternative 1, with Mitigation Measures NOI-2 and NOI-3, any potential damage to existing on-site structures or interference with on-site equipment caused by the construction of Alternative 2 short-term projects would be documented and repaired. In addition, construction activities would be limited to daytime hours (7:30 a.m. to 6:00 p.m.), minimizing the potential for sleep disturbance. Therefore, with implementation of Mitigation Measures NOI-2 and NOI-3, direct impacts (with respect to building damage and vibration-sensitive equipment use) of Alternative 2 short-term projects would be noticeable but would be short term and reduced to a minor level. No indirect impacts would occur. However, similar to Alternative 1, potential vibration impacts with respect to sleep disturbance would be potentially adverse if heavy construction equipment is operating within 60 feet of the affected building. This impact would be short term and would remain adverse even with mitigation.

Construction-related trucks traveling to and from the project site for Alternative 2 short-term projects would utilize the same routes as under short-term projects for Alternative 1. Although the total number of construction-related trucks would be slightly lower under Alternative 2 short-term projects than under Alternative 1 short-term projects, these trucks would generate similar groundborne vibration levels of 72 VdB or 0.016 in/sec PPV at the residences along the construction haul routes. This is because the groundborne vibration level is based on a single truck traveling down the street. The groundborne vibration generated by the construction-related truck traffic would be well below the most stringent significance threshold applicable for old building structures (0.12 in/sec) and the 80-VdB standard for human annoyance. Therefore, groundborne vibration impacts from the project's construction truck traffic at the off-site sensitive receptors would be minor under Alternative 2 short-term projects.

Operation

Noise

Operation of the Alternative 2 short-term projects would result in an increase in average daily vehicle trips in the vicinity of the SFVAMC Fort Miley Campus, as under Alternative 1 short-term projects. Therefore, mobile-source noise impacts of Alternative 2 short-term projects would be the same as those of Alternative 1 short-term projects, as provided in Table 3.10-12. The largest potential change in ambient roadway noise levels under the short-term project conditions would occur along 43rd Avenue between Clement Street and Point Lobos Avenue, and would be approximately 0.5 dBA L_{eq} (Table 3.10-12). The predicted noise increase would be less than the more stringent threshold of 3.0 dBA. As a result, the increase in daily vehicle operations at the Campus caused by implementing Alternative 2 short-term projects would not result in a noticeable increase in ambient traffic noise along local roadways. Therefore, this direct, operational mobile-source noise impact would be minor. No indirect impacts would occur.

Noise impacts of Alternative 2 short-term projects from other noise sources, including sirens and on-site stationary equipment, would be similar to the impacts of Alternative 1 short-term projects. As discussed for Alternative 1, the use of emergency sirens would continue to generate noise along the ambulance's routes. However, as under Alternative 1, implementing Alternative 2 short-term projects would not increase capacity for emergency transport. Therefore, noise generated by emergency sirens would not be anticipated to increase, and noise impacts from emergency sirens would be minor.

On-site stationary equipment (e.g., HVAC equipment) for Alternative 2 short-term projects would be similar to equipment for Alternative 1 short-term projects. This equipment would largely be located on the rooftops of proposed structures and would be shielded. The BMP described for Alternative 1 also would be implemented under Alternative 2 to maintain noise levels at the on-site patient rooms at 45 dBA L_{dn}. In addition, stationary equipment would comply with the San Francisco Noise Control Ordinance, as described for Alternative 1, at the off-site sensitive receptors. As under Alternative 1, noise impacts of Alternative 2 short-term projects would be minor.

Vibration

As with the short-term projects for Alternative 1, on-site equipment for Alternative 2 short-term projects would be appropriately installed, padded, and mounted to minimize the potential for perceivable on-site vibration during equipment operation. As a result, vibration impacts of Alternative 2 short-term projects would be minor. No indirect impacts would occur.

Long-Term Projects

Alternative 2 long-term projects at the existing SFVAMC Fort Miley Campus would be similar to Alternative 1 long-term projects, with one exception. Specifically, three additional existing buildings—Buildings 1, 6, and 8—would be retrofitted as part of Alternative 2 long-term projects (Table 2-4 and Figure 2-4). Alternative 2 long-term projects include construction of a total of 285,487 gsf, which is 115,487 gsf more than under Alternative 1 long-term projects, because Alternative 2 includes construction of Building 213 along with the seismic retrofit of Buildings 1, 6, and 8.

Construction

Noise

As described above, Alternative 2 long-term projects would be similar to the long-term project for Alternative 1, except that Buildings 1, 6, and 8 would be retrofitted together with the construction of Building 213 (Clinical Addition Building). The nearest off-site sensitive receptors would be approximately 350 feet from the construction area (Building 1) (see Figure 3.10-2). Based on the distance attenuation, the predicted construction noise level at the nearest off-site sensitive receptor would be 63.2 dBA L_{eq}. The predicted construction noise level at the nearest off-site sensitive receptor would be 1 dBA above the existing ambient noise level of approximately 62 dBA L_{eq}, which would be less than the 5-dBA significance threshold. Therefore, impacts on off-site receptors from on-site construction activities for Alternative 2 long-term projects would be minor.

However, similar to Alternative 1 long-term projects, on-site receptors, including the Community Living Center (Building 208), would be located approximately 50 feet from the nearest construction area (Building 213). Therefore, exterior construction noise levels could reach as high as 84.5 dBA L_{eq} at Building 208, thus exceeding existing L_{eq} noise levels by approximately 32 dBA (see Table 3.10-4, above). As a result, impacts would be short term and noticeable. The on-site childcare center would be approximately 350 feet from and shielded from construction of Alternative 2 long-term projects (specifically, the Building 8 seismic retrofit). Therefore, construction-related noise levels at the on-site childcare center would be approximately 53.2 dBA L_{eq}, which would be less than the 55-dBA significance threshold. As under the Alternative 1 long-term project, Section 01568, "Environmental Protection," of the VA Specifications would be implemented as part of the Alternative 2 long-term projects, but the potential exists for on-site receptors to be exposed to noise levels exceeding the noise standards established by EPA (identified above in Table 3.10-5). Therefore, impacts would be potentially adverse.

However, with Mitigation Measure NOI-1 and Management Measure NOI-1 as discussed above, VA would continually monitor construction noise levels and make provisions for receptors that may be exposed to noise levels exceeding EPA standards. Therefore, with implementation of Mitigation Measure NOI-1 and Management Measure NOI-1, construction-related noise impacts on on-site receptors from Alternative 2 long-term projects would be noticeable but short term and reduced to a minor level. No indirect impacts would occur.

The Alternative 2 long-term projects would generate off-site traffic from construction worker vehicles and haul and vendor trucks. Vendor and haul trucks would peak at 36 vehicles (72 trips) per day and construction worker vehicles would peak at 45 (90 trips) per day (VA, 2014). The highest hourly noise level from construction-related traffic for the Alternative 2 long-term projects along the construction traffic routes would be 58.2 dBA L_{eq}, approximately 0.1 dBA higher than under the Alternative 1 long-term project. The estimated construction traffic noise level would be less than the existing ambient noise in the project vicinity of 62 dBA (measured at Sites 1 and 2; see Table 3.10-4). Therefore, noise impacts associated with the project's off-site construction traffic during Alternative 2 long-term projects would be minor.

Vibration

As under the Alternative 1 long-term project, the facilities proposed under Alternative 2 long-term projects would be located within the existing SFVAMC Fort Miley Campus, away from the existing off-site residences. However, the construction activities at Building 1 would occur approximately 350 feet from the nearest off-site residential receptor, which is 50 feet closer than the activities for Building 213 under the Alternative 1 long-term project. Therefore, construction activities at the site would be slightly greater than those evaluated above for the Alternative 1 long-term project, which would result in vibration levels of approximately 60 VdB at the nearest residential structures located to the south. This would be well below the FTA-established thresholds for structural damage and human annoyance (80 VdB); therefore, impacts would be minor.

Construction could occur within 50 feet of existing on-site medical facilities, including patient beds. Similar to the impacts identified for the Alternative 1 long-term project, the potential exists for construction-related vibration to exceed 0.12 PPV (the threshold established by FTA for potential damage to older structures). Specifically, a vibratory roller (used for compaction) could generate anticipated vibration levels of up to 0.21 PPV at adjacent structures. In addition, the operation of heavy construction equipment could interfere with the operation of existing medical equipment on-site if vibration levels were to exceed FTA's standard of 65 VdB.

With respect to potential human annoyance as a result of construction vibration, on-site sensitive receptors could experience vibration levels up to 94 VdB at a distance of 25 feet, which would be considered noticeable (i.e., exceeding 75 VdB). However, construction activities would be limited to daytime hours (7:30 a.m. to 6:00 p.m.) and would not be anticipated to disturb sleeping patients. As a result, this impact would be short term, noticeable, and potentially adverse, as under the Alternative 1 long-term project.

With Mitigation Measures NOI-2 and NOI-3, any potential damage to existing on-site structures or interference with on-site equipment caused by the construction of long-term projects under Alternative 2 would be documented and repaired. In addition, construction activities would be limited to daytime hours (7:30 a.m. to 6:00 p.m.), minimizing the potential for sleep disturbance. As a result, the potential impact on on-site receptors, including structures, would be limited. Therefore, with implementation of Mitigation Measures NOI-2 and NOI-3, direct impacts of Alternative 2 long-term projects would be noticeable but would be short term and reduced to a minor level. No indirect impacts would occur.

As under the Alternative 1 long-term project, trucks traveling to and from the project site for Alternative 2 long-term projects would generate groundborne vibration along the designated construction truck routes. Therefore, existing residential buildings along the construction truck routes would be exposed to groundborne vibration up to 72 VdB or 0.016 in/sec PPV, as for the Alternative 1 long-term project. The groundborne vibration generated by the project's construction-related truck traffic would be well below the most stringent significance threshold applicable for old building structures (0.12 in/sec) and the 80-VdB standard for human annoyance. Therefore, groundborne vibration impacts at the off-site receptors from the construction truck traffic for Alternative 2 long-term projects would be minor.

Operation

Noise

Operation of the Alternative 2 long-term projects would result in an increase in average daily vehicle trips in the vicinity of the SFVAMC Fort Miley Campus, as under the Alternative 1 long-term project. Therefore, mobile-source noise impacts of Alternative 2 long-term projects would be the same as those of the Alternative 1 long-term project, as provided in Table 3.10-13. As shown in Table 3.10-13, the largest potential change in ambient roadway noise levels under the long-term project conditions would occur at 42nd Avenue between Clement Street and Point Lobos Avenue and would be approximately 1.9 dBA L_{dn} above existing conditions (Table 3.10-13). The predicted noise increase would be less than the more stringent threshold of 3.0 dBA. Therefore, operational mobile-source noise impacts of Alternative 2 long-term projects would be minor.

Noise impacts of Alternative 2 long-term projects from other noise sources, including sirens and on-site stationary equipment, would be similar to those of the Alternative 1 long-term project. As discussed for the Alternative 1 long-term project, the use of emergency sirens would continue to generate noise along the ambulance's routes. However, as under the Alternative 1 long-term project, implementation of the Alternative 2 long-term projects would not increase capacity for emergency transport. Therefore, noise generated by emergency sirens would not be anticipated to increase. Noise impacts from emergency sirens would be minor.

On-site stationary equipment (e.g., HVAC equipment) for the Alternative 2 long-term projects would be similar to equipment for the Alternative 1 long-term project. This equipment would largely be located on the rooftops of

proposed structures and would be shielded. The BMP described for the Alternative 1 long-term project would be implemented under Alternative 2 long-term projects to maintain noise levels at the on-site patient rooms at 45 dBA L_{dn}. In addition, stationary equipment would comply with the San Francisco Noise Control Ordinance, as described for the Alternative 1 long-term project, at the off-site sensitive receptors. As under the Alternative 1 long-term project, noise impacts of the Alternative 2 long-term projects would be minor.

Vibration

As under the Alternative 1 long-term project, on-site equipment for Alternative 2 long-term projects would be appropriately installed, padded, and mounted to minimize the potential for perceivable on-site vibration during equipment operation. As a result, vibration impacts of Alternative 2 long-term projects would be minor. No indirect impacts would occur.

Alternative 3: SFVAMC Fort Miley Campus Plus Mission Bay Campus Alternative

Short-Term Projects

Construction and Operation

Alternative 3 short-term projects (during both construction and operation) would be the same as Alternative 1 short-term projects (see Table 2-1 and Figure 2-1). Therefore, the impacts of Alternative 3 short-term projects would be the same as the impacts of Alternative 1 short-term projects. These impacts would range in significance from minor to adverse with mitigation (Mitigation Measures NOI-1, NOI-2, and NOI-3).

Long-Term Projects

Alternative 3 long-term projects (during both construction and operation) would be similar to the Alternative 1 long-term project, except that the ambulatory care center and an associated parking garage would be located at the potential new SFVAMC Mission Bay Campus under Alternative 3 (see Table 2-5 and Figure 2-5).

Construction

Noise

Alternative 3 long-term projects would involve constructing facilities at a potential new SFVAMC Mission Bay Campus. The distance between construction activities for the potential new Campus and nearby off-site receptors is unknown at this time. The types of construction activities that would be required are also unknown. If, for example, pile-driving were determined to be necessary at the potential new Campus, noise levels would equate to 88 dBA L_{eq} at 100 feet, which would exceed the threshold established by the City and County of San Francisco for construction noise. Implementing Mitigation Measure NOI-1 and Management Measure NOI-1 would reduce potential noise impacts on receptors adjacent to the potential new Campus. Project-level analysis would be required once a specific location for potential new Campus is determined. It is anticipated that implementing Mitigation Measure NOI-1 and Management Measure NOI-1 would help to reduce this impact to a minor level.

Vibration

Alternative 3 long-term projects would involve constructing facilities at a potential new SFVAMC Mission Bay Campus. The distance between construction activities for the potential new Campus and nearby off-site receptors is unknown at this time. The types of construction activities that would be required are also unknown. Nonetheless, construction activities would be limited to daytime hours (7:30 a.m. to 6:00 p.m.), which would minimize the potential for sleep disturbance and human annoyance. In addition, with implementation of Mitigation Measures NOI-2 and NOI-3, the potential impact on on-site receptors, including structures, would be limited. Direct impacts would be noticeable but would be short term and would be reduced to a minor level. No indirect impacts would occur.

Operation

Noise

Mobile-Source Noise

Operation of the potential new SFVAMC Mission Bay Campus under Alternative 3 long-term projects would result in an increase in average daily vehicle trips in the Mission Bay area. Because the location of the potential new Campus has yet to be determined, a formal determination cannot be made at this time regarding the increase in roadway noise that could result from the potential new Campus's operation. As a result, the off-site medical facility would be subject to separate environmental review, as plans for the facility are developed. However, with respect to roadway traffic noise impacts, a doubling of the existing traffic volume would result in a 3-dBA increase (i.e., significance threshold). The potential new Mission Bay Campus would generate approximately 184 vehicle trips during the weekday p.m. peak hour (VA, 2014). Based on a conservative assumption that the Mission Bay Campus would be located in an area with small roadways (low existing traffic) as at the Fort Miley Campus, the increase in traffic noise in the area would likely be less than 2.0 dBA. Therefore, the noise impacts associated with roadway traffic of the potential new Mission Bay Campus under Alternative 3 long-term projects would be minor.

Siren Noise

Like Alternative 1 long-term projects, Alternative 3 long-term projects would not alter the manner in which emergency vehicles access SFVAMC facilities. The potential new SFVAMC Mission Bay Campus would not be anticipated to require or receive emergency medical services. Furthermore, none of the long-term projects for Alternative 3 would involve creating new emergency services at the potential new Campus. The use of emergency medical services is determined based on need. Therefore, implementing Alternative 3 long-term projects would not be anticipated to increase the potential for siren noise in the Mission Bay area. It would not increase capacity for accepting emergency transport or result in a substantial increase in local population (see Section 3.11, "Socioeconomics and Environmental Justice") that could reasonably be considered to have a secondary effect on the need for emergency services. Therefore, this direct impact would be minor. No indirect impacts would occur.

Stationary Source

Alternative 3 long-term projects would involve constructing facilities at a potential new SFVAMC Mission Bay Campus. With respect to off-site receptors in the Mission Bay area, the proposed stationary-source equipment for

the potential new Campus, which would be largely limited to HVAC and emergency generator equipment, could be located within 50 feet of existing residences, depending on the proposed site location. The exact location of HVAC equipment and emergency generators has yet to be determined. HVAC equipment is typically mounted on rooftops or mechanical rooms, while emergency generators may be located on the rooftop, loading dock area, or mechanical room. The lack of detailed project information precludes a quantitative analysis of proposed new stationary-source equipment at this time. However, it is reasonable to assume that operation of this stationary equipment could result in an exceedance of the City's noise limit of 8 dB above the ambient noise level at the property line, and in a substantial increase in ambient noise levels above existing levels near the off-site portion of Alternative 3. This is dependent on the need for HVAC equipment to properly filter and control the building climate. In this case, impacts would be potentially adverse.

> **Mitigation Measure NOI-4: Conduct a Site-Specific Noise Study to Inform Design of Stationary Noise Sources for the Potential New SFVAMC Mission Bay Campus**
>
> *VA will retain the services of a qualified acoustical consultant to conduct an additional site-specific noise study to evaluate and establish the appropriate ambient noise levels at the proposed off-site medical research facility for a detailed HVAC and emergency-generator noise reduction analysis. The recommendations of the acoustical consultant will include specific equipment design and operations measures to reduce HVAC and emergency-generator noise to acceptable levels for exterior and interior noise levels as specified in the San Francisco Noise Control Ordinance.*

With Mitigation Measure NOI-4, the design and installation of stationary-source equipment would include an evaluation and implementation of measures related to controlling noise from these sources to such an extent that noise levels at nearby residences would not exceed EPA or San Francisco Noise Control Ordinance standards. Therefore, with implementation of Mitigation Measure NOI-4, this direct impact would be reduced to a minor level. No indirect impacts would occur.

Vibration

In general, the potential for operational vibration impacts is limited to areas subject to substantial heavy truck traffic or rail operations. However, neither source of vibration would be present at the potential new SFVAMC Mission Bay Campus as a result of implementation of Alternative 3 long-term projects. Furthermore, on-site equipment would be appropriately installed, padded, and mounted so as to minimize the potential for perceivable on-site vibration during equipment operation. Therefore, operational vibration impacts would be minor. No indirect impacts would occur.

Alternative 4: No Action Alternative

Construction

Under Alternative 4, there would be no new construction and no retrofitting of existing buildings at the existing SFVAMC Fort Miley Campus. Thus, no construction-related noise or vibration would result, and no direct or indirect impacts on- and off-site receptors would occur.

Operation

Noise

Under Alternative 4, no new development would occur at the existing SFVAMC Fort Miley Campus; therefore, no additional noise from stationary sources or emergency transport sirens would be anticipated. With respect to ambient roadway noise levels, traffic to and from the Campus would be anticipated to incrementally increase as regional population increases. This would have a secondary effect of incrementally increasing traffic volumes on local roadways. Noise levels would increase by approximately 0.2 dBA L_{dn} under short-term (2020) conditions and 0.4 dBA L_{dn} under long-term (2027) conditions (Table 3.10-15). Also as shown in Table 3.10-15, roadway noise levels along the five segments adjacent to the Campus would increase (even without implementation of the LRDP) by less than 0.5 dBA L_{dn} by 2027, which would not exceed the 3.0-dBA thresholds identified above for incremental roadway noise-level increases. As a result, direct operational noise impacts from mobile and stationary sources and sirens would be minor. No indirect impacts would occur.

Table 3.10-15: Predicted Short-Term Future Traffic Noise Levels (Alternative 4)

Roadway	Segment		L_{dn} at 50 Feet, dBA						
	From	To	Existing	Short-Term (2020) Plus Alt. 4	Net Change	Substantial Increase?	Long-Term (2027) Plus Alt. 4	Net Change	Substantial Increase?
Clement Street	43rd Avenue	42nd Avenue	62.0	62.2	0.2	No	62.4	0.4	No
Clement Street	42nd Avenue	34th Avenue	63.3	63.5	0.2	No	63.6	0.3	No
Clement Street	43rd Avenue	48th Avenue	60.7	60.9	0.2	No	61.1	0.4	No
43rd Avenue	Clement Street	Point Lobos Avenue	60.7	60.9	0.2	No	61.0	0.3	No
42nd Avenue	Clement Street	Point Lobos Avenue	57.5	57.7	0.2	No	57.9	0.4	No

Notes:
dB = (A-weighted) decibels; L_{dn} = day-night average noise level
Traffic noise levels are predicted at a standard distance of 50 feet from the roadway centerline and do not account for shielding from existing noise barriers or intervening structures. Traffic noise levels may vary depending on actual setback distances and localized shielding.
Source: Data modeled by AECOM in 2012

Vibration

In general, under Alternative 4, the potential for operational vibration impacts is limited to areas subject to substantial heavy truck traffic or rail operations. However, neither source of vibration would be present as part of operation of the existing SFVAMC Fort Miley Campus. Furthermore, no additional on-site equipment that could generate vibration during its operation would be installed and operated under Alternative 4. Therefore, no direct or indirect operational vibration impact would occur.

3.10.4 References

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3.11 SOCIOECONOMICS AND ENVIRONMENTAL JUSTICE

This section describes the existing physical affected environment and regulatory framework related to population, housing, employment, income, and ethnicity, and discusses the potential effects of the EIS Alternatives related to socioeconomics. In addition to general socioeconomic information, this section includes discussions about environmental justice and risks to children's health and safety.

3.11.1 Affected Environment

This section presents regional and local demographic and economic information as it relates to the existing SFVAMC Fort Miley Campus and the Mission Bay area. The information relating to population, housing, and employment for the region and local jurisdiction (City and County of San Francisco) is derived from the 2010 U.S. Census, which is the most recent comprehensive source of data, as well as projections by the California Department of Finance (DOF) and Association of Bay Area Governments (ABAG). In addition, information related to minority, low-income, and low-English-language-proficiency populations within 0.25 mile of the project site is derived from the 2010 U.S. Census and the 2008–2012 American Community Survey 5-year estimates (U.S. Census Bureau, 2008–2012).

Population

Regional and Local

Approximately 7,341,700 persons resided in the greater San Francisco Bay Area in 2010, an increase of 557,938 persons since 2000 (Table 3.11-1). The Bay Area is estimated to experience an increase in total population of 1,377,600 (19 percent) between 2010 and 2030 (Table 3.11-1).

Table 3.11-1: Population of the San Francisco Bay Area and of the City and County of San Francisco

	2000	2010	2020	2030	Annual Average Growth	
					Previous (2000–2010)	Projected (2010–2030)
San Francisco Bay Area	6,783,762	7,341,700	8,018,000	8,719,300	55,794	68,880
City and County of San Francisco	776,733	805,235	852,788	877,847	2,851	3,631

Sources: U.S. Census Bureau, 2000 and 2010; DOF, 2013a; ABAG, 2009

San Francisco's population grew steadily from before the turn of the 20th century until World War II. Between 1890 and 1950, the city grew by an average of approximately 80,000 residents per decade; the Great Depression in the 1930s was the only period when the population level stagnated. During the latter half of the 20th century, San Francisco's population experienced modest declines (1950–1980) and moderate growth (1990–2000), resulting in a population of approximately 776,000 in 2000, nearly the same as in the 1950s.

Approximately 805,235 persons resided in San Francisco in 2010, an increase of 28,502 persons since 2000 (Table 3.11-1). San Francisco is estimated to experience an increase in total population of 72,612 (8.3 percent) between 2010 and 2030 (Table 3.11-1).

Existing SFVAMC Fort Miley Campus

The existing SFVAMC Fort Miley Campus is located within Census Tract 9802 (U.S. Census Bureau, 2010). The Campus does not have any permanent population that lives on-site, because there are no permanent housing units on the Campus. However, there is a temporary (inpatient/outpatient) population total of approximately 1,500 persons per shift per day on the Campus.

Mission Bay Area

The Mission Bay area encompasses Census Tracts 8909, 614, 615, 227.04, 607, 229.03, 228.02, 227.02, 226, 180, and 177 (U.S. Census Bureau, 2010). Because no SFVAMC campus currently operates in the Mission Bay area, this area does not have an existing population associated with SFVAMC facilities.

Housing

Regional and Local

The greater San Francisco Bay Area had approximately 2,667,340 housing units in 2010, an increase of 201,320 units since 2000 (Table 3.11-2). The Bay Area is estimated to experience an increase in total housing units of 504,600 (19 percent) between 2010 and 2030 (Table 3.11-2). San Francisco had approximately 358,380 housing units in 2010, an increase of 30,415 units since 2000 (Table 3.11-2). San Francisco is estimated to lose 7,812 housing units (2.1 percent) between 2010 and 2030 (Table 3.11-2).

Table 3.11-2: Housing Units in the San Francisco Bay Area and in the City and County of San Francisco

	2000	2010	2020	2030	Annual Average Growth	
					Previous (2000–2010)	Projected (2010–2030)
San Francisco Bay Area	2,466,020	2,667,340	2,911,000	3,171,940	20,132	25,230
City and County of San Francisco	346,527	376,942	361,785	369,130	3,042	-261

Sources: U.S. Census Bureau, 2000 and 2010; DOF, 2013b; ABAG, 2009

Existing SFVAMC Fort Miley Campus

Hoptel facilities at the existing SFVAMC Fort Miley Campus provide temporary overnight housing for Veterans, and the Community Living Center provides short-term care to restore Veterans to their highest levels of well-being. However, there are no long-term or permanent housing units on the existing Campus.

Mission Bay Area

Because no SFVAMC campus currently operates in the Mission Bay area, this area does not have any existing housing associated with SFVAMC facilities.

Employment

Regional and Local

The greater San Francisco Bay Area had approximately 3,475,840 jobs in 2010, a decrease of 277,620 jobs since 2000 (Table 3.11-3). The Bay Area is estimated to experience an increase in total jobs of 1,262,890 (36 percent) between 2010 and 2030 (Table 3.11-2).

Table 3.11-3: Employment in the San Francisco Bay Area and in the City and County of San Francisco

	2000	2010	2020	2030	Annual Average Growth	
					Previous (2000–2010)	Projected (2010–2030)
San Francisco Bay Area	3,753,460	3,475,840	4,040,690	4,738,730	-27,762	63,145
City and County of San Francisco	642,500	568,730	647,190	748,100	-7,377	8,969

Sources: ABAG, 2009

In 2000, most of San Francisco had an unemployment rate of only 2–4 percent (SF Public Health, 2011). However, San Francisco had approximately 568,730 jobs in 2010, a decrease of 73,770 jobs since 2000 (Table 3.11-2). San Francisco is estimated to experience an increase in total jobs of 179,370 (32 percent) between 2010 and 2030 (Table 3.11-3).

Existing SFVAMC Fort Miley Campus

The existing Fort Miley Campus has a total daily-employment population of approximately 3,500 persons per day (SFVAMC, 2012). It is assumed that estimates of the daily-employment population include SFVAMC employees as well as visiting employees from the University of California, San Francisco Medical Center and other hospital-affiliated employees.

Mission Bay Area

Because no SFVAMC campus currently operates in the Mission Bay area, this area does not have any existing employment associated with SFVAMC facilities.

Low-Income Population

The term “low-income” is defined in accordance with Executive Order 12898, “Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations” (see Section 3.11.2, “Regulatory

Framework") and agency guidance as a person with household income at or below the poverty guidelines of the U.S. Department of Health and Human Services. According to these guidelines, a household of four would be living under the poverty line if its 2012 income were $23,050 or less (U.S. Department of Health and Human Services, 2012). For purposes of this analysis, data for census tracts within 0.25 mile of the existing SFVAMC Fort Miley Campus and potential new SFVAMC Mission Bay Campus were compared to the San Francisco Countywide (Countywide) figures. Countywide figures include data for the entire City and County of San Francisco.

Existing SFVAMC Fort Miley Campus Area

Table 3.11-4 shows the population living below the poverty level by census tract within 0.25 mile of the SFVAMC Fort Miley Campus. Based on 2008–2012 American Community Survey estimates (U.S. Census Bureau, 2012), the percentage of households living below the poverty level in the City and County of San Francisco was 13 percent. All four census tracts within 0.25 mile of the existing SFVAMC Fort Miley Campus (i.e., the study area) have a percentage of the population living under the poverty line that is not "meaningfully greater" than the percentage for the City and County of San Francisco. As defined by the Council on Environmental Quality (CEQ) (1997), "meaningfully greater" is assumed to be more than 10 percentage points than the Countywide percentages of minority or low-income populations. Census Tract 9802 has the highest percentage of the population living below the poverty line at 16 percent, which is 3 percent greater than the Countywide figure.

Table 3.11-4: Population Living Below the Poverty Line, by Census Tract within 0.25 Mile of the Existing SFVAMC Fort Miley Campus, 2008–2012

Geography	Population Below the Poverty Line (%)
Census Tract 478.02	6%
Census Tract 479.01	5%
Census Tract 479.02	12%
Census Tract 9802	16%
City and County of San Francisco	13%

Sources: U.S. Census Bureau, 2008–2012

Mission Bay Area

Three census tracts in the vicinity of the Mission Bay area have a percentage of households living below the poverty line at least 10 percentage points higher than the Countywide average (Table 3.11-5). In Census Tracts 178.02, 178.01, and 179.02, 24 percent, 30 percent, and 37 percent of the population, respectively, live below the poverty line.

Table 3.11-5: Population Living Below the Poverty Line, by Census Tract within 0.25 Mile of the Potential New SFVAMC Mission Bay Area Campus, 2008–2012

Geography	Population Below the Poverty Line (%)
Census Tract 9809	13%
Census Tract 614	17%
Census Tract 615	9%
Census Tract 227.04	4%
Census Tract 178.02	24%
Census Tract 178.01	30%
Census Tract 607	11%
Census Tract 251	8%
Census Tract 229.03	18%
Census Tract 229.02	18%
Census Tract 228.02	19%
Census Tract 228.03	12%
Census Tract 228.01	14%
Census Tract 227.02	5%
Census Tract 226	3%
Census Tract 180	18%
Census Tract 179.02	37%
Census Tract 177	11%
City and County of San Francisco	13%

Sources: U.S. Census Bureau, 2008–2012

Minority Population

As defined in Executive Order 12898 and subsequent agency guidance, the term “minority” includes any individual who is Native American or Native Alaskan, Asian or Pacific Islander (including Native Hawaiian), Black/African American (not of Hispanic origin), or Hispanic/Latino.

Existing SFVAMC Fort Miley Campus Area

Table 3.11-6 shows the percentage of minority populations by census tract in the study area. Three census tracts adjacent to the existing SFVAMC Fort Miley Campus have minority populations greater than 50 percent.

Table 3.11-6: Percentage of Minorities by Census Tract within 0.25 Mile of the Existing SFVAMC Fort Miley Campus, 2010

Geography	Minority (%)
Census Tract 478.02	62%
Census Tract 479.01	58%
Census Tract 479.02	56%
Census Tract 9802	33%
City and County of San Francisco	58%

Sources: U.S. Census Bureau, 2010

Mission Bay Area

As shown in Table 3.11-7, 12 census tracts in the study area for the Mission Bay area have minority populations greater than 50 percent.

Table 3.11-7: Percentage of Minorities by Census Tract within 0.25 Mile of the Potential New SFVAMC Mission Bay Campus, 2010

Geography	Minority (%)
Census Tract 9809	47%
Census Tract 614	54%
Census Tract 615	45%
Census Tract 227.04	28%
Census Tract 178.02	53%
Census Tract 178.01	74%
Census Tract 607	55%
Census Tract 251	46%
Census Tract 229.03	69%
Census Tract 229.02	68%
Census Tract 228.02	60%
Census Tract 228.03	67%
Census Tract 228.01	61%
Census Tract 227.02	30%
Census Tract 226	31%
Census Tract 180	57%
Census Tract 179.02	73%
Census Tract 177	57%
City and County of San Francisco	58%

Sources: U.S. Census Bureau, 2010

Low-English-Language-Proficiency Population

Three census questions are used to capture those who speak a language other than English at home. The analysis below focuses on those who stated that they speak a language other than English at home and consider their English language proficiency to be less than “very well.”

Existing SFVAMC Fort Miley Campus Area

As shown in Table 3.11-8, no census tracts within 0.25 mile of the existing SFVAMC Fort Miley Campus have a percentage of the population with less than “very well” English language proficiency that is meaningfully greater than the Countywide average of 23 percent.

Table 3.11-8: Percentage of Population with Less than "Very Well" English Language Proficiency by Census Tract within 0.25 Mile of the Existing SFVAMC Fort Miley Campus, 2008–2012

Geography	Less than "Very Well" (%)
Census Tract 478.02	23%
Census Tract 479.01	27%
Census Tract 479.02	25%
Census Tract 9802	22%
City and County of San Francisco	23%

Sources: U.S. Census Bureau, 2008–2012

Mission Bay Area

Census Tracts 178.01 (56 percent) and 228.03 (35 percent) have substantially larger percentages of their populations with less than "very well" English language proficiency, compared to the Countywide average of 23 percent (Table 3.11-9). The remainder of the census tracts are split between those similar to (~17–28 percent) and those markedly less than (~0–9 percent) the Countywide average.

Table 3.11-9: Percentage of Population with Less than "Very Well" English Language Proficiency by Census Tract within 0.25 Mile of the Potential New Mission Bay Campus, 2008–2012

Geography	Less than "Very Well" (%)
Census Tract 9809	0%
Census Tract 614	9%
Census Tract 615	14%
Census Tract 227.04	4%
Census Tract 178.02	14%
Census Tract 178.01	56%
Census Tract 607	22%
Census Tract 251	8%
Census Tract 229.03	28%
Census Tract 229.02	28%
Census Tract 228.02	17%
Census Tract 228.03	35%
Census Tract 228.01	18%
Census Tract 227.02	6%
Census Tract 226	4%
Census Tract 180	14%
Census Tract 179.02	8%
Census Tract 177	24%
City and County of San Francisco	23%

Sources: U.S. Census Bureau, 2008–2012

Child Population

Existing SFVAMC Fort Miley Campus

Table 3.11-10 shows the number and percentage of children by census tract within 0.25 mile of the existing SFVAMC Fort Miley Campus. Two of the four census tracts in the vicinity of the existing Campus (Census Tracts 479.01 and 478.02) have populations of children equal to or greater than 13 percent. In these census tracts, the populations of children range from 14 to 17 percent of the total population.

Table 3.11-10: Population of Children by Census Tract within 0.25 Mile of the Existing SFVAMC Fort Miley Campus, 2008–2012

Geography	Total Population	Population of Children (Ages 0-17)	Percentage Children
Census Tract 478.02	4,140	690	17%
Census Tract 479.01	6,775	921	14%
Census Tract 479.02	3,813	371	10%
Census Tract 9802	308	8	3%
City and County of San Francisco	807,755	108,353	13%

Sources: U.S. Census Bureau, 2008–2012
Note: Children are defined as any person 17 years or younger.

Mission Bay Area

Table 3.11-11 shows the number and percentage of children by census tract within 0.25 mile of the potential new SFVAMC Mission Bay Campus. Nine of the 18 census tracts in the vicinity of the project boundary for the Mission Bay area have populations of children equal to or greater than 13 percent, which is the overall percentage of children in the City and County of San Francisco.

3.11.2 Regulatory Framework

Title VI of the Civil Rights Act of 1964

Title VI of the Civil Rights Act of 1964, 42 U.S. Code 2000d et seq., and agency implementing regulations prohibit recipients of federal financial assistance from taking actions that discriminate on the basis of race, sex, color, national origin, or religion. If an agency is aware that a recipient of federal funds may be taking action that is causing a racially discriminatory impact, the agency should consider using Title VI as a means to prevent or eliminate that discrimination.

Executive Order 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations"

Executive Order 12898 requires federal agencies to make achieving environmental justice part of their missions by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of their programs, policies, and activities on minority populations and low-income populations.

Table 3.11-11: Population of Children by Census Tract within 0.25 Mile of the Potential New SFVAMC Mission Bay Campus, 2008–2012

Geography	Total Population	Population of Children (Ages 0–17)	Percentage Children
Census Tract 9809	337	0	0%
Census Tract 614	5,301	951	18%
Census Tract 615	11,083	864	8%
Census Tract 227.04	3,095	257	8%
Census Tract 178.02	3,922	279	7%
Census Tract 178.01	3,034	100	3%
Census Tract 607	8,372	652	8%
Census Tract 251	3,198	507	16%
Census Tract 229.03	2,985	400	13%
Census Tract 229.02	2,507	430	17%
Census Tract 228.02	2,072	272	13%
Census Tract 228.03	4,876	627	13%
Census Tract 228.01	4,468	729	16%
Census Tract 227.02	2,167	285	13%
Census Tract 226	1,599	136	9%
Census Tract 180	3,615	185	5%
Census Tract 179.02	2,501	367	15%
Census Tract 177	1,549	141	9%
City and County of San Francisco	807,755	108,353	13%

Note:
Children are defined as any person 17 years or younger.
Sources: U.S. Census Bureau, 2008–2012

These provisions also apply fully to programs involving Native Americans. In addition, Executive Order 12898 requires federal agencies to conduct their programs, policies, and activities in a manner that ensures that such programs, policies, and activities do not have the effect of excluding persons (including populations) from participation in, denying persons (including populations) the benefits of, or subjecting persons (including populations) to discrimination under such programs, policies, and activities because of their race, color, or national origin.

Executive Order 12898 particularly emphasizes four issues that are pertinent to the NEPA process:

1. The order requires the development of agency-specific environmental justice strategies. Thus, agencies have developed and should periodically revise their strategies that provide guidance concerning the types of programs, policies, and activities that may, or historically have, raised environmental justice concerns at the particular agency. This guidance may suggest possible approaches to addressing such concerns in the agency's NEPA analyses, as appropriate.

2. The order recognizes the importance of research, data collection, and analysis, particularly with respect to multiple and cumulative exposures to environmental hazards for low-income populations, minority populations, and Indian tribes. Thus, data on these exposure issues should be incorporated into NEPA analyses as appropriate.

3. The order provides for agencies to collect, maintain, and analyze information on patterns of subsistence consumption of fish, vegetation, or wildlife. Where an agency action may affect fish, vegetation, or wildlife, that agency action may also affect subsistence patterns of consumption and indicate the potential for disproportionately high and adverse human health or environmental effects on low-income populations, minority populations, and Indian tribes.

4. The order requires agencies to work to ensure effective public participation and access to information. Thus, in its NEPA process and through other mechanisms, each federal agency must translate crucial public documents, notices, and hearings relating to human health or the environment for the benefit of limited-English-speaking populations, wherever doing so is practicable and appropriate. In addition, each agency should work to ensure that public documents, notices, and hearings relating to human health or the environment are concise, understandable, and readily accessible to the public.

Executive Order 13045, "Protection of Children from Environmental Health Risks and Safety Risks"

A growing body of scientific knowledge demonstrates that children may suffer disproportionately from environmental health risks and safety risks. These risks arise because children's neurological, immunological, digestive, and other bodily systems are still developing; children eat more food, drink more fluids, and breathe more air in proportion to their body weight than adults; children's size and weight may diminish their protection from standard safety features; and children's behavior patterns may make them more susceptible to accidents because they are less able to protect themselves. Therefore, to the extent permitted by law and appropriate, Executive Order 13045 requires federal agencies to make it a high priority to identify and assess environmental health risks and safety risks that may disproportionately affect children. Federal agencies also must ensure that their policies, programs, activities, and standards address disproportionate risks to children that result from environmental health risks or safety risks.

3.11.3 Environmental Consequences

Significance Criteria

A NEPA evaluation must consider the context and intensity of the environmental effects that would be caused by, or result from, the EIS Alternatives. CEQ's national guidance suggests that federal agencies consider opportunities to reduce socioeconomic impacts caused by proposed federal actions and address these issues in their agency NEPA procedures. According to CEQ's draft national guidance, there are two main considerations when addressing socioeconomics in environmental documentation: (1) the impacts of a proposed action or alternatives on local or regional socioeconomic conditions, and (2) the environmental justice impacts of a proposed action or alternatives. Therefore, this analysis discloses both the contribution of the EIS Alternatives to socioeconomic effects and the environmental justice effects that could result from implementing the EIS Alternatives.

An Alternative analyzed in this EIS is considered to result in an adverse impact related to socioeconomics if it would:

- result in an economic loss for affected communities or surrounding area;
- result in displacement of populations, residences, and/or businesses;
- result in impacts on the availability of housing or accommodation;
- cause the inducement of growth;
- displace or modify existing activities as a result of the nature and duration of construction and operational activities; or
- cause any diversion or temporary suspension of access associated with a proposed action.

The thresholds below were developed based on VA's status as a signatory agency for Executive Order 12898. An Alternative analyzed in this EIS is considered to result in an adverse impact related to environmental justice if it would:

- result in disproportionately high and adverse human health or environmental effects of a proposed agency action on low-income, minority, or low-English-language-proficiency populations;
- result in health effects, which may be measured in risks and rates, that are adverse (i.e., bodily impairment, infirmity, illness, or death) or above generally accepted norms;
- result in a risk or rate of hazard exposure by minority, low-income, or low-English-language-proficiency populations that could result in an environmental hazard that is adverse and appreciably exceeds or is likely to appreciably exceed the risk or rate to the general population or other appropriate comparison group; or
- result in cumulative or multiple adverse exposures by minority, low-income, or low-English-language-proficiency populations that could result in environmental hazards where health effects already occur in such populations.

Assessment Methods

General socioeconomic impacts resulting from a proposed action can lead to an economic loss for affected communities or the surrounding area. "Socioeconomic impacts" refer to the basic attributes and resources associated with the human environment, with particular emphasis on population, employment, and housing. Potential impacts can be related to the displacement of populations, residences, and/or businesses; effects on the availability of housing or accommodation; and the inducement of growth. Socioeconomic impacts can also stem from the nature and duration of construction and operational activities that, in turn, may lead to displacement or modification of existing activities. They can also be caused by any diversion or temporary suspension of access associated with a proposed action.

Because the EIS Alternatives would not involve adding or removing permanent housing, this analysis does not address impacts related to the availability of housing. However, daily-employment population totals for the proposed EIS Alternatives were estimated by VA and information provided in the *San Francisco Transportation*

Impact Analysis Guidelines was considered. The data presented in Table C-1 of the guidelines indicate that the employee density for land uses with travel demand characteristics is similar to that of the existing SFVAMC Fort Miley Campus, which is a factor of 276 square feet of space per employee (SF Planning, 2002). The square footage for each proposed land use was divided by the employee density value to determine the daily employment population.

"Environmental justice impacts" refer to disproportionately high and adverse human health or environmental effects of a proposed agency action on low-income, minority, or low-English-language-proficiency populations. When determining whether human health effects are disproportionately high and adverse, agencies are to consider all of the following factors to the extent practicable:

(a) Whether the health effects, which may be measured in risks and rates, are significant or above generally accepted norms. Adverse health effects may include bodily impairment, infirmity, illness, or death.

(b) Whether the risk or rate of hazard exposure by a minority population, low-income population, or Native American tribe to an environmental hazard is significant and appreciably exceeds or is likely to appreciably exceed the risk or rate to the general population or other appropriate comparison group.

(c) Whether health effects occur in a minority population, low-income population, or Native American tribe affected by cumulative or multiple adverse exposures from environmental hazards.

When determining whether environmental effects are disproportionately high and adverse, agencies are to consider all of the following factors to the extent practicable:

(a) Whether there is or will be an impact on the natural or physical environment that significantly and adversely affects a minority, low-income, or low-English-language-proficiency population. Such effects may include ecological, cultural, human health, economic, or social impacts on minority, low-income, or low-English-language-proficiency populations when those impacts are interrelated to impacts on the natural or physical environment.

(b) Whether environmental effects are significant and are or may be having an adverse impact on minority, low-income, or low-English-language-proficiency populations that appreciably exceeds or is likely to appreciably exceed those on the general population or other appropriate comparison group.

(c) Whether the environmental effects occur or would occur in a minority, low-income, or low-English-language-proficiency populations affected by cumulative or multiple adverse exposures from environmental hazards.

As defined by CEQ (1997), "meaningfully greater" is assumed to be more than 10 percentage points greater than the Countywide percentage of households living below the poverty line (13 percent) and low English language proficiency (23.3 percent). Based on the 2008–2012 American Community Survey estimates (U.S. Census Bureau, 2012), census tracts that have a "meaningfully greater" percentage of the population at or below the poverty line or a "meaningfully greater" percentage of the population with less than "very well" English language proficiency compared to the City and County of San Francisco are considered environmental justice communities. In addition, environmental justice communities are identified when the minority percentage in a census block is greater than 50 percent. If any of these criteria are exceeded, an environmental justice community is present.

Based on this method of assessing what areas are considered environmental justice communities, the following are relevant environmental justice communities located within 0.25 mile of the project site (Figures 3.11-1 and 3.11-2):

- Three low-income populations are located near the potential SFVAMC Mission Bay Campus area.
  - In Census Tracts 178.02, 178.01, and 179.02, 24 percent, 30 percent, and 37 percent of the population, respectively, are living below the poverty line. Because the percentages of households in these census tracts that are living below the poverty line is at least 10 percent greater than the Countywide percentage, these census tracts have a meaningfully greater percentage of their population living under the poverty line than the Countywide average of 13 percent. Therefore, these census tracts are environmental justice communities.

- Fifteen minority populations are located near the existing SFVAMC Fort Miley Campus and the potential new SFVAMC Mission Bay Campus.
  - Fifteen census tracts in the study area for the existing SFVAMC Fort Miley Campus and the potential new Mission Bay Campus have minority populations greater than 50 percent: Census Tracts 478.02, 479.01, 479.02, 614, 178.02, 178.01, 607, 229.03, 229.02, 228.02, 228.03, 228.01, 180, 179.02, and 177. These census tracts are therefore considered environmental justice communities.

- Two low-English-language-proficiency populations are located near the potential SFVAMC Mission Bay Campus.
  - Census Tracts 178.01 and 228.03 have a meaningfully greater percentage of households with low English language proficiency than the City and County of San Francisco; therefore, these are environmental justice communities.

Environmental health and safety risks to children were assessed in terms of whether potential health and safety hazards would disproportionately affect children.

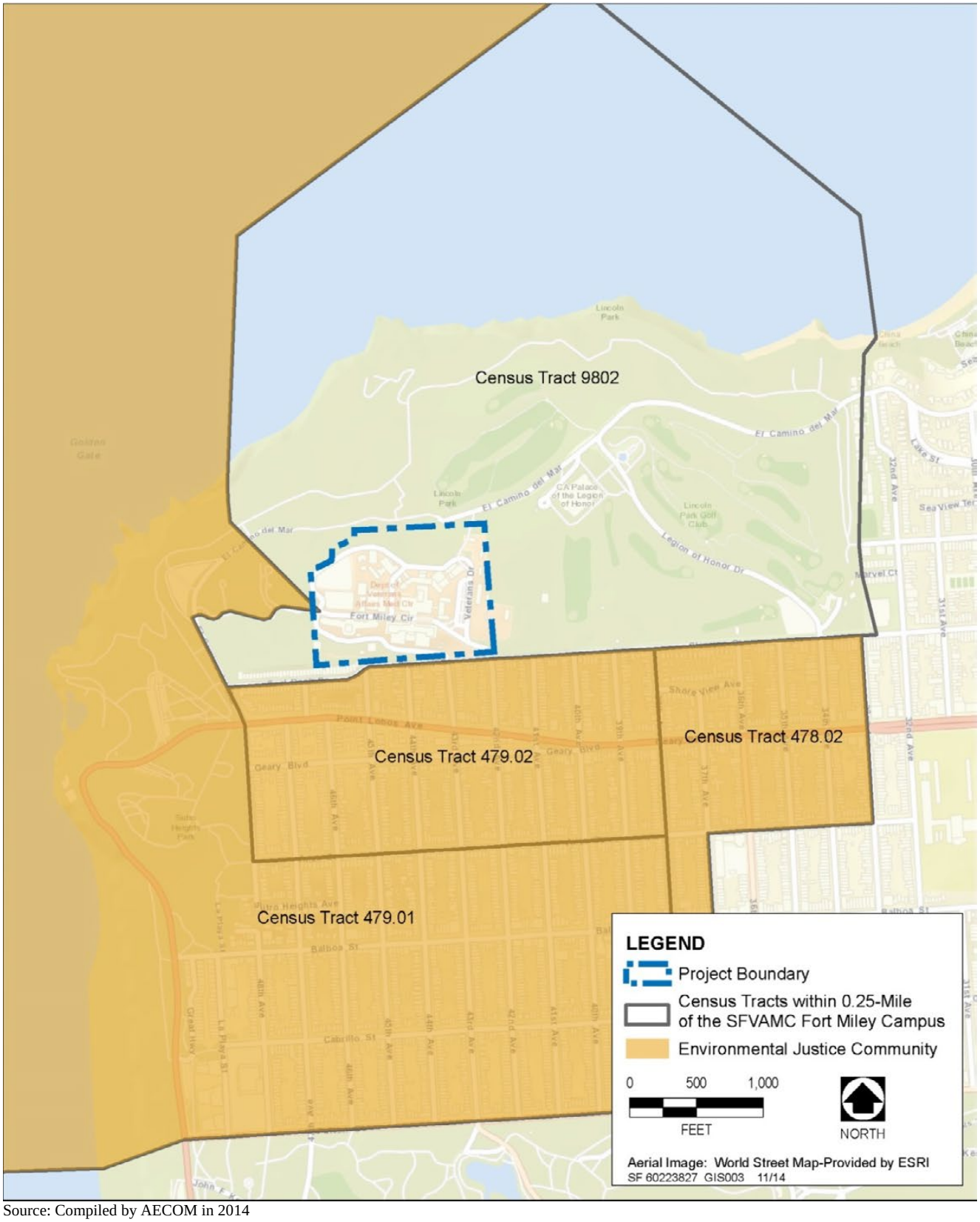
Alternative 1: SFVAMC Fort Miley Campus Buildout Alternative

Short-Term Projects

Construction

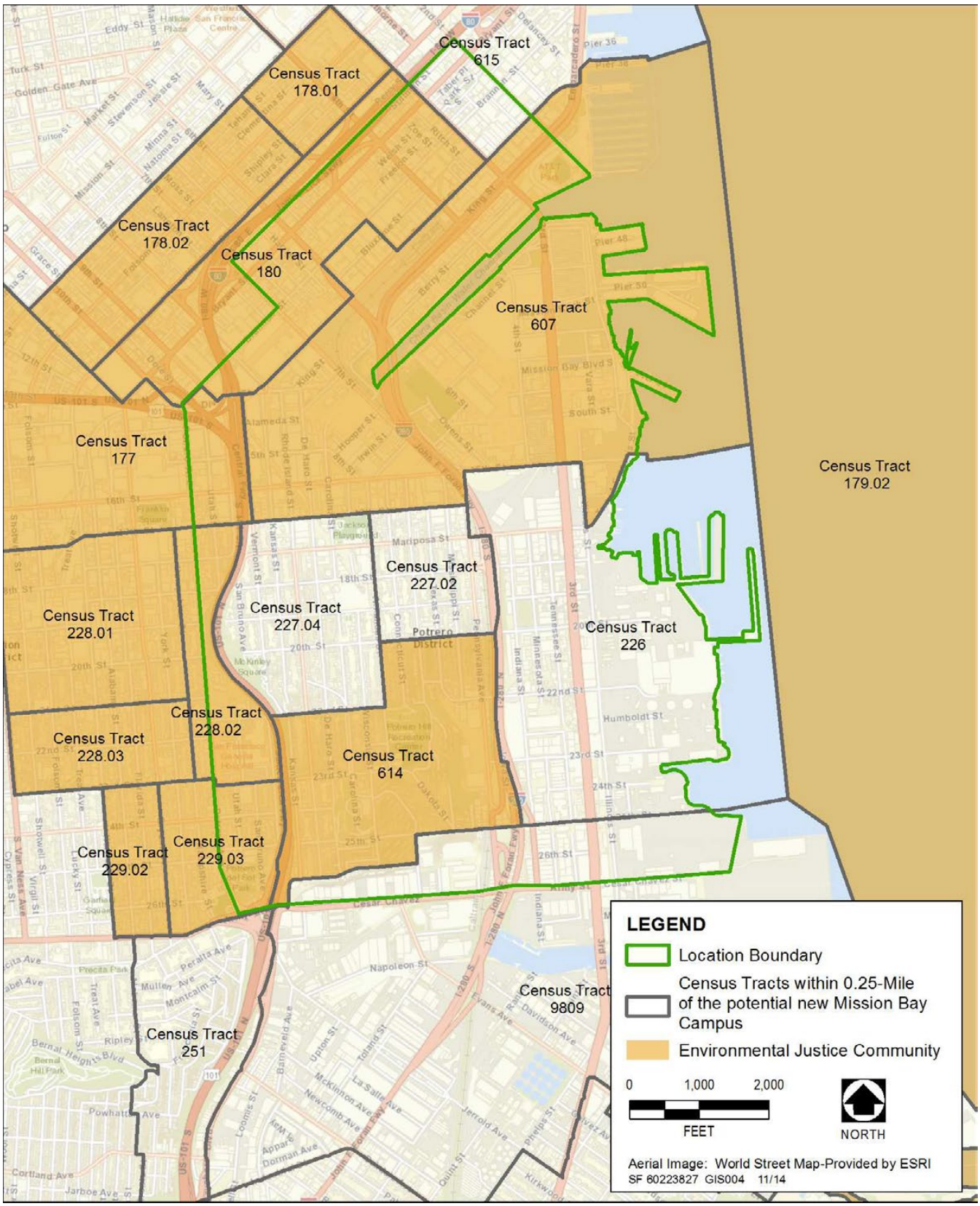
Induced Employment Growth

Alternative 1 short-term projects would involve 17 projects that would occur over 7 years. These projects would involve construction of 600,992 gross square feet (gsf) (384,452 of which would be net new) at the existing SFVAMC Fort Miley Campus. Construction at the existing Campus is anticipated to require a temporary crew of approximately 72 persons who would be available from the local labor pool. The greater San Francisco Bay Area and the City and County of San Francisco have experienced a notable reduction in employment availability, including construction jobs, over the last decade (between 2000 and 2010). Therefore, the addition of approximately 72 construction jobs could be supported by the skill sets available in the Bay Area's labor pool. The impact related to induced employment growth would be beneficial.



Source: Compiled by AECOM in 2014

Figure 3.11-1: Environmental Justice Communities within 0.25 Mile of the Existing SFVAMC Fort Miley Campus



Source: Compiled by AECOM in 2014

Figure 3.11-2: Environmental Justice Communities within 0.25 Mile of the Potential New SFVAMC Mission Bay Campus

Displacement of Populations, Residences, and/or Businesses

Construction of Alternative 1 short-term projects is not expected to impede residential or business activity in the community surrounding the existing SFVAMC Fort Miley Campus, because all construction activities would occur on the Campus. There would be no displacement of persons, residences, or businesses. Thus, no displacement impact would occur.

Environmental Justice

Three of the four census tracts located within 0.25 mile of the existing SFVAMC Fort Miley Campus are environmental justice communities because these areas have a minority population that is greater than 50 percent. This analysis identifies potential impacts from Alternative 1 short-term projects and determines whether they would have a disproportionate adverse effect on identified environmental justice communities.

The only adverse effect identified for Alternative 1 short-term projects that would not be mitigated to a minor level in this EIS is discussed in Section 3.4, "Cultural Resources." Construction and operation of the Alternative 1 short-term projects would result in the incremental impairment of the integrity of materials, design, feeling, and setting of the SFVAMC Historic District that would result from buildout of all phases under Alternative 1. Although no single project would result in an adverse effect on the SFVAMC Historic District on its own, the future setting of the historic district would be impaired by the combination of physical changes to individual contributing buildings, introduction of new facilities within the historic district, and changes to the character of the historic district, including densification of the Campus. This adverse effect on the SFVAMC Historic District would occur and be confined to the SFVAMC Fort Miley Campus; there are no environmental justice populations on Campus or outside of the Campus in Census Tracts 478.02, 479.01, and 479.02 that would be directly affected in a manner that would have health effects or change exposure to hazards or hazardous materials. Potential construction-related air quality impacts would be mitigated to a minor level with implementation of identified mitigation measures in Section 3.2, "Air Quality." Therefore, construction of Alternative 1 short-term projects would not result in disproportionate and/or adverse human health or environmental impacts on such populations. No environmental justice impact would occur.

Environmental Health and Safety Risks to Children

Construction of Alternative 1 short-term projects would occur on the existing SFVAMC Fort Miley Campus, which is primarily surrounded by the Golden Gate National Recreation Area (GGNRA), City recreational facilities, and residential uses. Currently, children comprise 14 and 17 percent of the population in Census Tracts 479.01 and 478.02, respectively, which is greater than the Countywide average of 13 percent. However, the only facility frequently used by children (e.g., schools, childcare centers, or neighborhood parks) that is located in the immediate vicinity of the project site for Alternative 1 short-term projects is the existing privately owned childcare center on the Campus itself. As discussed in Section 3.2, "Air Quality," short-term localized emissions of air pollutants from both on-site and off-site mobile sources would not adversely affect either patients or children on the Campus or off-site residents, including children. However, as discussed in Section 3.10, "Noise and Vibration," noise and vibration impacts at the interior of the childcare center would be adverse during construction hours for Alternative 1 short-term projects. Retrofitting of Building 10 and construction of Building 32 would generate noise levels up to 60 A-weighted decibels (dBA) equivalent noise level (L_{eq}) at the outdoor

play area, which would exceed the U.S. Environmental Protection Agency's (EPA's) daycare significance threshold of 55 dBA L_{eq} before mitigation.

With implementation of Mitigation Measures NOI-1 and NOI-2, VA would monitor construction noise levels and make provisions for receptors that may be exposed to noise levels exceeding EPA standards. Furthermore, Mitigation Measure NOI-1 would reduce the construction-related noise impacts at the outdoor play area of the childcare center by a minimum of 5 dBA; thus, childcare-specific impacts would be reduced to a minor level. Therefore, SFVAMC construction activities under Alternative 1 short-term projects are not anticipated to present risks to children's health and safety, and this impact would be minor.

Operation

Induced Population, Housing, or Employment Growth

Because no permanent housing is proposed at the existing SFVAMC Fort Miley Campus, the permanent population and housing would not change with operation of Alternative 1 short-term projects. Thus, no population or housing impact would occur.

Under Alternative 1 short-term projects, the daily-employment population at the SFVAMC Fort Miley Campus would experience a net increase of an estimated 642 employees (Table 3.11-12). Because 3,500 employees (staff members, volunteers, and contractors) currently work at the Campus, this would represent an 18 percent net increase in employees at the Campus between 2013 and 2020. The greater Bay Area and the City and County of San Francisco have experienced a notable reduction in employment availability over the last decade (between 2000 and 2010). Thus, the addition of an estimated 642 jobs that could be filled by Bay Area and/or San Francisco residents is not anticipated to result in an adverse growth-inducement impact. This impact would be beneficial, because it would increase employment.

Environmental Justice

The adverse effect related to cultural resources discussed under "Construction" for Alternative 1 short-term projects would be the same for operation of these projects. Environmental justice populations in Census Tracts 478.02, 479.01, and 479.02 would not be directly affected in a manner that would have health effects or change exposure to hazards or hazardous materials. Potential operational impacts related to air quality and hazardous materials would be minor. Therefore, operation of Alternative 1 short-term projects would not result in disproportionate and/or adverse human health or environmental impacts on such populations. No environmental justice impact would occur.

Environmental Health and Safety Risks to Children

Alternative 1 short-term projects would be implemented on the existing SFVAMC Fort Miley Campus, which is primarily surrounded by the GGNRA, City recreational facilities, and residential uses. As stated previously, the only facility frequently used by children (e.g., schools, childcare centers, or neighborhood parks) located in the immediate vicinity of the project site for Alternative 1 short-term projects is the existing privately owned childcare center on the Campus itself. Furthermore, as discussed in Section 3.2, "Air Quality," short-term localized emissions of air pollutants from both on-site and off-site mobile sources would not adversely affect either patients or children on the Campus or off-site residents, including children.

Therefore, SFVAMC operational activities under Alternative 1 short-term projects are not anticipated to present risks to children's health and safety. This impact would be minor.

Table 3.11-12: Estimate of the Net New Daily-Employment Population for the SFVAMC Fort Miley Campus under Alternative 1 and Alternative 2 Short-Term Projects

Phase	ITE Land Use Category	Proposed Use	Size (net new sf)	Net New Daily-Employment Population
1.2; 1.9; 1.11; 1.13	Research & Development (760)	Bldg 41 Research; Bldg 40 Research; Bldg 43 Research/Administrative; Bldg 23 Mental Health Research Expansion	132,300	479
1.1; 1.5; 1.12	N/A	Emergency Operations Center; Bldgs 209 and 211 Parking Garage Expansion; Trailer 36	239,452	0
1.4	Motel (320)	Bldg 22 Hoptel Addition	8,700 (8 net new rooms)	7
1.6; 1.10; 1.15	Office Building (710)	Bldg 203 C-Wing Extension (Ground-Floor Patient Welcome Center); Bldg 207 Expansion (IT Support); Bldg 208 Extension—Community Living Center and National Cardiac Device Surveillance Center	23,100	84
1.7; 1.8; 1.14;	Hospital (610)	Bldg 200 Expansion; Bldg 24 Mental Health Clinic Expansion; Bldg 203 (Psychiatric Intensive Care Unit)	19,800	72
		TOTAL	**423,352**	**642**

Notes: Bldg = Building; ITE = Institute of Transportation Engineers; N/A = not applicable; sf = square feet; SFVAMC = San Francisco Veterans Affairs Medical Center

The average density per employee of 276 square feet was used for the Office Building (710), Hospital (610), and Research & Development Center (760) ITE land use categories. The average density of 0.9 employee per room was used for the Motel (320) ITE land use category.

Sources: VA, 2014

Long-Term Projects

Construction

Induced Employment Growth

Construction of the Alternative 1 long-term project at the existing SFVAMC Fort Miley Campus is anticipated to require a temporary crew of approximately 41 persons who would be available from the local labor pool. The greater Bay Area and the City and County of San Francisco have experienced a notable reduction in employment availability, including construction jobs, over the last decade (between 2000 and 2010). The addition of approximately 41 construction jobs could be supported by the skill sets available in the Bay Area's labor pool. Therefore, the impact related to induced employment growth would be beneficial.

Displacement of Populations, Residences, and/or Businesses

Construction of the Alternative 1 long-term project is not expected to impede residential or business activity in the community surrounding the existing SFVAMC Fort Miley Campus because all construction activities would occur on the Campus. There would be no displacement of persons, residences, or businesses. Thus, no displacement impact would occur.

Environmental Justice

The adverse effect related to cultural resources discussed under "Construction" for Alternative 1 short-term projects would be the same for construction of the Alternative 1 long-term project. Environmental justice populations in Census Tracts 478.02, 479.01, and 479.02 would not be directly affected in a manner that would have health effects or change exposure to hazards or hazardous materials. Potential construction-related air quality impacts would be mitigated to a minor level with implementation of the mitigation measures identified in Section 3.2, "Air Quality." Therefore, construction of the Alternative 1 long-term project would not result in disproportionate and/or adverse human health or environmental impacts on such populations. No environmental justice impact would occur.

Environmental Health and Safety Risks to Children

Construction of the Alternative 1 long-term project would occur on the existing SFVAMC Fort Miley Campus, which is primarily surrounded by the GGNRA, City recreational facilities, and residential uses. As described previously for Alternative 1 short-term projects, the only facility frequently used by children that is located in the immediate vicinity is the existing privately owned childcare center on the Campus itself. Long-term localized emissions of air pollutants from mobile sources would not adversely affect either patients or children on the Campus or off-site residents, including children. In addition, with implementation of Mitigation Measures NOI-1 and NOI-2 as discussed in Section 3.10, "Noise and Vibration," construction-related noise at the on-site childcare center during the Alternative 1 long-term project would be below EPA's daycare threshold. Therefore, SFVAMC construction activities for the Alternative 1 long-term project are not anticipated to present risks to children's health and safety. Therefore, SFVAMC construction activities for the Alternative 1 long-term project are not anticipated to present risks to children's health and safety, and this impact would be minor.

Operation

Induced Population, Housing, or Employment Growth

Because no permanent housing is proposed under the Alternative 1 long-term project, the permanent population and housing would not change with operation of this project. Thus, no population or housing impact would occur.

Under the Alternative 1 long-term project, the daily-employment population at the existing SFVAMC Fort Miley Campus would experience a net increase of an estimated 616 employees (Table 3.11-13). A total of 3,500 employees (staff members, volunteers, and contractors) currently work at the Campus; an additional 642 employees would be working at the Campus at the completion of Alternative 1 short-term projects, for a total of 4,142 employees at the Campus in 2020. Therefore, a net increase of 616 employees under the Alternative 1 long-term project would represent a 15 percent increase in employees at the Campus between late 2020 and 2027. The

greater Bay Area and the City and County of San Francisco have experienced a notable reduction in employment availability over the last decade (between 2000 and 2010). Thus, the addition of an estimated 616 jobs that could be filled by Bay Area and/or San Francisco residents is not anticipated to result in an adverse growth-inducement impact. This impact would be beneficial.

Table 3.11-13: Estimate of the Daily-Employment Population at the SFVAMC Fort Miley Campus under Long-Term Projects for Alternatives 1 and 2

Phase	ITE Land Use Category	Proposed Use	Size (net new sf)	Daily-Employment Population
2.1	Hospital (610)	Bldg 213 (Clinical Addition Building)	170,000	616
TOTAL			**170,000**	**616**

Notes: Bldg = Building; ITE = Institute of Transportation Engineers; sf = square feet; SFVAMC = San Francisco Veterans Affairs Medical Center
The average density per employee of 276 square feet was used for the Hospital (610), Medical-Dental Office Building (720), Office Building (710), and Research & Development Center (760) ITE land use categories.
Sources: VA, 2014

Environmental Justice

The adverse effect related to cultural resources discussed under "Construction" for Alternative 1 short-term projects would be the same for operation of the Alternative 1 long-term project. Environmental justice populations in Census Tracts 478.02, 479.01, and 479.02 would not be directly affected in a manner that would have health effects or change exposure to hazards or hazardous materials. Potential operational impacts related to air quality and hazardous materials would be minor. Therefore, operation of the Alternative 1 long-term project would not result in disproportionate and/or adverse human health or environmental impacts on such populations. No environmental justice impact would occur.

Environmental Health and Safety Risks to Children

The Alternative 1 long-term project would be implemented on the existing SFVAMC Fort Miley Campus, which is primarily surrounded by the GGNRA, City recreational facilities, and residential uses. As described previously for Alternative 1 short-term projects, the only facility frequently used by children that is located in the immediate vicinity is the existing privately owned childcare center on the Campus itself. Long-term localized emissions of air pollutants from mobile sources would not adversely affect either patients or children on the Campus or off-site residents, including children. Therefore, SFVAMC operational activities under the Alternative 1 long-term project are not anticipated to present risks to children's health and safety. This impact would be minor.

Alternative 2: SFVAMC Fort Miley Campus Buildout Alternative

Short-Term Projects

Alternative 2 short-term projects at the existing SFVAMC Fort Miley Campus would be the same as Alternative 1 short-term projects, with one exception. Specifically, retrofitting of the existing Buildings 1, 6, and 8 would not occur as part of Alternative 2 short-term projects (Table 2-3 and Figure 2-3), but instead would be accomplished in the long term. Alternative 2 short-term projects would involve 16 projects that would occur over 6 years.

Alternative 2 short-term projects include construction of a total of 485,445 gsf, which is 115,547 gsf less than for short-term projects under Alternative 1. Therefore, impacts of Alternative 2 short-term projects would be similar to or less than those of Alternative 1 short-term projects. Socioeconomic and environmental justice impacts would range from no impact to minor to beneficial.

Construction

Induced Employment Growth

Alternative 2 short-term projects would involve construction of 485,445 gsf (384,452 of which would be net new) at the existing SFVAMC Fort Miley Campus. Construction at the existing Campus is anticipated to require a temporary crew of approximately 64 persons who would be available from the local labor pool. The greater San Francisco Bay Area and the City and County of San Francisco have experienced a notable reduction in employment availability, including construction jobs, over the last decade (between 2000 and 2010). Therefore, the addition of approximately 64 construction jobs could be supported by the skill sets available in the Bay Area's labor pool. The impact related to induced employment growth would be beneficial.

Displacement of Populations, Residences, and/or Businesses

Construction of Alternative 2 short-term projects is not expected to impede residential or business activity in the community surrounding the existing SFVAMC Fort Miley Campus because all construction activities would occur on the Campus. There would be no displacement of persons, residences, or businesses. Thus, no displacement impact would occur.

Environmental Justice

The adverse effect related to cultural resources discussed under "Construction" for Alternative 1 short-term projects would be the same for construction of Alternative 2 short-term projects. Environmental justice populations in Census Tracts 478.02, 479.01, and 479.02 would not be directly affected in a manner that would have health effects or change exposure to hazards or hazardous materials. Potential construction-related air quality impacts would be mitigated to a minor level with implementation of the mitigation measures identified in Section 3.2, "Air Quality." Therefore, construction of Alternative 2 short-term projects would not result in disproportionate and/or adverse human health or environmental impacts on such populations. No environmental justice impact would occur.

Environmental Health and Safety Risks to Children

Construction of Alternative 2 short-term projects would occur on the existing SFVAMC Fort Miley Campus, which is primarily surrounded by the GGNRA, City recreational facilities, and residential uses. As described previously for Alternative 1 short-term projects, the only facility frequently used by children that is located in the immediate vicinity is the existing privately owned childcare center on the Campus itself. Short-term localized emissions of air pollutants from mobile sources would not adversely affect either patients or children on the Campus or off-site residents, including children. In addition, Mitigation Measure NOI-1, discussed in Section 3.10, "Noise and Vibration," would reduce the construction-related noise impacts at the outdoor play area of the childcare center by a minimum of 5 dBA; thus, childcare-specific impacts would be reduced to minor. Therefore,

SFVAMC construction activities for Alternative 2 short-term projects are not anticipated to present risks to children's health and safety. This impact would be minor.

Operation

Induced Population, Housing, or Employment Growth

As under Alternative 1, no permanent housing is proposed at the existing SFVAMC Fort Miley Campus under Alternative 2 short-term projects. Therefore, the permanent population and housing would not change, and no population or housing impact would occur with operation of Alternative 2 short-term projects.

Under Alternative 2 short-term projects, the daily-employment population at the SFVAMC Fort Miley Campus would experience a net increase of an estimated 642 employees (Table 3.11-4). Because 3,500 employees (staff members, volunteers, and contractors) currently work at the Campus, this would represent an 18 percent net increase in employees at the Campus between 2013 and 2020. The greater Bay Area and the City and County of San Francisco have experienced a notable reduction in employment availability over the last decade (between 2000 and 2010). Thus, the addition of an estimated 642 jobs that could be filled by Bay Area and/or San Francisco residents is not anticipated to result in an adverse growth-inducement impact. This impact would be beneficial.

Environmental Justice

The adverse effect related to cultural resources discussed under "Construction" for Alternative 1 short-term projects would be the same for operation of Alternative 2 short-term projects. Environmental justice populations in Census Tracts 478.02, 479.01, and 479.02 would not be directly affected in a manner that would have health effects or change exposure to hazards or hazardous materials. Potential operational impacts related to air quality and hazardous materials would be minor. Therefore, operation of Alternative 2 short-term projects would not result in disproportionate and/or adverse human health or environmental impacts on such populations. No environmental justice impact would occur.

Environmental Health and Safety Risks to Children

Alternative 2 short-term projects would be implemented on the existing SFVAMC Fort Miley Campus, which is primarily surrounded by the GGNRA, City recreational facilities, and residential uses. As described previously for Alternative 1 short-term projects, the only facility frequently used by children that is located in the immediate vicinity is the existing privately owned childcare center on the Campus itself. Short-term localized emissions of air pollutants from mobile sources would not adversely affect either patients or children on the Campus or off-site residents, including children. Therefore, as under Alternative 1, SFVAMC operational activities for Alternative 2 short-term projects are not anticipated to present risks to children's health and safety. This impact would be minor.

Long-Term Projects

Alternative 2 long-term projects at the existing SFVAMC Fort Miley Campus would be the same as the Alternative 1 long-term project, with one exception. Specifically, three additional existing buildings—Buildings

1, 6, and 8—would be retrofitted as part of Alternative 2 long-term projects (Table 2-4 and Figure 2-4). Alternative 2 long-term projects include construction of a total of 285,487 gsf, which is 115,487 gsf more than under the Alternative 1 long-term project, because Alternative 2 includes construction of Building 213 along with the seismic retrofit of Buildings 1, 6, and 8. Therefore, construction impacts of Alternative 2 long-term projects would be similar to, although slightly greater than, those of the Alternative 1 long-term project. Socioeconomic and environmental justice impacts would range from no impact to minor to beneficial.

Construction

Induced Employment Growth

Construction of Alternative 2 long-term projects at the existing SFVAMC Fort Miley Campus is anticipated to require a temporary crew of approximately 45 persons who would be available from the local labor pool. The greater Bay Area and the City and County of San Francisco have experienced a notable reduction in employment availability, including construction jobs, over the last decade (between 2000 and 2010). As under Alternative 1, the addition of approximately 45 construction jobs under Alternative 2 could be supported by the skill sets available in the Bay Area's labor pool. Therefore, the impact related to induced employment growth would be beneficial.

Displacement of Populations, Residences, and/or Businesses

Construction of Alternative 2 long-term projects is not expected to impede residential or business activity in the community surrounding the existing SFVAMC Fort Miley Campus because all construction activities would occur on the Campus. As under Alternative 1, there would be no displacement of persons, residences, or businesses. Thus, no displacement impact would occur.

Environmental Justice

The adverse effect related to cultural resources discussed under "Construction" for Alternative 1 short-term projects would be the same for construction of Alternative 2 long-term projects. Environmental justice populations in Census Tracts 478.02, 479.01, and 479.02 would not be directly affected in a manner that would have health effects or change exposure to hazards or hazardous materials. Potential construction-related air quality impacts would be mitigated to a minor level with implementation of the mitigation measures identified in Section 3.2, "Air Quality." Therefore, construction of Alternative 2 long-term projects would not result in disproportionate and/or adverse human health or environmental impacts on such populations. No environmental justice impact would occur.

Environmental Health and Safety Risks to Children

Construction of Alternative 2 long-term projects would occur on the existing SFVAMC Fort Miley Campus, which is primarily surrounded by the GGNRA, City recreational facilities, and residential uses. As described previously for the Alternative 1 long-term project, the only facility frequently used by children that is located in the immediate vicinity is the existing privately owned childcare center on the Campus itself. Long-term localized emissions of air pollutants from mobile sources would not adversely affect either patients or children on the Campus or off-site residents, including children. In addition, with implementation of Mitigation Measures NOI-1

and NOI-2 as discussed in Section 3.10, "Noise and Vibration," construction-related noise at the on-site childcare center during Alternative 2 long-term projects would be below the EPA daycare threshold. Therefore, SFVAMC construction activities under Alternative 2 long-term projects are not anticipated to present risks to children's health and safety. This impact would be minor.

Operation

Induced Population, Housing, or Employment Growth

Because no permanent housing is proposed under Alternative 2 long-term projects, the permanent population and housing would not change. Thus, no population or housing impact would occur.

Under Alternative 2 long-term projects, the daily-employment population at the existing SFVAMC Fort Miley Campus would experience a net increase of an estimated 616 employees (Table 3.11-13). A total of 3,500 employees (staff members, volunteers, and contractors) currently work at the Campus; an additional 642 employees would be working at the Campus at the completion of Alternative 2 short-term projects, for a total of 4,142 employees at the Campus in 2020. Therefore, a net increase of 616 employees under Alternative 2 long-term projects would represent a 15 percent increase in employees at the Campus between late 2020 and 2027. The greater Bay Area and the City and County of San Francisco have experienced a notable reduction in employment availability over the last decade (between 2000 and 2010). Thus, the addition of an estimated 616 jobs that could be filled by Bay Area and/or San Francisco residents is not anticipated to result in an adverse growth-inducement impact. This impact would be beneficial.

Environmental Justice

The adverse effect related to cultural resources discussed under "Construction" for Alternative 1 short-term projects would be the same for operation of Alternative 2 long-term projects. Environmental justice populations in Census Tracts 478.02, 479.01, and 479.02 would not be directly affected in a manner that would have health effects or change exposure to hazards or hazardous materials. Potential operational impacts related to air quality and hazardous materials would be minor. Therefore, operation of Alternative 2 long-term projects would not result in disproportionate and/or adverse human health or environmental impacts on such populations. No environmental justice impact would occur.

Environmental Health and Safety Risks to Children

Alternative 2 long-term projects would be implemented on the existing SFVAMC Fort Miley Campus, which is primarily surrounded by the GGNRA, City recreational facilities, and residential uses. As described previously for Alternative 1 long-term projects, the only facility frequently used by children that is located in the immediate vicinity is the existing privately owned childcare center on the Campus itself. Long-term localized emissions of air pollutants from mobile sources would not adversely affect either patients or children on the Campus or off-site residents, including children. Therefore, as under Alternative 1, SFVAMC operational activities under Alternative 2 long-term projects are not anticipated to present risks to children's health and safety. This impact would be minor.

Alternative 3: SFVAMC Fort Miley Campus Plus Mission Bay Campus Alternative

Short-Term Projects

Alternative 3 short-term projects (during both construction and operation) would be the same as short-term projects for Alternative 1 (Table 2-1 and Figure 2-1); all Alternative 3 short-term projects would be located at the SFVAMC Fort Miley Campus. These impacts would range in significance from no impact to minor to beneficial.

Long-Term Projects

Alternative 3 long-term projects would involve primarily development of ambulatory care and parking structure uses at a potential new SFVAMC Mission Bay Campus. See Figure 2-5 for the location of the off-site portion of Alternative 3. The impact discussion below focuses primarily on the impacts that may result from construction and operation of the ambulatory care center and associated parking structure uses at the potential new Campus, as proposed as part of Alternative 3 long-term projects.

Construction

Induced Employment Growth

Construction of Alternative 3 long-term projects at the potential new SFVAMC Mission Bay Campus is anticipated to require a temporary crew of approximately 83 persons who would be available from the local labor pool, depending on the concurrent phase(s) of project construction. The greater Bay Area and the City and County of San Francisco have experienced a notable reduction in employment availability, including construction jobs, over the last decade (between 2000 and 2010). Therefore, the addition of a total of approximately 83 construction jobs at both campuses can be supported by the skill sets available in the Bay Area's labor pool. The impact related to induced employment growth would be beneficial.

Displacement of Populations, Residences, and/or Businesses

Construction of Alternative 3 long-term projects is not expected to impede residential or business activity in the Mission Bay area, because all construction activities are anticipated to occur at the future site of the potential new SFVAMC Mission Bay Campus. There would be no displacement of persons, residences, or businesses. Thus, no displacement impact would occur.

Environmental Justice

Construction of Alternative 3 long-term projects would develop a potential new SFVAMC Mission Bay Campus at an as-yet-unknown specific location. Currently, there are 18 census tracts within 0.25 mile of the potential new SFVAMC Mission Bay Campus area, 12 of which include environmental justice communities (Table 3.11-7). Depending on where construction of the potential Campus would occur, environmental justice communities could be affected. Therefore, a project-level NEPA analysis would be required once a specific location and site plan for the potential new Campus is determined. It is anticipated that the development of the projects would take into account the context of the neighborhood and area and would address environmental justice impacts to ensure that only a minor impact would result, consistent with federal guidance.

Environmental Health and Safety Risks to Children

Alternative 3 long-term projects would be implemented at a potential new SFVAMC Mission Bay Campus. However, it is unknown specifically where in the Mission Bay area the potential new Campus would be located. Thus, the proximity of the potential new Campus to facilities frequently used by children that are located in the Mission Bay area is also unknown at this time. However, a project-level NEPA analysis would be required once a specific location and site plan for the potential new Campus is determined. It is anticipated that the development of the projects would take into account the location and potential impacts to ensure that the health and safety risks to children during construction were addressed, so that the impact would be minor, as required by federal, State, and local codes and requirements.

Operation

Induced Population, Housing, or Employment Growth

Because no permanent housing is proposed under Alternative 3 long-term projects, the permanent population and housing would not change with operation of Alternative 3 long-term projects. Thus, no population or housing impact would occur.

Currently, there are no SFVAMC employees in the Mission Bay area. The greater Bay Area and the City and County of San Francisco have experienced a notable reduction in employment availability over the last decade (between 2000 and 2010). Thus, the addition of a total of 507 positions between 2023 and 2027 could be filled by Bay Area and/or San Francisco residents is not anticipated to result in an adverse growth-inducement impact. This impact would be beneficial.

Table 3.11-14: Estimate of Daily-Employment Population at the Potential New SFVAMC Mission Bay Campus under Alternative 3 Long-Term Projects

Phase	ITE Land Use Category	Proposed Use	Size (net new sf)	Daily-Employment Population
2.1	Hospital (610)	Ambulatory Care Center	140,000	507
	TOTAL		**140,000**	**507**

Notes: ITE = Institute of Transportation Engineers; sf = square feet; SFVAMC = San Francisco Veterans Affairs Medical Center
The average density per employee of 276 square feet was used for the Hospital (610), Office Building (710), and Research & Development Center (760) ITE land use categories.
Note: Phases 2.2 and 2.4 are not included in this table because parking garage space does not contribute to employment estimates.
Sources: VA, 2014

Environmental Justice

Operation of Alternative 3 long-term projects would take place at a potential new SFVAMC Mission Bay Campus at an as-yet-unknown specific location. As described under “Construction” for Alternative 3 long-term projects, adverse effects on environmental justice communities have the potential to occur. Therefore, a project-level NEPA analysis would be required once a specific location and site plan for the potential new Campus is determined. It is anticipated that the development of the projects would take into account the context of the neighborhood and area and address environmental justice impacts to ensure that only a minor impact would result, consistent with federal guidance.

Environmental Health and Safety Risks to Children

Alternative 3 long-term projects would be implemented at a potential new SFVAMC Mission Bay Campus. However, it is unknown specifically where in the Mission Bay area the potential new Campus would be located. Thus, the proximity of the potential new Campus to facilities frequently used by children that are located in the Mission Bay area is also unknown at this time. However, a project-level NEPA analysis would be required once a specific location and site plan for the potential new Campus is determined. It is anticipated that the development of the projects would take into account the location and potential impacts to ensure that the health and safety risks to children were addressed, so that the impact would be minor, as required by federal, State, and local codes and requirements.

Alternative 4: No Action Alternative

Short-Term and Long-Term Projects

Construction

Under Alternative 4, there would be no demolition, no new building construction, and no seismic retrofitting of existing buildings. Therefore, Alternative 4 would not contribute to construction employment. In addition, because no housing would be built under Alternative 4, no impact related to displacement of population, housing, or businesses would occur. In addition, no impacts on children or environmental justice populations would occur.

Operation

Under Alternative 4, the permanent population and housing levels, the natural and physical environment, and environmental health and safety risks to children would not change. Thus, no growth-inducement or environmental justice impacts would occur.

3.11.4 References

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3.12 SOLID AND HAZARDOUS MATERIALS AND HAZARDS

This section describes the existing physical and regulatory setting for solid and hazardous materials and hazards and discusses effects of the EIS Alternatives on this resource area. Hazardous material exposure and solid waste generation and disposal are evaluated in this section. Exposure to hazardous air emissions of toxic air contaminants[1] is addressed in Section 3.2, "Air Quality." Other safety hazards, such as earthquakes, are addressed in Section 3.6, "Geology, Soils, and Paleontological Resources." Flooding hazards are addressed in Section 3.5, "Floodplains, Wetlands, and Coastal Management," and Section 3.8, "Hydrology and Water Quality." Emergency operations and access issues are addressed in Section 3.3, "Community Services."

3.12.1 Affected Environment

This section describes solid waste services, hazardous materials, and public safety conditions in the immediate vicinity of the existing SFVAMC Fort Miley Campus and in the Mission Bay area. Other public services, including law enforcement, fire protection, and parks/recreation, are discussed in Section 3.3.

Solid Waste

Recology, a private company, is San Francisco's authorized solid waste collection company and serves both residences and businesses. After solid waste is sorted and recycled (i.e., diverted), the waste that is not diverted is transferred to the Altamont Landfill on Altamont Pass Road in Livermore, approximately 60 miles from San Francisco. The Altamont Landfill handles construction, demolition, and mixed municipal waste and serves several jurisdictions, including several East Bay cities such as Oakland, Alameda, Emeryville, and Richmond; however, San Francisco is the largest single contributor to the landfill.

The Altamont Landfill occupies approximately 2,130 acres (472 acres of disposal area) and has a maximum permitted intake capacity of 11,150 tons per day and a maximum total permitted intake capacity of 62 million cubic yards, of which 73.7 percent (45.7 million cubic yards) remained as of 2000 (CalRecycle, 2011a). The landfill is projected to have sufficient capacity to operate until at least 2025 if disposal were to continue at current rates, according to the California Integrated Waste Management Board Solid Waste Information System (SWIS) database (CalRecycle, 2011b). However, the Altamont Landfill is currently scheduled for closure on January 1, 2029 (SF Redevelopment & SF Planning, 2009).

Existing SFVAMC Fort Miley Campus

Recology handles recycling and composting for SFVAMC. Sunset Scavenger Company, a subsidiary of Recology, handles solid waste collection services. In 2010, the existing SFVAMC Fort Miley Campus generated a total of approximately 2,435 tons of solid waste, composed of approximately 1,445 tons of trash and 990 tons of recycled materials that were diverted from landfills. Additionally, approximately 48.6 tons of medical waste, 8.4 tons of hazardous waste, and 468 cubic feet of radioactive waste were generated at the Campus in 2010. Currently, solid waste from the SFVAMC Fort Miley Campus is taken to the Altamont Landfill.

[1] Sources of hazardous or toxic air emissions include but are not limited to processes (e.g., laboratory fume hood exhaust); vehicle use (diesel particulate emissions from exhaust); and proximity to existing or relocated sources of diesel or other toxic air emissions.

Mission Bay Area

Recology handles recycling and composting for the Mission Bay area. Recology's subsidiary Sunset Scavenger Company handles solid waste collection services. Solid waste from the Mission Bay area is taken to the Altamont Landfill.

Hazardous Materials

Hazardous substances include but are not limited to hazardous materials and hazardous wastes as defined under Section 25501 and Section 24117, respectively, of the California Health and Safety Code. Specifically, materials and waste may be considered hazardous if they are poisonous (toxic); can be ignited by open flame (ignitable), corrode other materials (corrosive); or react violently, explode, or generate vapors when mixed with water (reactive). A hazardous waste, for the purpose of this EIS, is any hazardous material that is to be abandoned, discarded, or recycled. The term "hazardous material" is defined as any material that, because of quantity, concentration, or physical or chemical characteristics, poses a significant present or potential hazard to human health and safety or to the environment (California Health and Safety Code, Section 25501[o]).

Medical waste is generated or produced as a result of diagnosis, treatment, or immunization of human beings or animals and the production or testing of biologicals.[2] Medical waste is either biohazardous waste or sharps waste.[3] Cultures, blood and blood products, tissues, and body parts are all considered medical waste. The transportation and disposal of medical waste are closely regulated under the California Medical Waste Management Program. The Hazardous Materials Unified Program Agency of the San Francisco Department of Public Health regulates the handling of medical waste for the existing SFVAMC Fort Miley Campus.

This section describes the nature and extent of routine hazardous materials used at the existing SFVAMC Fort Miley Campus and in the Mission Bay area, as well as the potential for upset and accident conditions under which hazardous materials could be released inadvertently.

Existing SFVAMC Fort Miley Campus

To determine the presence or absence of documented soil or groundwater contamination at or near the existing SFVAMC Fort Miley Campus, a comprehensive report was compiled by Environmental Data Resources (EDR), which listed the results of a search of public environmental databases in February 2011. This report is provided in Appendix D, "EDR DataMap Environmental Atlas for the Existing SFVAMC Campus." The report provided information about the existing SFVAMC Fort Miley Campus and nearby properties that was obtained from federal, State, regional, and local regulatory databases. A set of historical aerial photographs, dating from 1946 to 2005, was also obtained from EDR. As a hospital and health facility, SFVAMC is permitted to routinely generate, store, and handle hazardous and/or medical waste. SFVAMC is also permitted by the Bay Area Air Quality

[2] The term "biologicals" means medicinal preparations made from living organisms and their products, including but not limited to serums, vaccines, antigens, and antitoxins (California Medical Waste Management Act, California Health and Safety Code Sections 117600–118360).

[3] The term "sharps waste" refers to any device having acute rigid corners, edges, or protuberances capable of cutting or piercing, including but not limited to hypodermic needles and broken glass items (such as pipettes and vials) contaminated with biohazardous waste (California Medical Waste Management Act, California Health and Safety Code Sections 117600–118360).

Management District for air emissions related to various sources on its Fort Miley Campus, such as the emergency generators, boilers, and incinerator.

The SFVAMC Fort Miley Campus was identified in several government environmental databases (see Appendix D). A review of these databases determined that only two incidents involved the accidental release or exposure of hazardous materials, thereby posing a health risk to the public and environment.

The first incident was caused by the structural failure of a leaking underground diesel tank on the SFVAMC Fort Miley Campus, with potential contamination of adjacent soil. A report was opened in the San Francisco County Leaking Underground Storage Tank (LUST) database on February 24, 1994. This incident was also listed in the California Department of Toxic Substances Control's EnviroStor database, the San Francisco County LUST database, the California Hazardous Waste Information System (i.e., HAZNET), and the California Air Resources Board's Emissions Inventory Data (i.e., EMI) database. The leaking underground diesel tank incident was investigated and the case was subsequently closed by the County of San Francisco Local Oversight Program on April 28, 1994.

The second incident occurred on September 19, 2007. During drilling operations at the SFVAMC Fort Miley Campus for construction of the Building 200 Annex, sludge containing polychlorinated biphenyls (PCBs) from an unknown source was discovered approximately 12–15 feet below ground between Buildings 2 and 200. This incident was listed in the California Hazardous Material Incident Reporting System (i.e., CHMIRS) database. SFVAMC, working in close coordination with U.S. Environmental Protection Agency (EPA) Region 9, performed extensive corrective actions and cleanup to the maximum extent practicable to protect human health and the environment. VA also conducted five phases of site characterization and remediation actions. Approximately 1,688 tons of PCB-contaminated soil were excavated and approximately 11 tons of wall coating and concrete-wall paint wastes were generated from the concrete-wall mitigation. As a result, only residual amounts of PCB contamination remained in the subsurface soil and wall and the case was subsequently closed.

There is no indication that the current soil or groundwater at the Campus is affected by these previous incidents.

Mission Bay Area

Many past uses in the Mission Bay area involved hazardous materials; therefore, many of the sites require clean-up and monitoring before redevelopment can occur. A search of available environmental records was conducted by EDR to determine the presence or absence of hazardous materials in the Mission Bay area. In total, 5,241 sites in the study area[4] were identified in various environmental governmental databases. The locations of those sites are illustrated in the Key Map located in Section 1 of Appendix D, "EDR DataMap Environmental Atlas for the Potential New SFVAMC Mission Bay Campus." Appendix D also summarizes the number of listings from federal, State, and local databases as well as EDR proprietary records.

[4] The study area for the EDR Radius Map Report extends up to 1 mile beyond the boundary of the 2.5-square-mile area for the potential Mission Bay Campus.

3.12.2 Regulatory Framework

Hazardous substances are those substances defined as hazardous by the Comprehensive Environmental Response Compensation and Liability Act of 1980 (CERCLA) (42 U.S. Code [USC] 6901 et seq.) and the Resource Conservation and Recovery Act of 1976 (RCRA) (42 USC 6901 et seq., as amended).

Comprehensive Environmental Response, Compensation, and Liability Act of 1980

CERCLA (also known as Superfund) provides EPA with the regulatory authority to seek out parties responsible for uncontrolled or abandoned hazardous-waste sites, and for accidents, spills, and other emergency releases of pollutants and contaminants into the environment, and to ensure their cooperation in cleanup efforts. EPA and state environmental protection or waste management agencies coordinate identification, monitoring, and response activities for Superfund sites. Construction and operation of the EIS Alternatives would involve the handling, transport, and storage of hazardous wastes; therefore, the EIS Alternatives would be subject to the regulations set forth under CERCLA.

Superfund Amendments and Reauthorization Act of 1986

The Superfund Amendments and Reauthorization Act (SARA) reauthorized CERCLA to continue cleanup activities around the country. This legislation added several site-specific amendments, clarified definitions, and imposed technical requirements, including additional enforcement authorities. Also, Title III of SARA authorized the Emergency Planning and Community Right-to-Know Act (EPCRA). As a facility that would contain hazardous waste, SFVAMC would be required to conform with the regulations set forth under SARA regarding remediation of hazardous waste sites.

Resource Conservation and Recovery Act of 1976

Under RCRA, EPA regulates hazardous waste from “cradle to grave,” which includes the generation, transportation, treatment, storage, and disposal of hazardous waste. RCRA also provides a framework for the management of nonhazardous solid wastes. Construction and operation of the EIS Alternatives would involve the generation, transportation, treatment, storage, and disposal of hazardous wastes, as well as the generation, transportation, and disposal of nonhazardous solid wastes. Therefore, the EIS Alternatives would be required to adhere to the regulations set forth under RCRA.

Hazardous and Solid Waste Amendments

The Hazardous and Solid Waste Amendments (HSWA) amended RCRA in 1984, affirming and extending the “cradle to grave” system of regulating hazardous wastes. The amendments specifically prohibited the use of certain techniques for the disposal of some hazardous wastes, focusing on waste minimization and phasing out land disposal of hazardous wastes, as well as providing corrective action for releases. Additional HSWA mandates included enhanced enforcement authority for EPA, stricter hazardous waste management standards, and a comprehensive underground storage tank program. As discussed under RCRA, the EIS Alternatives would involve the generation, transportation, treatment, storage, and disposal of hazardous wastes, as well as the generation, transportation, and disposal of nonhazardous solid wastes; therefore, they would be subject to the regulations set forth by HSWA.

Title 49 of the Code of Federal Regulations

Under Title 49 of the Code of Federal Regulations (CFR), the U.S. Department of Transportation has the regulatory responsibility for the safe transportation of hazardous materials. U.S. Department of Transportation regulations govern all means of transportation, except packages shipped by mail. Construction and operation of the EIS Alternatives would the transportation of hazardous materials to and from the project site. As such, the EIS Alternatives would be required to conform with all of the regulations set forth under CFR Title 49.

Title 10 of the Code of Federal Regulations

The federal Atomic Energy Act requires states to assume responsibility for the use, transportation, and disposal of low-level radioactive material and for the protection of the public from radiation hazards. The use of radioactive materials is closely regulated by the Nuclear Regulatory Commission (NRC), and the requirements for using radioactive byproduct materials for medical uses are set forth in 10 CFR 35 (VA, 2011).

The NRC issued a Master Materials License (MML) to VA in 2003. The NRC requires users of radioactive materials to keep radiation exposure within the agency's dose limits as low as reasonably achievable; and users are required to be licensed and undergo inspections by the NRC to ensure safe practices with radioactive materials and compliance with regulations (VA, 2011).

As a medical facility, SFVAMC may use low-level radioactive materials for medical imaging or research purposes; therefore, the EIS Alternatives would be subject to the regulations set forth under CFR Title 49.

Title 29 of the Code of Federal Regulations

Occupational safety standards are established in CFR Title 29 to minimize worker safety risks from both physical and chemical hazards in the workplace. The Occupational Safety and Health Administration (OSHA) is the agency with primary responsibility for assuring worker safety in the workplace. Under 29 CFR 1910.1200 (Hazard Communication Standard), construction workers must be informed about hazardous substances that they may encounter. Among other provisions, the regulations require that employers identify and label hazardous substances and communicate hazard information relating to hazardous substances and their handling. The hazard communication program also requires that data sheets detailing the safety of various materials be available to employees and that employee information and training programs be documented. These regulations also require employers to prepare emergency action plans (escape and evacuation procedures, rescue and medical duties, alarm systems, and training in emergency evacuation).

Compliance with 29 CFR 1926 Subpart B (General Safety and Health Provisions) would ensure that workers are properly trained to recognize workplace hazards and to take appropriate steps to reduce potential risks caused by such hazards. To protect workers from exposure to potential hazards, a site health and safety plan must be prepared before any work may begin at a site that is contaminated, or where work requires disturbance of building materials containing hazardous substances. OSHA includes extensive, detailed requirements for worker protection applicable to any activity that could disturb materials containing asbestos, including maintenance, renovation, and demolition. These regulations are also designed to ensure that persons working near the maintenance, renovation, or demolition activity are not exposed to asbestos.

CFR Title 29 includes special provisions for communicating about hazards to employees in research laboratories, including training employees on chemical work practices. Specific, more detailed training and monitoring is required for the use of carcinogens, ethylene oxide, lead, asbestos, and certain other chemicals listed in CFR Title 29. Emergency equipment and supplies, such as fire extinguishers, safety showers, and eye washes, must also be provided and maintained in accessible places.

Department of Veterans Affairs National Health Physics Program and VA National Radiation Safety Committee

Under the guidance of VA's National Radiation Safety Committee, the VA National Health Physics Program provides regulatory oversight for the NRC's MML (described above), which entails permitting the use of radioactive materials, conducting on-site inspections, and investigating incidents (VA, 2011). The VA National Health Physics Program manages the MML and issues each Veterans Health Administration (VHA) facility a Materials Permit for all use of radioactive materials.

Department of Veterans Affairs Directives

VA and VHA have a number of directives to establish policy regarding the handling of solid and hazardous waste materials:

- VA Directive 0057 establishes the Environmental Management Program.
- VA Directive 0059 establishes policies for implementing chemicals management and pollution prevention requirements.
- VA Directive 0063 establishes procedures for waste prevention and recycling programs.
- VHA Directive 2003-030 provides procedures to ensure that hazardous chemicals are ordered, stored, handled, used, and disposed of in a manner consistent with applicable regulatory, statutory, and accreditation requirements.
- VHA Directive 1105.01 establishes policies and actions to implement the NRC MML.
- VHA Directive 2011-036 establishes policy for maintaining a safe and healthy worksite during construction- and renovation-related activities.

Emergency Planning and Community Right-to-Know Act

Enacted in 1986, EPCRA, also known as SARA Title III, provides state- and local-level infrastructure to plan for chemical emergencies. Under EPCRA, facilities that store, use, or release certain chemicals may be subject to several reporting requirements. Facility-reported information is then made publicly available to ensure that interested parties have access to this information and may become more informed about potentially deleterious chemicals present in their communities. The EIS Alternatives may involve the storage and use of chemicals regulated under EPCRA. As such, the EIS Alternatives would be required to adhere to the regulations set forth under EPCRA, including notifying the surrounding communities regarding potentially deleterious chemicals present at the project site.

Toxic Substances Control Act of 1976

TSCA provides EPA with the regulatory authority to implement requirements for reporting, recordkeeping, testing, and restrictions associated with chemical substances and/or mixtures. Specifically, under TSCA, EPA regulates the production, importation, use, and disposal of specific chemicals, such as PCBs, asbestos, radon, and lead-based paint. Demolition and construction activities associated with the EIS Alternatives may require the disposal of chemicals, such as PCBs, asbestos, or lead-based paint. Therefore, the EIS Alternatives would be subject to the regulations set forth under TSCA.

Department of Veterans Affairs Strategic Sustainability Performance Plan

The *Department of Veterans Affairs Strategic Sustainability Performance Plan* (VA SSPP) was prepared in response to Section 8 of Executive Order 13514, "Federal Leadership in Environmental, Energy, and Economic Performance." Section 8 requires federal agencies to "develop, implement, and annually update an integrated Strategic Sustainability Performance Plan that will prioritize agency actions" to meet sustainability objectives identified in statutes, regulations, and executive orders.

The VA SSPP provides approaches to addressing sustainability goals for a variety of resource areas, including the management and reduction of solid and hazardous wastes, for VA facilities. The VA SSPP lists goals and subgoals for pollution prevention and waste elimination, summarizes current challenges that exist for VA facilities in accomplishing sustainability goals, and identifies implementation methods and programs for pollution prevention and waste elimination. The VA SSPP also identifies a diversion target of 50 percent for nonhazardous solid waste and construction and demolition material and debris by 2015.

Because a VA facility is involved, the EIS Alternatives would be subject to the performance goals established in the SSPP.

Medical Waste Management Act of 2007

The Medical Waste Management Act authorizes a local governing body to implement and enforce a medical waste management program by adopting an ordinance or resolution. A medical waste management program involves processing and reviewing medical waste management plans, inspecting on-site treatment facilities, conducting an evaluation, or reviewing records for all facilities that have been issued a large-quantity medical waste registration or permit. Medical waste generators must be inspected in response to complaints or emergency incidents; their medical waste permits issued by the local agency may be either suspended or revoked accordingly.

As a medical facility routinely handling medical waste, SFVAMC must conform with the policies set forth by the Medical Waste Management Act. Inspections ensure that businesses are in compliance with applicable regulations, including the Medical Waste Management Act.

3.12.3 Environmental Consequences

Significance Criteria

A NEPA evaluation must consider the context and intensity of the environmental effects that would be caused by, or result from, the EIS Alternatives. There is no standard federal guidance or established threshold pertaining to solid and hazardous materials. Therefore, other environmental assessment documents were reviewed and the following criteria were selected for the evaluation.

An Alternative analyzed in this EIS is considered to result in an adverse impact related to solid and hazardous materials if it would:

- be served by a landfill whose permitted capacity would be exceeded by accommodating the project's solid waste disposal needs;
- create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials; or
- create a significant hazard to the public or environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment and exposing the public to unhealthy levels of hazardous materials.

Assessment Methodology

The evaluation of potential impacts related to solid waste was based on a review of existing information for solid waste landfills serving the project area, such as capacity and daily intake volumes, to determine whether existing facilities could accommodate the waste likely to be generated by the EIS Alternatives. Waste generation projections were based on solid-waste generation rates of "Medical Office Building/Hospital" facilities as estimated by the California Department of Resources Recycling and Recovery (CalRecycle). For the purposes of this analysis, impacts related to solid waste are considered adverse if an EIS Alternative would cause a permitted landfill to exceed its permitted capacity.

To enable assessment of potential impacts related to hazardous materials, a comprehensive report was compiled by EDR to obtain information about sites near the project area that may be contaminated by hazardous materials, thereby exposing such materials. Additionally, hazardous materials that could be used during project construction (e.g., fuels, lubricants, paints, adhesives) and operation (e.g., laboratory chemicals, medical waste) were considered in assessing the potential for the EIS Alternatives to create a hazard to the public or environment through the transport, use, or disposal of hazardous materials. For the purposes of this analysis, impacts related to hazardous waste are considered adverse if an EIS Alternative would expose the public or the environment to unhealthy levels of hazardous materials.

Alternative 1: SFVAMC Fort Miley Campus Buildout Alternative

Short-Term Projects

Alternative 1 short-term projects would involve the construction of 17 projects over 7 years. These short-term projects would involve construction of 600,992 gross square feet (gsf) (384,452 of which would be net new) at the existing SFVAMC Fort Miley Campus.

Construction

Solid Waste Generation

Constructing Alternative 1 short-term projects would result in a short-term increase in the generation of construction waste. Construction activities would require disposal of solid waste generated from tree removal and demolition of existing facilities, as well as removal of excess unsatisfactory soil from excavation activities, trash, and scrap materials. Most construction waste is expected to be generated by the demolition of existing buildings, which would generate approximately 127,500 cubic yards of construction waste.[5]

The VA SSPP has a diversion target for nonhazardous solid waste of 50 percent by 2015. Should this target be achieved, approximately 63,750 cubic yards of construction waste would be transported to landfills over the 7-year construction period for Alternative 1 short-term projects. City and County of San Francisco Ordinance No. 27-06, the Construction and Demolition Debris Recovery Ordinance, requires that all mixed construction and demolition debris be transported by a registered transporter and be taken to a registered facility that can process and divert a minimum of 65 percent from landfills. However, SFVAMC is not required to comply with Ordinance No. 27-06 when implementing an EIS Alternative (Williams, pers. comm., 2012).

The anticipated volume of solid waste generated by construction of Alternative 1 short-term projects could be accommodated by landfills located in the region, including the Altamont Landfill (Livermore), where SFVAMC's solid waste is currently disposed of. The Altamont facility had 73.7 percent remaining capacity as of August 2009 and is anticipated to be in operation until approximately 2029. This facility is also permitted to take construction/demolition waste.

Further, the construction contractor would be required to prepare and submit an environmental protection plan pursuant to Section 015719 of the VA Specifications. This plan requires the contractor to specify controls to be taken to manage environmental pollution, which includes the handling and disposal of solid waste. The construction contractor also must manage nonhazardous waste from building construction and demolition in accordance with Section 017419 of the VA Specifications, which requires efficient waste management and removal and legal disposal of materials. During demolition and construction, waste would be disposed of in a manner consistent with federal, State, and local regulations. Therefore, impacts of Alternative 1 short-term projects related to construction-related solid waste would be minor.

[5] The volume of demolition waste generated was calculated based on the volume of all buildings proposed for demolition and seismic retrofit (in cubic feet), converted to cubic yards, and multiplied by a factor of 0.25 to obtain the demolition debris volume.

Hazardous Materials Exposure

The existing SFVAMC Fort Miley Campus and the surrounding area are occupied by structures that either are known to or presumably manage hazardous materials, chemicals, and petroleum products. Further, the Campus is in an area of possible serpentinitic bedrock; therefore, naturally occurring asbestos may be present in the soil. Various construction activities under Alternative 1 short-term projects, such as grading, trenching, compacting, and excavating soils, would involve the handling and movement of soil. Moving soil that contains hazardous materials (including naturally occurring asbestos) could expose workers and the public to chemicals in the soil from dust, and impacts on water quality and the environment could result if hazardous constituents were to migrate off-site. In addition, should construction require dewatering of groundwater, hazardous materials could be released. The public and the environment could be exposed to such materials if contaminated groundwater were discharged to the sanitary sewer system, causing a potentially adverse impact.

Alternative 1 short-term projects would require the demolition of existing structures. Existing building materials could include lead-based paint, asbestos-containing materials, PCBs, and fluorescent lights containing mercury vapors. Demolishing or renovating existing structures without following proper abatement procedures could expose workers or the community to hazardous building materials during construction, and future building occupants could be exposed if hazardous building materials were left in place and not properly contained. Soil around a structure could also become contaminated by hazardous building materials if these materials were inadvertently released to the environment, resulting in a potentially adverse impact.

Further, construction activities would require the construction contractor to transport hazardous materials (e.g., fuels, lubricants, paints, adhesives, contaminated soil) to and from the SFVAMC Fort Miley Campus and to use such materials. In addition, construction vehicles require the use of hazardous materials, such as oils, grease, and fuels. The contractor would likely store these hazardous materials and vehicles on-site. Hazardous materials could be released accidentally if not properly stored or transported, which could degrade soil and/or groundwater quality, potentially resulting in adverse health effects on construction workers, the public, and the environment.

To minimize construction risks related to exposure to hazardous materials, all hazardous materials would be stored, used, transported, and disposed of in strict accordance with all local, State, and federal hazardous waste regulations. OSHA regulations also mandate an initial training course and subsequent annual training for hazardous-waste workers. Worker safety regulations would require the preparation and implementation of site-specific health and safety plans in accordance with OSHA requirements. Further, the construction contractor would be required to submit an environmental protection plan in accordance with Section 015719 of the VA Specifications. This plan would describe the best management practices (BMPs) that would be implemented to minimize the risks associated with the use, storage, handling, and transport of hazardous materials and the contingency protocols to follow in the event of an accidental release or exposure during construction. Given compliance with the environmental protection plan, site-specific health and safety plan, and applicable regulations, impacts of Alternative 1 short-term projects related to potential hazardous materials exposure would be minor.

Additionally, the construction contractor would be required to implement a stormwater pollution prevention plan (SWPPP) as part of the site drains to the separate storm drain system, as well as comply with the San Francisco Public Utilities Commission’s (SFPUC) Construction Site Runoff Control Program and apply for a Construction

Site Runoff Control Permit. The SFPUC does not require development of a separate erosion and sediment control plan (ESCP) for a project if a SWPPP has been prepared prepared. The SWPPP would identify the sources of sediment and other pollutants and describe BMPs to eliminate these materials from stormwater and nonstormwater discharges during construction.

For additional discussion of construction storm water management, see Section 3.8, "Hydrology and Water Quality." Implementation of the SWPPP and compliance with the requirements of the Construction Site Runoff Control Program would further reduce the potential for releases from the transport, use, or disposal of hazardous materials required during construction activities. Therefore, impacts related to hazardous wastes, substances, or materials during construction of Alternative 1 short-term projects would be minor.

Federal hazardous materials guidelines regulate exposure to and disposal of hazardous building materials, including lead, asbestos, PCBs, and mercury. SFVAMC would be required to adhere to the regulations and standards for inspection, abatement, exposure, and disposal of these hazardous building materials.[6] Adherence to these requirements would minimize, to the extent required by law, the potential health and environmental hazards of asbestos, lead, or PCBs in buildings and structures to be demolished. Thus, this impact would be minor.

Hazards and Public Safety

Construction activities, such as trenching and operation of large construction equipment, may pose a risk to public safety, such as accidental injury. However, the construction contractor would erect exclusion fencing around active construction zones to prevent the public from accessing areas immediately adjacent to or within the construction zone, as part of standard BMPs during construction. Thus, impacts on public safety during construction activities for Alternative 1 short-term projects would be minor.

Construction-related impacts related to toxic air contaminants are identified in Section 3.2, "Air Quality." Safety hazards such as earthquakes are addressed in Section 3.6, "Geology, Soils, and Paleontological Resources." Flooding hazards are addressed in Section 3.5, "Floodplains, Wetlands, and Coastal Management," and Section 3.8, "Hydrology and Water Quality." Emergency operations and access issues are addressed in Section 3.3, "Community Services."

Operation

Solid Waste Generation

Implementing Alternative 1 short-term projects would expand the facilities of the existing SFVAMC Fort Miley Campus and SFVAMC's staffing capacities; therefore, the generation of solid waste would likely increase during operation of these projects. CalRecycle estimates that medical office building/hospital land uses have a solid-waste generation rate of approximately 0.0108 ton per square foot per year; therefore, with the addition of the short-term projects, SFVAMC is estimated to generate an additional 1,561.68 tons of waste per year, for a total estimate of 3,997 tons of waste per year through 2020.[7] The VA SSPP has a diversion target for nonhazardous solid waste of 50 percent by 2015. Should this target be achieved, operation of SFVAMC is estimated to generate

[6] These regulations include VA Specification Section 028333.13, "Lead-Based Paint Removal and Disposal," and TSCA.
[7] This is based on habitable area and does not include parking structure and mechanical penthouse square footage.

1,998 tons of waste per year, which represents a 437-ton reduction in solid waste generation relative to current generation rates. The anticipated volume of solid waste could be accommodated by landfills located in the region, including Altamont, with approximately 73.7 percent remaining capacity. Therefore, impacts of the operation of Alternative 1 short-term projects related to solid waste generation would be minor.

Hazardous Waste Generation

Operation of Alternative 1 short-term projects would generate hazardous wastes similar to those currently permitted to be generated, stored, and/or released on the existing SFVAMC Fort Miley Campus. Because Alternative 1 short-term projects would involve expanding the existing SFVAMC Campus, the generation of hazardous wastes may increase. These materials would be used, stored, and disposed of in accordance with applicable laws and regulations. VA would update its existing certificates of registration for hazardous materials, radioactive-materials licenses, certificates of registration for medical waste, and medical waste permits, with updated site maps, hazardous-materials inventories, training plans, emergency operations plans, and medical-waste plans at the Campus. Given compliance with the VA SSPP and existing regulations and requirements, potential impacts from the use and storage of hazardous materials generated during the operation of Alternative 1 short-term projects would be minor.

Hazards and Public Safety

Most of the existing SFVAMC Fort Miley Campus is more than 75 years old and consists of aging buildings and infrastructure. Alternative 1 short-term projects would involve seismic, structural, mechanical, and electrical reconstruction activities that would have a long-term beneficial effect on public safety by structurally stabilizing and rehabilitating aging buildings and infrastructure.

Furthermore, to ensure public safety, SFVAMC establishes and regularly updates hazards emergency protocols in its *All-Hazards Emergency Operations Plan* (SFVAMC, 2009). This emergency operations plan:

- identifies an organized process to initiate, manage, and recover from various types of emergencies that could occur at the SFVAMC Fort Miley Campus;
- addresses emergency situations related to fire, hazardous materials/radiological/decontamination issues, utilities, bomb threats, behavioral emergencies, external emergencies, earthquakes, national disaster medical systems, VA/U.S. Department of Defense contingency hospitals, the national response framework, medical equipment, an infectious diseases/pandemic influx, a 96-hour plan, and medical surges; and
- includes detailed emergency operations procedures for staff members and departmental response and communication, recovery procedures, communication procedures, resource and asset management, and security and safety operations.

Through continued compliance with SFVAMC's *All-Hazards Emergency Operations Plan* at the Campus and adherence to applicable regulations and requirements, impacts of Alternative 1 short-term projects related to hazards and public safety would range from beneficial to minor.

Long-Term Projects

Construction

Solid Waste Generation

The construction-related impacts of the Alternative 1 long-term project related to generation of solid waste would be less than those for construction of short-term projects for Alternative 1. No demolition of existing buildings has been proposed under the Alternative 1 long-term project. Solid waste generated by the retrofitting of the existing buildings would be minimal and would be transported to landfills over the 2-year construction period for the Alternative 1 long-term project. However, SFVAMC is not required to comply with Ordinance No. 27-06 when implementing an EIS Alternative (Williams, pers. comm., 2012). The measures to reduce impacts of solid waste generation during construction of the Alternative 1 long-term project would be the same as those for construction of Alternative 1 short-term projects. Therefore, for the same reasons as described for construction impacts of short-term projects, construction impacts of the Alternative 1 long-term project related to solid waste generation would be minor.

Hazardous Materials Exposure

The construction-related impacts of the Alternative 1 long-term project related to hazardous materials would be similar to the construction impacts of Alternative 1 short-term projects identified above. Therefore, for the same reasons as described for the construction impacts of short-term projects, construction impacts of the Alternative 1 long-term project related to potential exposure to hazardous materials would be minor.

Hazards and Public Safety

The construction-related impacts of the Alternative 1 long-term project related to hazards and public safety would be similar to the construction impacts of Alternative 1 short-term projects identified above. Therefore, for the same reasons as described for the construction impacts of short-term projects, construction impacts of the Alternative 1 long-term project related to hazards and public safety would be minor.

Operation

Solid Waste Generation

Operation of the Alternative 1 long-term project would result in solid-waste generation impacts similar to those identified above for operation of Alternative 1 short-term projects. Based on CalRecycle estimates for solid waste generation for medical office buildings/hospitals, operation of the long-term project is projected to increase the generation of solid waste by an estimated 1,836 tons per year, for a total estimate for the SFVAMC Fort Miley Campus of 4,271 tons of waste per year through 2027.[8] Should the 2015 VA SSPP's diversion target for nonhazardous solid waste of 50 percent be achieved and maintained through 2027, operation of the Alternative 1 long-term project is estimated to generate 2,136 tons of waste per year. For the same reasons as described above for operation of Alternative 1 short-term projects, operational impacts of the Alternative 1 long-term project related to solid waste generation would be minor.

[8] This is based on habitable area and does not include parking structure or mechanical penthouse square footage.

Hazardous Waste Generation

Operation of the Alternative 1 long-term project would result in hazardous-waste generation impacts similar to those identified above for operation of Alternative 1 short-term projects. Therefore, for the same reasons as described above for operation of Alternative 1 short-term projects, operational impacts of the Alternative 1 long-term project related to hazardous waste generation would be minor.

Hazards and Public Safety

Operation of the Alternative 1 long-term project would result in impacts related to hazards and public safety similar to those identified above for operation of Alternative 1 short-term projects. Therefore, for the same reasons as described above for operation of Alternative 1 short-term projects, operational impacts of the Alternative 1 long-term project related to hazards and public safety would range from beneficial to minor.

Alternative 2: SFVAMC Fort Miley Campus Buildout Alternative

Short-Term Projects

Alternative 2 short-term projects at the existing SFVAMC Fort Miley Campus would be the same as short-term projects for Alternative 1, with one exception. Specifically, retrofitting of the existing Buildings 1, 6, and 8 would not occur as part of Alternative 2 short-term projects (Table 2-3 and Figure 2-3), but would instead be accomplished in the long term. Alternative 2 short-term projects include construction of a total of 485,445 gsf, which is 115,547 gsf less than for short-term projects under Alternative 1. Therefore, impacts of Alternative 2 short-term projects would be similar to or less than those of Alternative 1 short-term projects. Solid and hazardous waste impacts would be minor.

Construction

Solid Waste Generation

As with construction of short-term projects for Alternative 1, constructing Alternative 2 short-term projects would result in a short-term increase in the generation of construction waste. Construction would require the disposal of solid waste generated from tree removal, demolition of existing facilities, and removal of excess unsatisfactory soil from excavation activities and trash and scrap materials. For the same reasons as described above for the construction of Alternative 1 short-term projects, construction-related impacts of Alternative 2 short-term projects related to solid waste generation would be minor.

Hazardous Materials Exposure

As described for Alternative 1 short-term projects, the existing SFVAMC Fort Miley Campus and the surrounding area are occupied by structures that manage or may manage hazardous materials, medical chemicals, and petroleum products, and the Campus is in an area of possible serpentinitic bedrock where naturally occurring asbestos may be present in the soil. Like construction activities for short-term projects under Alternative 1, construction activities for Alternative 2 short-term projects would result in the handling and movement of soil. Moving soil, demolishing existing structures, and dewatering groundwater could result in potentially adverse

health effects on construction workers, the public, and the environment. The measures to reduce impacts of hazardous materials exposure during construction of Alternative 2 short-term projects would be the same as those described for construction of Alternative 1 short-term projects, and the potential impacts would be similar. Therefore, construction-related impacts of Alternative 2 short-term projects related to hazardous materials exposure would be minor.

Hazards and Public Safety

Like short-term projects for Alternative 1, Alternative 2 short-term projects would involve seismic, structural, mechanical, and electrical reconstruction activities that would have a long-term beneficial effect on public safety by structurally stabilizing and rehabilitating aging buildings and infrastructure. The measures to reduce impacts related to hazards and public safety during construction of Alternative 2 short-term projects would be the same as those described for construction of Alternative 1 short-term projects, and the potential impacts would be similar. Therefore, construction-related impacts of Alternative 2 short-term projects related to hazards and public safety would be minor.

Operation

Solid Waste Generation

Like Alternative 1 short-term projects, Alternative 2 short-term projects would expand the facilities of the existing SFVAMC Fort Miley Campus and SFVAMC's staffing capacities; therefore, the generation of solid waste would likely increase during operation of Alternative 2 short-term projects. For the same reasons as described above for the operation of Alternative 1 short-term projects, operational impacts of Alternative 2 short-term projects related to solid waste generation would be minor.

Hazardous Waste Generation

Like operation of Alternative 1 short-term projects, operation of Alternative 2 short-term projects would generate hazardous wastes similar to those currently permitted by State and federal agencies to be generated, stored, and/or released on the existing SFVAMC Fort Miley Campus. Because Alternative 2 short-term projects would involve expanding the existing Campus, the generation of hazardous wastes may increase. The measures to reduce impacts related to hazardous waste during operation of Alternative 2 short-term projects would be the same as those described for short-term projects under Alternative 1, and the potential impacts would be similar. Therefore, operational impacts of Alternative 2 short-term projects related to hazardous waste generation would be minor.

Hazards and Public Safety

Like Alternative 1 short-term projects, Alternative 2 short-term projects would involve seismic, structural, mechanical, and electrical reconstruction activities that would have a long-term beneficial effect on public safety by structurally stabilizing deteriorating buildings and infrastructure. The measures to reduce impacts related to hazards and public safety during operation of Alternative 2 short-term projects would be the same as those described for short-term projects of Alternative 1, and the potential impacts would be similar. Therefore, operational impacts of Alternative 2 short-term projects related to hazards and public safety would range from beneficial to minor.

Long-Term Projects

Alternative 2 long-term projects at the existing SFVAMC Fort Miley Campus would be the same as the Alternative 1 long-term project, with one exception. Specifically, three additional existing buildings—Buildings 1, 6, and 8—would be retrofitted as part of Alternative 2 long-term projects (Table 2-4 and Figure 2-4). Alternative 2 long-term projects include construction of a total of 285,487 gsf, which is 115,487 gsf more than under the Alternative 1 long-term project, because Alternative 2 includes construction of Building 213 along with the seismic retrofit of Buildings 1, 6, and 8. Therefore, construction impacts of Alternative 2 long-term projects would be similar to, although slightly greater than, those of the Alternative 1 long-term project. Solid and hazardous waste impacts would be minor.

Construction

Solid Waste Generation

The impacts of construction of Alternative 2 long-term projects related to solid waste generation would be less than those of construction of short-term projects under this alternative. No demolition of existing buildings is proposed. The measures to reduce impacts of solid waste generation during construction of Alternative 2 long-term projects would be the same as those described for construction of Alternative 1 short-term projects. Therefore, for the same reasons as described for construction impacts of short-term projects for Alternative 1, construction impacts of Alternative 2 long-term projects related to solid waste generation would be minor.

Hazardous Materials Exposure

The impacts of construction of Alternative 2 long-term projects related to hazardous materials exposure would be similar to the construction impacts of Alternative 1 short-term projects. Therefore, for the same reasons as described for the construction impacts of short-term projects for Alternative 1, construction impacts of Alternative 2 long-term projects related to potential hazardous materials exposure would be minor.

Hazards and Public Safety

The impacts of construction of Alternative 2 long-term projects related to hazards and public safety would be similar to the construction impacts of Alternative 1 short-term projects. Therefore, for the same reasons as described for the construction impacts of short-term projects for Alternative 1, construction impacts of Alternative 2 long-term projects related to hazards and public safety would be minor.

Operation

Solid Waste Generation

Operation of Alternative 2 long-term projects would result in impacts related to solid waste generation similar to those identified above for operation of Alternative 1 short-term projects. For the same reasons as described above for operation of short-term projects for Alternative 1, operational impacts of Alternative 1 long-term projects related to solid waste generation would be minor.

Hazardous Waste Generation

Operation of Alternative 2 long-term projects would result in impacts related to hazardous waste generation similar to those identified above for operation of Alternative 1 short-term projects. Therefore, for the same reasons as described above for operation of short-term projects for Alternative 1, operational impacts of Alternative 1 long-term projects related to hazardous waste generation would be minor.

Hazards and Public Safety

Operation of Alternative 2 long-term projects would result in impacts related to hazards and public safety similar to those identified above for operation of Alternative 1 short-term projects. Therefore, for the same reasons as described above for operation of short-term projects for Alternative 1, operational impacts of Alternative 2 long-term projects associated with hazards and public safety would range from beneficial to minor.

Alternative 3: SFVAMC Fort Miley Campus Plus Mission Bay Campus Alternative

Short-Term Projects

Alternative 3 short-term projects (during both construction and operation) would be the same as short-term projects under Alternative 1; thus, all Alternative 3 short-term projects would be located at the SFVAMC Fort Miley Campus. See Tables 2-1 and Figure 2-1 for Alternative 3 short-term projects. Therefore, impacts of Alternative 3 short-term projects related to solid waste generation, hazardous materials exposure, and hazards and public safety would be the same as the impacts of Alternative 1 short-term projects. These impacts would range in significance from beneficial to minor.

Long-Term Projects

Alternative 3 long-term projects (during both construction and operation) would involve developing 170,000 gsf for ambulatory care and parking structure uses at a potential new SFVAMC Mission Bay Campus. See Figure 2-5 for the location of the off-site portion of Alternative 3.

Construction

Solid Waste Generation

Alternative 3 long-term projects would involve new construction at a potential new SFVAMC Mission Bay Campus. It is unknown whether any demolition would be required to construct a potential new Campus. The measures to reduce impacts of solid waste generation during construction of Alternative 3 long-term projects would be the same as those described for short-term projects under Alternative 1. Therefore, the impact of Alternative 3 long-term projects related to a long-term increase in generation of construction waste would be similar to the impact of construction of Alternative 1 short-term projects. Impacts would be minor.

Hazardous Materials Exposure

Alternative 3 long-term projects would involve new construction at a potential new SFVAMC Mission Bay Campus. The measures to reduce impacts of hazardous materials exposure during construction of Alternative 3

long-term projects would be the same as those described for short-term projects under Alternative 1, and the potential impacts of Alternative 3 long-term projects related to hazardous materials exposure during construction would be similar to those addressed for construction of Alternative 1 short-term projects. Therefore, impacts would be minor.

Hazards and Public Safety

Alternative 3 long-term projects would involve new construction at a potential new SFVAMC Mission Bay Campus. The potential impacts related to hazards and public safety during construction of Alternative 3 long-term projects would be similar to the impacts of construction of short-term projects under Alternative 1, and the measures to reduce those impacts would be the same. Therefore, impacts would be minor.

Operation

Solid Waste Generation

Based on CalRecycle estimates for solid waste generation for medical office buildings/hospitals, the potential new SFVAMC Mission Bay Campus would generate approximately 1,188 tons of waste per year,[9] an estimated 1,247 tons less waste per year than is generated by the existing SFVAMC Fort Miley Campus. Should the VA SSPP diversion target for nonhazardous solid waste of 50 percent be achieved and maintained through 2027, operation of Alternative 3 long-term projects is estimated to generate 1,188 tons of waste per year. No net new solid waste would be generated at the existing SFVAMC Fort Miley Campus under Alternative 3 long-term projects, because no additional construction would occur at this site. Therefore, under Alternative 3 long-term projects, the existing Campus would generate an estimated 1,562 tons of waste per year.

Should the VA SSPP diversion target for nonhazardous solid waste of 50 percent be achieved and maintained through 2027, operation of Alternative 3 long-term projects would generate an estimated 2,592 tons of waste per year. Between the potential new SFVAMC Mission Bay Campus and the existing Fort Miley Campus, a total of 5,185 net new tons of waste would be generated per year, or 2,592 tons of waste per year with the 50 percent solid-waste diversion target. Operation of Alternative 3 long-term projects would ultimately result in solid waste impacts similar to those associated with operation of short-term and long-term projects for Alternative 1. Therefore, impacts would be minor.

Hazardous Materials Exposure

Operation of the potential new SVAMC Mission Bay Campus would require the handling, storage, use, and/or disposal of hazardous waste typically generated by medical facilities; therefore, SFVAMC would obtain all necessary permits (such as a Hazardous Material Registration, Hazardous Materials Certificate of Registration, and Large Quantity Generator permit for medical waste from the Hazardous Materials Unified Program Agency of the San Francisco Department of Public Health) to perform these activities for the potential new Campus, once its location has been identified. As a result, impacts would be minor.

[9] This is based on habitable area and does not include parking structure square footage. The calculation is based on 110.000 square feet of habitable space, not including the 30,000 square feet of parking proposed at the Mission Bay Campus.

Hazards and Public Safety

The potential new SFVAMC Mission Bay Campus would be composed of new, structurally sound, and retrofitted facilities that would have a long-term benefit on public safety. Furthermore, as during operation of Alternative 1 short-term projects, the potential new Campus would adhere to the emergency protocols in SFVAMC's *All-Hazards Emergency Operations Plan*. Therefore, operation of Alternative 3 long-term projects would result in impacts related to hazards and public safety similar to those for operation of the long-term project under Alternative 1. Impacts would range from beneficial to minor.

Alternative 4: No Action Alternative

Short-Term and Long-Term Projects

Construction

Under Alternative 4, there would be no new construction and no retrofitting of existing buildings. Therefore, no construction-related impacts related to solid waste, hazardous waste, or hazards would occur.

Operation

Under Alternative 4, the LRDP would not be implemented. Therefore, no project-related impacts related to solid waste or hazardous waste would occur. However, because retrofitting of existing SFVAMC buildings would not occur under this alternative, continued operation of the existing SFVAMC Fort Miley Campus could compromise public safety due to aging buildings and infrastructure as well as potential seismic hazards.

3.12.4 References

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3.13 TRANSPORTATION, TRAFFIC, CIRCULATION, AND PARKING

This section summarizes the traffic, transportation, circulation, and parking impacts, including transit, pedestrian, bicycle, and loading impacts, that are projected to result from implementation of the EIS Alternatives. A detailed transportation impact analysis was prepared and is included in Appendix E.

3.13.1 Affected Environment

Regional and Local Access

Existing Fort Miley Campus

The existing SFVAMC Fort Miley Campus is a 29-acre site located in northwestern San Francisco. The site is positioned along the north side of Clement Street, with access points at 42nd Avenue and 43rd Avenue (Figure 3.13-1). Regional and local access points to and from the existing Campus are summarized below.

Regional Access

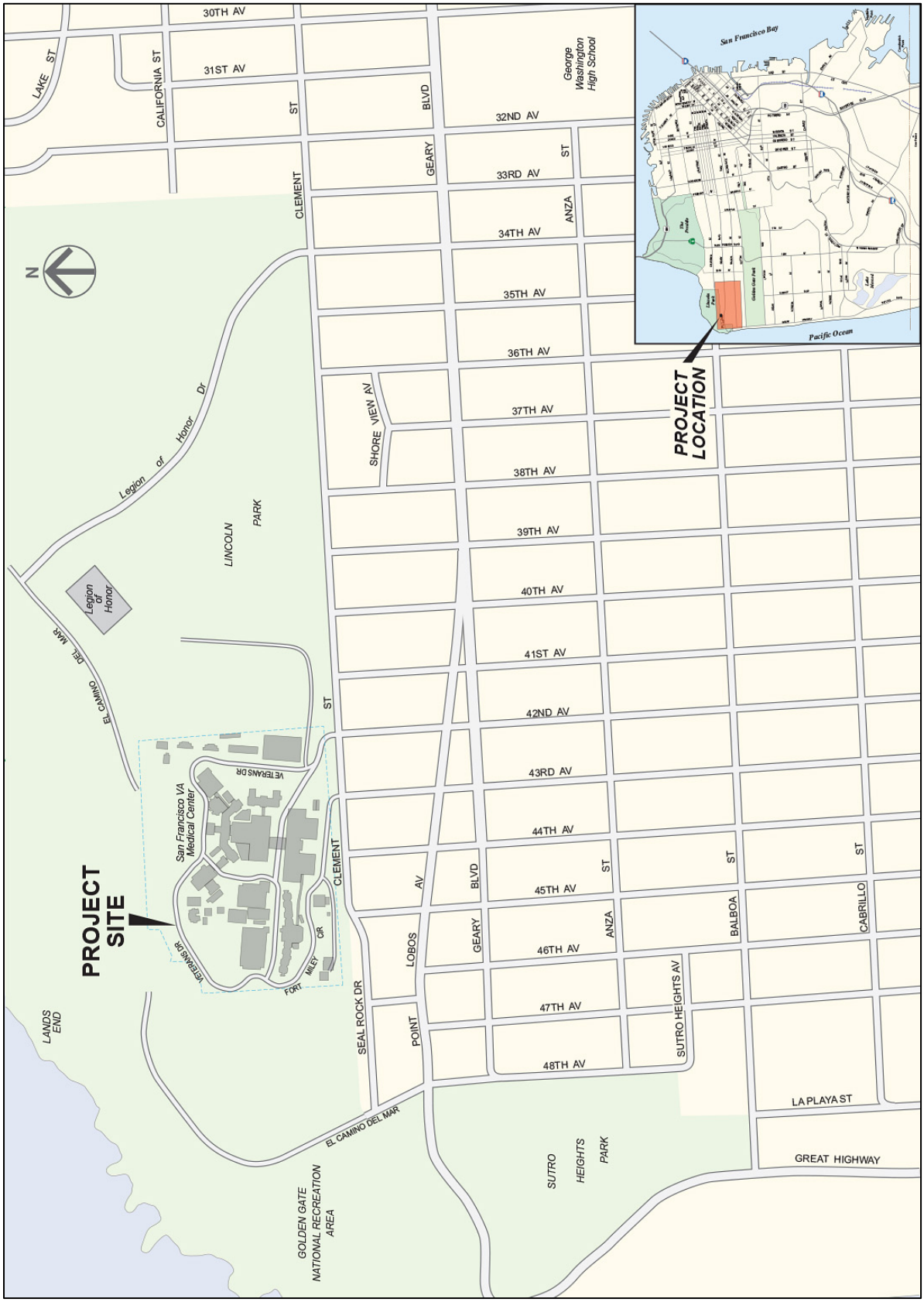
State Route (SR) 1, U.S. Highway 101 (U.S. 101), Interstate 80 (I-80), and Interstate 280 (I-280) provide regional access to and from the existing SFVAMC Fort Miley Campus.

East Bay

Regional vehicular access to and from the East Bay is provided primarily by I-80 and the Bay Bridge, with on- and off-ramps at First Street/Fremont Street/Essex Street/Bryant Street in Rincon Hill, Fourth Street/Fifth Street in the central South of Market Area, and Seventh Street/Eighth Street in the western South of Market Area. Alternative access to I-80 is provided via U.S. 101 and the U.S. 101/I-80 interchange, which can be accessed via the Central Freeway ramps at Mission Street/South Van Ness Avenue or the U.S. 101 terminus at Market Street/ Octavia Boulevard. Vehicles would be expected to use major local arterials such as Geary Boulevard/O'Farrell Street, Turk Boulevard/Golden Gate Avenue, or Fell Street/Oak Street to travel between the SFVAMC Fort Miley Campus and these ramps.

South Bay

Regional vehicular access to and from the South Bay is provided primarily by SR 1—operating through most of the San Francisco city limits as a surface arterial (19th Avenue/Park Presidio Boulevard)—and I-280. Access to SR 1 is provided primarily via the Park Presidio Boulevard/Geary Boulevard intersection, and vehicles would be expected to use Geary Boulevard to travel between the Campus and SR 1. Access to I-280 is provided via its interchange with SR 1 (Junipero Serra Boulevard) near John Daly Boulevard in Daly City, or via SR 35 (Skyline Boulevard/Sloat Boulevard). If using SR 35, access to the Campus is provided via the Great Highway and Point Lobos Avenue, or alternatively via Sunset Boulevard, Chain of Lakes Drive, and 43rd Avenue.



Source: VA, 2014c

Figure 3.13-1: Location of Proposed Action

North Bay

Regional vehicular access to and from the North Bay is provided by SR 1 (Park Presidio Boulevard in the vicinity of the Campus), 25th Avenue/Lincoln Boulevard, and the Golden Gate Bridge. Access to SR 1 or 25th Avenue/ Lincoln Boulevard is provided via the Park Presidio Boulevard/Geary Boulevard and 25th Avenue/Geary Boulevard intersections, and vehicles would be expected to use Geary Boulevard to travel between the Campus and SR 1 or 25th Avenue.

Local Access

As part of the *San Francisco General Plan*, the City and County of San Francisco identifies several types of roadway networks: the Congestion Management Program network, the Metropolitan Transportation System network, Transit Preferential Streets, and the Citywide Pedestrian Network. Local roadways serving the existing SFVAMC Fort Miley Campus and their functional designations in the *San Francisco General Plan* are described in more detail below.

Clement Street

Clement Street is an east-west collector road running from 45th Avenue in the west (where it continues as Seal Rock Drive to El Camino del Mar and Lands End) to Arguello Boulevard in the east. In the vicinity of the Campus, Clement Street is two-way with one travel lane in each direction. On-street parking is provided on both sides of the street, with restrictions during street cleaning periods.

Geary Boulevard

Geary Boulevard is a major east-west roadway that runs from 48th Avenue and Sutro Heights Park in the west (with a branch connecting to Point Lobos Avenue at 39th Avenue/40th Avenue) to Gough Street in the east, where it continues as the one-way couplet of O'Farrell Street (eastbound) and Geary Street (westbound) to Market Street in downtown San Francisco. In the vicinity of the Campus, Geary Boulevard is two-way with two to three travel lanes in each direction. On-street parking is provided on both sides of the street, with restrictions during street cleaning periods. The *San Francisco General Plan* identifies Geary Boulevard as a Major Arterial in the Congestion Management Program network through the study area. Geary Boulevard is also classified as a Metropolitan Transportation System roadway, a Neighborhood Commercial Street, and a Transit Preferential (Transit-Important) Street.

Point Lobos Avenue

Point Lobos Avenue is a major east-west roadway running from the Cliff House and Ocean Beach in the west (where it continues as the Great Highway south to Daly City) to 39th Avenue and 40th Avenue, where Point Lobos Avenue merges with Geary Boulevard. On-street parking is provided on both sides of the street. The *San Francisco General Plan* identifies Point Lobos Avenue as a Transit Conflict Street in the Congestion Management Program network through the study area. Point Lobos Avenue is also classified as a Metropolitan Transportation System recreational street.

34th Avenue

34th Avenue is a north-south collector road running from El Camino del Mar (near Lincoln Park and the Legion of Honor) to Fulton Street and Golden Gate Park. A separate section of 34th Avenue, functioning primarily as a local road, runs from Lincoln Way on the south side of Golden Gate Park to Sloat Boulevard. In the vicinity of the Campus, 34th Avenue is two-way with one travel lane in each direction. On-street parking is provided on both sides of the street, with restrictions during street cleaning periods.

42nd Avenue and 43rd Avenue

42nd Avenue and 43rd Avenue are north-south collector roads running from Clement Street in the north to Fulton Street and Golden Gate Park in the south. 42nd Avenue continues through Golden Gate Park as Chain of Lakes Drive, connecting with 41st Avenue at Lincoln Way and continuing south to Sloat Boulevard. A separate section of 41st Avenue also runs south of Golden Gate Park, but there is no direct connection through the park. In the immediate vicinity of the SFVAMC Fort Miley Campus, 42nd Avenue and 43rd Avenue are both two-way streets, with one travel lane in each direction, and serve as the two main access points to the Campus. On-street parking is provided on both sides of 42nd Avenue and 43rd Avenue, with restrictions during street cleaning periods.

Fort Miley Circle and Veterans Drive

Fort Miley Circle and Veterans Drive are the two primary roadways within the SFVAMC Fort Miley Campus, providing access to buildings and other facilities on the Campus. Both are generally two-way roadways with one travel lane in each direction, except for the section of Fort Miley Circle from Building 203 in the east to Veterans Drive in the west, which is one-way westbound. Veterans Drive connects into the Campus's two main access points at the 43rd Avenue/Clement Street and 42nd Avenue/Clement Street intersections.

Potential New Mission Bay Campus

With regard to Alternative 3, the "Mission Bay" area is assumed to comprise the geographical extent shown in Figure 2-5.

Regional Access

U.S. 101, I-80, and I-280 provide regional access to and from the Mission Bay area.

Local Access

Major east-west arterials providing local access to and from the Mission Bay area are Market, Mission, Howard/ Folsom, Harrison/Bryant, King, 16th, and Cesar Chavez Streets. Major north-south arterials providing local access to and from the Mission Bay area are The Embarcadero; Third, Fourth, Sixth, Seventh, Eighth, Ninth, and 10th Streets; and Van Ness Avenue.

Traffic

Existing SFVAMC Fort Miley Campus

Five study intersections were selected for analysis, representing locations that are the most relevant for capturing traffic flow effects related to operation of the existing SFVAMC Fort Miley Campus:

1. 34th Avenue/Clement Street
2. 42nd Avenue/Clement Street
3. 43rd Avenue/Clement Street
4. 42nd Avenue/Point Lobos Avenue
5. 43rd Avenue/Point Lobos Avenue

The locations of these study intersections in relation to the SFVAMC Fort Miley Campus are illustrated in Figure 3.13-2.

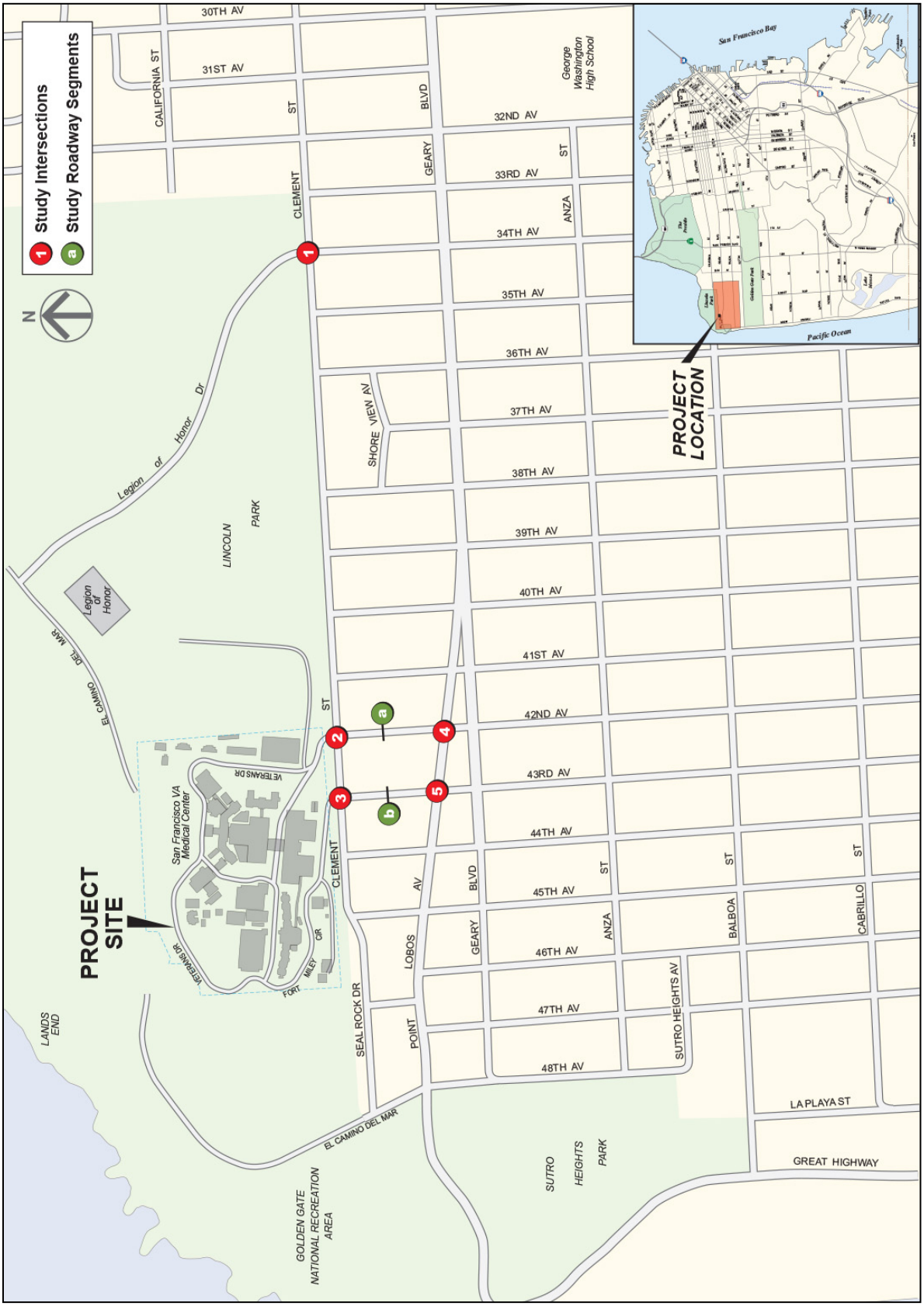
Traffic counts for each study intersection were collected during the weekday p.m. peak period (4:00 p.m. to 6:00 p.m.) on a nonholiday, fair-weather weekday while school was in session (Tuesday, February 15, 2011) (Appendix E). The intersection analysis focuses on conditions during the weekday p.m. peak hour—defined as the peak 1 hour (four consecutive 15-minute intervals) of the weekday p.m. peak period—and uses the 2000 *Highway Capacity Manual* (HCM) methodology, which is based on level of service (LOS).[1] The LOS methodology is a qualitative description of the performance of an intersection based on average delay per vehicle.

For signalized intersections, the HCM methodology determines the capacity of each lane group approaching the intersection. (Note that the only signalized intersections near the existing SFVAMC Fort Miley Campus are on Geary Boulevard.) The LOS is then based on average delay (in seconds per vehicle) for the various movements within the intersection. A combined weighted-average delay and LOS are then presented for the intersection. For unsignalized intersections, the LOS is based on the average delay (in seconds per vehicle) for all approaches for an all-way stop, or the worst approach for a one- or two-way stop controlled intersection.

Intersection LOS ranges from LOS A, which indicates free flow or excellent conditions with short delays, to LOS F, which indicates congested or overloaded conditions with extremely long delays. LOS A through D are considered excellent to satisfactory levels of service, and LOS E and LOS F represent unacceptable levels of service.

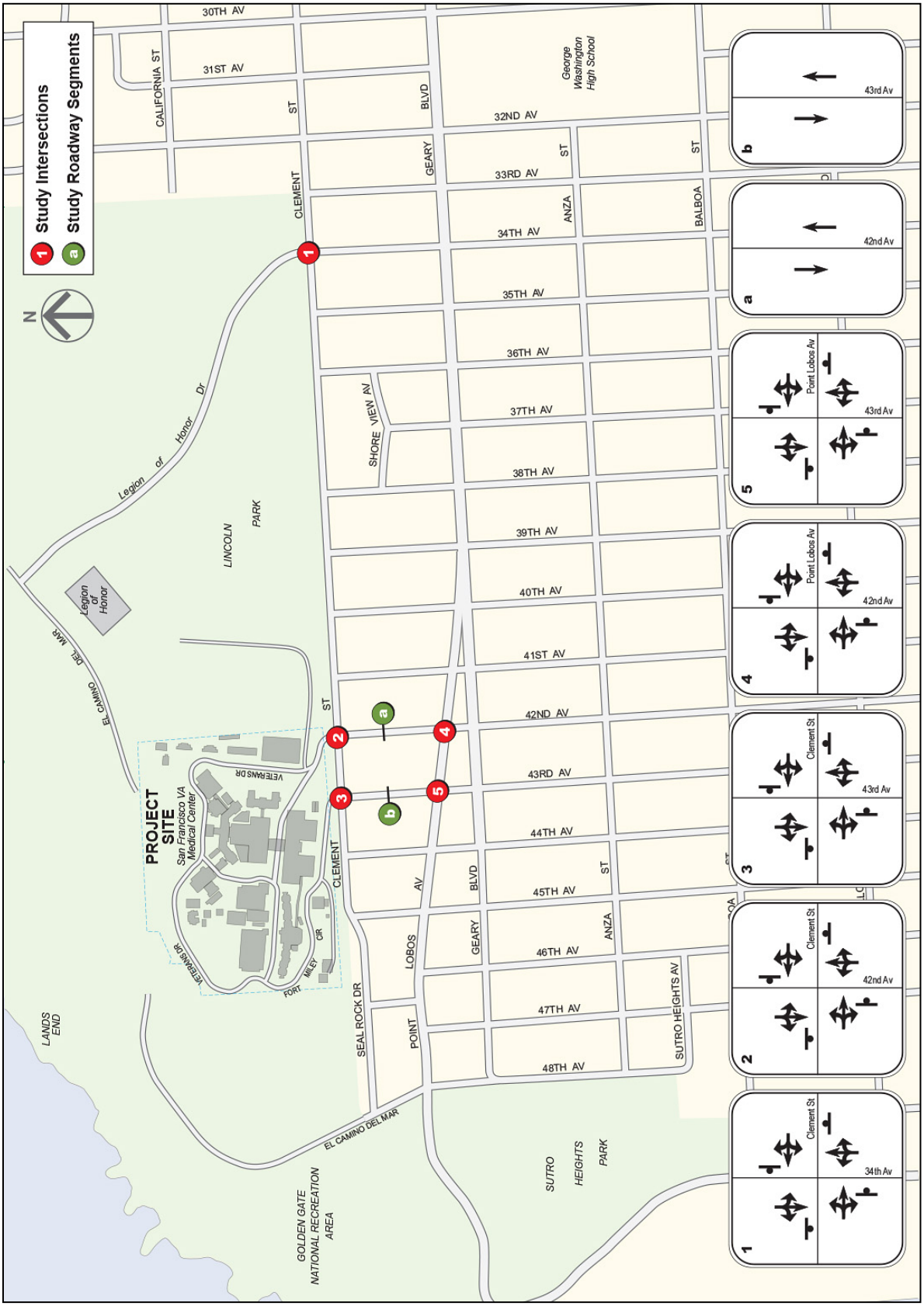
Lane geometries for each intersection are presented in Figure 3.13-3, and the existing-conditions traffic volumes are presented in Figure 3.13-4. The existing-conditions intersection LOS is summarized in Table 3.13-1. Detailed LOS calculations are provided in Appendix E.

[1] As part of the HCM methodology, adjustments are typically made to the capacity of each intersection to account for various factors that reduce the ability of the streets to accommodate vehicles. These factors include the downtown nature of the area, number of pedestrians, vehicle types, lane widths, grades, on-street parking, and queues. These adjustments are performed to ensure that the LOS analysis results reflect the operating conditions that are observed in the field.



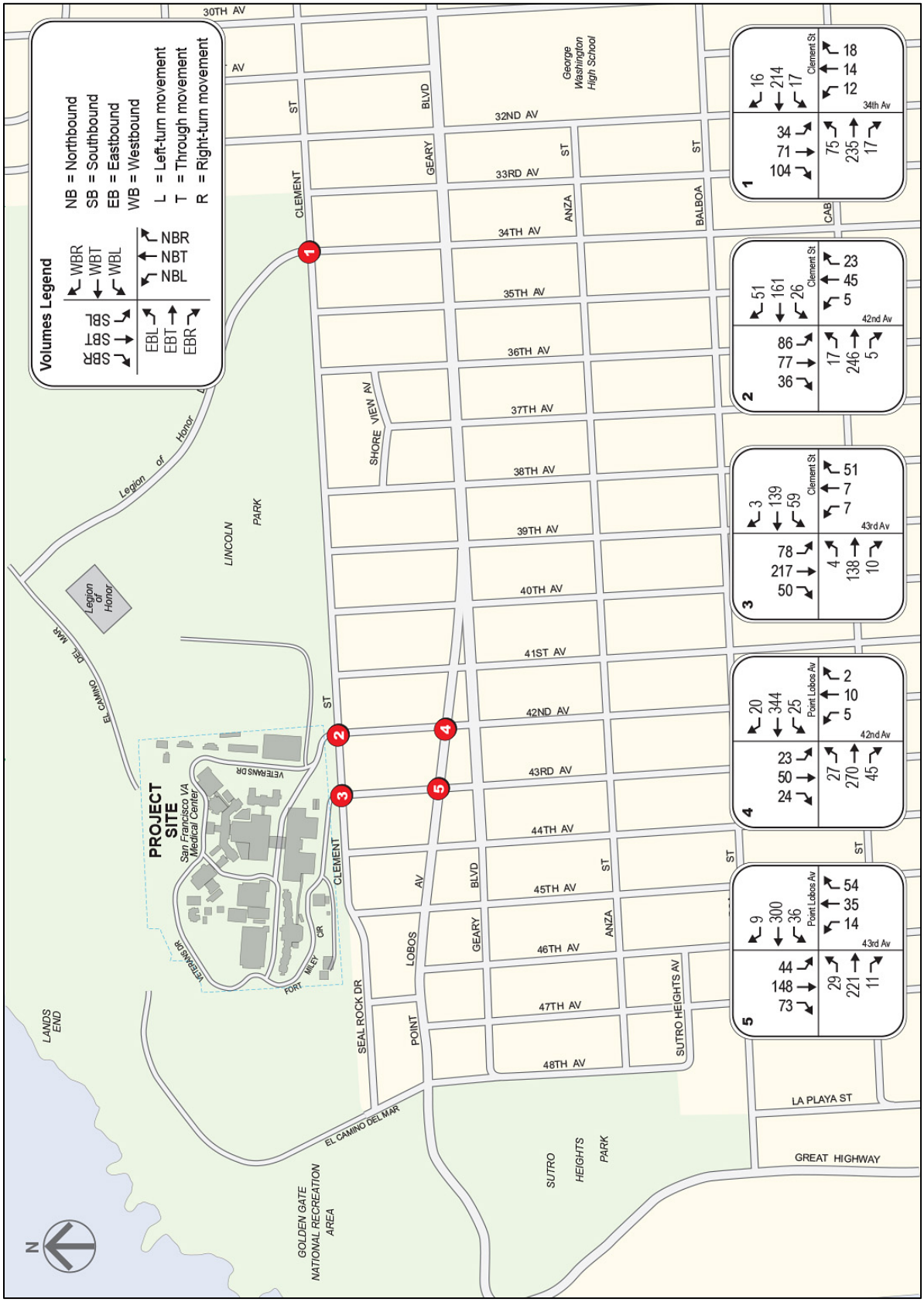
Source: VA, 2014c

Figure 3.13-2: Traffic Analysis Locations near the SFVMC Fort Miley Campus



Source: VA, 2014c

Figure 3.13-3: Intersection Lane Geometry near the SFVAMC Fort Miley Campus (Existing Conditions)



Source: VA, 2014c

Figure 3.13-4: Intersection Traffic Volumes near the SFVAMC Fort Miley Campus (Existing Conditions)

Table 3.13-1: Intersection Levels of Service—Existing Conditions, Weekday P.M. Peak Hour

	Intersection	Control Type	Existing Conditions near the SFVAMC Fort Miley Campus	
			LOS	Delay[1]
1	34th Avenue/Clement Street	All-way Stop	B	11.8
2	42nd Avenue/Clement Street	All-way Stop	B	11.0
3	43rd Avenue/Clement Street	All-way Stop	B	11.7
4	42nd Avenue/Point Lobos Avenue	All-way Stop	B	12.4
5	43rd Avenue/Point Lobos Avenue	All-way Stop	B	14.2

Notes: LOS = level of service; SFVAMC = San Francisco Veterans Affairs Medical Center
[1] Delay presented in seconds per vehicle.
Source: VA, 2014c

As shown in Table 3.13-1, under existing conditions, all five study intersections were found to operate at acceptable conditions (LOS D or better) during the weekday p.m. peak hour (defined as the peak 1 hour [four consecutive 15-minute intervals] of the weekday p.m. peak period [4:00 p.m. to 6:00 p.m.]).

In addition to the intersection analysis, LOS was also analyzed for two midblock roadway segments, selected because of their proximity to the existing SFVAMC Fort Miley Campus and their function as the primary vehicular access routes to and from the Campus:

1. 42nd Avenue between Clement Street and Point Lobos Avenue
2. 42nd Avenue between Clement Street and Point Lobos Avenue

See Figure 3.13-2 for the locations of these study roadway segments. The roadway-segment analysis is based on the calculation of a volume-to-capacity ratio for each study roadway segment, assuming a conservative capacity of 450 vehicles per hour per lane.[2] Similar to LOS for intersections, roadway LOS ranges from LOS A to LOS F, with LOS A through D considered excellent to satisfactory and LOS E and LOS F representing unacceptable conditions.

The existing-conditions LOS for roadway segments is summarized in Table 3.13-2. Detailed LOS calculations are provided in Appendix E. As shown in Table 3.13-2, under existing conditions, both study roadway segments were found to operate at acceptable conditions (LOS D or better) during the weekday p.m. peak hour, when traffic congestion is typically highest.

[2] The capacity of roadway facilities can fall within a wide range of values, depending on the nature of access control and free-flow travel speeds. Facilities with high access control. such as expressways. can accommodate up to 1,900 vehicles per hour per lane (vphpl); roadways with limited access control generally operate with much lower capacity, as explained below. In most urban contexts, for example, intersection density and the presence of traffic control devices such as traffic signals or stop signs are the primary constraints on roadway capacity. Urban arterials with signal control are typically assumed to accommodate up to 900 vphpl, dropping to 600 vphpl for minor collector roads. Given the local context of the selected study roadway segments as neighborhood streets, a conservative capacity of 450 vphpl was assumed for this analysis.

Table 3.13-2: Roadway Segment Levels of Service—Existing Conditions, Weekday P.M. Peak Hour

	Roadway Segment	Direction	Existing Conditions near the SFVAMC Fort Miley Campus	
			LOS	v/c Ratio
1	42nd Avenue/Clement Street *Between Clement Street and Point Lobos Avenue*	Northbound	A	0.16
		Southbound	A	0.24
2	43rd Avenue/Clement Street *Between Clement Street and Point Lobos Avenue*	Northbound	A	0.16
		Southbound	C	0.64

Notes: LOS = level of service; SFVAMC = San Francisco Veterans Affairs Medical Center; v/c = volume-to-capacity
Source: VA, 2014c

Mission Bay Area

Study intersections were not identified for the Mission Bay area because of the uncertainty about where SFVAMC facilities might be located in this approximately 2.5-square-mile area. Therefore, traffic counts and LOS information are not provided. When specific site locations are identified for SFVAMC facilities in the Mission Bay area, study intersections will be identified and a project-level transportation analysis will be completed.

Transit

Existing Fort Miley Campus

Public Transit

Local Transit

Transit Lines

The San Francisco Municipal Railway (Muni) provides local transit service within San Francisco, including bus (diesel and electric trolley), light rail (Metro), streetcar, and cable car lines. Local transit service to the SFVAMC Fort Miley Campus is provided primarily by Muni bus services in the Geary Boulevard corridor. One of Muni's busiest corridors, the Geary Boulevard corridor connects the Inner and Outer Richmond District neighborhoods, Laurel Heights, and Fillmore/Japantown/Western Addition with downtown San Francisco. The 38 Geary and 38L Geary Limited are the closest major routes serving the Campus, providing frequent service with articulated coaches each capable of carrying 94 passengers. The 38 Geary provides local service in the corridor and operates 24 hours a day, 7 days a week, and the 38L Geary Limited provides faster, limited-stop service during daytime hours (morning to early evening) on weekdays and Saturdays. Supplementary weekday peak-period service in the vicinity of the SFVAMC Fort Miley Campus is provided by the 38AX Geary "A" Express, but only in the general commute direction (inbound from the Outer Richmond to downtown in the mornings and outbound from downtown to the Outer Richmond in the evenings).

The key characteristics of each line are summarized in Table 3.13-3. Figure 3.13-5 illustrates the transit service in the vicinity of the existing Campus.



Source: VA, 2014c

Figure 3.13-5: Transit Network—Existing Conditions

Table 3.13-3: San Francisco Municipal Railway Transit Service in the Campus Vicinity

Line		Vehicle Capacity (passengers)	Approximate Headway[1,2] (minutes)				Nearest Stop to the SFVAMC Fort Miley Campus	
			Weekday A.M. Peak Hour		Weekday P.M. Peak Hour			
			Inbound	Outbound	Inbound	Outbound	Inbound	Outbound
38	Geary	94	12.0	12.0	7.5	8.0	Fort Miley Circle/Veterans Drive[3] or 42nd Avenue/ Geary Boulevard	42nd Avenue/ Point Lobos Avenue
38L	Geary Limited	94	5.5	5.5	5.5	5.5	42nd Avenue/ Geary Boulevard	42nd Avenue/ Point Lobos Avenue
38AX	Geary "A" Express	63	11	No service	No service	9.0	42nd Avenue/ Geary Boulevard	42nd Avenue/ Point Lobos Avenue

Notes: SFVAMC = San Francisco Veterans Affairs Medical Center
1 "Headway" is defined as the time interval between transit vehicles.
2 To stay consistent with the most recent peak-hour ridership data published by the San Francisco Municipal Transit Agency, headways are presented as they were in 2011. San Francisco Municipal Railway vehicles are typically defined as traveling either "inbound" (i.e., toward downtown) or "outbound" (i.e., leaving downtown).
3 Direct service to and from the SFVAMC Fort Miley Campus varies by time of day. Not all buses serve the Campus.
Source: SFMTA, 2014

The nearest major Muni stops to the SFVAMC Fort Miley Campus are at 42nd Avenue/Geary Boulevard (eastbound direction) and 42nd Avenue/Point Lobos Avenue (westbound direction). These stops are located approximately 500 feet from the southern edge of the Campus along Clement Street and are served by all three lines, although the actual service varies by day and time of day.

In addition to these stops along Geary Boulevard and Point Lobos Avenue, a branch of the 38 Geary also directly serves the SFVAMC Fort Miley Campus. Under current schedules (as of May 2014), weekday service on the Fort Miley branch of the 38 Geary is as follows:

- In the inbound direction, every other bus between approximately 6:00 a.m. and 7:30 p.m. departs from the SFVAMC Fort Miley Campus, with other buses departing from a separate terminal farther east of the Campus at 32nd Avenue/Balboa Street near Washington High School.

- In the outbound direction, all buses between approximately 5:30 a.m. and 8:00 a.m. and every other bus between 8:00 a.m. and 8:00 p.m. serve the SFVAMC Fort Miley Campus. Between 5:30 a.m. and 7:15 a.m., all outbound buses serving the Campus continue to 48th Avenue/Point Lobos Avenue (Lands End/ Sutro Heights Park/Cliff House).

The Fort Miley service does not operate at other times of the day on weekdays. Service on Saturdays and Sundays is similar, although the start and end times for service vary slightly from the weekday schedule. Buses operating on the Fort Miley service currently enter the SFVAMC Fort Miley Campus via 42nd Avenue, terminating at a

stop to the south of Building 1 (Opioid Replacement Clinic) before looping through the site via Fort Miley Circle to 43rd Avenue and continuing back inbound to downtown San Francisco.

It should also be noted that the 38AX is a peak-period, commute-direction service. During the weekday p.m. peak period, service is provided only in the westbound direction (toward Lands End and 48th Avenue/Point Lobos Avenue).

Ridership and Capacity

The availability of transit is based on the capacity utilization of each line, which relates the number of passengers per transit vehicle to the design capacity of the vehicle. The capacity per vehicle includes both seated and standing capacity, where standing capacity is between 30 and 80 percent of the seated capacity, depending on the configuration of the vehicle. Ridership values are obtained at the maximum load point, which is the stop along the line where average passenger loads reach their peak.

In accordance with Proposition E, the San Francisco Municipal Transportation Agency (SFMTA) Board of Directors has adopted an “85 percent” standard for transit vehicle loads—i.e., all transit vehicles should operate at or below 85 percent capacity utilization. The SFMTA Board has determined that this threshold most accurately reflects actual operations and the likelihood of “pass-ups” (i.e., vehicles not stopping to pick up more passengers).

Table 3.13-4 shows the weekday p.m. peak-hour capacity use for each Muni bus route that directly serves the existing SFVAMC Fort Miley Campus. The ridership data represent the most recent automatic passenger count data published by SFMTA. The capacity data presented reflect the schedule at the time the ridership data were collected in fall 2011 (as summarized in Table 3.13-3), and do not consider changes to Muni service since that time. For reference, the data for the 38BX Geary “B” Express are also included to present a more complete picture of conditions within the Geary Corridor, although this particular route does not directly serve the Campus (the outer terminus is at Geary Boulevard/25th Avenue, east of the Campus).

Muni defines trips with respect to downtown San Francisco. Thus, inbound (eastbound) trips are considered to be traveling toward downtown, and outbound (westbound) trips are considered to be traveling away from downtown. As shown in Table 3.13-4, all three lines operate below capacity during the weekday p.m. peak hour, with the majority of ridership traveling outbound from downtown San Francisco. The highest capacity utilization during the weekday p.m. peak hour is on outbound 38L Geary Limited buses, approaching the 85 percent policy standard when leaving the stop at Geary Boulevard/Van Ness Avenue.

Regional Transit

No regional public transit service is in the immediate vicinity of the SFVAMC Fort Miley Campus. Transit passengers with origins or destinations outside of San Francisco typically need to transfer to or from Muni to complete their transit trips, or take advantage of the regional/commuter shuttles provided by SFVAMC. Regional public transit services in San Francisco are described in more detail below.

Table 3.13-4: San Francisco Municipal Railway Transit Ridership and Capacity in the Vicinity of the Existing SFVAMC Fort Miley Campus, Weekday P.M. Peak Hour

Line		Direction[1]	Existing Conditions, Weekday P.M. Peak Hour			
			Ridership	Capacity	Utilization	Maximum Load Point
38	Geary	Inbound	352	752	47%	Geary Boulevard/Laguna Street
		Outbound	450	705	64%	Geary Boulevard/Franklin Street
38L	Geary Limited	Inbound	556	1,025	54%	Geary Boulevard/Divisadero Street
		Outbound	862	1,025	84%	Geary Boulevard/Van Ness Avenue
38AX	Geary "A" Express	Inbound	*No service in inbound direction during weekday p.m. peak period*			
		Outbound	280	420	67%	Pine Street/Montgomery Street
38BX	Geary "B" Express[2]	Inbound	*No service in inbound direction during weekday p.m. peak period*			
		Outbound	222	378	59%	Pine Street/Montgomery Street
Total		**Inbound**	**908**	**1,777**	**51%**	
		Outbound	**1,814**	**2,528**	**72%**	

Notes: SFVAMC = San Francisco Veterans Affairs Medical Center

[1] San Francisco Municipal Railway vehicles are typically defined as either traveling "inbound" (i.e., toward downtown) or "outbound" (i.e., leaving downtown).

[2] This line does not directly serve the SFVAMC Fort Miley Campus, but is included here for consistency and to present a more complete picture of transit conditions in the Geary Corridor.

Source: SFMTA, 2014

- East Bay

  Regional public transit service connecting the East Bay (Alameda and Contra Costa Counties) with San Francisco is provided primarily by the San Francisco Bay Area Rapid Transit District (BART) and the Alameda–Contra Costa Transit District (AC Transit). BART provides regional rail service between San Francisco and the East Bay, with outer terminals at Pittsburg/Bay Point, Richmond, (East) Dublin/Pleasanton, and Fremont. Passengers traveling via BART would be able to transfer to Muni's 38 Geary and 38L Geary Limited at the Montgomery Station or to SFVAMC's commuter shuttles at the Embarcadero Station (Ferry Building).

  AC Transit, the primary bus operator for Alameda and Contra Costa Counties, operates an extensive network of commuter routes. Some routes also operate all day and on weekends, although most operate only on weekdays during the commute period and in the general commute direction. Almost all of AC Transit's commuter routes terminate at the (Temporary) Transbay Terminal, where passengers can connect with Muni's 38 Geary and 38L Geary Limited or with SFVAMC's commuter shuttles.

  Supplementary transit service to and from the East Bay is provided by ferry (terminals in Vallejo, at Oakland's Jack London Square, and in Alameda at Main Street and in Harbor Bay), and by commuter bus service operated by Solano County Transit (service to and from Vallejo via Route 200) and the Western Contra Costa Transit Authority (service to and from Hercules via the Lynx Commuter Express).

- South Bay/Peninsula

  Regional public transit service connecting the South Bay and Peninsula (San Mateo and Santa Clara Counties) with San Francisco is provided primarily by BART, Caltrain, and San Mateo County Transit (SamTrans). BART provides service in northern San Mateo County, with outer terminals at San Francisco International Airport and Millbrae; passengers traveling on BART can transfer to Muni's 38 Geary and 38L Geary Limited at the Montgomery Station or to SFVAMC's commuter shuttles at the Civic Center Station.

  Caltrain provides commuter rail service along the full length of the Peninsula to San Jose, with some services extending farther south to Gilroy. Passengers traveling on Caltrain can transfer to SFVAMC's commuter shuttles at Caltrain's San Francisco terminal at Fourth Street/King Street; or they can transfer to BART at the Millbrae Station, transferring to the commuter shuttle at the Civic Center Station.

  SamTrans, the primary bus operator in San Mateo County, operates regular service to and from San Francisco on Routes KX and 292. Passengers on these services can transfer to Muni's 38 Geary and 38L Geary Limited or SFVAMC's commuter shuttles at the Civic Center Station or the (Temporary) Transbay Terminal.

- North Bay

  Regional public transit service connecting the North Bay (Marin and Sonoma Counties) with San Francisco is provided primarily by the Golden Gate Bridge, Highway & Transportation District. This transit provider operates an extensive network of bus service to San Francisco through Golden Gate Transit, as well as ferry services departing from Larkspur and Sausalito. Passengers traveling on Golden Gate Transit can transfer to SFVAMC's commuter shuttles at the Golden Gate Bridge Toll Plaza, and passengers traveling via ferry can transfer at the Ferry Building. Supplementary transit service to and from the North Bay is provided by the Blue & Gold Fleet, which operates ferry services from Tiburon and Sausalito (terminating at Pier 41 in San Francisco's Fisherman's Wharf area).

SFVAMC Shuttle Services

SFVAMC provides a variety of local, regional, and intercity shuttle services through several different operating schemes:

- Services operated directly by SFVAMC staff members
- Services operated jointly with the University of California, San Francisco (UCSF)
- Services contracted out to third-party for-profit companies (currently Bauer's Transportation)
- Services provided by the Disabled American Veterans Volunteer Transportation Network

These services operate weekdays only (Mondays through Fridays) but serve a wide variety of Campus users—patients, employees/staff members, and visitors as well as affiliated faculty, students, and guests of UCSF. Table 3.13-5 summarizes shuttle services provided at the SFVAMC Fort Miley Campus.

Table 3.13-5: SFVAMC Shuttle Services

Route	Operator	Daily Round Trips (Weekday)	Ridership Served
Intercity			
Mendocino/Humboldt Counties: *Santa Rosa (VA Outpatient Clinic), Ukiah (VA Outpatient Clinic), Willits, Laytonville, Garberville, Rio Dell/Scotia, Fortuna, Eureka (VA Outpatient Clinic)*	SFVAMC	1–2[1]	Patients
Sonoma/Mendocino Counties: *Santa Rosa (VA Outpatient Clinic), Cloverdale, Hopland, Ukiah (VA Clinic)*	SFVAMC	3.5[2]	Patients
Mendocino County (Inland): *Cloverdale, Hopland, Ukiah*	DAV VTN	1	Patients
Mendocino County (Coast): *Boonville, Fort Bragg*	DAV VTN	1	Patients
Napa/Lake Counties: *Napa, Middletown, Lower Lake, Clearlake*	DAV VTN	1	Patients
Regional/Commuter			
South Bay/East Bay Commuter: *Ferry Building, Transbay Terminal, Caltrain (Fourth & King), Civic Center*	Bauer's	10.5[3]	Patients, employees, volunteers
North Bay Commuter: *Golden Gate Bridge Toll Plaza*	Bauer's	6[4]	Patients, employees, volunteers
Marin/Sonoma Counties: *Novato, Petaluma, Cotati, Santa Rosa*	DAV VTN	1	Patients
San Bruno VA Outpatient Clinic	SFVAMC	4	Patients, employees, visitors
Local			
Downtown San Francisco VA Outpatient Clinic: *Third Street/Harrison Street*	SFVAMC	3	Patients, employees, visitors
UCSF Parnassus Campus: *401 Parnassus Avenue*	SFVAMC/ UCSF	17[5]	Patients, faculty, employees, students, visitors

Notes: DAV VTN = Disabled American Veterans Volunteer Transportation Network; SFVAMC = San Francisco Veterans Affairs Medical Center; UCSF = University of California, San Francisco; VA = U.S. Department of Veterans Affairs

1 One round trip daily Mondays and Fridays, two round trips daily Tuesdays, Wednesdays, and Thursdays.

2 Three southbound trips and four northbound trips daily.

3 Commute period, commute direction only (inbound to SFVAMC in the mornings and outbound from SFVAMC in the afternoons/ evenings). Operates on variable headways (10−30 minutes), with 11 inbound trips and 10 outbound trips.

4 Commute period, commute direction only (inbound to SFVAMC in the mornings and outbound from SFVAMC in the afternoons/ evenings). Operates on fixed headways (30 minutes), with six inbound trips and six outbound trips.

5 Operates on variable headways (approximately 30 minutes peak, 60 minutes off-peak).

Source: VA, 2014c

Specifically, SFVAMC currently contracts with Bauer's Transportation to provide free bus and shuttle service to SFVAMC staff members and patients daily. The service operates between the SFVAMC Fort Miley Campus and major transportation hubs in San Francisco (the Ferry Building/Embarcadero Station, the Transbay Terminal, Caltrain's Fourth & King Station, and the Civic Center Station) from 5:00 a.m. to 9:00 a.m. and again from 2:30 p.m. to 6:30 p.m. More than 1,285 staff members and patients utilize this commuter service provided by VA every day.

Taxis

In addition to public transit and the shuttle services provided by SFVAMC, the SFVAMC Fort Miley Campus is served by taxis. Designated taxi stops are provided in two different locations on the Campus, between Building 200 and Building 203 and between Building 208 and Building 209. Taxis are permitted to enter and exit the Campus through either 42nd Avenue or 43rd Avenue. A taxi call station is located at Building 200 near the entrance.

Mission Bay Area

Local service in the Mission Bay area is provided by Muni bus and light rail lines, while regional transit service is provided by Caltrain, BART, Golden Gate Transit, and AC Transit.

The Mission Bay area is near several key transit facilities: the Transbay Terminal, the Embarcadero BART/Muni Metro Station, the Montgomery BART/Muni Metro Station, the Ferry Building, and Caltrain's San Francisco terminal (Fourth & King Station). Transit service to and from the East Bay is provided by BART and AC Transit. Transit service to and from the South Bay is provided by BART (via connection to Caltrain in Millbrae), SamTrans, and Caltrain. Transit service to and from the North Bay is provided by Golden Gate Transit buses and ferries. UCSF and other shuttles provide services to and from these hubs and Mission Bay neighborhood. Other UCSF shuttles run between Mission Bay and UCSF campuses.

Local transit service operated by Muni is available along major east-west roadways such as Market Street, Mission Street, Howard Street, Folsom Street, Harrison Street, and Bryant Street. North-south transit service is provided along Third Street, where light rail service will be extended more directly into downtown San Francisco and north into Chinatown as part of the Central Subway project (currently under construction).

Pedestrian

Existing SFVAMC Fort Miley Campus

Generally, a low level of pedestrian activity was observed throughout the day in the vicinity of the existing SFVAMC Fort Miley Campus. Activity at 42nd Avenue/Clement Street and 43rd Avenue/Clement Street is slightly higher than at other minor intersections farther away as a result of foot traffic heading to and from the Campus, particularly during the weekday a.m. and p.m. peak periods. During the weekday p.m. peak period, sidewalks and crosswalks were observed to be operating at free-flow conditions, with pedestrians moving at normal speeds and with freedom to bypass other pedestrians. Most Campus-related pedestrian traffic in the surrounding neighborhoods consists of staff members and patients heading to and from transit stops or parked vehicles.

On-Campus Conditions for Pedestrians

Sidewalks and walkways are provided on the existing SFVAMC Fort Miley Campus and connect to sidewalks along Clement Street. Sidewalks are provided around Fort Miley Circle and Veterans Drive and between buildings within the Campus. However, some segments of Veterans Drive, such as segments adjacent to Lot G and Lot J, currently lack sidewalks or designated pedestrian space on one or both sides. Pedestrians in these locations were observed to walk along the roadway edges, although these areas do not generally see high levels of pedestrian activity compared to other parts of the Campus.

Off-Campus Conditions for Pedestrians

Sidewalks

Most major streets in the vicinity of the existing SFVAMC Fort Miley Campus have sidewalks on both sides of the street, although Clement Street abutting the Campus (between 43rd Avenue and 45th Avenue) and Lincoln Park (east of 42nd Avenue) lack sidewalks along the north side. Sidewalks are 4 feet wide or greater, although obstructions such as utility poles, fire hydrants, and shrubbery may narrow the effective width, such as along the south side of Clement Street at the southeast corner of 42nd Avenue/Clement Street or the north side of Clement Street at the northwest corner of 43rd Avenue/Clement Street. Sidewalk pavement conditions are generally good, although there is a high frequency of curb cuts because of the residential nature of the neighborhood and the need to secure access to ground-level garages for homes.

Crosswalks

The provision of marked crosswalks at intersections varies by location and direction. In the immediate vicinity of the SFVAMC Fort Miley Campus, marked crosswalks are only provided across two legs at 42nd Avenue/Clement Street (west and south legs) and 43rd Avenue/Clement Street (east and south legs), although stop bars are provided on the pavement. Farther from the Campus, minor intersections along Clement Street west and east of the Campus generally lack marked crosswalks completely. Major intersections south of the Campus at 42nd Avenue/Point Lobos Avenue, 42nd Avenue/Geary Boulevard, 43rd Avenue/Point Lobos Avenue, and 43rd Avenue/Geary Boulevard feature marked crosswalks on all legs. Crosswalk markings are low-visibility designs (parallel lines) lacking special treatments (e.g., ladder, continental, or diagonal striping; high-visibility signage; flashing devices) and are generally in poor condition, with substantial fading or cracking.

Curb Ramps

As with sidewalks, the provision of curb ramps varies by location and street corner. In the immediate vicinity of the SFVAMC Fort Miley Campus, curb ramps are missing at some street corners at 42nd Avenue/Clement Street (northeast corner) and 43rd Avenue/Clement Street (northwest corner), or may be provided in only one orientation (e.g., southwest corners at both intersections). Most existing curb ramps at these intersections and in the surrounding area are not compliant with the Americans with Disabilities Act (ADA), lacking tactile warning devices such as truncated dome tiles.

Speed Bumps

There are three speed bumps along Clement Street between 36th and 40th Avenues to slow vehicular traffic and enhance pedestrian and bicycle safety.

Mission Bay Area

All major streets in the Mission Bay area have sidewalks and all major intersections have marked crosswalks. Intersection corners also have curb ramps, although some are not ADA compliant and lack tactile warning systems such as truncated domes. In the Mission Bay area, there is generally a moderate level of pedestrian activity throughout the day. Peaks occur in the morning, at midday, and in the evening as employees head to office buildings, go to and from lunch, and head home.

Bicycle

Existing Fort Miley Campus

During field observations, bicyclists were observed riding along the established bicycle routes near the existing SFVAMC Fort Miley Campus. Bicycle activity is generally low because of the hilly terrain and steep grades and the Campus's location well outside of downtown San Francisco and major regional transportation hubs. However, SFMTA provides bicycle racks on the front of all Muni buses, and major regional public transit services such as BART and ferries allow passengers to bring bicycles on board. Some of the shuttle services bringing patients, staff members, and visitors to and from the Fort Miley Campus also feature bicycle racks and bicycle lockers. Overall, bicycle conditions were observed to be acceptable, with only minor conflicts observed between right-turning vehicles and bicyclists.

On-Campus Conditions for Bicycles

There are no designated bike lanes on the SFVAMC Fort Miley Campus and bicyclists must share Campus roads with other users. However, the restricted speed limit (10 miles per hour) on the Campus helps to provide a safe riding environment for bicyclists. SFVAMC currently provides bicycle racks and bicycle lockers for use by staff members commuting to and from the Campus by bike.

Off-Campus Conditions for Bicycles

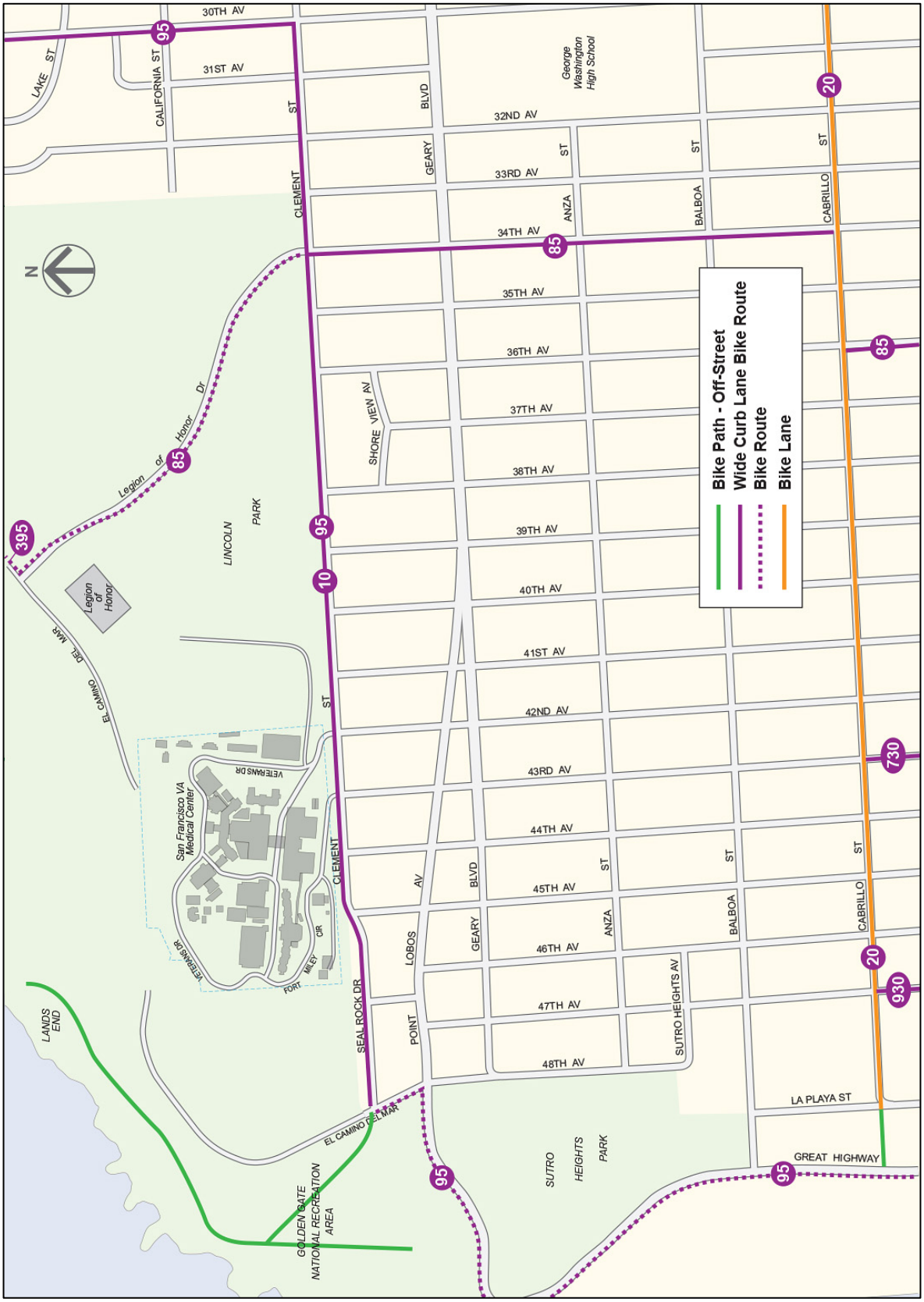
Four major citywide bicycle routes consisting of Class 1 and Class 3 bikeways are situated in the vicinity of the existing SFVAMC Fort Miley Campus, and are supplemented by Class 1 trails through Lands End and Lincoln Park. Class 1 bicycle facilities are paved off-street paths; Class 2 bicycle facilities are striped separated bicycle lanes adjacent to the curb lane; and Class 3 bicycle facilities are signed routes only, where bicyclists share travel lanes with vehicles. The major bicycle routes in the immediate vicinity of the existing SFVAMC Fort Miley Campus are illustrated in Figure 3.13-6 and described below.

Route 10

Route 10 is a major east-west bikeway stretching from Lands End in the west to The Embarcadero in the east via Clement Street, Lake Street, Clay Street, and Pacific Street. In the immediate vicinity of the SFVAMC Fort Miley Campus along Clement Street, Route 10 comprises Class 3 facilities with painted sharrows and signage, but Class 2 facilities are provided farther east along Lake Street between 28th Avenue and Arguello Boulevard. At its western end, Route 10 connects to the Lands End trail network and Route 95. Because of the relatively flat terrain, low traffic volumes, and the presence of Class 2 facilities along Lake Street, Route 10 is one of the preferred east-west routes for reaching the SFVAMC Fort Miley Campus.

Route 85

Route 85 is a major north-south bikeway stretching from Lincoln Park and the Legion of Honor in the north to Lake Merced and the border with Daly City in the south, via 34th Avenue and Lake Merced Boulevard. In the immediate vicinity of the SFVAMC Fort Miley Campus, Route 85 runs along Legion of Honor Drive and 34th Avenue and comprises Class 3 facilities with painted sharrows and signage, connecting with east-west facilities such as Route 10 and Route 395.



Source: VA, 2014c

Figure 3.13-6: Bicycle Network—Existing Conditions

Route 95

Route 95 is a major north-south bikeway stretching from the Golden Gate Bridge in the north to Fort Funston and the border with Daly City in the south, via Lincoln Boulevard, El Camino del Mar, Clement Street, Point Lobos Avenue/Great Highway, and Skyline Boulevard. In the immediate vicinity of the SFVAMC Fort Miley Campus, Route 95 is a Class 3 facility along Clement Street with painted sharrows and signage, overlapping with Route 10. Farther away, Route 95 includes sections of Class 1 and Class 2 facilities, such as through the Presidio and along the Great Highway.

Route 395

Route 395 is a minor east-west bikeway that serves as a branch of Route 95, connecting Route 85 and the shared-use trails in Lands End/Lincoln Park with Route 95 at 30th Avenue/El Camino del Mar. Route 395 is a Class 3 bikeway with painted sharrows and signage.

Lands End Trail Network

A network of recreational trails serves the Lands End/Lincoln Park area of the Golden Gate National Recreation Area (GGNRA), to the immediate north of the SFVAMC Fort Miley Campus. The unpaved trails are used primarily for hiking, walking, and running because of steep grades and frequent elevation changes, dense vegetation, narrow width, and high levels of foot traffic. However, some segments are open to recreational (mountain) bicyclists as unpaved Class 1 facilities.

Speed Bumps

As discussed previously, there are three speed bumps along Clement Street between 36th and 40th Avenues to slow vehicular traffic and enhance pedestrian and bicycle safety.

Mission Bay Area

In the Mission Bay area, bicycle lanes are provided along Terry A. Francois Boulevard, 16th Street, Howard Street, Folsom Street, The Embarcadero, Seventh Street, Eighth Street, and 11th Street. Bicycle routes are provided along Second, Fifth, and Townsend Streets. Howard Street operates as a one-way couplet with Folsom Street. There is generally a low to moderate level of bicycle activity in the area.

Loading

Existing Fort Miley Campus

Medical, building, office, and food supplies are delivered to the existing SFVAMC Fort Miley Campus on a daily basis. Delivery vehicles have the option of using either of the two main access points at 42nd Avenue/Clement Street and 43rd Avenue/Clement Street. Typically, however, they access the site via the 42nd Avenue/Clement Street intersection, where they use Fort Miley Circle and Veterans Drive to directly access individual building delivery bays.

There are currently 11 loading bays on campus, distributed as follows among on-site structures:

- Building 7—one bay
- Building 203—four bays
- Building 6—one bay
- Building 12—three bays
- Building 208—two bays

Although not related to VA facilities at the SFVAMC Fort Miley Campus, the National Park Service (NPS) Trails Crew facility at East Fort Miley also generates freight loading demand and heavy-vehicle access needs related to materials and equipment deliveries that access the Campus via the 42nd Avenue/Clement Street intersection. Truck movements into and out of the access road serving East Fort Miley occasionally result in minor, temporary obstructions to traffic circulation in this part of the Campus, which usually dissipate after trucks have completed their maneuvers.

Mission Bay Area

Loading facilities were not identified for the Mission Bay area because a specific site for SFVAMC facilities has not been identified.[3]

Site Access and Circulation

Existing Fort Miley Campus

Access to the existing SFVAMC Fort Miley Campus is provided from 42nd Avenue and 43rd Avenue onto Veterans Drive, which provides access to all Campus buildings and all parking facilities. The two internal roadways—Fort Miley Circle and Veterans Drive—provide access throughout the Campus. Existing traffic patterns indicate that a majority of vehicles enter from 42nd Avenue/Clement Street and exit from 43rd Avenue/ Clement Street.

Fire response service on the Campus is provided by the San Francisco Fire Department. Fire engines and trucks can currently enter and exit the Campus via either of the two main access points at 42nd Avenue/Clement Street and 43rd Avenue/Clement Street. SFVAMC currently provides only limited emergency medical services. Ambulances and other emergency medical vehicles arriving at the Campus are destined for Building 200 (Ambulatory Care Center), and typically enter the Campus via the 42nd Avenue access. Overall, the Campus currently provides adequate emergency medical access.

Mission Bay Area

Specific access and circulation points were not identified for the Mission Bay area because a specific site for SFVAMC facilities has not been identified.[4]

[3] Loading facilities were not identified in the Mission Bay area because of the uncertainty about the location to which SFVAMC facilities might relocate in this approximately 2.5-square-mile area.

Parking

Existing Fort Miley Campus

Parking supply and occupancy for on- and off-street public parking facilities in the study area were obtained via field observations. Parking occupancy surveys were conducted during the weekday morning (9:00 a.m. to 11:00 a.m.), midday (1:00 p.m. to 3:00 p.m.), and evening (7:00 p.m. to 9:00 p.m.) peak periods to obtain sufficient data to characterize parking demand over the course of the day.

On-Campus Parking

Parking Supply

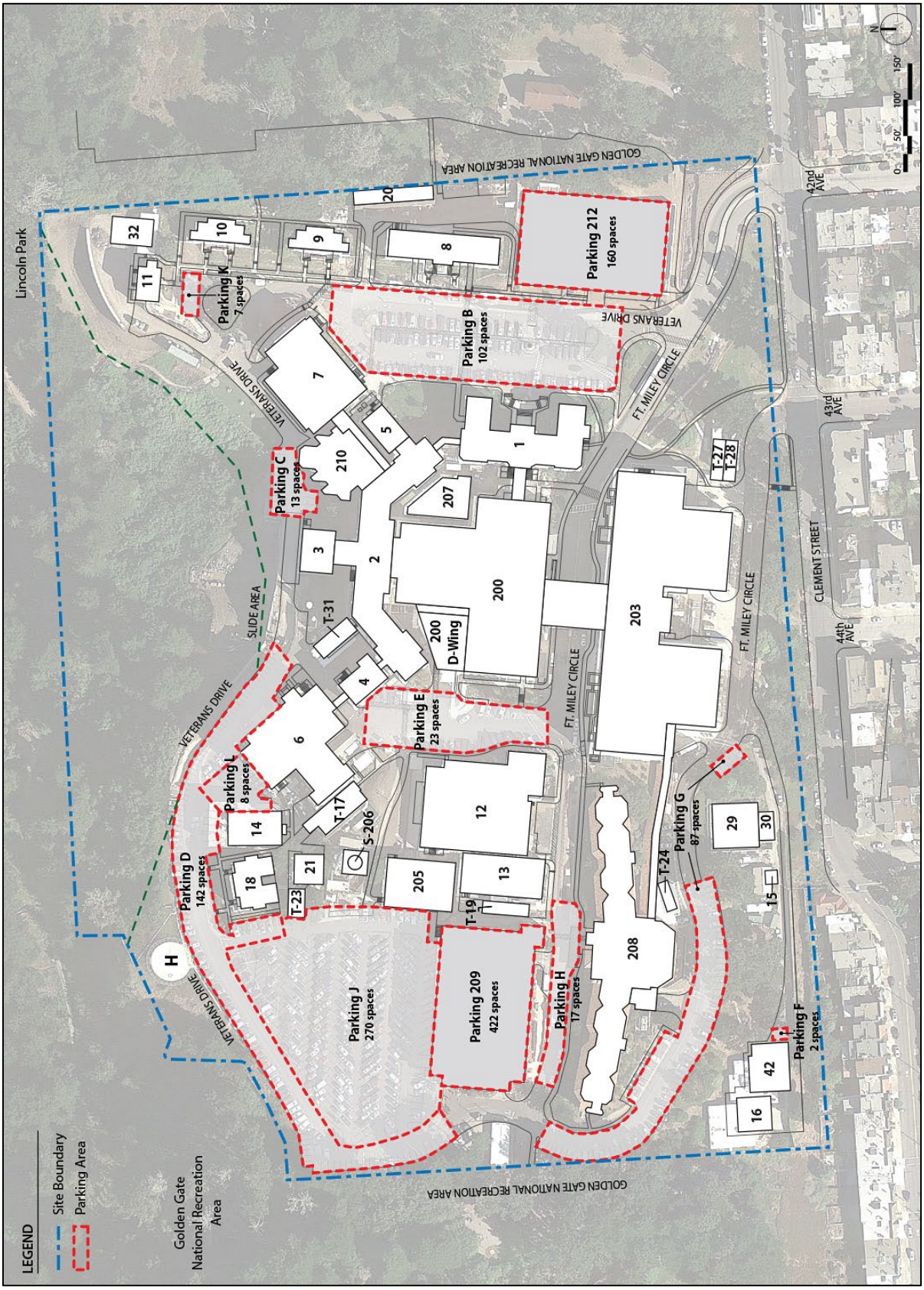
Two parking structures (Building 209 and Building 212) and 10 surface parking lots (Lot B through Lot L) are located on the existing SFVAMC Fort Miley Campus, providing a total of 1,253 parking spaces. These facilities are summarized in Table 3.13-6 and illustrated in Figure 3.13-7.

Table 3.13-6: Existing Off-Street Parking Supply at the SFVAMC Fort Miley Campus

Facility	Configuration	Function/User	Capacity (spaces)
Building 209	Structure	Employee/Visitor	422
Building 212	Structure	Patient	160
Lot B	Surface lot	Patient/Visitor	102
Lot C	Surface lot	Employee	13
Lot D	Surface lot	GSA/Employee	142
Lot E	Surface lot	Patient	23
Lot F	Surface lot	Employee	2
Lot G	Surface lot	Employee	87
Lot H	Surface lot	Patient/Visitor	17
Lot J	Surface lot	Employee	270
Lot K	Surface lot	Employee	7
Lot L	Surface lot	Employee	8
Total			**1,253**

Notes: GSA = General Services Administration; SFVAMC = San Francisco Veterans Affairs Medical Center
Reflects status as of 2012, as reported in the SFVAMC Long Range Development Plan. Some facilities listed have since been permanently or temporarily closed or restriped/reconfigured as a result of construction activities, Americans with Disabilities Act compliance, or other factors.
Sources: VA, 2014a and 2014c

[4] Specific access and circulation points were not identified in the Mission Bay area because of the uncertainty about the location to which SFVAMC facilities might relocate in this approximately 2.5-square-mile area.



Source: VA, 2014.

Figure 3.13-7: Parking Facilities—Existing Conditions

Patients and visitors may currently park in Lots B, E, and H, and at Buildings 209 and 212.[5] The remaining facilities are designated for SFVAMC employees, except that some spaces in Lot D are reserved for use by the General Services Administration. Not included in the summary of parking supply in Table 3.13-6 are four additional spaces provided near Building 32 (Childcare Center) for pick-up/drop-off activities, as well as curb space along Fort Miley Circle adjacent to Buildings 208, 209, 200, and 203 designated for various uses such as police parking and shuttle parking.

Parking Demand

Field observations indicated very high utilization of off-street parking facilities on the Campus on weekdays. Occupancy levels remained at or near capacity through the morning and midday periods, but decreased considerably by the evening period. The results of the field observations were corroborated against older data regarding on-site parking occupancy levels, obtained from a transportation study prepared for a proposed new Campus building for the Northern California Institute for Research and Education (VA, 2003).

Off-Campus Parking

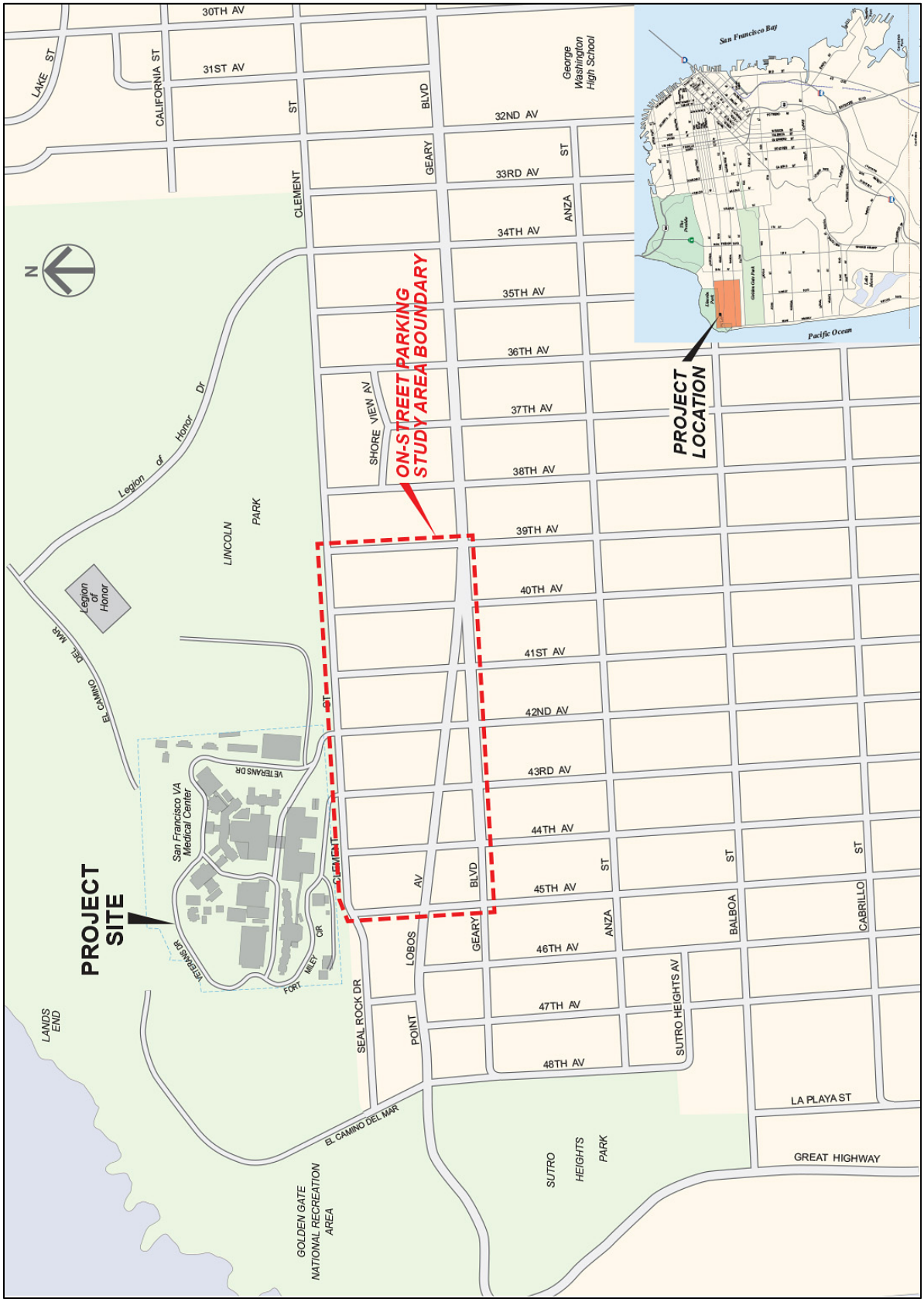
Off-campus (i.e., on-street) parking conditions were evaluated for a six-block area bounded by Clement Street to the north, Geary Boulevard to the south, 39th Avenue to the east, and 45th Avenue to the west (Figure 3.13-8).

Parking Supply

On-street parking in the vicinity of the existing SFVAMC Fort Miley Campus generally consists of unmetered parallel parking. Angled parking is provided along the north side of Geary Boulevard between 43rd Avenue and 42nd Avenue and between 41st Avenue and 40th Avenue, and along the south side of Point Lobos Avenue between 43rd Avenue and 42nd Avenue. It should be noted that the angled parking provided on the north side of Geary Boulevard and the south side of Point Lobos Avenue between 43rd Avenue and 42nd Avenue is located adjacent to a Walgreens store, the only major commercial land use in the immediate vicinity of the Campus. These spaces are designated as 1-hour parking spaces between 8:00 a.m. and 6:00 p.m. and can be used by all motorists (i.e., these spaces are not designated for customer use only). All other on-street parking in the study area is adjacent to residential land uses, with the exception of parking along the north side of Clement Street abutting the south edge of the Campus.

Because on-street parking in the study area is unmarked, the supply of on-street spaces has been estimated assuming 25 feet of curb space per vehicle. Based on this assumption, approximately 600 on-street parking spaces are currently provided in the parking study area. Figure 3.13-9 summarizes on-street parking capacity by block face.

[5] Building 209 provides valet parking in addition to standard striped parking stalls.



Source: VA, 2014b

Figure 3.13-8: On-Street Parking Study Area



Source: VA, 2014b

Figure 3.13-9: On-Street Parking Supply—Existing Conditions

Parking Demand

The parking study area, like most of the Richmond District, tends to have high on-street parking utilization, in part because the area has minimal parking restrictions (except during street cleaning) and no residential parking permits are required. In addition, many of the residential units have multiple tenants who do not have access to garage parking and therefore park on the street.

Parking occupancy surveys were conducted during the weekday morning (9:00 a.m. to 11:00 a.m.), midday (1:00 p.m. to 3:00 p.m.), and evening (7:00 p.m. to 9:00 p.m.) peak periods to obtain sufficient data to characterize parking demand over the course of the day. Based on the field observations, it was determined that on-street parking is well utilized throughout the day, although particular occupancy percentages can vary depending on location and peak period.

During the weekday morning peak period, on-street parking occupancy ranges between 80 percent and 100 percent along most block faces, with an average overall occupancy of 87 percent. During the weekday midday peak period, on-street parking occupancy continued to range between 80 percent and 100 percent along most block faces, with an average overall occupancy of 90 percent. Specifically, on-street parking spaces along the north side of Clement Street were found to be 100 percent occupied between 45th Avenue and 43rd Avenue, 92 percent occupied between 43rd Avenue and 42nd Avenue, and 93 percent occupied between 42nd Avenue and 39th Avenue during the weekday midday peak period.

During the weekday evening peak period, on-street parking occupancy levels are lower than during the weekday morning and midday peak periods. Many block faces experience occupancy levels below 80 percent. Average overall occupancy during the evening peak period was found to be 73 percent. On-street parking along Clement Street adjacent to the Campus remained relatively high, and lower occupancy levels were observed along Point Lobos Avenue and along roadways west of the Campus. Specifically, on-street parking spaces along the north side of Clement Street were found to be 100 percent occupied between 45th Avenue and 43rd Avenue, 85 percent occupied between 43rd Avenue and 42nd Avenue, and 53 percent occupied between 42nd Avenue and 39th Avenue during the weekday evening peak period.

On-street parking occupancy during the weekday morning, midday, and evening peak periods is illustrated in Figure 3.13-10, Figure 3.13-11, and Figure 3.13-12, respectively.

Residential and employment-based land uses generally complement each other in terms of parking demand peaking. In particular, many SFVAMC personnel begin leaving Campus by 4 to 5 p.m., with occupancy of Campus employee parking facilities beginning to reduce to 50 percent during this time. Therefore, the effect of Campus parking demand on the surrounding residential neighborhoods during the course of a typical day already has substantially subsided by the latter half of the weekday PM peak period, when many local residents in the area would be expected to be returning home from work or school.



Source: VA, 2014b

Figure 3.13-10: On-Street Parking Occupancy—Existing Conditions (Morning)



Source: VA, 2014b

Figure 3.13-11: On-Street Parking Occupancy—Existing Conditions (Midday)



Source: VA, 2014b

Figure 3.13-12: On-Street Parking Occupancy—Existing Conditions (Evening)

Mission Bay Area

On-street parking, parking lots, and parking structures exist throughout the Mission Bay area.[6]

3.13.2 Regulatory Framework

There are no applicable federal standards related to transportation and parking.

3.13.3 Environmental Consequences

Significance Criteria

A NEPA evaluation must consider the context and intensity of the environmental effects that would be caused by, or result from, the EIS Alternatives. There are no standard federal policies for assessment of project-level transportation, transit, pedestrian, bicycle, loading, and parking impacts. Therefore, after a review of guidance from other federal transportation agencies such as the Federal Highway Administration and the Federal Transit

Administration, the thresholds used by the jurisdiction closest to the SFVAMC Fort Miley Campus, the City and County of San Francisco, were used for this analysis.

An Alternative analyzed in this EIS is considered to result in an adverse operational impact related to transportation and parking if any of the following conditions related to signalized or unsignalized intersections would occur:

- *Signalized intersections*—Traffic related to the EIS Alternative would cause the intersection LOS to deteriorate from LOS D or better to LOS E or LOS F, or from LOS E to LOS F. An Alternative may result in adverse impacts at intersections that operate at LOS E or LOS F under existing conditions, depending on the magnitude of the contribution made by the Alternative to the worsening of the average delay per vehicle. In addition, an EIS Alternative would have an adverse impact if it would cause major traffic hazards or contribute considerably to cumulative traffic increases that would cause deterioration in LOS to unacceptable levels.

- *Unsignalized intersections*—Traffic related to the EIS Alternative would cause the intersection LOS to deteriorate from LOS D or better to LOS E or LOS F, or from LOS E to LOS F, and the conditions of the *Manual on Uniform Traffic Control Devices* peak-hour signal warrant would be met. In addition, an EIS Alternative would have an adverse impact if it would cause major traffic hazards or contribute considerably to cumulative traffic increases that would cause deterioration in LOS to unacceptable levels.

The City and County of San Francisco does not have significance criteria related to roadway segments. To preserve consistency with the intersection analysis, the LOS-based criteria identified above for the study intersections were also applied to the study roadway segments.

[6] Specific parking amenities were not identified in the Mission Bay area because of the uncertainty about the location to which SFVAMC facilities might relocate in this approximately 3-square-mile area.

In addition, an Alternative analyzed in this EIS would have an adverse effect on the environment if any of the following additional conditions would occur:

- The EIS Alternative would cause a substantial increase in transit demand that could not be accommodated by adjacent transit capacity, resulting in unacceptable levels of transit service; or would cause a substantial increase in delays or operating costs such that adverse impacts in transit service levels could result. The Alternative would have an adverse effect on the transit provider if transit trips related to implementation of the Alternative would cause the capacity utilization standard to be exceeded during the peak hour.

- The EIS Alternative would result in substantial overcrowding on public sidewalks, create potentially hazardous conditions for pedestrians, or otherwise interfere with pedestrian accessibility to the site and adjoining areas.

- The EIS Alternative would create potentially hazardous conditions for bicyclists or otherwise substantially interfere with bicycle accessibility to the site and adjoining areas.

- The EIS Alternative would result in a loading demand during the peak hour of loading activities that could not be accommodated within proposed on-site loading facilities or within convenient on-street loading zones, and would create potentially hazardous conditions or substantial delays affecting traffic, transit, bicycles, or pedestrians.

- The EIS Alternative would result in inadequate emergency access.

Assessment Methods

The following scenarios were evaluated to identify the potential transportation impacts of the proposed LRDP at the SFVAMC Fort Miley Campus:

- 2020 Short-Term Conditions:
  - No Action (Alternative 4)
  - Alternative 1 Short-Term Projects Conditions
  - Alternative 3 Short-Term Projects Conditions
- 2027 Long-Term Conditions:
  - No Action (Alternative 4)
  - Alternative 1 Short-Term and Long-Term Projects Conditions
  - Alternative 3 Short-Term and Long-Term Projects Conditions
- 2040 Cumulative Conditions:
  - No Action (Alternative 4)
  - Alternative 1 Short-Term and Long-Term Projects Conditions
  - Alternative 3 Short-Term and Long-Term Projects Conditions

The 2040 Cumulative Conditions are discussed in Section 4.3.13 in Chapter 4.0, "Cumulative Impacts."

It should be noted that Alternative 2 is identical to Alternative 1 in terms of the total amount and type of operational space proposed, but would involve different phasing and implementation schedules for some projects, resulting in a different, longer construction schedule. Therefore, the evaluation of the transportation impacts of the EIS Alternatives distinguishes between Alternatives 1 and 2 only when discussing construction-related impacts.

Traffic

The potential for impacts of the Alternatives on intersection and roadway segment operations was assessed quantitatively based on the expected change in LOS and associated metrics (delay or volume-to-capacity ratio). Impacts on passenger vehicle access (and related activities, such as passenger loading) and vehicle access for GGNRA traffic at East Fort Miley were assessed qualitatively.

Transit

The potential for impacts of the Alternatives on transit access, operations, and facilities was generally assessed qualitatively. Transit services evaluated included those provided at the SFVAMC Fort Miley Campus, including local and regional public transit, various shuttle services provided by SFVAMC, and taxis, together with their access in and out of the Campus. However, transit ridership and capacity for the weekday p.m. peak hour was assessed quantitatively for Muni services in the Geary Boulevard corridor (38 Geary, 38L Geary Limited, and 38AX Geary "A" Express), using ridership and capacity data published by SFMTA.

Pedestrians

The potential for impacts of the Alternatives on pedestrian conditions throughout the study area was generally assessed qualitatively. The assessment included an estimate of the number of new pedestrian trips that would be added to the existing pedestrian network. Potential pedestrian safety issues were identified, including potential conflicts between vehicular traffic and pedestrian circulation. Impacts on pedestrian conditions from activities resulting from implementation of the Alternatives, including generation of vehicular traffic, also were assessed qualitatively.

Bicycles

The potential for impacts of the Alternatives on bicycle conditions throughout the study area was generally assessed qualitatively. The assessment included an analysis of safety and right-of-way issues and estimated the number of new trips that would be added to the existing bikeway and roadway network. Impacts on bicycle conditions from activities resulting from implementation of the Alternatives, including generation of vehicular traffic, also were assessed qualitatively.

Loading

The potential for impacts of the Alternatives on delivery loading access caused by changes in the circulation system at the SFVAMC Fort Miley Campus was assessed qualitatively.

Site Access and Circulation

The potential for impacts on general site access and circulation from changes in the circulation system at the SFVAMC Fort Miley Campus was assessed qualitatively. The assessment focused on fire access and emergency medical (ambulance) access.

Parking

Absent NEPA requirements for parking supply, the proposed supply of parking was evaluated against guidance from the San Francisco Planning Code (Planning Code) regarding off-street parking requirements and the estimated peak parking demand generated by each Alternative. The peak parking demands were calculated using demand rates published by the Institute of Transportation Engineers (ITE) in *Parking Generation* (4th ed., 2010).

Travel Demand Methodology

Details of the methodology used for travel demand (trip generation, mode split, average vehicle occupancy, and trip distribution), parking demand, and delivery vehicle loading demand are provided below. Travel demand estimates for the EIS Alternatives were developed based on data from the following sources:

- *Transportation Impact Analysis Guidelines for Environmental Review* (*SF Guidelines*)

  Published by the San Francisco Planning Department in October 2002, the *SF Guidelines* prescribes standard methodologies for analyzing transportation impacts of development projects in the City and County of San Francisco. The *SF Guidelines* also contain empirical data on travel behavior characteristics—namely, trip distribution, mode split, and average vehicle occupancy—localized into four distinct quadrants (superdistricts) of the city. The SFVAMC Fort Miley Campus is located in Superdistrict 2, representing northwestern San Francisco and including the Inner Richmond, Outer Richmond/Seacliff, the Presidio, the Marina, Cow Hollow/Pacific Heights, Laurel Heights, the Fillmore/Western Addition, the Haight, and Hayes Valley/North of Panhandle. The proposed new SFVAMC Mission Bay Campus would be located in Superdistrict 3, representing most of central, eastern, and southeastern San Francisco and encompassing the Mission District, Castro/Noe Valley, Dogpatch/Potrero Hill, Mission Bay, Central Waterfront, Bayview/Hunters Point, Visitacion Valley, Outer Mission/Ingleside, Excelsior/Crocker Amazon, Diamond Heights/Glen Park, Portola/Silver Terrace, and Bernal Heights.

- U.S. Census

  The U.S. Census regularly collects and forecasts a variety of demographic data across the United States, including data on commute travel behavior, frequently referred to as “Journey to Work” data. Specifically, the U.S. Census provides data on residents’ commute mode share (“means of transportation to work”) and average vehicle occupancy, which can be obtained down to the census tract level.

- *Trip Generation*

  Published by ITE, *Trip Generation* (8th ed., 2008; 9th ed., 2012) are the most commonly used sources of land use–based trip generation rates, derived from empirical data collected through trip surveys at locations across the United States.

Trip Generation

The person-trip generation for each EIS Alternative includes trips made by patients, visitors, and employees of the proposed hospital, office, and research uses. For the purposes of this analysis, trip generation rates are based on information contained in ITE's *Trip Generation*, because the *SF Guidelines* (SF Planning 2002) do not contain rates for uses comparable to those of the EIS Alternatives.

ITE trip generation rates are developed through the aggregation of trip surveys conducted for various land uses in suburban areas throughout the United States. Specifically, sites represented in the ITE samples are generally highly automobile-dependent and automobile-oriented, with the majority of trips taken by automobiles. Therefore, the ITE rates can be assumed to represent an approximately 100 percent automobile mode share. Because the standard methodology outlined in the *SF Guidelines* examines trips made by all modes of travel, the ITE trip generation rates (vehicle-trips) were adjusted for this analysis using an appropriate average vehicle occupancy rate to determine total "person-trips" by a given land use. Because ITE survey data were taken at various locations throughout the country, the national average vehicle occupancy rate from 2000 U.S. Census data, as provided on the U.S. Department of Transportation Federal Highway Administration's Census Transportation Planning Products website, was used (FHA, 2011). Table 3.13-7 presents the trip generation rates used for the analysis of the alternatives.

Table 3.13-7: Assumed Person-Trip Generation Rates

Land Use (ITE Land Use Code)	Trip Rate Unit	ITE Trip Rate		Equivalent Person-Trip Rate[1]	
		Weekday Daily	Weekday P.M. Peak Hour	Weekday Daily	Weekday P.M. Peak Hour
Hospital (610)	1,000 square feet (gross)	13.22	0.93	14.28	1.00
Office (710)	1,000 square feet (gross)	11.03	1.49	11.91	1.61
Research and Development (760)	1,000 square feet (gross)	8.11	1.07	8.76	1.16
Nursing Home (620)	1,000 square feet (gross)	7.60	0.74	8.21	0.80
Motel (320)	room	5.63	0.47	6.08	0.51
Medical–Dental Office Building (720)	1,000 square feet (gross)	36.13	3.57	39.02	3.86

Notes: ITE = Institute of Transportation Engineers
[1] ITE trip generation rates are adjusted using the national average vehicle occupancy rate of 1.08 passengers per vehicle, per 2000 U.S. Census data.
Sources: SF Planning, 2002; ITE, 2008; ITE, 2012; U.S. FHA, 2011

Data on work/nonwork splits and inbound/outbound splits were obtained from the *SF Guidelines* for comparable land uses expected to exhibit work/nonwork splits and inbound/outbound splits similar to uses under the EIS Alternatives.

Mode Split

The estimated person-trips generated by the EIS Alternatives were assigned to travel modes to determine the number of auto, transit, and "other" trips, where "other" includes walk, bicycle, motorcycle, taxi, and additional modes. It should be noted that mode split information for the proposed uses is based on the *SF Guidelines* for Superdistrict 2 (for the existing SFVAMC Fort Miley Campus) and Superdistrict 3 (for the potential new SFVAMC Mission Bay Campus).

Trip Distribution/Assignment

The trips generated by the EIS Alternatives would be distributed to the four quadrants of San Francisco (Superdistricts 1, 2, 3, and 4), the East Bay, the North Bay, the South Bay/Peninsula, and outside the region, based on the origin/destination of each trip and land use–based trip distribution data contained in the *SF Guidelines*. For this analysis, it has been assumed that the trip distribution for the hospital and research uses proposed by the EIS Alternatives would be similar to the trip distribution for office uses. Table 3.13-8 presents the trip distribution percentages used for the analysis of each of the alternatives.

Table 3.13-8: Trip Distribution Patterns

Off-Site Trip End	Trip Distribution			
	Superdistrict 2 (Existing SFVAMC Fort Miley Campus)		Superdistrict 3 (Potential New SFVAMC Mission Bay Campus)	
	Work Trips	Nonwork Trips	Work Trips	Nonwork Trips
Superdistrict 1	8.4%	13.0%	8.3%	13%
Superdistrict 2	35.2%	27.0%	10.6%	14%
Superdistrict 3	15.8%	14.0%	23.9%	44%
Superdistrict 4	15.1%	9.0%	7.9%	7%
East Bay	7.1%	11.0%	14.3%	9%
North Bay	7.0%	4.0%	5.6%	1%
South Bay	10.6%	8.0%	26.9%	9%
Out of Region	0.8%	14.0%	2.5%	3%
Total	**100.0%**	**100.0%**	**100.0%**	**100.0%**

Source: AECOM, 2014

Parking Demand

Similar to the trip generation calculations, the proposed LRDP's parking demand was calculated using rates provided from ITE's *Parking Generation*, 4th Edition, the industry-accepted source for land use–based parking demand rates. The rates provided in *Parking Generation* are derived from empirical data collected through parking surveys at locations across the United States. Like the ITE trip generation rates, the ITE parking-demand rates represent data samples in automobile-dependent and automobile-oriented suburban areas with negligible transit, biking, and walking mode shares. To correct the ITE parking demand rates, mode splits from the

SF Guidelines were applied to the rates, reflecting the multimodal nature of travel in San Francisco and producing a more accurate estimate of the actual increase in parking demand expected with the EIS Alternatives.

Table 3.13-9 presents the trip generation rates used in the analysis of the EIS Alternatives, together with the peak parking demand period(s) as identified in *Parking Generation*. As shown in Table 3.13-9, the equivalent parking rates are approximately half of the rates published by ITE in *Parking Generation*, reflecting the presence of attractive, viable alternative modes of travel in San Francisco. Most of the selected land use categories exhibit peaking characteristics similar to existing facilities on the SFVAMC Fort Miley Campus and reasonably approximate the weekday midday (1:00 p.m. to 3:00 p.m.) peak period selected for the parking occupancy surveys.

Table 3.13-9: Assumed Vehicle Parking Demand Rates

Land Use (ITE Land Use Code)	Parking Rate Unit	ITE Parking Rate (spaces per unit)	Equivalent Parking Rate (spaces per unit)		ITE Peak Parking Demand Periods (Weekdays)
			Superdistrict 2 (Existing SFVAMC Fort Miley Campus)	Superdistrict 3 (Potential New SFVAMC Mission Bay Campus)	
Hospital (610)	1,000 square feet (gross)	3.70	2.16		9:00 a.m.–10:00 a.m. 12:00 p.m.–1:00 p.m. 3:00 p.m.–4:00 p.m.
Office (701)	1,000 square feet (gross)	2.47	1.20		9:00 a.m.–5:00 p.m.
University/College (550)	1,000 square feet (gross)	1.20	0.69	0.89	*No data provided*
Nursing Home (620)	1,000 square feet (gross)	0.98	0.57		9:00 a.m.–10:00 a.m. 11:00 a.m.–4:00 p.m.
Motel (320)	1,000 square feet (gross)	0.71	0.41		*No data provided*
Medical–Dental Office Building (720)	1,000 square feet (gross)	3.20	1.87	2.09	10:00 a.m.–12:00 p.m. 2:00 p.m.–3:00 p.m.

Notes:
ITE = Institute of Transportation Engineers; SFVAMC = San Francisco Veterans Affairs Medical Center
Sources: SF Planning, 2002; ITE, 2010; VA, 2014c

Loading Demand

The *SF Guidelines* provide truck trip generation rates for common land uses such as residential, retail, light industry, and office, but they do not provide specific rates for medical or medical-related uses. In particular, medical and medical-related uses may have specific loading needs (e.g., medical equipment and supplies, biohazard waste disposal). These specific loading needs may not be adequately reflected when attempting to approximate these land uses with more common uses for which the *SF Guidelines* specifically provides truck trip generation rates.

In addition, most large campus environments such as the SFVAMC Fort Miley Campus typically provide delivery loading spaces within each campus building or facility. Vehicle parking for large campuses is typically shared among various campus facilities and provided in facilities designed specifically for vehicle storage; but the nature of delivery loading activities requires loading spaces to be typically provided in each building as needed, in the form of a loading dock or dedicated curb space. Thus, delivery loading impacts are typically analyzed for each specific building, at a time when the design of such buildings has been determined to a sufficient level of detail to identify the location of proposed loading facilities, the proposed supply of loading spaces, and the access routes for service and delivery vehicles. In particular, larger trucks may require specific accommodations with regard to building features (e.g., loading dock dimensions) or roadway design (e.g., curb radii) that typically require detailed turning template analyses to determine the accessibility and usability of proposed delivery loading facilities.

The EIS Alternatives, however, represent a master plan for the SFVAMC Fort Miley Campus involving multiple buildings and uses and, as such, are analyzed here as part of a program-level environmental review. Specific details such as building features and roadway design will be determined only as each project for the selected Alternative begins to move into the design and implementation phase. Therefore, this EIS does not fully assess delivery loading impacts with regard to the demand and supply of loading spaces or the accessibility and usability of delivery loading facilities (and any associated off-Campus effects). These impacts may require further evaluation later as each project for the selected EIS Alternative is designed in more detail.

Travel Demand

Trip Generation

Table 3.13-10 and Table 3.13-11 summarize the person-trip generation for the uses proposed by Alternative 1 and Alternative 3, respectively.[7] The trips in Table 3.13-10 and Table 3.13-11 represent net-new person-trips, accounting for reductions in travel demand as a result of the demolition or replacement of existing Campus facilities. Trips were not estimated for some uses, such as those involving nonhabitable uses, because they would not be expected to generate or attract trips on their own, and were therefore excluded from the calculations.

Because Alternative 1 and Alternative 3 propose the same short-term actions, these two Alternatives would generate the same number of person-trips in the short-term time frame. Specifically, short-term actions would generate approximately 159 net-new person-trips during the weekday p.m. peak hour under both Alternatives. Long-term actions would generate approximately 655 net-new person-trips and 809 net-new person-trips under Alternative 1 and Alternative 3, respectively, during the weekday p.m. peak hour. Alternative 3 would generate substantially more net-new person-trips in the long-term time frame, but the majority of these trips would be concentrated at the potential new Mission Bay Campus.

Mode Split

Table 3.13-12 presents the net-new trip generation by mode for Alternative 1. As shown, Alternative 1 is expected to generate 57 net-new vehicle-trips at the existing SFVAMC Fort Miley Campus under 2020 Alternative 1 Short-

[7] The person-trip generation for the proposed uses under Alternative 1 and Alternative 3 short-term projects (2020) is a conservative estimate, because it does not take into account the existing space deficiency at the SFVAMC Fort Miley Campus.

Term Projects Conditions and 259 net-new vehicle-trips under 2027 Alternative 1 Long-Term Project Conditions during the weekday p.m. peak hour.

Table 3.13-13 presents the net-new trip generation by mode under Alternative 3. As shown, Alternative 3 is expected to generate 57 net-new vehicle-trips at the existing SFVAMC Fort Miley Campus under 2020 Alternative 3 Short-Term Projects Conditions during the weekday p.m. peak hour. Under 2027 Alternative 3 Long-Term Projects Conditions, Alternative 3 would generate 57 net-new vehicle-trips at the existing SFVAMC Fort Miley Campus and 184 vehicle-trips at the potential new SFVAMC Mission Bay Campus during the weekday p.m. peak hour.

Table 3.13-10: Net-New Person-Trip Generation—Alternative 1

Phase		Action	ITE Land Use [Code]	Net-New Gross Area in square feet	Net-New Person-Trips	
					Weekday Daily	Weekday P.M. Peak Hour
Short-Term Projects						
1.1	Building 211: *Emergency Operations Center/Parking Garage*	Construction	*EOC to be operated by existing staff (no new parking demand) Parking garage not a habitable space*			
1.2	Trailer 17	Removal	R&D Center [760]	(1,700)	(15)	(2)
	Building 41: *Research*	Construction	R&D Center [760]	14,200	124	16
1.3	Buildings 5 and 7	Seismic Retrofit	*Renovation of existing building/space*			
1.4	Buildings 9 and 10	Seismic Retrofit	*Renovation of existing building/space*			
	Building 22: *Hoptel*[1]	Construction	Motel [320]	8,700	49	4
1.5	Buildings 209 and 211: *Parking Garage Extensions*	Construction	*Not a habitable space*			
1.6	Building 203: *C-Wing Extension (Ground-Floor Patient Welcome Center)/Drop-Off Area with Canopy Structure*	Construction	Hospital [610]	7,100	101	7
1.7	Building 200: *Expansion (Operating Room D-Wing)*	Construction	Hospital [610]	5,300	76	5
1.8	Building 20	Demolition	*Currently used as storage*			
	Building 24: *Mental Health Clinical Expansion*	Construction	Hospital [610]	15,600	223	16
1.9	Building 18	Demolition	R&D Center [760]	(9,700)	(85)	(11)
	Building 14	Demolition	R&D Center [760]	(6,400)	(56)	(7)
	Building 21	Demolition	R&D Center [760]	(1,700)	(15)	(2)
	Trailer 23	Removal	R&D Center [760]	(900)	(8)	(1)
	Structure 206: *Water Tower*	Installation	*Not a habitable space*			
	Structure 206: *Water Tower*	Removal	*Not a habitable space*			
	Building 40: *Research*	Construction	R&D Center [760]	110,000	963	127
1.10	Building 207: *Expansion (IT Support Space)*	Construction	Office Building [710]	7,000	83	11
1.11	Trailer 31	Removal	Hospital [610]	(1,500)	(21)	(2)
	Building 43: *Research and Admin.*	Construction	R&D Center [760]	15,000	131	17
1.12	Trailer 36: *New Modular*	Installation	R&D Center [760]	2,200	19	3
1.13	Building 23: *Mental Health Research Expansion*	Construction	R&D Center [760]	15,000	131	17
1.14	Building 203: *Extension (Psychiatric Intensive Care Unit C-Wing)*	Construction	Hospital [610]	1,200	17	1

Table 3.13-10: Net-New Person-Trip Generation—Alternative 1

	Phase	Action	ITE Land Use [Code]	Net-New Gross Area in square feet	Net-New Person-Trips	
					Weekday Daily	Weekday P.M. Peak Hour
	Trailer 24	Removal	Medical–Dental Office Building [720]	(1,000)	(39)	(4)
1.15	Building 208: *Extension (Community Living Center/ National Cardiac Device Surveillance Center)*	Construction	Nursing Home [620]	10,000	82	8
	Building 8	Seismic Retrofit	*Renovation of existing building/space*			
1.16	Building 1	Seismic Retrofit	*Renovation of existing building/space*			
	Building 6	Seismic Retrofit	*Renovation of existing building/space*			
1.17	Building 12	Demolition	R&D Center [760]	(38,900)	(341)	(45)
Subtotal					*1,421*	*159*
Long-Term Project						
2.1	Building 213: *Clinical Addition Building*	Construction		170,000	6,633	655
Subtotal					*6,633*	*655*
Total					**8,055**	**815**

Notes: EOC = Emergency Operations Center; ITE = Institute of Transportation Engineers; R&D = Research and Development
Numerical values enclosed in parentheses indicate negative values (demolition of building/structure or reduction in trips).
[1] A guest room density of approximately 1 room per 1,000 gross square feet was assumed for the hoptel.
Source: VA, 2014c

Table 3.13-11: Net-New Person-Trip Generation—Alternative 3

Phase	Action	ITE Land Use [Code]	Net-New Gross Area in square feet	Net-New Person-Trips	
				Weekday Daily	Weekday P.M. Peak Hour
Short-Term Projects					
Same as for Alternative 1					
Subtotal				*1,421*	*159*
Long-Term Projects[1]					
2.1 Ambulatory Care Center	Construction	Medical–Dental Office Building [720]	140,000	5,463	540
2.2 Clinical Parking Garage (100 spaces)	Construction	*Not a habitable space*			
Subtotal				*5,463*	*540*
Total				**6,884**	**699**

Notes: ITE = Institute of Transportation Engineers; R&D = Research and Development
[1] Under Alternative 3, the long-term land use projects would take place at the new Mission Bay Campus.
Source: VA, 2014c

Table 3.13-12: Net-New Trip Generation by Mode (Weekday P.M. Peak Hour)—Alternative 1

Direction	Net-New Person-Trips					Net-New Vehicle-Trips
	Auto	Transit	Walk	Other[1]	Total	
2020 Short-Term Projects						
Inbound	13	6	4	1	25	7
Outbound	67	39	17	4	127	49

Table 3.13-12: Net-New Trip Generation by Mode (Weekday P.M. Peak Hour)—Alternative 1

Direction	Net-New Person-Trips					Net-New Vehicle-Trips
	Auto	Transit	Walk	Other[1]	Total	
Total	*81*	*45*	*20*	*6*	*152*	*57*
2027 Long-Term Projects						
Inbound	177	85	47	18	327	101
Outbound	177	85	47	18	327	101
Total	*354*	*170*	*94*	*36*	*654*	*202*
Total (Short-Term and Long-Term Projects)						
Inbound	190	91	51	19	352	108
Outbound	244	124	64	22	454	150
Total	**435**	**215**	**114**	**42**	**806**	**259**

Notes:
[1] "Other" mode includes bicycles, motorcycles, and taxis.
Source: VA, 2014c

Table 3.13-13: Net-New Trip Generation by Mode (Weekday P.M. Peak Hour)—Alternative 3

Direction	Net-New Person-Trips					Net-New Vehicle-Trips
	Auto	Transit	Walk	Other[1]	Total	
2020 Short-Term Projects (Existing SFVAMC Fort Miley Campus)						
Inbound	13	6	4	1	25	7
Outbound	67	39	17	4	127	49
Total	*81*	*45*	*20*	*6*	*152*	*57*
2027 Long-Term Projects (Potential New SFVAMC Mission Bay Campus)						
Inbound	164	52	36	18	270	92
Outbound	164	52	36	18	270	92
Total	*327*	*104*	*72*	*37*	*540*	*184*
Total (Short-Term and Long-Term Projects)						
Inbound	177	58	40	20	294	99
Outbound	231	91	53	23	397	141
Total	**408**	**149**	**92**	**43**	**691**	**240**

Notes: SFVAMC = San Francisco Veterans Affairs Medical Center
[1] "Other" mode includes bicycles, motorcycles, and taxis.
Source: VA, 2014c

Parking Demand

Table 3.13-14 presents the weekday parking demand for Alternative 1. Overall, Alternative 1 would result in a net increase in peak-period parking demand at the existing SFVAMC Fort Miley Campus of an estimated 132 spaces under 2020 Short-Term Projects Conditions and an additional 295 spaces under 2027 Long-Term Projects Conditions.

Table 3.13-15 presents the weekday parking demand for Alternative 3. Overall, Alternative 3 is anticipated to result in a net increase in peak-period parking demand of an estimated 132 spaces under 2020 Short-Term Projects Conditions at the existing SFVAMC Fort Miley Campus. Under 2027 Long-Term Projects Conditions, Alternative 3 is anticipated to result in a peak-period parking demand of an additional 271 spaces at the potential new SFVAMC Mission Bay Campus.

Table 3.13-14: Net-New Parking Demand—Alternative 1

Subphase		Action	ITE Land Use [Code]	Net-New Gross Area in square feet	Net-New Weekday Peak-Hour Parking Demand in Spaces
Short-Term Projects					
1.1	Building 211: *Emergency Operations Center/ Parking Garage*	Construction	*EOC to be operated by existing staff (no new parking demand) Parking garage not a habitable space*		
1.2	Trailer 17	Removal	University/College [550]	(1,700)	(1)
	Building 41: *Research*	Construction	University/College [550]	14,200	9
1.3	Buildings 5 and 7	Seismic Retrofit	*Renovation of existing building/space*		
1.4	Buildings 9 and 10	Seismic Retrofit	*Renovation of existing building/space*		
	Building 22: *Hoptel*[1]	Construction	Motel [320]	8,700	3
1.5	Buildings 209 and 211: *Parking Garage Extensions*	Construction	*Not a habitable space*		
1.6	Building 203: *C-Wing Extension (Ground-Floor Patient Welcome Center)/Drop-Off Area with Canopy Structure*	Construction	Hospital [610]	7,100	14
1.7	Building 200: *Expansion (Operating Room D-Wing)*	Construction	Hospital [610]	5,300	11
1.8	Building 20	Demolition	*Currently used as storage (no parking demand assumed)*		
	Building 24: *Mental Health Clinical Expansion*	Construction	Hospital [610]	15,600	31
1.9	Building 18	Demolition	University/College [550]	(9,700)	(6)
	Building 14	Demolition	University/College [550]	(6,400)	(4)
	Building 21	Demolition	University/College [550]	(1,700)	(1)
	Trailer 23	Removal	University/College [550]	(900)	(1)
	Structure 206: *Water Tower*	Installation	*Not a habitable space*		
	Structure 206: *Water Tower*	Removal	*Not a habitable space*		
	Building 40: *Research*	Construction	University/College [550]	110,000	70
1.10	Building 207: *Expansion (IT Support Space)*	Construction	Office Building [701]	7,000	8
1.11	Trailer 31	Removal	Hospital [610]	(1,500)	(3)
	Building 43: *Research and Admin.*	Construction	University/College [550]	15,000	10
1.12	Trailer 36: *New Modular*	Installation	University/College [550]	2,200	1
1.13	Building 23: *Mental Health Research Expansion*	Construction	University/College [550]	15,000	10
1.14	Building 203: *Extension (Psychiatric Intensive Care Unit C-Wing)*	Construction	Hospital [610]	1,200	2
1.15	Trailer 24	Removal	Medical–Dental Office Building [720]	(1,000)	(2)
	Building 208: *Extension (Community Living Center/National Cardiac Device Surveillance Center)*	Construction	Nursing Home [620]	10,000	5
1.16	Building 8	Seismic Retrofit	*Renovation of existing building/space*		
	Building 1	Seismic Retrofit	*Renovation of existing building/space*		
	Building 6	Seismic Retrofit	*Renovation of existing building/space*		
1.17	Building 12	Demolition	University/College [550]	(38,900)	(25)
Subtotal					*132*

Table 3.13-14: Net-New Parking Demand—Alternative 1

Subphase		Action	ITE Land Use [Code]	Net-New Gross Area in square feet	Net-New Weekday Peak-Hour Parking Demand in Spaces
Long-Term Projects					
2.1	Building 213: *Clinical Addition Building*	Construction	Medical–Dental Office Bldg. [720]	170,000	295
Subtotal					*295*
Total					**426**

Notes: EOC = Emergency Operations Center; ITE = Institute of Transportation Engineers
Numerical values enclosed in parentheses indicate negative values (demolition of building/structure or reduction in trips).
[1] A guest room density of approximately 1 room per 1,000 gross square feet was assumed for the hoptel.
Source: VA, 2014c

Table 3.13-15: Net-New Parking Demand—Alternative 3

Subphase		Action	ITE Land Use [Code]	Net-New Gross Area in square feet	Net-New Weekday Peak-Hour Parking Demand in Spaces
Short-Term Projects (Existing SFVAMC Fort Miley Campus)					
Same as for Alternative 1					
Subtotal					*132*
Long-Term Projects (Potential New SFVAMC Mission Bay Campus)					
2.1	Ambulatory Care Center	Construction	Medical–Dental Office Building [720]	140,000	271
2.2	Clinical Parking Garage (100 spaces)	Construction	*Not a habitable space*		
Subtotal					*271*
Total					**403**

Notes: ITE = Institute of Transportation Engineers; SFVAMC = San Francisco Veterans Affairs Medical Center
[1] A guest room density of approximately 1 room per 1,000 gross square feet was assumed for the hoptel.
Source: VA, 2014c

2020 Short-Term Effects—Methods and Assumptions

Background Growth

Background growth in travel demand consists of both general growth in the city and region, and growth from specific foreseeable developments. Information about background growth is generally obtained by consulting travel demand forecasting models in an attempt to project traffic volumes for a given forecast year. Travel demand forecasting models incorporate a variety of factors related to the transportation network and trip-making behavior; land use, population, and socioeconomic characteristics; and other data.

For this study, the San Francisco Chained Activity Modeling Process (SF-CHAMP) model maintained by the San Francisco County Transportation Authority (SFCTA) was consulted in the development of background growth projections. SF-CHAMP is the standard travel demand model used to develop future-year travel forecasts for the analysis of development projects in San Francisco. SF-CHAMP is a state-of-the-art tool that models the city's transportation network (roadway and bikeway infrastructure, transit infrastructure and services, and the pedestrian environment) at a fine grain, while also comprehensively incorporating observations of city residents' travel patterns and other factors that may affect trip-making behavior, such as vehicle ownership rates. SF-CHAMP was

developed with a highly sensitive tour-based forecasting methodology that allows for trip chaining (or "trip linking"), which better replicates actual travel behavior and is more comprehensive than a traditional four-step model based on trip generation, mode split, trip distribution, and route assignment. To develop background growth projections, the SF-CHAMP model was used for both the baseline model year (2012) and forecast model year (2040).

Before background growth was estimated, the land use and socioeconomic inputs for the Traffic Analysis Zone (TAZ) containing the Campus were checked to determine whether the EIS Alternatives were already assumed in the future-year model. The SFVAMC Fort Miley Campus is located within TAZ 738, which is bounded by Clement Street/Seal Rock Drive at its southern end. TAZ 738 encompasses all of the Campus and portions of the surrounding GGNRA land, but does not include any of the surrounding residential neighborhoods. Investigation of the changes in assumed employment levels for TAZ 738 between the baseline-year and forecast-year models confirmed that the EIS Alternatives were not explicitly included as part of the forecast-year model.

Traffic Forecasts

To estimate future-year traffic volumes for this study, a noncompounded annual growth rate was derived by consulting the baseline-year and forecast-year SF-CHAMP models and extracting the projected volume on the roadway links feeding into each study intersection. Some degree of variability was observed in the calculated growth rates. Many locations showed a negative growth rate, corresponding to a decrease in traffic between the baseline-year and future-year models. The locations with the highest calculated growth rates still showed only modest growth of about 0.25 percent per year.

As a result, a general growth rate equivalent to approximately 0.5 percent per year was assumed for all the study intersections. Applying this level of growth is consistent with previous studies conducted in the vicinity of the existing SFVAMC Fort Miley Campus, including the *Presidio Trust Management Master Plan Environmental Impact Statement*. The 0.5 percent growth rate assumed is considered conservative because development in the vicinity of the Campus is near buildout conditions. This methodology was used in both short-term and long-term assumptions.

Transit Forecasts

Ridership projections for Muni lines serving the SFVAMC Fort Miley Campus were derived by examining ridership assignment outputs from SF-CHAMP for the baseline-year and forecast-year models. SF-CHAMP provides dedicated line-by-line boardings and alightings for each Muni line, known as "quickboards." Similar to the development of traffic forecasts, transit ridership forecasts can be developed by calculating annual growth rates from the baseline-year model ridership to the forecast-year model ridership based on the quickboard outputs. These growth rates can then be applied to empirical ridership data, adjusting for the desired horizon year, to derive future-year ridership projections.

Given the nature of travel forecasting, however, the quickboards can produce counterintuitive results—such as unexpected decreases in ridership—when attempting to analyze ridership assignments at a microscopic (i.e., line-by-line) level. As a result, a direct application of line-based growth factors calculated from SF-CHAMP is typically considered impractical. Instead, future-year ridership is typically examined at the corridor level. The growth rates are calculated by aggregating the quickboard data for each line in the corridor, smoothing out any

potential inconsistencies in the quickboard assignments. In particular, transit service along Geary Boulevard can be considered to comprise a total of four lines: one local line (38 Geary), one limited line (38L Geary Limited), and two express lines (38AX Geary "A" Express and 38BX Geary "B" Express). A noncompounded annual growth rate for transit ridership in the Geary Corridor was thus calculated by aggregating the quickboard assignments for these four lines.

The resulting ridership forecasts for the Geary Corridor were checked against the estimated ridership in 2035 for the Geary Corridor as calculated in the *Transit Effectiveness Project Draft Environmental Impact Report* (July 10, 2013) (*TEP DEIR*) (Planning Department Case No. 2011.0558E; State Clearinghouse No. 2011112030). Minor adjustments were made as necessary to ensure consistency with the *TEP DEIR*.

Transportation Network Modifications

Also included in the analyses for 2020 Short-Term Projects Conditions are changes to the transportation network proposed by SFMTA, including those associated with the Geary Corridor Bus Rapid Transit (BRT) Project, the Transit Effectiveness / Muni Forward Project (TEP), and the 2009 *San Francisco Bicycle Plan* (*Bike Plan*).

Geary Corridor Bus Rapid Transit

This project would involve major upgrades to transit service in the Geary Corridor designed to decrease travel times on transit, improve transit reliability, and improve pedestrian safety and access to transit. The project encompasses the stretch of Geary Street/O'Farrell Street and Geary Boulevard from Market Street west to 34th Avenue and proposes the following improvements:

- Improvements to transit infrastructure and service, including exclusive, high-visibility bus-only lanes for most of the route within the project extents, mostly in a side-running alignment but with a center-running alignment from Palm Avenue west to 26th Avenue. Transit signal priority and new low-floor buses would also be introduced, and bus stops would be relocated, replaced, or upgraded as needed. All-new, high-amenity platform stations would be constructed in the center-running segment and bus bulbs would be constructed in side-running segments.
- Improvements to pedestrian safety, including high-visibility treatments for crosswalks, improved signage, construction of corner bulb-outs at intersections, and measures to reduce conflict between pedestrians and left-turning vehicles.

Within the project extents, BRT stops would generally follow the existing stopping pattern for 38L services, with stops located at Kearny Street (outbound only), Stockton Street, Powell Street, Leavenworth Street, Van Ness Avenue, Fillmore Street, Divisadero Street, Masonic Avenue/Presidio Avenue, Spruce Street, Arguello Boulevard, 6th Avenue, Park Presidio Boulevard, 17th Avenue, 21st Avenue, 25th Avenue, 30th Avenue, and 33rd Avenue.

The project is expected to result in a 25 percent reduction in travel time and a 20 percent improvement in transit reliability, resulting in a 10 to 20 percent increase in ridership on the improved sections of the corridor. Construction could begin in 2017, with revenue service beginning as early as 2019, becoming Muni's second BRT project after the Van Ness Avenue BRT.

Existing transit service in the Geary Corridor is structured around four distinct services or routes—one local service, one limited service, and two peak-period (commute) express services. Based on discussions with SFMTA staff members, service in the Geary Corridor would be restructured with the commencement of BRT service into three lines operating four distinct services—one local, two limited, and one peak-period (commute) express. Each of the four services would operate with articulated buses (94 passengers per bus) at 6-minute headways during the peak hours, providing a combined total of 40 services per hour in the Geary Corridor. These services are described below.

- *38 Geary:* Local service between downtown and Fort Miley.
- *38 Geary Limited:* Two limited services, one operating between downtown and Geary Boulevard/ 25th Avenue and the other continuing west of 25th Avenue to Point Lobos Avenue/48th Avenue.
- *38X Geary Express:* Express service between downtown and Point Lobos Avenue/48th Avenue.

Transit Effectiveness / Muni Forward Project

The TEP would institute a series of sweeping, systemwide changes to Muni service to streamline operations, adapt to changes in travel patterns, and improve reliability and passenger experience. As described in the *TEP DEIR*, the proposed changes include the following projects:

- Service Improvements

  These projects include the following elements:

  – the creation of new routes,
  – changes to the alignment of existing routes (including elimination of underutilized routes or segments),
  – changes to frequency and service hours,
  – changes to transit vehicle type on specific routes,
  – changes to corridor service plans (e.g., adjustments to the scheduled mix of local, limited, and express services), and
  – other minor changes (e.g., new stops on express services, expansion of limited service on weekends, or providing an additional day of service on weekends).

- Service-Related Capital Improvements

  These projects represent service improvements that require investment in construction infrastructure, and include the following elements:

  – "Terminal and Transfer Point Improvements" (e.g., installation of new switches, installation of bus bulbs, expansion of bus layover facilities),
  – "Overhead Wire Expansion" (e.g., installation of new overhead wires and associated infrastructure to expand electric trolley coach service to new streets or allow electric trolley coaches to pass each other), and
  – "Systemwide Capital Infrastructure" (e.g., installation of new accessible platforms on the surface light rail network).

- Travel Time Reduction Proposals

  These projects include implementation of elements from SFMTA's Transit Preferential Streets Toolkit—transit stop changes, lane geometry modifications, parking/turn restrictions, traffic signal and stop sign changes, and pedestrian improvements—to 17 of the 23 corridors identified as part of Muni's "Rapid Network."

Specifically, the TEP proposes the following changes to routes in the Geary Corridor, where the weekday a.m. peak period is defined as 7:00 a.m. to 9:00 a.m., the weekday midday period as 9:00 a.m. to 2:00 p.m., and the weekday p.m. peak period as 4:00 p.m. to 6:00 p.m.:

- 38 Geary

  Service west of 33rd Avenue (i.e., Fort Miley and 48th Avenue/Point Lobos Avenue branches) would see minor changes to headways, as follows:

  – *Weekday a.m. peak period*: 12 minutes → 15 minutes
  – *Weekday midday period:* 16 minutes → 15 minutes
  – *Weekday p.m. peak period*: 16 minutes → 12 minutes

  Service east of 33rd Avenue would see minor changes to headways, as follows:

  – *Weekday a.m. peak period*: 12 minutes → 7.5 minutes
  – *Weekday p.m. peak period:* 8 minutes → 6 minutes

- 38L Geary Limited

  Service would be expanded to operate on Sundays. Minor changes to headways would be implemented, as follows:

  – *Weekday a.m. peak period*: 5.5 minutes → 5 minutes
  – *Weekday midday:* 5.5 minutes → 5 minutes
  – *Weekday p.m. peak period*: 5.5 minutes → 5 minutes

- 38AX Geary "A" Express

  New stops would be added at Bush Street/Van Ness Avenue (inbound) and Pine Street/Van Ness Avenue (outbound).

- 38BX Geary "B" Express

  New stops would be added at Bush Street/Van Ness Avenue (inbound) and Pine Street/Van Ness Avenue (outbound).

San Francisco Bicycle Plan

The *Bike Plan* (June 26, 2009) outlines a series of improvements to San Francisco's bicycle route network, as well as supporting policies related to bicycle use (e.g., bicycle parking, traffic enforcement and safety) designed to promote and increase safe bicycle use in the city. The *Bike Plan* proposes changes to existing bicycle routes in the city's network (e.g., relocation or realignment of routes), as well as expansions of the bicycle route network to

new streets. In particular, the *Bike Plan* categorizes improvements to the bicycle route network into one of three categories:

- Short-Term Bicycle Improvement Projects

  These are a series of 60 projects intended to be implemented in the short-term time frame. Detailed design has already been conducted for these projects.

- Long-Term Bicycle Improvement Projects

  These projects are intended to be implemented in the long-term time frame. No schedule or detailed design has been developed for these projects.

- Minor Improvements to Bicycle Route Network

  These projects are minor treatments to improve conditions for bicycle use, including projects to address gaps or deficiencies in the bicycle route network. Typical improvements include pavement treatments and signage, traffic signal adjustments, and changes to on-street parking.

In terms of improvement to the bicycle route network in the vicinity of the SFVAMC Fort Miley Campus, the *Bike Plan* proposes the following projects:[8]

- Short-Term Bicycle Improvement Projects
  - *Route 95:* Great Highway and Point Lobos Avenue Bicycle Lanes, El Camino del Mar to Cabrillo Street (Project 7-3)

- Long-Term Bicycle Improvement Projects
  - Geary Boulevard between 25th Avenue and Divisadero Street

- Minor Improvements to Bicycle Route Network
  - *Route 10:* Lake Street between 28th Avenue and 30th Avenue
  - *Route 10/95:* Clement Street/Seal Rock Drive between 30th and 34th Avenue and between 43rd Avenue and El Camino del Mar, and El Camino del Mar between Seal Rock Drive and Point Lobos Avenue
  - *Route 85:* Legion of Honor Drive/34th Avenue between Lincoln Highway/El Camino del Mar and Cabrillo Street
  - *Route 95:* El Camino del Mar between 28th Avenue and El Camino del Mar (Sea Cliff Avenue) and between McLaren Avenue and 30th Avenue, and 30th Avenue between El Camino del Mar and Lake Street
  - *Route 395:* El Camino del Mar/Lincoln Highway between Legion of Honor Drive/34th Avenue and 30th Avenue

[8] Since the lifting of an injunction that prevented implementation of the *Bike Plan* (subsequent to the data collection efforts conducted used to develop existing conditions for this EIS section), many of the improvement projects have already been completed. In particular, a modified version of Project 7-3 was approved as an addendum to the *San Francisco Bicycle Plan Final Environmental Impact Report* (August 2009) (Planning Department Case No. 2007.0347E; State Clearinghouse No. 2008032052) on May 15, 2013, and has already been constructed.

2027 Long-Term Effects—Methods and Assumptions

Background Growth

Like the analysis for 2020 Short-Term Projects Conditions, the analysis for 2027 Long-Term Projects Conditions assumes a 0.5 percent per year growth rate for background traffic for all study intersections. Muni ridership growth was calculated using the same methodology discussed above for the 2020 Short-Term analysis.

Transportation Network Modifications

The same changes to the transportation network assumed under the 2020 Short-Term Projects Conditions are assumed under the analyses of 2027 Long-Term Projects Conditions.

Alternative 1: SFVAMC Fort Miley Campus Buildout Alternative

Short-Term Projects

Construction

This section evaluates the potential construction impacts of the Alternative 1 short-term projects and includes the following components:

- Identification of haul truck routes to be used during construction
- Estimate of temporary traffic and parking demand, including haul truck and construction worker traffic, that would be generated during construction
- Identification of mitigation measures, such as overflow parking and other management strategies, to accommodate the temporary traffic and parking demand generated by construction activities and any associated loss of parking supply on the SFVAMC Fort Miley Campus

Because Alternative 2 would have slightly different construction phasing than Alternative 1, this section also evaluates potential construction impacts of the Alternative 2 short-term projects.

Construction-Related Haul Activity

Haul trucks traveling to and from the SFVAMC Fort Miley Campus during construction would be expected to use truck traffic routes established by SFMTA. In particular, SFMTA has developed the *San Francisco Truck Traffic Routes* map (2010), a conceptual route map of truck traffic routes in San Francisco, for inclusion by the City and County of San Francisco in its next update to the *San Francisco General Plan*. Specifically, the map identifies potential routes for trucks traveling through the City, focusing on regional freeways/highways and surface arterials. Based on this map, large trucks would be expected to use the following routes:

- *From points north of the Campus:* U.S. 101 → SR 1 (Veterans Boulevard/Park Presidio Boulevard) → Geary Boulevard → Point Lobos Avenue → 42nd Avenue or 43rd Avenue

- *From points south of the Campus:* I-280 → SR 1 (Junipero Serra Boulevard/19th Avenue/Crossover Drive/ Park Presidio Boulevard) → Geary Boulevard → Point Lobos Avenue → 42nd Avenue or 43rd Avenue; or, alternatively, U.S. 101 (Bayshore Freeway/Central Freeway) → Mission Street → U.S. 101 (Van Ness Avenue) → Geary Boulevard → Point Lobos Avenue → 42nd Avenue or 43rd Avenue

- *From points east of the Campus:* I-80 → U.S. 101 (Central Freeway) → Mission Street → U.S. 101 (Van Ness Avenue) → Geary Boulevard → Point Lobos Avenue → 42nd Avenue or 43rd Avenue

These routes would minimize the impacts of haul truck activity farther from the Campus. However, under the Alternative 1 short-term projects, haul truck activity may still result in temporary but adverse impacts on traffic and transportation and vehicle parking, either at the Campus itself or in the immediate vicinity (VA, 2014d).

> **Mitigation Measure TRANS-1: Use Identified Truck Haul Routes and Implement Queue Abatement Program**
>
> *SFVAMC will use only a combination of the three haul truck routes identified below for LRDP construction-related activities.*
>
> - *From points north of the Campus: U.S. 101 → SR 1 (Veterans Boulevard/Park Presidio Boulevard) → Geary Boulevard → Point Lobos Avenue → 42nd Avenue or 43rd Avenue*
> - *From points south of the Campus: I-280 → SR 1 (Junipero Serra Boulevard/19th Avenue/Crossover Drive/Park Presidio Boulevard) → Geary Boulevard → Point Lobos Avenue → 42nd Avenue or 43rd Avenue; or, alternatively, U.S. 101 (Bayshore Freeway/Central Freeway) → Mission Street → U.S. 101 (Van Ness Avenue) → Geary Boulevard → Point Lobos Avenue → 42nd Avenue or 43rd Avenue*
> - *From points east of the Campus: I-80 → U.S. 101 (Central Freeway) → Mission Street → U.S. 101 (Van Ness Avenue) → Geary Boulevard → Point Lobos Avenue → 42nd Avenue or 43rd Avenue*
>
> *Use of alternative routes, particularly through the surrounding neighborhoods, is actively discouraged. SFVAMC and its construction contractors will monitor truck arrivals and, if necessary, implement a queue abatement program to ensure that haul trucks do not queue up and idle on the Campus or on adjacent or nearby streets.*

Implementation of Mitigation Measure TRANS-1 would reduce traffic-, transportation-, and parking–related impacts of construction haul truck activity to a minor level.

Construction-Related Traffic

Construction-Traffic Estimation Methodology

Detailed construction plans have not yet been developed for most of the projects identified as being part of the EIS Alternatives. As a result, estimates of traffic during construction of various projects are currently unavailable. To assess the potential impacts of construction-related traffic, both vendor/haul truck trips and construction worker trips were estimated based on the California Emissions Estimator Model (CalEEMod) Version 2013.2.2.

CalEEMod, published and maintained by the California Air Pollution Control Officers Association, is the accepted model for modeling construction-related air quality and greenhouse gas emissions in California, (CAPCOA, 2013).

Vendor/haul truck traffic was estimated for four different construction actions: demolition, seismic retrofitting, construction, and removal/installation. Construction worker trips were estimated for each of six different construction phases: demolition, site preparation, grading, building construction, architectural coating, and asphalt paving. General assumptions were made regarding building envelope (volume), haul truck capacity, and construction duration, and were combined with CalEEMod-recommended standards for equipment needs and construction worker vehicle-trip factors. Additional adjustments to the construction traffic estimates were made to account for major earthwork/grading (cut-and-fill) activities associated with some projects for the EIS Alternatives (VA, 2014d). More detail on the traffic estimation methodology is provided in the *Construction Traffic and Parking Management Plan*.

Construction Traffic Estimates

Under the Alternative 1 short-term projects, vendor and haul truck traffic would peak at 36 vehicles (72 trips) per day and construction worker trips would peak at 72 vehicles (144 trips) per day in December 2015. As a result, construction activities under the Alternative 1 short-term projects would generate their maximum traffic volumes in December 2015, with as many as 108 vehicles (216 trips) in a day. Construction traffic in other months would generally be much lower than during the peak month; in most months, the maximum traffic volume generated would not exceed 50 vehicles (100 trips) in a single day (VA, 2014d). Construction-related traffic impacts would be a minor.

Construction-Related Effects on Traffic, Transit, and Pedestrian Circulation

It is anticipated that construction activities for Alternative 1 short-term projects would take place primarily Monday through Friday between 7:30 a.m. and 6:00 p.m. Any Saturday work is assumed to occur between 8:00 a.m. and 4:00 p.m. on an as-needed basis, in compliance with the San Francisco Noise Control Ordinance (Article 29 of the City and County of San Francisco Police Code) and the conditions of the San Francisco Department of Building Inspection permit. It is anticipated that no regular travel lanes or Muni bus stops would need to be closed or relocated during the construction period.

Because detailed construction plans for each short-term project under Alternative 1 have yet to be developed, however, some potential still exists for construction-related activities to result in temporary disruptions to traffic, transit, and pedestrian circulation on or in the vicinity of the SFVAMC Fort Miley Campus. In particular, the placement of temporary swing space in Lot B under Alternative 1 may cause some disruption to circulation on the east side of the Campus, the primary access for Veterans and visitors. In addition, construction-related activities taking place simultaneously and/or close to each other could amplify the effects of these activities on Campus circulation (VA, 2014d). Although these effects generally would not be substantial enough to constitute an adverse impact, the following management measure is recommended to alleviate these effects.

> **Management Measure TRANS-1: Implement Protective Measures for Traffic, Transit, and Pedestrians if Pedestrian Facilities or Travel Lanes Require Closure during Construction**
>
> *Should construction activities require the closure of sidewalks or other pedestrian facilities within or outside of the Campus, SFVAMC will implement protective measures and erect equipment to ensure*

pedestrian safety. In high-conflict areas (either vehicle/pedestrian or vehicle/vehicle) such as access gates into construction sites, flag workers will be deployed to minimize traffic and pedestrian disruption and ensure the safety of Campus users.

Should it be determined that any travel lanes would require closure during construction, SFVAMC will coordinate the lane closures with the City to minimize impacts on local traffic. In general, temporary traffic and transportation changes must be coordinated through SFMTA's Interdepartmental Staff Committee on Traffic and Transportation and require a public meeting. As part of this process, the construction management plan may be reviewed by SFMTA's Transportation Advisory Committee to resolve internal differences between different transportation modes. SFVAMC will follow the Regulations for Working in San Francisco Streets ("The Blue Book")[9] (SFMTA, 2012) and will reimburse SFMTA for the costs of installation and removal of temporary striping and signage changes required during construction.

SFVAMC and its construction contractors will meet with SFMTA, the San Francisco Fire Department, the San Francisco Planning Department, and other City agencies to determine feasible measures to reduce any construction-related effects, including any potential transit disruption and pedestrian circulation impacts that would occur off-site during LRDP construction. To this effect, SFVAMC and its construction contractor(s) will implement the following measures:

- *Schedule most construction-related travel (i.e., deliveries, hauling, and worker trips) to occur during off-peak hours.*
- *Develop on-site detour routes to facilitate traffic movement through construction zones.*
- *Where feasible, temporarily restripe roadways—such as turn lanes, through lanes, and parking lanes—at affected locations to minimize driver confusion and optimize traffic flow.*
- *Where feasible, temporarily remove on-street parking to secure adequate traffic flow at those locations affected by construction closures.*
- *Post signage to encourage drivers to proceed at slower, safer travel speeds through construction zones.*
- *Develop and implement an outreach program to inform the general public about the construction process and planned roadway closures.*

If VA proceeds with Alternative 1, SFVAMC would provide temporary modular swing space within Lot B. Lot B and the adjacent section of Veterans Drive are currently designed with a one-way circulation pattern (northbound traffic along the east edge of the lot, southbound traffic along the west side of the lot). However, the presence of modular structures at this location, existing curbside parking activities, and the loss of parking capacity in Lot B could temporarily disrupt circulation through this part of the Campus (VA, 2014d). Although these effects would generally not be substantial enough to constitute an adverse impact, the following management measure is recommended to alleviate these effects.

[9] The SFMTA Blue Book is available online through SFMTA (www.sfmta.com).

Management Measure TRANS-2: Implement Protective Measures for Traffic, Transit, and Pedestrians during the Presence of Temporary Modular Structures on Campus

During the presence of temporary modular structures on the SFVAMC Fort Miley Campus as construction proceeds, SFVAMC will implement protective measures to ensure pedestrian safety and minimize impacts on local traffic. Potential measures could include the following:

- *Enhance signage and striping to reinforce the current one-way circulation pattern around Lot B.*
- *Discourage illegal parking, whether curbside along the east side of Veterans Drive adjacent to Building 8 (Mental Health) and Building 9 (Hoptel) or elsewhere in and around Lot B.*
- *Temporarily relocate curbside parking along the east side of Veterans Drive to other parts of the Campus.*
- *Temporarily convert any remaining parking spaces in Lot B from perpendicular parking to parallel parking.*

Pedestrian crossings at blind spots or locations with limited visibility for drivers (such as between modular structures) will also be discouraged, or will be properly designed with high-visibility markings and signage that force drivers to slow or stop. Adequate access for ambulances transporting patients to the SFVAMC Fort Miley Campus and emergency vehicles responding to Campus emergencies will be preserved at all times. Specific details of temporary measures to address any potential effects on Campus circulation will be discussed between SFVAMC and the general contractors during the construction planning process, at which time the magnitude of such effects can be more readily ascertained.

Construction-related activities occurring simultaneously and/or close to each other on the SFVAMC Fort Miley Campus could amplify the effects of these activities on overall Campus circulation. For example, the construction of the Building 209 and Building 211 extensions (March 2015 to March 2016) would partially overlap with the construction of Building 40 (December 2015 through December 2018). The close proximity of these two sites may affect constructability or on-Campus haul truck routes (VA, 2014d). Although these effects would generally not be substantial enough to constitute an adverse impact, the following management measure is recommended to alleviate these effects.

Management Measure TRANS-3: Implement Protective Measures for Traffic, Transit, and Pedestrians during Overlapping Construction Projects Located Close to Each Other on Campus

SFVAMC will serve as a liaison between the various general contractors for each construction project for coordination of construction-related activities to minimize potential secondary effects on SFVAMC Fort Miley Campus circulation. SFVAMC will collaborate with contractors to secure adequate haul truck access and minimize disruption of Campus user access, considering a variety of potential solutions such as limiting haul truck access to specific Campus access points or Campus roadways. In the case of Building 40 and the Building 209 and Building 211 extensions, for example, haul trucks could be restricted to the Campus's 43rd Avenue entrance, minimizing impacts on circulation in the patient/visitor zone of the Campus.

Implementing Management Measures TRANS-1 through TRANS-3 would ensure that construction-related effects on traffic, transit, and pedestrian circulation would be minor.

Construction-Related Effects on Parking

To implement some of the subphases identified in the LRDP, portions of the on-Campus parking areas may require temporary conversion for various construction-related activities such as excavation, staging of equipment and materials, and installation of temporary modular structures for a limited time period. These activities would result in a temporary loss of on-site parking capacity during some short-term projects under Alternative 1. When combined with increased parking demand on the site from construction workers, vendors, and other construction-related traffic, this temporary loss in on-site parking capacity would generally intensify the parking situation at the SFVAMC Fort Miley Campus.

To alleviate some of the loss in parking capacity during on-Campus construction activities, SFVAMC would implement valet parking at its two primary on-site parking structures, Building 209 and Building 212, which it has done successfully in the past. Under the LRDP, SFVAMC proposes to provide valet parking until the end of construction of Subphase 1.9 (i.e., through December 2018 under Alternative 1). This measure would partially offset the temporary loss in parking capacity and reduce spillover effects into the surrounding neighborhood.

The pending completion of Building 211 (Emergency Operations Center/Parking Garage) would increase parking capacity on the SFVAMC Fort Miley Campus by 200 spaces. This increased parking capacity is intended primarily to accommodate future growth on the Campus and existing spillover demand in the surrounding residential neighborhoods, but it also would likely be able to accommodate most of the temporary parking demand generated by construction-related activities. The Campus's valet program could also be expanded to include Building 211, increasing the total effective capacity of on-Campus parking facilities.

In addition, it is anticipated that actual maximum parking demand generated by construction-related activities on any single day during the peak month of construction traffic (December 2015) would be substantially less than 100 vehicles. In particular, although most construction workers would require parking spaces for the entire day, vendor trucks may require parking spaces for only short periods of time to deliver materials or equipment or perform contracted tasks. This may allow for some potential to share parking spaces during the day as turnover occurs. Haul trucks importing or exporting soil or debris would remain at the Campus only temporarily, for short periods of time, and therefore would not be expected to require dedicated parking spaces.

As mentioned above, SFVAMC would provide valet parking until the end of Subphase 1.9, providing an additional 180 spaces of parking capacity even after Building 211 has been completed but before all projects have been implemented. Therefore, there would likely be sufficient on-site parking capacity to accommodate the estimated temporary increase in parking demand that would result from construction-related activities for Alternative 1 short-term projects. The subsequent (March 2016) completion of the Building 209 and Building 211 extensions would further increase on-site parking capacity by 250 spaces, which would likely be sufficient to accommodate the parking demand generated by construction of subsequent projects. However, because of limitations in the methodology for estimating construction traffic, unforeseen circumstances such as delays or other necessary changes to the construction schedule, or other factors, some potential still exists for the temporary increase in parking demand generated by construction-related activities to exceed the available on-site parking

supply. Such a situation could potentially result in temporary but adverse impacts on traffic and transportation and vehicle parking at the Campus itself or in the immediate vicinity (VA, 2014d).

Mitigation Measure TRANS-2: Conduct Supplemental Surveys of Parking Occupancy and Implement Programs to Prevent Parking Spillover

SFVAMC will conduct supplemental surveys of parking occupancy several weeks after completion of Building 211 to determine the utilization of the new parking structure and overall occupancy of on-site facilities throughout the day. The survey will also consider on-street parking in the surrounding area to estimate how much spillover demand has been "recaptured" on the site as a result of the increased parking supply. As construction plans for specific LRDP projects are developed, construction contractors will work with SFVAMC to compare their own estimates of construction-related traffic and parking demand to the estimated parking capacity and surveyed occupancy levels, to determine whether additional temporary measures are required to mitigate expected parking constraints.

If these coordination efforts indicate that construction activities could result in a major parking deficit on the SFVAMC Fort Miley Campus, SFVAMC will implement measures to ensure that construction-related parking demand, as well as any associated parking loss in on-site parking capacity required to accommodate construction-related activities, does not result in additional spillover into the surrounding neighborhood beyond current conditions.

Potential programs (or other measures deemed necessary and adequate to ensure that spillover parking demand into the surrounding neighborhood does not increase beyond current conditions) could include the following:

- ***Expand the Campus's valet parking program.*** *On completion of Building 211, the valet parking program could be made permanent and expanded to include the new parking structure. Based on the estimates provided in the LRDP, Building 211 would provide a total of 461 marked spaces, but a valet parking program for this structure could provide approximately 140 additional spaces, based on the 30 percent increase in parking efficiency documented in field surveys of parking occupancy in Building 209.*

- ***Require general contractors to establish carpool/vanpool programs and encourage transit use.*** *Because some construction workers reside outside San Francisco, a vanpool service could be tailored to meet worker needs by operating as a "commuter shuttle" to major transit facilities, such as the BART station at Civic Center or 16th Street/Mission. To encourage transit use among construction workers, the contractor could provide free or discounted transit passes. A vanpool service could also be implemented in conjunction with a remote (i.e., off-site) "park-and-ride" facility, affording construction workers some of the convenience of a private vehicle and reducing some of the construction-related traffic effects in the immediate vicinity of the Campus. SFVAMC could work with its contractor to negotiate with the relevant property owners and parking operators in the area to lease spaces in an off-site surface lot or parking structure for a fixed period of time. The vanpool service could be contracted out to a third-party service provider.*

- ***Require general contractors to optimize staging-area needs and coordinate vendor arrival schedules.*** *In the development of construction plans, contractors should be required to optimize site*

utilization and schedule arrivals to minimize the associated traffic and vehicle parking impacts on the Campus community and surrounding neighborhoods.

If VA were to proceed with Alternative 1, temporary modular swing space would be provided in four separate locations on the SFVAMC Fort Miley Campus, including Lot B. Lot B currently provides patient and visitor parking, including most of the Campus's ADA-compliant spaces for patients and visitors. Use of this parking facility to accommodate temporary modular structures during Campus construction would require SFVAMC to temporarily provide replacement ADA spaces elsewhere on the Campus or implement other measures to ensure ADA compliance. Specifically, the use of Lot B to accommodate temporary modular structures during construction at the SFVAMC Fort Miley Campus would substantially reduce the Campus's existing supply of ADA spaces for patients and visitors, which could result in an adverse impact on vehicle parking at the site for these Campus users (VA, 2014d).

Mitigation Measure TRANS-3: Implement Temporary ADA Parking Strategies during Presence of Temporary Modular Structures on Campus

SFVAMC will implement temporary strategies to ensure ADA compliance while Lot B is in use for modular swing space. Potential strategies could include temporarily striping ADA spaces in other parking facilities on the Campus, such as Building 212, or implementing valet parking at the traffic circle outside the Patient Welcome Center for patients and visitors requiring ADA accommodations.

Implementing Mitigation Measures TRANS-2 and TRANS-3 would reduce construction-related parking impacts to a minor level.

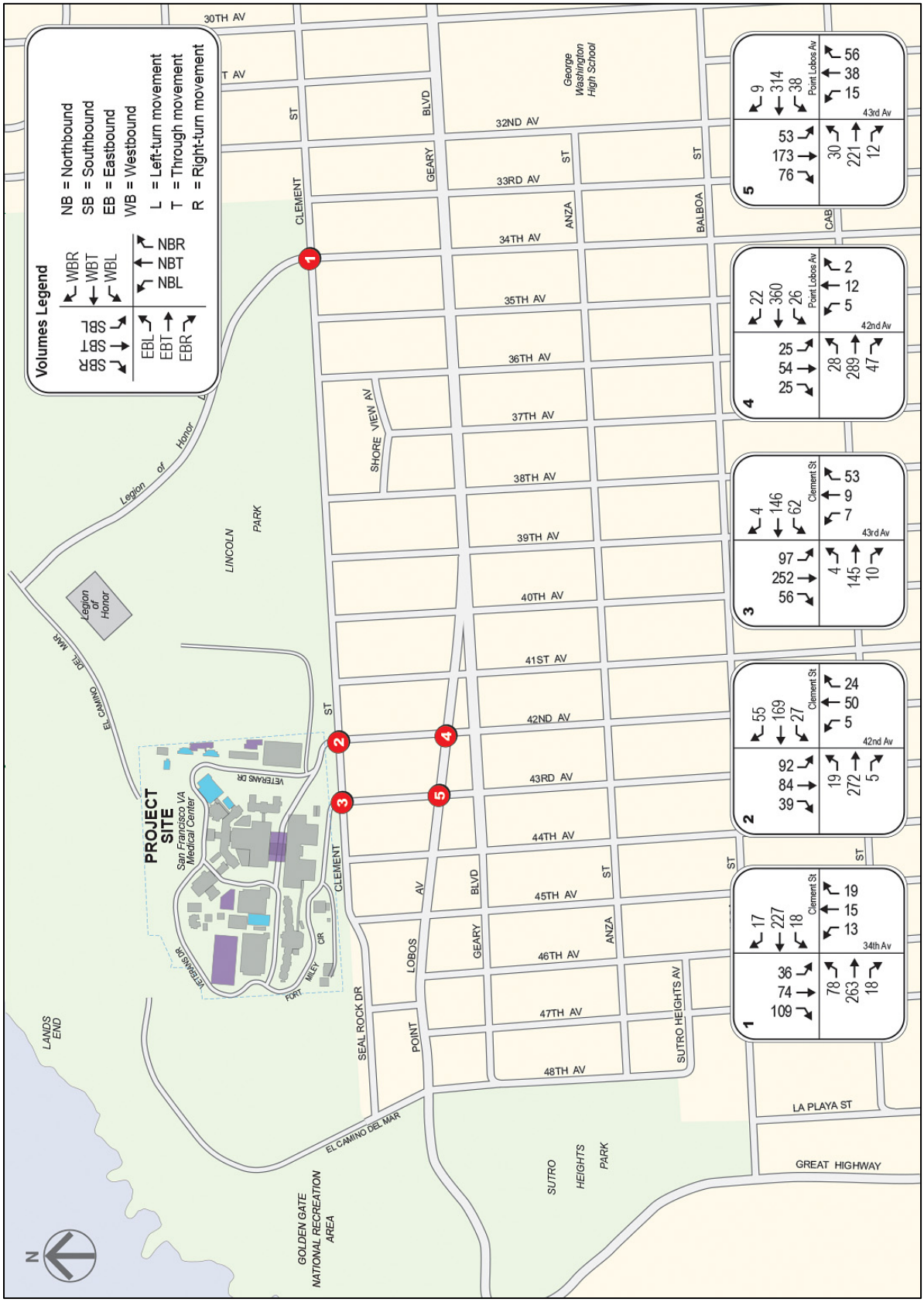
Operation

Traffic

Implementing Alternative 1 short-term projects would result in an increase in vehicle trips to and from the existing SFVAMC Fort Miley Campus. Traffic growth resulting from planned development both within and outside of the study area was used to develop traffic volumes for 2020 Short-Term Conditions and was then compared against traffic conditions with the addition of traffic volumes from Alternative 1 short-term projects.

Intersections

The resulting traffic volumes for 2020 Alternative 1 Short-Term Projects Conditions at the study intersections are illustrated in Figure 3.13-13. The LOS results for the study intersections are summarized in Table 3.13-16.



Source: VA, 2014c

Figure 3.13-13: Intersection Traffic Volumes—2020 Alternative 1 Short-Term Projects Conditions

Table 3.13-16: Intersection Levels of Service—2020 Alternative 1 Short-Term Projects Conditions, Weekday P.M. Peak Hour

	Intersection	Control Type	2020 Short-Term Conditions		2020 Alternative 1 Short-Term Projects Conditions	
			LOS	Delay[1]	LOS	Delay[1]
1	34th Avenue/Clement Street	All-way Stop	B	12.4	B	12.8
2	42nd Avenue/Clement Street	All-way Stop	B	11.4	B	11.8
3	43rd Avenue/Clement Street	All-way Stop	B	12.3	B	13.6
4	42nd Avenue/Point Lobos Avenue	All-way Stop	B	13.1	B	13.3
5	43rd Avenue/Point Lobos Avenue	All-way Stop	C	15.1	C	15.9

Notes: LOS = level of service
[1] Delay presented in seconds per vehicle.
Source: VA, 2014c

As shown in Table 3.13-16, Alternative 1 short-term projects would result in only a marginal increase in delays compared to the "no action" scenario without Alternative 1 (2020 Short-Term Conditions), with no material change in the LOS. In particular, all five study intersections are projected to operate at acceptable conditions (LOS D or better) during the weekday p.m. peak hour under 2020 Alternative 1 Short-Term Projects Conditions. Therefore, the Alternative 1 short-term projects would result in minor operational impacts at the study intersections.

Roadway Segments

LOS results for the study roadway segments are summarized in Table 3.13-17. As shown, Alternative 1 would result in only a marginal increase in the volume-to-capacity ratio compared to the "no action" scenario without Alternative 1 (2020 Short-Term Conditions). In particular, all study roadway segments are projected to operate at acceptable conditions (LOS D or better) during the weekday p.m. peak hour under 2020 Alternative 1 Short-Term Projects Conditions. Therefore, the Alternative 1 short-term projects would result in minor operational impacts along the study roadway segments.

Table 3.13-17: Roadway Segment Levels of Service—2020 Alternative 1 Short-Term Projects Conditions, Weekday P.M. Peak Hour

	Intersection	Direction	2020 Short-Term Conditions		2020 Alternative 1 Short-Term Projects Conditions	
			LOS	v/c Ratio	LOS	v/c Ratio
1	42nd Avenue/Clement Street *between Clement Street and Point Lobos Avenue*	Northbound	A	0.17	A	0.18
		Southbound	A	0.25	A	0.26
2	43rd Avenue/Clement Street *between Clement Street and Point Lobos Avenue*	Northbound	A	0.17	A	0.17
		Southbound	C	0.66	C	0.72

Notes: LOS = level of service; v/c = volume-to-capacity
Source: VA, 2014c

Passenger Vehicle Access

Alternative 1 short-term projects would institute several changes to circulation on the SFVAMC Fort Miley Campus. Specifically, construction of the Patient Welcome Center would require SFVAMC to close Fort Miley Circle to through traffic and construct a new traffic circle, providing curb space for passenger pick-up and drop-off activities. Access between the east and west sides of the Campus would be retained via Veterans Drive, although security gates would be installed on some segments surrounding proposed Building 40, effectively creating separate "employee" and "Veteran/visitor" zones on the Campus. The roadway between Building 200 and the future Building 213 would be narrowed as part of a traffic calming measure, and Fort Miley Circle west of Building 203 would be converted from one-way westbound traffic to two-way traffic.

These changes would generally improve passenger vehicle access by simplifying circulation through the Campus and segregating employee and Veteran/visitor vehicular traffic. Although a specific design for the proposed security gates near Building 40 has yet to be determined, a typical gate-processing time of 5 seconds would accommodate up to 720 vehicle movements per hour at each gate. The gates would likely be placed sufficiently within the confines of the Campus that any temporary vehicle queues that may develop would not extend outside of the Campus or cause major disruption to Campus circulation. Overall, the changes to passenger vehicle access under Alternative 1 short-term projects would result in, at most, only minor changes to travel times (either increase or decrease) and access routes, and would not constitute an adverse operational impact on passenger vehicle access at the Campus. This impact would be minor.

East Fort Miley Access

Alternative 1 short-term projects would not involve implementing specific changes to GGNRA access to and from East Fort Miley, and the existing access road at the southwest corner of Building 212 would continue to serve traffic generated at this facility. SFVAMC would implement some minor changes to the internal roadway network to better segregate employee and Veteran/visitor traffic across the Campus's two main access points on 42nd Avenue and 43rd Avenue. However, these changes would result in, at most, only minor changes in the total traffic volumes passing through the Veterans Drive/Fort Miley Circle intersection (either increase or decrease) and would not preclude GGNRA access into and out of East Fort Miley. Overall, implementing Alternative 1 short-term projects is not anticipated to result in adverse operational impacts on GGNRA access into and out of East Fort Miley. This impact would be minor.

Transit

Ridership and Capacity Effects

Alternative 1 would generate approximately 45 net-new transit trips (of which six would be inbound to the existing SFVAMC Fort Miley Campus and 39 would be outbound from the Campus) during the weekday p.m. peak hour (Table 3.13-12). Anticipated Muni ridership under 2020 Alternative 1 Short-Term Conditions is provided in Table 3.13-18. Existing ridership and future ridership (under 2020 Alternative 4 Short-Term Conditions) are also presented in Table 3.13-18 for reference, but the determination of impacts is based on the contribution, or share, of ridership generated by Alternative 1 relative to the total future ridership (2020 Alternative 1 Short-Term Conditions), in accordance with standard practice for evaluating transit ridership impacts in San Francisco.

Table 3.13-18: San Francisco Municipal Railway Transit Ridership and Capacity—2020 Alternative 1 Short-Term Projects Conditions, Weekday P.M. Peak Hour

Direction	Existing Conditions			2020 Alternative 4 Short-Term Conditions			2020 Alternative 1 Short-Term Projects Conditions		
	Ridership	Capacity	Utilization	Ridership	Capacity	Utilization	Ridership	Capacity	Utilization
Inbound	908	1,777	51%	1,142	2,820	41%	1,181	2,820	42%
Outbound	1,814	2,528	72%	2,359	3,826	62%	2,365	3,826	62%

Notes:
Ridership data based on conditions at the maximum load point for each line.
Sources: SFMTA, 2014; VA, 2014c

As a result of the SFVAMC Fort Miley Campus's location at the outer end of the Geary Corridor, well outside of downtown San Francisco, the commute direction for the Campus constitutes the "reverse commute" direction (i.e., traveling opposite the general commute direction). In particular, passenger loads are substantially heavier on outbound buses in the Geary Corridor than on inbound buses in the Geary Corridor during the weekday p.m. peak hour as passengers return home from downtown San Francisco. This trend is reflected in the expected ridership and capacity utilization for 2020 Alternative 1 Short-Term Projects Conditions.

Because of the Campus's location, however, Alternative 1 short-term projects would add only a maximum of six passengers to the Geary Corridor in the outbound direction during the weekday p.m. peak hour. These additional passengers could be accommodated easily without exceeding the 85 percent capacity utilization threshold established by the SFMTA Board. In particular, outbound transit service in the Geary Corridor is expected to operate at only 62 percent capacity utilization under 2020 Alternative 4 Short-Term Conditions (Table 3.13-18). Adding up to six passengers as a result of implementation of Alternative 1 short-term projects would represent an increase in capacity utilization of only 0.2 percent. This would not constitute a material change in the capacity utilization, which would remain below the 85 percent threshold at 62 percent under 2020 Alternative 1 Short-Term Projects Conditions.

Most of the transit ridership generated by the Alternative 1 short-term projects during the weekday p.m. peak hour would be leaving the SFVAMC Fort Miley Campus. Although Alternative 1 short-term projects would generate approximately 39 new transit riders in this direction, inbound transit services in the Geary Corridor operate at only 41 percent capacity utilization during the weekday p.m. peak hour. The addition of up to 39 new riders generated by Alternative 1 short-term projects would only increase the capacity utilization to a maximum of 42 percent, well below the 85 percent threshold.

In addition, it is likely that only some of these 39 new transit riders would choose to take Muni buses in the Geary Corridor. In particular, SFVAMC currently provides two commuter shuttle routes, one serving transit hubs in downtown San Francisco and the other serving the Golden Gate Bridge Toll Plaza. Although service on these routes is generally less frequent than Muni service in the Geary Corridor, the benefits of a free transit service offering faster (and less variable) travel times, higher-amenity vehicles, and a seat for the entire journey would likely attract many of these new riders. As a result, the actual increase in capacity utilization on inbound buses in the Geary Corridor is expected to be less than described above.

Given these considerations, implementing Alternative 1 short-term projects is not anticipated to result in an adverse operational impact on Muni capacity in either direction in the Geary Corridor. This impact would be minor.

Other Effects

By implementing Alternative 1 short-term projects, SFVAMC would institute several changes to circulation on the SFVAMC Fort Miley Campus. In particular, construction of the Patient Welcome Center would close Fort Miley Circle to through traffic. Muni buses directly serving the Campus on the 38 Geary's Fort Miley service would no longer loop via Fort Miley Circle to 43rd Avenue when continuing back inbound to downtown San Francisco, instead using the new traffic circle to return via 42nd Avenue. A designated stop for Muni vehicles would be provided at the traffic circle. Overall, these changes would not constitute an adverse operational impact on Muni service, and instead would represent benefits to Muni service, including a minor savings in travel time and fuel (and, by consequence, operating costs).

The circulation changes under Alternative 1 short-term projects would also better segregate traffic using the Campus's two main access points. Veterans and visitors would be encouraged to use the 42nd Avenue access and employees would be encouraged to use the 43rd Avenue access. This change would not constitute an adverse operational impact on Muni service, because the potential for increased conflict between buses and other vehicles would be minimal, with some potential benefits generated by the segregation of employee traffic and buses during the peak hours. In particular, the expected net increase of 57 vehicle-trips under Alternative 1 short-term projects (as shown in Table 3.13-12) would likely not substantially affect Muni operations, and the expected increase in average delays at 42nd Avenue/Clement Street would be negligible (as shown in Table 3.13-16). This impact would be minor.

SFVAMC Shuttle Services

By implementing Alternative 1 short-term projects, SFVAMC would institute several changes to shuttle access and circulation at the SFVAMC Fort Miley Campus. In particular, stops would be relocated into two new locations—one at the new Patient Welcome Center traffic circle, with dedicated stops and curbside space, and another between Building 208 and Building 209. Shuttles would be provided with the additional option of entering and exiting the Campus via 43rd Avenue. Overall, these changes would result in, at most, only minor changes to travel times (either increase or decrease), and would not constitute an adverse operational impact on shuttle services at the SFVAMC Fort Miley Campus. This impact would be minor.

Taxi Services

By implementing Alternative 1 short-term projects, SFVAMC would institute minor changes to the internal roadway network that would affect taxi circulation on the SFVAMC Fort Miley Campus. As for shuttle services, taxi services would be provided with dedicated stops at the new Patient Welcome Center traffic circle and a separate location between Building 208 and Building 209. Overall, these changes would result in, at most, only minor changes to travel times (either increase or decrease), and would not constitute an adverse operational impact on taxi services at the Campus. This impact would be minor.

Pedestrian

Alternative 1 short-term projects would include improvements to sidewalks and walkways for pedestrians to enhance connectivity and walkability. Pedestrian trips generated by Alternative 1 short-term projects would include walk-only trips (i.e., trips completed exclusively on foot) to and from the existing SFVAMC Fort Miley Campus, as well as some portion of transit trips (those trips not involving transit services that physically enter and exit the Campus). Overall, the net increase in pedestrian traffic under Alternative 1 short-term projects during the weekday p.m. peak hour on the streets surrounding the Campus under Alternative 1 would comprise 20 walk trips and some portion of the 45 transit trips and 81 auto trips (for transit passengers or motorists who access transit stops or parked vehicles at off-site locations).

Pedestrian connections are provided into Lands End and the surrounding National Park Service lands. However, most of this traffic is expected to enter and exit the Campus via the main access points at 42nd Avenue/Clement Street and 43rd Avenue/Clement Street. With the current volumes of pedestrian traffic on the surrounding street network, the new pedestrian trips generated by Alternative 1 short-term projects could be accommodated without any impacts on pedestrian safety or operations. The expected net increase of 57 vehicle-trips under Alternative 1 short-term projects (as shown in Table 3.13-12) would also likely not substantially increase the potential for conflicts between pedestrians and vehicles, especially when the traffic is distributed across two Campus access points at 42nd Avenue/Clement Street and 43rd Avenue/Clement Street. Both of these intersections feature all-way stop control, forcing motorists to come to a complete stop and visually check for the presence of pedestrians before proceeding through.

In addition, Alternative 1 short-term projects would not conflict with existing pedestrian facilities or propose design features hazardous to pedestrians. External access to and from the SFVAMC Fort Miley Campus for pedestrians would remain unchanged, and primary access would continue to be provided via 42nd Avenue and 43rd Avenue. By implementing Alternative 1 short-term projects, SFVAMC would make some general changes to enhance pedestrian connectivity and the pedestrian realm within the Campus. These general changes are expected to improve overall pedestrian conditions on the Campus by creating new pedestrian routes, eliminating conflict points with motorized traffic, and implementing traffic calming measures to reduce vehicle speed. Overall, Alternative 1 short-term projects are anticipated to result in minor operational impacts on pedestrian conditions.

Bicycle

A portion of the six “other” trips for Alternative 1 short-term projects presented in Table 3.13-12 would be bicycle trips. With the current bicycle and traffic volumes on the adjacent streets, bicycle travel generally occurs without major impedances or safety problems. The expected increase in bicycle trips in the study area that would occur with implementation of Alternative 1 short-term projects would not be substantial enough to affect overall bicycle circulation in the area or the operations of adjacent bicycle facilities. Thus, minor bicycle impacts are as anticipated to result from Alternative 1 short-term projects. Some portion of the expected net increase of 57 vehicle-trips for Alternative 1 short-term projects (as shown in Table 3.13-12) would travel on or cross roadways with designated bikeways, but this increase would likely not substantially increase the potential for conflicts between bicyclists and motorists.

SFVAMC does not propose specific changes with regard to bicycle access on the SFVAMC Fort Miley Campus as part of Alternative 1 short-term projects. Bicyclists would continue to be able to access the Campus as they

currently do, via the main access points at 42nd Avenue/Clement Street and 43rd Avenue/Clement Street. Although Alternative 1 short-term projects would involve implementing some minor changes to the internal roadway network, these changes would result in, at most, only minor changes to travel times (either increase or decrease), and would not conflict with existing or planned bicycle facilities outside of the Campus or constitute a hazard to bicycle users. Overall, Alternative 1 short-term projects are anticipated to result in minor operational impacts on bicycle conditions.

Loading

SFVAMC does not propose specific changes to access to the SFVAMC Fort Miley Campus for service/delivery vehicles as part of Alternative 1 short-term projects. These vehicles would continue to be able to enter and exit the Campus via the existing access points at 42nd Avenue/Clement Street and 43rd Avenue/Clement Street. Although Alternative 1 short-term projects would involve implementing some minor changes to the internal roadway network, these changes would result in, at most, only minor changes to travel times (either increase or decrease) and access routes for trucks serving the Campus. For many buildings on Campus, access would remain unchanged, and service and delivery vehicles—such as delivery trucks serving the Canteen in Building 7—would continue to be able to access the Campus as they currently do. Overall, Alternative 1 short-term projects are anticipated to result in minor operational impacts on delivery loading conditions.

Specific details regarding the future provision of loading spaces will be determined as each specific project enters the design and implementation phase. As mentioned previously, some of the proposed facilities may require specific loading needs or design features that cannot be fully evaluated until a more detailed design is available. These impacts related to the demand for and supply of loading spaces for deliveries or the accessibility and usability of loading facilities (and any associated off-Campus effects) may require evaluation at a later time to address any project-level detailed design. However, this impact is anticipated to be minor.

Site Access and Circulation

Patients and visitors are expected to enter the existing SFVAMC Fort Miley Campus via 42nd Avenue and park at facilities on the east side of the Campus, which include Building 212 and Lot B. Employees are expected to enter the Campus via 43rd Avenue and park at facilities on the west side of the Campus, which include Building 209 and Building 211. As proposed under Alternative 1 long-term projects, the 43rd Avenue entrance would be designated for staff members and service/delivery vehicles. Employees would enter the SFVAMC Fort Miley Campus via 43rd Avenue and be directed to parking facilities on the west side of the Campus. Buses, taxis, and private vehicles would utilize the Patient Welcome Center drop-off circle to transport passengers to/from the Campus.

Fire department access on the SFVAMC Fort Miley Campus would remain unchanged under Alternative 1 short-term projects. For emergency medical access, ambulances would be rerouted to enter the Campus via the 43rd Avenue entrance (instead of via the 42nd Avenue entrance as they currently do), but they would still have access to the Emergency Department located in the “D” Wing of Building 200. Alternative 1 short-term projects would also involve implementing minor changes to circulation within the Campus, which would affect how fire engines and trucks choose to access specific buildings or facilities on Campus when responding to emergencies. For example, the closure of through access along Fort Miley Drive and the creation of the new Patient Welcome Center may require the removal of bollards (or other movable obstructions or features) during emergency situations to facilitate direct fire response access to portions of Building 200 or Building 203. Overall, these

changes would result in, at most, only minor changes to travel times (either increase or decrease) and access routes; they would not eliminate emergency vehicle access to Campus facilities. As a result, these changes would constitute a minor operational impact on emergency vehicle access.

Parking

Parking conditions are not static; parking supply and demand varies from day to day, from day to night, from month to month, etc. Hence, the availability of parking spaces (or lack thereof) is not a permanent physical condition, but changes over time as people change their modes and patterns of travel. Although parking conditions change over time, a substantial deficit in parking caused by a project that creates hazardous conditions or substantial delays to traffic, transit, bicycles, or pedestrians could adversely affect the physical environment. Whether a deficit in parking creates such conditions depends on the magnitude of the shortfall and the ability of drivers to change travel patterns or switch to other travel modes. If a substantial deficit in parking caused by a project creates hazardous conditions or substantial delays in travel, such a condition could also result in secondary physical environmental impacts (e.g., air quality or noise impacts caused by congestion), depending on the project and its setting.

The absence of a ready supply of parking spaces, combined with available alternatives to auto travel (e.g., transit service, taxis, bicycles, or travel by foot) and a relatively dense pattern of urban development, induces many drivers to seek and find alternative parking facilities, shift to other modes of travel, or change their overall travel habits. Any such resulting shifts to transit service or other modes (walking and biking) would be in keeping with the City's "Transit First" policy and numerous *San Francisco General Plan* policies, including those enumerated in the Transportation Element. The City's Transit First Policy, established in Article 8A, Section 8A.115 of the City's Charter, provides that "parking policies for areas well served by public transit shall be designed to encourage travel by public transportation and alternative transportation."

This transportation analysis accounts for potential secondary effects, such as cars circling and looking for a parking space in areas of limited parking supply, by assuming that all drivers would attempt to find parking at or near the SFVAMC Fort Miley Campus and then seek parking farther away if convenient parking is unavailable. The secondary effects of drivers searching for parking are typically offset by a reduction in vehicle-trips by others who are aware of constrained parking conditions in a given area, and thus choose to reach their destination by other modes (walking, biking, transit, or taxi). Should this occur, any secondary environmental impacts that may result from a shortfall in parking in the vicinity of the Campus would be minor. Traffic assignments used in the transportation analysis, as well as in the associated air quality and noise analyses, would reasonably address potential secondary effects.

Parking Demand and Supply

Based on the results presented in Table 3.13-14, the new uses under Alternative 1 short-term projects would generate a demand for 132 parking spaces under 2020 Alternative 1 Short-Term Projects Conditions. Implementing Alternative 1 would provide 306 net additional spaces at the SFVAMC Fort Miley Campus in the short-term time frame, exceeding the estimated new demand under 2020 Alternative 1 Short-Term Projects Conditions by 174 spaces.

Some of these spaces would effectively "recapture" spillover demand generated by existing uses at the Campus that currently use on-street parking in the surrounding neighborhood. It should be noted, however, that the proposed supply of new spaces would exceed the parking provision ratio for the Campus under Existing Conditions. In particular, as published in the LRDP, the site currently houses 987,500 square feet in existing habitable building inventory (as of June 7, 2012) and provides 1,253 parking spaces (as of 2012), resulting in a ratio of approximately 1.27 spaces per 1,000 square feet. Alternative 1 short-term and long-term projects, however, would result in a net increase of approximately 152,500 square feet in habitable building inventory and 306 parking spaces, equivalent to approximately 2.00 spaces per 1,000 square feet.

The total capacity of visitor and patient parking on the SFVAMC Fort Miley Campus would be reduced slightly. However, the magnitude of this reduction would be relatively small and would be offset by improved pick-up and drop-off access provided by the proposed new traffic circle adjacent to the proposed Patient Welcome Center. Overall parking capacity on the Campus would still increase. SFVAMC would be able to repurpose additional employee-use Campus parking for patient and visitor use, either temporarily or permanently, should the parking demand for Campus patients and visitors exceed the supply of designated spaces.

Planning Code Guidance

Although this step is not explicitly required because the proposed EIS Alternatives are federal actions, the Planning Code was also consulted regarding requirements for providing off-street (i.e., on-Campus) parking. The following three land use categories from the Planning Code, listed with their associated requirement for off-street parking supply, were determined to be the most comparable proxies for the uses under Alternative 1 short-term projects:

- *Offices or studios of architects, engineers, interior designers, and other design professionals and studios of graphic artists:* One space for each 1,000 square feet of occupied floor area, where the occupied floor area exceeds 5,000 square feet

- Medical or dental office or outpatient clinic*:* One space for each 300 square feet of occupied floor area, where the occupied floor area exceeds 5,000 square feet

- *Residential care facility:* In RH-1 and RH-2 districts, one space for each 10 residents, where the number of residents exceeds nine[10]

Each short-term project for Alternative 1 was cross-referenced to one of the three uses above to determine the associated requirements for off-street parking supply according to the Planning Code. The results are summarized in Table 3.13-19.

[10] Although the Fort Miley Campus is officially located within a "P" (Public) zoning district, blocks in the surrounding neighborhood are located within RH-1 and RH-2 zoning districts. Because any demand not met on the site will spill over into the surrounding neighborhood, the requirements for RH-1 and RH-2 districts have been applied for these uses. Resident/patient capacity of these facilities was calculated based on 1,000 square feet per resident/patient.

Table 3.13-19: Planning Code Requirements for Off-Street Parking Supply—Alternative 1 Short-Term Projects

Subphase		Action	Planning Code Land Use[1,2]	Net-New Gross Area in square feet	Required Supply in Spaces
1.1	Building 211: *Emergency Operations Center/Parking Garage*	Construction	*EOC to be operated by existing staff (no new parking demand) Parking garage not a habitable space*		
1.2	Trailer 17	Removal	Office	12,500	13
	Building 41: *Research*	Construction			
1.3	Buildings 5 and 7	Seismic Retrofit	*Renovation of existing building/space*		
1.4	Buildings 9 and 10	Seismic Retrofit	*Renovation of existing building/space*		
	Building 22: *Hoptel*	Construction	Residential care facility	8,700	0
1.5	Buildings 209 and 211: *Parking Garage Extensions*	Construction	*Not a habitable space*		
1.6	Building 203: *C-Wing Extension (Ground-Floor Patient Welcome Center)/Drop-Off Area with Canopy Structure*	Construction	Medical office/clinic	7,100	24
1.7	Building 200: *Expansion (Operating Room D-Wing)*	Construction	Medical office/clinic	5,300	18
1.8	Building 20	Demolition	*Currently used as storage (no parking assumed)*		
	Building 24: *Mental Health Clinical Expansion*	Construction	Medical office/clinic	15,600	52
1.9	Building 18	Demolition	*Grouped under Building 40*	(9,700)	*Grouped under Building 40*
	Building 14	Demolition		(6,400)	
	Building 21	Demolition		(1,700)	
	Trailer 23	Removal		(900)	
	Structure 206: *Water Tower*	Installation	*Not a habitable space*		
	Structure 206: *Water Tower*	Removal	*Not a habitable space*		
	Building 40: *Research*	Construction	Office	110,000	91
1.10	Building 207: *Expansion (IT Support Space)*	Construction	Office	7,000	7
1.11	Trailer 31	Removal	Medical office/clinic	(1,500)	(0)
	Building 43: *Research and Admin.*	Construction	Office	15,000	15
1.12	Trailer 36: *New Modular*	Installation	Office	2,200	0
1.13	Building 23: *Mental Health Research Expansion*	Construction	Office	15,000	15
1.14	Building 203: *Extension (Psychiatric Intensive Care Unit C-Wing)*	Construction	Medical office/clinic	1,200	0
1.15	Trailer 24	Removal	Medical office/clinic	(1,000)	(0)
	Building 208: *Extension (Community Living Center/National Cardiac Device Surveillance Center)*	Construction	Residential care facility	10,000	10
1.16	Building 8	Seismic Retrofit	*Renovation of existing building/space*		
	Building 1	Seismic Retrofit	*Renovation of existing building/space*		
	Building 6	Seismic Retrofit	*Renovation of existing building/space*		
1.17	Building 12	Demolition	Office	(38,900)	(39)
Total					**206**

Notes: EOC = Emergency Operations Center

Numerical values enclosed in parentheses indicate negative values (demolition of building/structure or reduction in spaces).

1 "Office" = Offices or studios of architects, engineers, interior designers and other design professionals, and studios of graphic artists
"Medical office/clinic" = Medical or dental office or outpatient clinic

2 Where projects within the same subphase have been classified as the same land use according to the Planning Code, the calculation of the required parking supply is calculated based on the total (net) square footage of the projects. Where projects within the same subphase have been classified as different land uses according to the Planning Code, the required parking supply is calculated separately for the projects.

Source: VA, 2014c

As shown in Table 3.13-19, with implementation of Alternative 1 short-term projects, SFVAMC would be required to provide 206 new parking spaces: 102 spaces for uses classified as "office," 94 spaces for uses classified as "medical office/clinic," and 10 spaces for uses classified as "residential care facility." As noted, the 306 net new parking spaces would be provided under 2020 Alternative 1 Short-Term Projects Conditions. Therefore, the parking supply under Alternative 1 short-term projects would exceed Planning Code requirements.

In summary, Alternative 1 short-term projects (as part of 2020 Alternative 1 Short-Term Projects Conditions) would not result in a substantial parking deficit with the amount of on-Campus parking currently proposed. Rather, parking would be provided at higher provision ratios than currently supplied for existing on-site uses at the SFVAMC Fort Miley Campus.

In addition, the proposed on-Campus parking supply would create improved conditions for traffic, transit, bicycles, or pedestrians, because it would not cause delays or affect transit or other alternative modes of transportation. Specifically, the proposed parking would be provided in Building 209 and Building 211, located in the western half of the Campus. The existing access points to the Campus at 42nd Avenue/Clement Street and 43rd Avenue/Clement Street would remain unchanged; under Alternative 1 short-term projects, no new access points would be constructed to serve these new parking facilities.

The circulation changes under Alternative 1 short-term projects and the segregation of the Campus into separate zones for employees and Veterans/visitors, each with its own dedicated access point (43rd Avenue for employees and 42nd Avenue for Veterans/visitors), would minimize the effects on transit vehicles and other Campus users of traffic heading to and from these parking facilities.

Given these considerations, Alternative 1 short-term projects are anticipated to result in minor operational impacts related to parking.

Long-Term Projects

Construction

Under the Alternative 1 long-term project, vendor and haul truck traffic would peak at 36 vehicles (72 trips) additional per day in April 2024, and construction worker trips would peak at 44 vehicles (88 trips) total per day in January 2026. Construction activities under the Alternative 1 long-term project would generate their maximum traffic volumes in April 2024, with as many as 77 vehicles (154 trips) in one day. Construction traffic would generally be much lower in other months than in the peak month, with most months generating a maximum traffic volume that would not exceed 50 vehicles (100 trips) in one day (VA, 2014d).

Overall, construction of the Alternative 1 long-term project would generate a lower peak-month traffic volume than construction of short-term projects under this alternative. As a result, construction-related impacts under the Alternative 1 long-term project are anticipated to be similar to or slightly less severe than construction-related impacts under short-term projects. Mitigation measures for any potentially adverse impacts of the Alternative 1 long-term project would be the same as described in the previous section for Alternative 1 short-term projects.

Operation

Traffic

Implementing the Alternative 1 long-term project would result in an increase in vehicle trips to and from the existing SFVAMC Fort Miley Campus. Growth in traffic as a result of planned development both within and outside of the study area was used to develop traffic volumes for 2027 Alternative 1 Long-Term Project Conditions. Please note that Alternative 1 Long-Term Project Conditions at the existing SFVAMC Fort Miley Campus account for the ongoing operation of the short-term projects under Alternative 1, plus planned development in the vicinity of the study area.

Intersections

The resulting traffic volumes under 2027 Alternative 1 Long-Term Project Conditions at the study intersections are illustrated in Figure 3.13-14. The LOS results for the study intersections are summarized in Table 3.13-20.

As shown in Table 3.13-20, under 2027 Alternative 1 Long-Term Project Conditions, all five study intersections are projected to operate at acceptable conditions (LOS D or better) during the weekday p.m. peak hour. Therefore, the Alternative 1 long-term project would result in minor operational impacts at the study intersections.

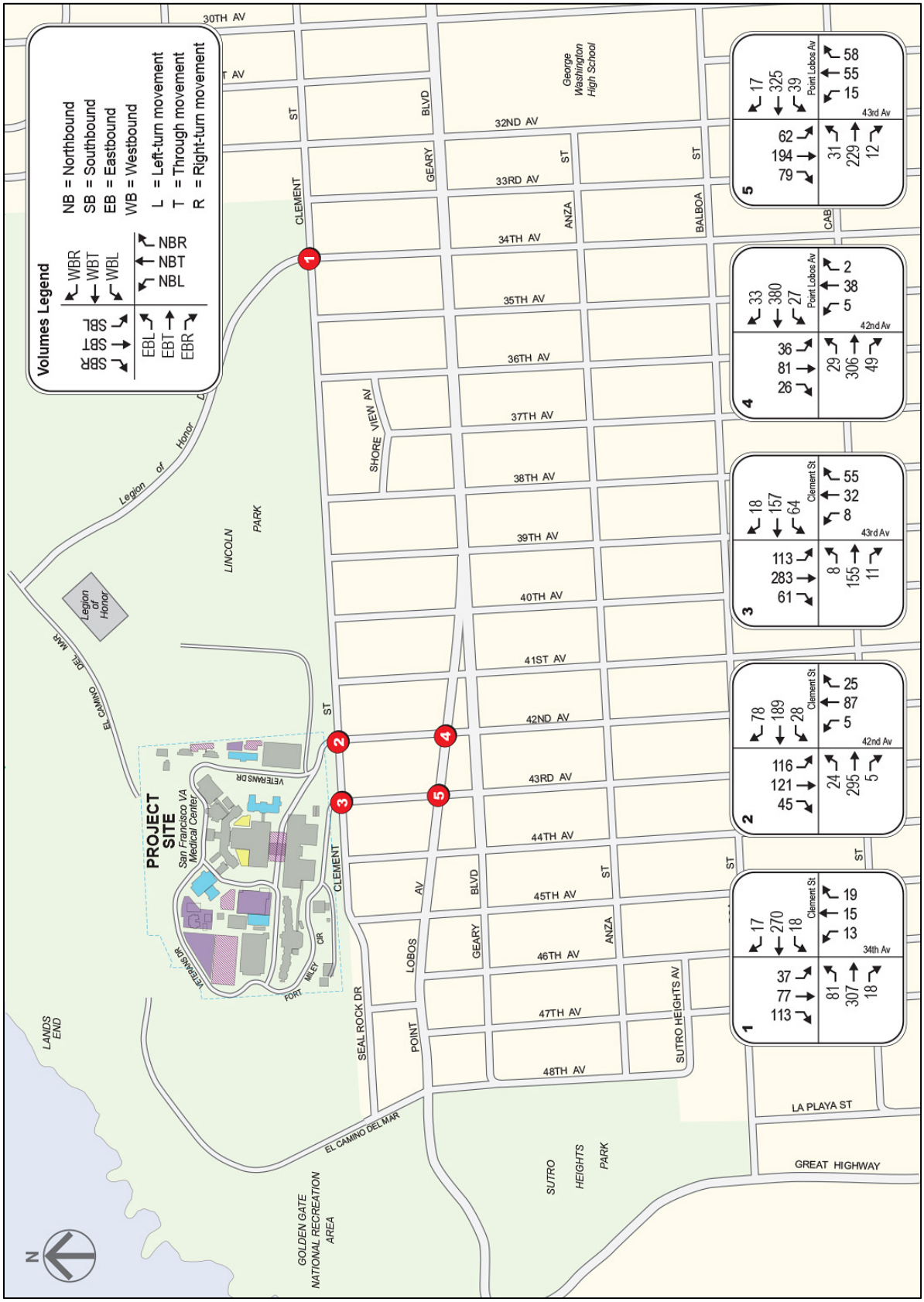
Table 3.13-20: Intersection Levels of Service—2027 Alternative 1 Long-Term Project Conditions, Weekday P.M. Peak Hour

	Intersection	Control Type	2027 Long-Term Conditions		2027 Alternative 1 Long-Term Project Conditions	
			LOS	Delay[1]	LOS	Delay[1]
1	34th Avenue/Clement Street	All-way Stop	B	12.9	C	15.0
2	42nd Avenue/Clement Street	All-way Stop	B	11.8	C	15.1
3	43rd Avenue/Clement Street	All-way Stop	B	12.8	C	17.3
4	42nd Avenue/Point Lobos Avenue	All-way Stop	B	13.7	C	16.0
5	43rd Avenue/Point Lobos Avenue	All-way Stop	C	16.2	C	19.0

Notes: LOS = level of service
[1] Delay presented in seconds per vehicle.
Source: VA, 2014c

Roadway Segments

LOS results for the study roadway segments are summarized in Table 3.13-21. Although southbound 43rd Avenue between Clement Street and Point Lobos Avenue would degrade to LOS D, both roadway segments would operate at acceptable conditions (LOS D or better) during the weekday p.m. peak hour under 2027 Alternative 1 Long-Term Project Conditions (Table 3.13-21). Therefore, the Alternative 1 long-term project would result in minor operational impacts along the study roadway segments.



Source: VA, 2014c

Figure 3.13-14: Intersection Traffic Volumes—2027 Alternative 1 Long-Term Project Conditions

Table 3.13-21: Roadway Segment Levels of Service—2027 Alternative 1 Long-Term Project Conditions, Weekday P.M. Peak Hour

	Intersection	Direction	2027 Long-Term Conditions		2027 Alternative 1 Long-Term Project Conditions	
			LOS	v/c Ratio	LOS	v/c Ratio
1	42nd Avenue/Clement Street *Between Clement Street and Point Lobos Avenue*	Northbound	A	0.18	A	0.26
		Southbound	A	0.26	B	0.34
2	43rd Avenue/Clement Street *Between Clement Street and Point Lobos Avenue*	Northbound	A	0.18	A	0.23
		Southbound	C	0.69	D	0.80

Notes: LOS = level of service; volume-to-capacity
Source: VA, 2014c

Passenger Vehicle Access

As discussed for the Alternative 1 short-term projects, the changes to passenger vehicle access would simplify circulation through the SFVAMC Fort Miley Campus and help to segregate employee and Veteran/visitor vehicular traffic. These changes would result in, at most, only minor changes to travel times (either increase or decrease) and access routes, and would not constitute an adverse operational impact on passenger vehicle access at the Campus. This impact would be minor.

East Fort Miley Access

As discussed for the Alternative 1 short-term projects, the Alternative 1 long-term project would not involve implementing specific changes to GGNRA access to and from East Fort Miley. The existing access road at the southwest corner of Building 212 would continue to serve traffic generated at this facility. The changes to the internal roadway network proposed by the Alternative 1 long-term project would result in, at most, only minor changes in the total traffic volumes passing through the Veterans Drive/Fort Miley Circle intersection (either increase or decrease) and would not preclude GGNRA access into and out of East Fort Miley. Overall, the Alternative 1 long-term project is not anticipated to result in adverse operational impacts on GGNRA access into and out of East Fort Miley. This impact would be minor.

Transit

Ridership and Capacity Effects

The Alternative 1 long-term project would generate approximately 215 net-new transit trips (91 inbound to the existing SFVAMC Fort Miley Campus and 124 outbound from the Campus) during the weekday p.m. peak hour (Table 3.13-12). Please note that Alternative 1 Long-Term Project Conditions at the Campus account for the ongoing operation of the short-term projects, plus planned development in the vicinity of the study area. Anticipated Muni ridership under 2027 Alternative 1 Long-Term Project Conditions is provided in Table 3.13-22. Existing ridership and future ridership (under 2027 Alternative 4 Long-Term Conditions) are also presented in Table 3.13-22 for reference, but the determination of impacts is based on the contribution, or share, of ridership

generated by Alternative 1 relative to the total future ridership (2027 Alternative 1 Long-Term Project Conditions), in accordance with standard practice for evaluating transit ridership impacts in San Francisco.

Table 3.13-22: Muni Ridership and Capacity—2027 Alternative 1 Long-Term Project Conditions, Weekday P.M. Peak Hour

Direction	Existing Conditions			2027 Alternative 4 Long-Term Conditions			2027 Alternative 1 Long-Term Project Conditions		
	Ridership	Capacity	Utilization	Ridership	Capacity	Utilization	Ridership	Capacity	Utilization
Inbound	908	1,777	51%	1,324	2,820	47%	1,448	2,820	51%
Outbound	1,814	2,528	72%	2,783	3,826	73%	2,874	3,826	75%

Notes:
Ridership data based on conditions at the maximum load point for each line.
Sources: SFMTA, 2014; VA, 2014c

As discussed for the Alternative 1 short-term projects, the location of the SFVAMC Fort Miley Campus at the outer end of the Geary Corridor means that the commute direction for the Campus constitutes the "reverse commute" direction. Trips heading inbound to the Campus would take outbound transit services in the Geary Corridor, and trips heading outbound from the Campus would take inbound transit services in the Geary Corridor.

In particular, outbound transit service in the Geary Corridor is expected to operate at 73 percent capacity utilization under 2027 Alternative 4 Long-Term Conditions (Table 3.13-22). Adding of up to 91 passengers as a result of implementation of the Alternative 1 long-term project would increase capacity utilization to 75 percent, which would still remain below the 85 percent threshold. In the opposite direction, inbound transit service in the Geary Corridor is expected to operate at only 47 percent capacity utilization during the weekday p.m. peak hour. Even with the addition of up to 124 new transit riders generated by implementation of the Alternative 1 long-term project, capacity utilization would still increase to only 51 percent, well below the 85 percent threshold.

Similar to 2020 Alternative 1 Short-Term Projects Conditions, it is likely that only some of these 124 new transit riders leaving the Campus would choose to take Muni buses in the Geary Corridor. Many of these riders would be expected to use the commuter shuttle services provided by SFVAMC. Thus, the actual increase in capacity utilization on inbound buses in the Geary Corridor is expected to be less than as described above.

Overall, implementing the Alternative 1 long-term project is anticipated to result in a minor operational impact on Muni capacity in either direction within the Geary Corridor.

Other Effects

As discussed for the Alternative 1 short-term projects, the changes to circulation on the Campus for Muni buses with implementation of the Alternative 1 long-term project would represent only minor changes and would not constitute an adverse operational impact on Muni service. Although the short-term and long-term projects of Alternative 1 would generate a combined net increase of 259 vehicle-trips (as shown in Table 3.13-12), only some of these vehicles would interact with Muni buses. Many would actually be employee vehicles using the employee access at 42nd Avenue/Clement Street and would likely not interact with Muni buses at all. Overall, the expected

increase in average delays at 42nd Avenue/Clement Street would be minimal, and this impact would be minor (as shown in Table 3.13-20).

SFVAMC Shuttle Services

As discussed for the Alternative 1 short-term projects, the changes to shuttle access and circulation at the SFVAMC Fort Miley Campus with implementation of the Alternative 1 long-term project would result in, at most, only minor changes to travel times (either increase or decrease), and would not constitute an adverse operational impact on shuttle services at the Campus. This impact would be minor.

Taxi Services

As discussed for the Alternative 1 short-term projects, the changes to taxi access and circulation at the SFVAMC Fort Miley Campus with implementation of the Alternative 1 long-term project would result in, at most, only minor changes to travel times (either increase or decrease), and would not constitute an adverse operational impact on shuttle services at the Campus. This impact would be minor.

Pedestrian

The net increase in pedestrian traffic during the weekday p.m. peak hour on the streets surrounding the SFVAMC Fort Miley Campus with implementation of the Alternative 1 long-term project would comprise 114 walk trips and some portion of the 215 transit trips and 435 auto trips (for transit passengers or motorists accessing transit stops or parked vehicles at off-site locations). Please note that Alternative 1 Long-Term Project Conditions at the SFVAMC Fort Miley Campus account for the ongoing operation of the short-term projects, plus planned development in the vicinity of the study area.

Similar to 2020 Alternative Short-Term Alternative 1 Conditions, the new pedestrian trips generated by the Alternative 1 long-term project could be accommodated without any impacts on pedestrian safety or operations. The expected net increase of 259 vehicle-trips from the Alternative 1 short-term and long-term projects (as shown in Table 3.13-12) would also likely not substantially increase the potential for conflicts between pedestrians and vehicles, especially when the traffic is distributed across two access points on the Campus (42nd Avenue/Clement Street and 43rd Avenue/Clement Street), both of which feature all-way stop control.

As discussed for the Alternative 1 short-term projects, the Alternative 1 long-term project would not conflict with existing pedestrian facilities or propose design features hazardous to pedestrians. External access to and from the Campus for pedestrians would remain unchanged, but proposed changes within the Campus would generally improve pedestrian conditions. Overall, the Alternative 1 long-term project is anticipated to result in minor operational impacts on pedestrian conditions.

Bicycle

A portion of the 42 net-new “other” trips for Alternative 1 short-term and long-term projects presented in Table 3.13-12 would be bicycle trips. Please note that Alternative 1 Long-Term Project Conditions at the SFVAMC Fort Miley Campus account for the ongoing operation of the short-term projects, plus planned development in the vicinity of the study area. With the current bicycle and traffic volumes on the adjacent streets,

bicycle travel generally occurs without major impedances or safety problems. Furthermore, the anticipated increase in bicycle trips in the study area under Alternative 1 would not be substantial enough to affect overall bicycle circulation in the area or the operations of adjacent bicycle facilities. Thus, minor impacts are anticipated as a result of Alternative 1 long-term projects. Some portion of the expected net increase of 259 vehicle-trips from the Alternative 1 short-term and long-term projects (as shown in Table 3.13-12) would travel on or cross roadways with designated bikeways. However, this would likely not substantially increase the potential for conflicts between bicyclists and motorists, especially when the traffic is distributed across two access points on the Campus (42nd Avenue/Clement Street and 43rd Avenue/Clement Street) and across two different directions (entering and exiting the Campus).

As discussed for the Alternative 1 short-term projects, the Alternative 1 long-term project does not propose specific changes with regard to bicycle access on the Campus. Bicyclists would continue to be able to access the Campus as they currently do, via 42nd Avenue and 43rd Avenue. The changes to the internal roadway network proposed by the Alternative 1 long-term project would result in, at most, only minor changes to travel times (either increase or decrease), and would not conflict with existing or planned bicycle facilities outside of the Campus or constitute a hazard to bicycle users. Overall, the Alternative 1 long-term project is anticipated to result in minor operational impacts on bicycle conditions.

Loading

As discussed for the Alternative 1 short-term projects, SFVAMC does not propose specific changes to Campus access for service/delivery vehicles as part of the Alternative 1 long-term project, and the existing access via 42nd Avenue and 43rd Avenue would remain unchanged. The changes to the internal roadway network would result in, at most, only minor changes to travel times (either increase or decrease) and access routes for trucks serving the Campus, and would constitute a minor operational impact on delivery loading conditions.

Similarly, specific details regarding the future provision of delivery loading spaces will only be determined as each specific project enters the design and implementation phase. As mentioned previously, some of the proposed facilities may require specific loading needs or design features that cannot be fully evaluated until a more detailed design is available. Impacts related to the demand and supply of loading spaces or the accessibility and usability of delivery loading facilities (and any associated off-Campus effects) may require evaluation later as specific details are designed for Alternative 1 projects. However, this impact is anticipated to be minor.

Site Access and Circulation

No major changes would be made to access points or the internal roadway network beyond those already discussed for Alternative 1 short-term projects. Therefore, site access and circulation under the Alternative 1 long-term project would be similar to those described above for the short-term time frame under this alternative. As discussed for the Alternative 1 short-term projects, fire department access on the SFVAMC Fort Miley Campus would remain unchanged under the Alternative 1 long-term project, but emergency medical access would be rerouted via the 43rd Avenue entrance. These changes, together with changes to the internal roadway network, would result in, at most, only minor changes to travel times (either increase or decrease) and access routes for emergency vehicles, and would constitute a minor operational impact on emergency vehicle access.

Parking

As discussed for the Alternative 1 short-term projects, parking conditions are not static; parking supply and demand varies from day to day, from day to night, from month to month, etc. Hence, the availability of parking spaces (or lack thereof) is not a permanent physical condition, but changes over time as people change their modes and patterns of travel. Although parking conditions change over time, a substantial deficit in parking caused by a project that creates hazardous conditions or substantial delays to traffic, transit, bicycles, or pedestrians could adversely affect the physical environment. Whether a deficit in parking creates such conditions depends on the magnitude of the shortfall and the ability of drivers to change travel patterns or switch to other travel modes. If a substantial deficit in parking caused by a project creates hazardous conditions or substantial delays in travel, such a condition could also result in secondary physical environmental impacts (e.g., air quality or noise impacts caused by congestion), depending on the project and its setting.

The absence of a ready supply of parking spaces, combined with available alternatives to auto travel (e.g., transit service, taxis, bicycles, or travel by foot) and a relatively dense pattern of urban development, induces many drivers to seek and find alternative parking facilities, shift to other modes of travel, or change their overall travel habits. Any such resulting shifts to transit service or other modes (walking and biking) would be in keeping with the City's "Transit First" policy and numerous *San Francisco General Plan* policies, including those enumerated in the Transportation Element. The City's Transit First Policy, established in Article 8A, Section 8A.115 of the City's Charter, provides that "parking policies for areas well served by public transit shall be designed to encourage travel by public transportation and alternative transportation."

This transportation analysis accounts for potential secondary effects, such as cars circling and looking for a parking space in areas of limited parking supply, by assuming that all drivers would attempt to find parking at or near the SFVAMC Fort Miley Campus and then seek parking farther away if convenient parking is unavailable. The secondary effects of drivers searching for parking are typically offset by a reduction in vehicle-trips attributable to others who are aware of constrained parking conditions in a given area, and thus choose to reach their destination by other modes (walking, biking, transit, or taxi). Should this occur, any secondary environmental impacts that may result from a shortfall in parking in the vicinity of the Campus would be minor. Traffic assignments used in the transportation analysis, as well as in the associated air quality and noise analyses, would reasonably address potential secondary effects.

Parking Demand and Supply

As shown in Table 3.13-14, Alternative 1 short-term and long-term projects would generate a demand for 426 new parking spaces under 2027 Alternative 1 Long-Term Project Conditions, based on ITE parking demand rates. Overall, Alternative 1 would provide 306 net new off-street spaces at the Campus, which would result in an unmet parking demand of 120 spaces.

The estimated demand would exceed the supply under the Alternative 1 long-term project. However, it should be noted that the SFVAMC Fort Miley Campus is located in an urban environment where alternative modes attract a reasonably substantial share of the total travel demand. As described above, the presence of viable alternative modes of travel such as transit, biking, and walking would likely induce some Campus users to shift to other modes of travel, in keeping with San Francisco's "Transit First" policy.

The total capacity of visitor and patient parking on the SFVAMC Fort Miley Campus would be reduced slightly. However, the overall magnitude of this reduction would be relatively small and would be offset by improved pick-up and drop-off access provided by the proposed new traffic circle adjacent to the proposed Patient Welcome Center. Overall parking capacity on the Campus would still increase. SFVAMC would have the ability to repurpose additional employee-use Campus parking for patient and visitor use, either temporarily or permanently, should the parking demand for Campus patients and visitors exceed the supply of designated spaces.

Planning Code Guidance

Although this step is not explicitly required because the proposed EIS Alternatives are federal actions, the Planning Code was also consulted regarding requirements for the provision of off-street (i.e., on-Campus) parking was also consulted. The required supply of off-street parking under the Alternative 1 long-term project according to the San Francisco Planning Code was calculated using the methodology described under 2020 Short-Term Alternative 1 Conditions. The results are summarized in Table 3.13-23.

As shown in Table 3.13-23, with implementation of Alternative 1 short-term and long-term projects, SFVAMC would be required to provide 773 new parking spaces (206 spaces in the short-term time frame and 567 spaces in the long-term time frame). Because 306 net new spaces would be provided on the Campus, the parking supply under Alternative 1 short-term and long-term projects would not meet Planning Code requirements.

Table 3.13-23: Planning Code Requirements for Off-Street Parking Supply—Alternative 1 Short-Term and Long-Term Projects

Subphase		Action	Planning Code Land Use[1]	Net-New Gross Area in square feet	Required Supply in spaces
Short-Term Projects					
	See Table 3.13-19 for detailed calculations of required parking supply for short-term projects				
	Subtotal				*206*
Long-Term Project					
2.1	Building 213: *Clinical Addition Building*	Construction	Medical office/clinic	170,000	567
	Subtotal				*567*
Total					**773**

Notes:
[1] "Medical office/clinic" = Medical or dental office or outpatient clinic
Source: VA, 2014c

As discussed previously, however, a deficit in the parking supply under Alternative 1 relative to the estimated demand and/or Planning Code requirements, in and of itself, would not constitute an adverse impact related to vehicle parking conditions. On-site parking would be provided at higher provision ratios than currently provided for existing uses at the SFVAMC Fort Miley Campus. The Campus is well-served by transit and other viable alternative modes of travel, including a variety of shuttle services for patients, visitors, and SFVAMC staff and employees.

In addition, the proposed supply of parking would not create hazardous conditions or substantial delays affecting traffic, transit, bicycles, or pedestrians, nor would it render use of transit or other alternative modes infeasible.

Given these considerations, Alternative 1 long-term projects are anticipated to result in minor operational impacts related to parking. Should the secondary effects of the parking deficit cause concern, the existing valet parking program would be expanded to include the additional parking structures proposed to be constructed under Alternative 1 and could provide as much as 150 additional spaces.

Alternative 2: SFVAMC Fort Miley Campus Buildout Alternative

Short-Term Projects

Alternative 2 short-term projects at the existing SFVAMC Fort Miley Campus would be the same as short-term projects for Alternative 1, with one exception. Specifically, retrofitting of the existing Buildings 1, 6, and 8 would not occur as part of Alternative 2 short-term projects (Table 2-3 and Figure 2-3), but would instead be accomplished in the long term. Alternative 2 short-term projects include construction of a net total of 485,445 gross square feet (gsf), which is 115,547 gsf less than for short-term projects under Alternative 1. Therefore, impacts of Alternative 2 short-term projects would be similar to or less than those of Alternative 1 short-term projects, and the same mitigation measures would apply. Traffic, transportation, circulation, and parking impacts would range from minor to minor with mitigation.

Construction

Construction-Related Haul Truck Routes

Haul trucks operating during construction activities for Alternative 2 short-term projects would be expected to use the same routes to and from the existing SFVAMC Fort Miley Campus as haul trucks operating during Alternative 1 short-term projects. These routes would minimize the impacts of haul track activity farther away from the Campus. Still, haul truck activity could result in temporary but adverse impacts, either at the Campus itself or in the immediate vicinity, on traffic and transportation and vehicle parking. Such impacts would be minor with mitigation (Mitigation Measure TRANS-1).

Construction Traffic Estimates

Under the Alternative 2 short-term projects, vendor and haul truck traffic would peak at 36 vehicles (72 trips) per day and construction worker trips would peak at 64 vehicles (128 trips) per day in January 2016. As a result, construction activities under Alternative 2 short-term projects would generate their maximum traffic volumes in January 2016, with as many as 100 vehicles (200 trips) in one day. As under Alternative 2 short-term projects, construction traffic would generally be much lower in other months than in the peak month, with most months generating a maximum traffic volume that would not exceed 50 vehicles (100 trips) in one day (VA, 2014d).

Construction-Related Effects on Traffic, Transit, and Pedestrian Circulation

Like construction activities for the Alternative 1 short-term projects, construction-related activities for Alternative 2 short-term projects may result in temporary impacts on circulation within or in the vicinity of the SFVAMC

Fort Miley Campus for traffic, transit, and pedestrians. Although these effects would generally not be substantial enough to constitute an adverse impact, Management Measures TRANS-1, TRANS-2, and TRANS-3 are recommended to alleviate these effects. This impact would be minor.

In particular, although temporary modular swing space would be provided at a single location under Alternative 2 (at the site of the current Building 12 and future Building 213), similar measures to those cited for Alternative 1 under Management Measure TRANS-2 should be implemented as needed to minimize the effects of construction-related activities on traffic, transit, bicycle, pedestrian, and emergency vehicle circulation. Measures should be taken to ensure adequate safety and access for pedestrians crossing between Building 12 and surrounding facilities such as Building 200, Building 203, and Building 208. Double parking or other parking behavior that disrupts traffic circulation should be discouraged and enforced. Existing perpendicular parking may need to be converted to parallel parking or temporarily closed to minimize effects on Campus.

Construction-Related Effects on Parking

Construction-period parking capacity under Alternative 2 short-term projects would be similar to that under Alternative 1 short-term projects. There would be some minor differences in the construction schedules for the short-term projects for Alternative 1 and Alternative 2; however, the temporary loss and gain and the permanent net gain in on-Campus parking capacity would be identical for each subphase.

As under Alternative 1 short-term projects, the pending completion of Building 2011 and the continuation of valet parking through until the end of Subphase 1.9 under Alternative 2 short-term projects would likely be sufficient to accommodate the parking demand generated by construction of subsequent projects. However, because of limitations in the methodology for estimating construction traffic, unforeseen circumstances such as delays or other necessary changes to the construction schedule, or other factors, some potential still exists for the temporary increase in parking demand generated by construction-related activities to exceed the available on-site parking supply. Such impacts, however, would be minor with mitigation (Mitigation Measures TRANS-2 and TRANS-3).

Operation

The seismic retrofitting of Buildings 1, 6, and 8 would not affect the significance of operational impacts under the Alternative 2 short-term projects relative to those under the Alternative 1 short-term projects, as the retrofit would not increase the overall intensity of functions within these buildings. In particular, the expected travel demand and changes to the Campus circulation system under the Alternative 2 short-term projects would be similar to those under the Alternative 1 short-term projects. Therefore, traffic, transportation, circulation, and parking operational impacts would be minor.

Overall, construction of long-term projects would generate a lower peak-month traffic volume than construction of short-term projects. As a result, construction-related impacts under long-term projects are anticipated to be similar to or slightly less severe than those under short-term projects. Mitigation measures for any potentially adverse impacts under long-term projects would be as described in the previous section for short-term projects.

Long-Term Projects

Alternative 2 long-term projects at the existing SFVAMC Fort Miley Campus would be the same as the Alternative 1 long-term project, with one exception. Specifically, three additional existing buildings—Buildings 1, 6, and 8—would be retrofitted as part of Alternative 2 long-term projects (Table 2-4 and Figure 2-4). Alternative 2 long-term projects include construction of a total of 285,487 gsf, which is 115,487 gsf more than under the Alternative 1 long-term project, because Alternative 2 includes construction of Building 213 along with the seismic retrofit of Buildings 1, 6, and 8. Therefore, construction impacts of Alternative 2 long-term projects would be similar to, although slightly greater than, those of the Alternative 1 long-term project. Mitigation measures for any potentially adverse impacts under Alternative 2 long-term projects would be the same as described for the Alternative 1 long-term project. Traffic, transportation, circulation, and parking impacts would be minor or minor with mitigation.

Construction

Under the Alternative 2 long-term projects, vendor and haul truck traffic would peak at 36 vehicles (72 trips) per day and construction worker trips would peak at 45 vehicles (90 trips) per day in May 2024. As a result, construction activities under the Alternative 2 long-term projects would generate their maximum traffic volumes in May 2024, with as many as 81 vehicles (162 trips) in one day. As with the Alternative 2 short-term projects, construction traffic would generally be much lower in other months than during the peak month, with most months generating a maximum traffic volume that would not exceed 50 vehicles (100 trips) in one day (VA, 2014d). Construction impacts would be minor with mitigation (Mitigation Measures TRANS-1, TRANS-2, and TRANS-3) or minor with Management Measures TRANS-1, TRANS-2, and TRANS-3 further alleviating minor impacts.

Operation

The seismic retrofit of Buildings 1, 6, and 8 would not affect the significance of operational impacts under the Alternative 2 long-term projects relative to those under the Alternative 1 long-term project because the retrofit would not increase the overall intensity of functions within these buildings. In particular, the expected travel demand and changes to the Campus circulation system under the Alternative 2 long-term projects would be similar to those under the Alternative 1 long-term project. Therefore, traffic, transportation, circulation, and parking operational impacts would be minor.

Alternative 3: SFVAMC Campus Plus Mission Bay Campus Alternative

Short-Term Projects

Alternative 3 short-term projects (during both construction and operation) would be the same as the short-term projects of Alternative 1 (Tables 2-1 and Figure 2-1). Therefore, the impacts of Alternative 3 short-term projects for construction, traffic, transit, pedestrian, bicycle, parking, loading, and site access and circulation would be the same as the impacts of Alternative 1 short-term projects.

Long-Term Projects

Alternative 3 long-term projects (during both construction and operation) at the existing SFVAMC Fort Miley Campus would be the same as the Alternative 1 long-term project, except that the ambulatory care center would be located at the potential new SFVAMC Mission Bay Campus under Alternative 3 (Tables 2-2 and 2-5 and Figure 2-5). Therefore, the impacts of Alternative 3 long-term projects at the existing Campus would be the same as or less than the impacts of the Alternative 1 long-term project.

As discussed in Chapter 2.0, buildout of the existing SFVAMC Fort Miley Campus is expected to be completed by 2026, while buildout of the potential new SFVAMC Mission Bay Campus is expected to be completed by 2027. Because a specific location for the potential new Campus has yet to be determined, a detailed quantitative analysis of transportation impacts on the Mission Bay area has not been conducted. Therefore, further analysis to quantify transportation impacts at the potential new Campus would be required in the future, once a specific location in the Mission Bay area has been identified.

Construction

SFVAMC does not propose any major construction-related activities at the SFVAMC Fort Miley Campus under the Alternative 3 long-term projects. Thus, there would be no additional construction impacts beyond those identified for 2020 Alternative 3 Short-Term Projects Conditions.

An analysis assessing construction impacts at the potential new Mission Bay Campus would be required as part of a subsequent environmental review, once a specific location and detailed facilities plan for the potential new Campus have been determined. In particular, a construction plan specific to the site location would need to be developed once the location is defined. Such a plan would be developed to ensure that any impacts of construction activities under Alternative 3 long-term projects on the surrounding area would be temporary. In general, temporary traffic and transportation changes must be coordinated through SFMTA's Interdepartmental Staff Committee on Traffic and Transportation and require a public meeting. As part of this process, the construction management plan may be reviewed by SFMTA's Transportation Advisory Committee to resolve internal differences between different transportation modes. Through assumed compliance with measures identified in a future site-specific transportation impact study for the potential new Mission Bay Campus, impacts related to construction traffic are anticipated to be minor.

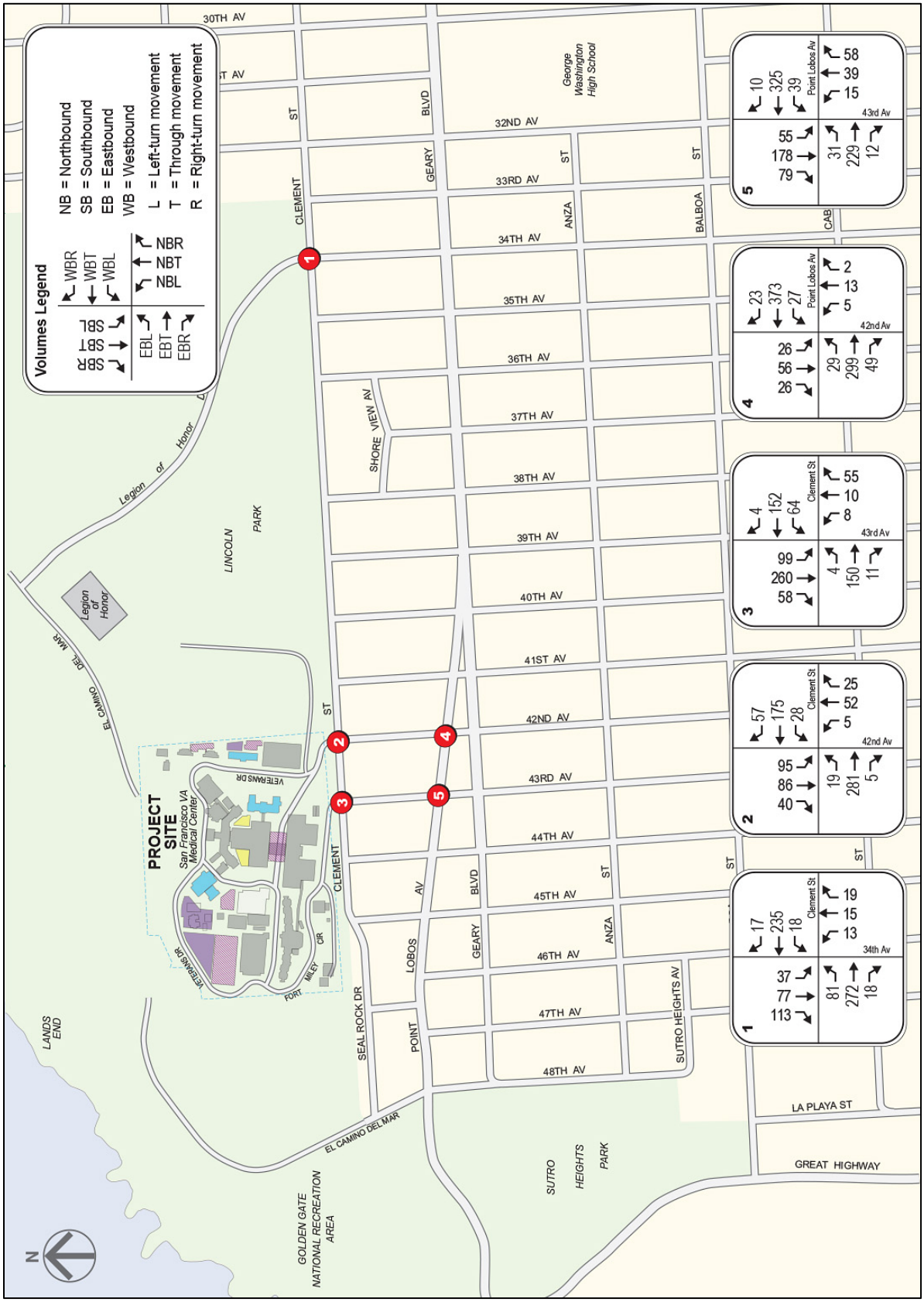
Operation

Traffic

Growth in traffic as a result of planned development both within and outside of the study area, as well as traffic growth attributable to Alternative 3 long-term projects, was used to develop traffic volumes for 2027 Alternative 3 Long-Term Project Conditions.

Intersections

The resulting traffic volumes for 2027 Alternative 3 Long-Term Projects Conditions at the study intersections are illustrated in Figure 3.13-15. The LOS results for the study intersections are summarized in Table 3.13-24.



Source: VA, 2014c

Figure 3.13-15: Intersection Traffic Volumes—2027 Alternative 3 Long-Term Projects Conditions

Table 3.13-24: Intersection Levels of Service—2027 Alternative 3 Long-Term Projects Conditions, Weekday P.M. Peak Hour

	Intersection	Control Type	2027 Long-Term Conditions		2027 Alternative 3 Long-Term Projects Conditions	
			LOS	Delay[1]	LOS	Delay[1]
1	34th Avenue/Clement Street	All-way Stop	B	12.9	B	13.3
2	42nd Avenue/Clement Street	All-way Stop	B	11.8	B	12.2
3	43rd Avenue/Clement Street	All-way Stop	B	12.8	B	14.3
4	42nd Avenue/Point Lobos Avenue	All-way Stop	B	13.7	B	14.0
5	43rd Avenue/Point Lobos Avenue	All-way Stop	C	16.2	C	17.1

Notes:
LOS = level of service
[1] Delay presented in seconds per vehicle.
Source: VA, 2014c

As shown in Table 3.13-24, under 2027 Alternative 3 Long-Term Projects Conditions (encompassing both short-term and long-term projects), all five study intersections are projected to operate at acceptable conditions (LOS D or better) during the weekday p.m. peak hour. Therefore, the Alternative 3 long-term projects would result in minor operational impacts at any study intersections.

Roadway Segments

LOS results for the study roadway segments are summarized in Table 3.13-25. Although southbound 43rd Avenue between Clement Street and Point Lobos Avenue would degrade to LOS D, both roadway segments would operate at acceptable conditions (LOS D or better) during the weekday p.m. peak hour under 2027 Alternative 3 Long-Term Project Conditions (as shown in Table 3.13-25). Therefore, the Alternative 3 long-term projects would result in minor operational impacts along any study roadway segments.

Table 3.13-25: Roadway Segment Levels of Service—2027 Alternative 3 Long-Term Projects Conditions, Weekday P.M. Peak Hour

	Intersection	Direction	2027 Long-Term Conditions		2027 Alternative 3 Long-Term Projects Conditions	
			LOS	v/c Ratio	LOS	v/c Ratio
1	42nd Avenue/Clement Street *Between Clement Street and Point Lobos Avenue*	Northbound	A	0.18	A	0.18
		Southbound	A	0.26	A	0.27
2	43rd Avenue/Clement Street *Between Clement Street and Point Lobos Avenue*	Northbound	A	0.18	A	0.18
		Southbound	C	0.69	D	0.74

Notes: LOS = level of service; v/c = volume-to-capacity
Source: VA, 2014c

Passenger Vehicle Access

As discussed for the Alternative 1 short-term projects, the changes to passenger vehicle access would simplify circulation through the SFVAMC Fort Miley Campus and help to segregate employee and Veteran/visitor vehicular traffic. These changes would result in, at most, only minor changes to travel times (either increase or decrease) and access routes, and would not constitute an adverse operational impact on passenger vehicle access at the Campus. This impact would be minor.

East Fort Miley Access

As discussed for the Alternative 1 short-term projects, Alternative 3 long-term projects would not involve implementing specific changes to GGNRA access to and from East Fort Miley, and the existing access road at the southwest corner of Building 212 would continue to serve traffic generated at this facility. The changes to the internal roadway network proposed by Alternative 3 long-term projects would result in, at most, only minor changes in the total traffic volumes passing through the Veterans Drive/Fort Miley Circle intersection (either increase or decrease) and would not preclude GGNRA access into and out of East Fort Miley. Overall, the Alternative 3 long-term projects are not anticipated to result in adverse operational impacts on GGNRA access into and out of East Fort Miley. This impact would be minor.

Potential New Mission Bay Campus

The location of the 140,000-square-foot ambulatory care center would be an undetermined site in the Mission Bay area of San Francisco. Alternative 3 would generate an estimated 184 vehicle-trips during the weekday p.m. peak hour at the potential new SFVAMC Mission Bay Campus (Table 3.13-11): 92 vehicle-trips inbound to the site and 92 vehicle-trips outbound from the site. Because a specific location and detailed facilities plan for the potential new Mission Bay Campus have not yet been determined, further analysis to assess traffic impacts at the potential new Campus would be required as part of a subsequent environmental review, once these details have been determined.

Transit

Ridership and Capacity Effects

Alternative 3 long-term projects would generate an estimated 45 net-new transit trips at the existing SFVAMC Fort Miley Campus (six inbound to the Campus and 39 outbound from the Campus) during the weekday p.m. peak hour (Table 3.13-13). Please note that Alternative 3 Long-Term Projects Conditions at the SFVAMC Fort Miley Campus account for the ongoing operation of the short-term projects, plus planned development in the vicinity of the study area. For reference, anticipated Muni ridership under 2027 Alternative 4 Long-Term Projects Conditions is provided in Table 3.13-22.

As discussed for the Alternative 1 short-term projects, the location of the SFVAMC Fort Miley Campus at the outer end of the Geary Corridor means that the commute direction for the Campus constitutes the “reverse commute” direction. Trips heading inbound to the Campus would take outbound transit services in the Geary Corridor, and trips heading outbound from the Campus would take inbound transit services in the Geary Corridor.

In particular, outbound transit service in the Geary Corridor is expected to operate at only 73 percent capacity utilization under 2027 Alternative 4 Long-Term Conditions, as shown in Table 3.13-22. Adding up to six passengers as a result of Alternative 3 would represent an increase of only 0.2 percent in capacity utilization. This would not constitute a material change in the capacity utilization, which would continue to remain below the 85 percent threshold at 73 percent under 2027 Alternative 3 Long-Term Projects Conditions. In the opposite direction, inbound transit service in the Geary Corridor is expected to operate at only 47 percent capacity utilization during the weekday p.m. peak hour. Even with the addition of up to 39 new transit riders generated by Alternative 3 long-term projects, capacity utilization would still only increase to 48 percent, well below the 85 percent threshold.

Overall, Alternative 3 long-term projects are anticipated to result in a minor operational impact on Muni capacity in either direction in the Geary Corridor.

Other Effects

As discussed for the Alternative 1 short-term projects, the changes to circulation on the Campus for Muni buses under Alternative 3 long-term projects would represent only minor changes and would not constitute an adverse operational impact on Muni service. In particular, the expected net increase of 57 vehicle-trips from Alternative 3 as shown in Table 3.13-13 would likely not substantially affect Muni operations, and the expected increase in average delays at 42nd Avenue/Clement Street would be negligible, as shown in Table 3.13-24. This impact would be minor.

SFVAMC Shuttle Services

As discussed for the Alternative 1 short-term projects, the changes to shuttle access and circulation at the SFVAMC Fort Miley Campus under Alternative 3 long-term projects would result in, at most, only minor changes to travel times (either increase or decrease), and would constitute a minor operational impact on shuttle services at the Campus.

Taxi Services

As discussed for the Alternative 1 short-term projects, the changes to taxi access and circulation at the SFVAMC Fort Miley Campus under Alternative 3 long-term projects would result in, at most, only minor changes to travel times (either increase or decrease), and would constitute a minor operational impact on shuttle services at the Campus.

Potential New Mission Bay Campus

The potential new SFVAMC Mission Bay Campus would generate an estimated 104 transit trips during the weekday p.m. peak hour (52 trips inbound to the potential new Campus and 52 trips outbound from the potential new Campus). Because a specific location and detailed facilities plan for the potential new Mission Bay Campus have not yet been determined, further analysis to assess transit impacts at the Mission Bay Campus would be required as part of a subsequent environmental review, once these details have been determined.

Pedestrian

The net increase in pedestrian traffic during the weekday p.m. peak hour on the streets surrounding the existing SFVAMC Fort Miley Campus with implementation of Alternative 3 long-term projects would comprise 20 walk trips and some portion of the 45 transit trips and 81 auto trips (for transit passengers or motorists accessing transit stops or parked vehicles at off-site locations) shown in Table 3.13-13.

Similar to the 2020 Alternative 1 Short-Term Projects Conditions, the new pedestrian trips generated by Alternative 3 long-term projects could be accommodated without any impacts on pedestrian safety or operations. Some portion of the expected net increase of 57 vehicle-trips from Alternative 3 as shown in Table 3.13-13 would travel on or cross roadways with designated bikeways, but would likely not substantially increase the potential for conflicts between bicyclists and motorists.

As discussed for the Alternative 1 short-term projects, Alternative 3 long-term projects would not conflict with existing pedestrian facilities or propose design features hazardous to pedestrians. External access to and from the existing Campus for pedestrians would remain unchanged, but proposed changes within the Campus would generally improve pedestrian conditions. Overall, implementing Alternative 3 long-term projects is anticipated to result in minor operational impacts on pedestrian conditions.

Mission Bay Campus

Pedestrian trips generated at the potential new Mission Bay Campus during the weekday p.m. peak hour would include approximately 72 walk trips, plus some portion of the 104 transit trips and 509 auto trips shown in Table 3.13-13, depending on the proposed shuttle services and on-site parking supply provided at the potential new Campus. Because a specific location and detailed facilities plan for the potential new Mission Bay Campus have not yet been determined, further analysis to assess pedestrian impacts at the potential new Campus would be required as part of a subsequent environmental review, once these details have been determined.

Bicycle

A portion of the six net-new “other” trips presented in Table 3.13-13 would be bicycle trips at the existing SFVAMC Fort Miley Campus. Please note that Alternative 3 Long-Term Projects Conditions at the existing SFVAMC Fort Miley Campus account for the ongoing operation of the short-term projects, plus planned development in the vicinity of the study area. With the current bicycle and traffic volumes on the adjacent streets, bicycle travel generally occurs without major impedances or safety problems. The expected increase in bicycle trips in the area as a result of Alternative 3 would not be substantial enough to affect overall bicycle circulation in the area or the operations of adjacent bicycle facilities. Thus, minor impacts to bicycle conditions are anticipated as a result of Alternative 3 long-term projects at the existing Campus.

Some portion of the expected net increase of 57 vehicle-trips from Alternative 3 as shown in Table 3.13-13 would travel on or cross roadways with designated bikeways. However, this would likely not substantially increase the potential for conflicts between bicyclists and motorists, especially when the traffic is distributed across two access points on the SFVAMC Fort Miley Campus (42nd Avenue/Clement Street and 43rd Avenue/Clement Street) and across two different directions (entering and exiting the Campus).

As discussed for the Alternative 1 short-term projects, Alternative 3 long-term projects do not propose specific changes with regard to bicycle access on the SFVAMC Fort Miley Campus. Bicyclists would continue to be able to access the Campus as they currently do, via 42nd Avenue and 43rd Avenue. The changes to the internal roadway network proposed by Alternative 3 long-term projects would result in, at most, only minor changes to travel times (either increase or decrease), and would not conflict with existing or planned bicycle facilities outside of the Campus or constitute a hazard to bicycle users. Overall, implementing Alternative 3 long-term projects is anticipated to result in minor operational impacts on bicycle conditions.

Mission Bay Campus

A portion of the 37 trips during the weekday p.m. peak hour shown as "other" in Table 3.13-13 for Alternative 3 long-term projects, would be completed by bicycle. Because a specific location and detailed facilities plan for the potential new Mission Bay Campus have not yet been determined, further analysis to assess bicycle impacts at the Mission Bay Campus would be required as part of a subsequent environmental review, once these details have been determined.

Loading

As discussed for the Alternative 1 short-term projects, SFVAMC does not propose specific changes to SFVAMC Fort Miley Campus access for service/delivery vehicles with implementation of Alternative 3 long-term projects, and the existing access via 42nd Avenue and 43rd Avenue would remain unchanged. The changes to the internal roadway network would result in, at most, only minor changes to travel times (either increase or decrease) and access routes for trucks serving the Campus, and would constitute a minor operational impact on delivery loading conditions.

Similarly, specific details regarding the future provision of delivery loading spaces will be determined as each specific LRDP project enters the design and implementation phase. As mentioned previously, some of the proposed facilities may require specific loading needs or design features that cannot be fully evaluated until a more detailed design is available. Impacts related to the demand for and supply of loading spaces or the accessibility and usability of delivery loading facilities (and any associated off-Campus effects) would require additional evaluation later as specific projects are designed in more detail. However, this impact is anticipated to be minor.

Mission Bay Campus

Because a specific location and detailed facilities plan for the potential new Mission Bay Campus have not yet been determined, an analysis assessing delivery loading impacts at the Mission Bay Campus would be required as part of a subsequent environmental review, once these details have been determined.

Site Access and Circulation

No major changes would be made to access points or the internal roadway network beyond those already discussed for Alternative 1 short-term projects. As discussed for the Alternative 1 short-term projects, fire department access on the SFVAMC Fort Miley Campus would remain unchanged under Alternative 3 long-term projects, but emergency medical access would be rerouted via the 43rd Avenue entrance. These changes, together

with changes to the internal roadway network, would result in, at most, only minor changes to travel times (either increase or decrease) and access routes for emergency vehicles, and would constitute a minor operational impact on emergency vehicle access.

Mission Bay Campus

Because a specific location and detailed facilities plan for the potential new Mission Bay Campus have not yet been determined, an analysis assessing site access and circulation impacts at the Mission Bay Campus would be required as part of a subsequent environmental review, once these details have been determined.

Parking

As discussed for the Alternative 1 short-term projects, parking conditions are not static; parking supply and demand varies from day to day, from day to night, from month to month, etc. Hence, the availability of parking spaces (or lack thereof) is not a permanent physical condition, but changes over time as people change their modes and patterns of travel. Although parking conditions change over time, a substantial deficit in parking caused by a project that creates hazardous conditions or substantial delays to traffic, transit, bicycles, or pedestrians could adversely affect the physical environment. Whether a deficit in parking creates such conditions depends on the magnitude of the shortfall and the ability of drivers to change travel patterns or switch to other travel modes. If a substantial deficit in parking caused by a project creates hazardous conditions or substantial delays in travel, such a condition could also result in secondary physical environmental impacts (e.g., air quality or noise impacts caused by congestion), depending on the project and its setting.

The absence of a ready supply of parking spaces, combined with available alternatives to auto travel (e.g., transit service, taxis, bicycles, or travel by foot) and a relatively dense pattern of urban development, induces many drivers to seek and find alternative parking facilities, shift to other modes of travel, or change their overall travel habits. Any such resulting shifts to transit service or other modes (walking and biking) would be in keeping with the City's "Transit First" policy and numerous *San Francisco General Plan* policies, including those enumerated in the Transportation Element. The City's Transit First Policy, established in Article 8A, Section 8A.115 of the City's Charter, provides that "parking policies for areas well served by public transit shall be designed to encourage travel by public transportation and alternative transportation." This transportation analysis accounts for potential secondary effects, such as cars circling and looking for a parking space in areas of limited parking supply, by assuming that all drivers would attempt to find parking at or near the Campus and then seek parking farther away if convenient parking is unavailable. The secondary effects of drivers searching for parking are typically offset by a reduction in vehicle-trips attributable to others who are aware of constrained parking conditions in a given area, and thus choose to reach their destination by other modes (walking, biking, transit, or taxi). If this occurs, any secondary environmental impacts that may result from a shortfall in parking in the vicinity of the Campus would be minor. The traffic assignments used in the transportation analysis, as well as in the associated air quality and noise analyses, would reasonably address potential secondary effects.

Parking Demand and Supply

As indicated in Table 3.13-15, the new uses under Alternative 3 long-term projects would generate a demand for 132 parking spaces at the existing SFVAMC Fort Miley Campus, similar to 2020 Alternative 1 Short-Term

Projects Conditions. Alternative 3 would provide 306 net additional spaces at the Campus, exceeding the estimated new demand by 174 spaces.

Although some of these spaces would "recapture" unmet demand on the Campus that currently spills into the surrounding neighborhood, the proposed supply of 306 spaces would exceed the parking provision ratio for the Campus under Existing Conditions.

Given these considerations, Alternative 3 long-term projects are anticipated to result in minor operational impacts related to parking.

Mission Bay Campus

As indicated in Table 3.13-15, the new uses under Alternative 3 long-term projects would generate a demand for 271 parking spaces at the potential new Mission Bay Campus. Because a specific location and detailed facilities plan for the potential new Mission Bay Campus have not yet been determined, further analysis to assess vehicle parking impacts at the Mission Bay Campus would be required as part of a subsequent environmental review, once these details have been determined.

Alternative 4: No Action Alternative

Alternative 4 represents the "No Action" Alternative, facilitating a comparison with the EIS action Alternatives (Alternatives 1, 2, and 3) to help determine impacts. For this reason, this section focuses on topics for which potential impacts of the EIS action Alternatives are determined through quantitative analysis—namely, intersection and roadway segment operations for traffic conditions and Muni ridership and capacity for transit conditions. Topics for impacts evaluated qualitatively—such as bicycle, pedestrian, vehicle parking, delivery loading, and emergency vehicle access conditions—are not discussed in this section.

Short-Term Projects

Construction

Under Alternative 4, there would be no construction or retrofitting of existing buildings. Thus, no construction-related transportation, traffic, parking, transit, or pedestrian circulation impacts would occur.

Operation

Traffic

Alternative 4 would involve the continued operation of facilities at the existing SFVAMC Fort Miley Campus. No additional vehicle trips would be generated by the Campus as a result of Alternative 4. Ambient growth in traffic volumes as a result of planned development both within and outside of the study area was used to develop traffic volumes for 2020 Alternative 4 Short-Term Conditions.

Intersections

The resulting traffic volumes for 2020 Alternative 4 Short-Term Conditions at the study intersections are illustrated in Figure 3.13-16. The LOS results for the study intersections are summarized in Table 3.13-26.

Table 3.13-26: Intersection Levels of Service—2020 Alternative 4 Short-Term Conditions, Weekday P.M. Peak Hour

	Intersection	Existing Conditions		2020 Short-Term Alternative 4 Conditions	
		LOS	Delay[1]	LOS	Delay[1]
1	34th Avenue/Clement Street	B	11.8	B	12.4
2	42nd Avenue/Clement Street	B	11.0	B	11.4
3	43rd Avenue/Clement Street	B	11.7	B	12.3
4	42nd Avenue/Point Lobos Avenue	B	12.4	B	13.1
5	43rd Avenue/Point Lobos Avenue	B	14.2	C	15.1

Notes: LOS = level of service
[1] Delay presented in seconds per vehicle.
Source: VA, 2014c

As shown in Table 3.13-26, under 2020 Alternative 4 Short-Term Conditions, all five study intersections are projected to operate at acceptable conditions (LOS D or better) during the weekday p.m. peak hour. Because no additional vehicle trips would be generated at the Campus, Alternative 4 would result in minor operational impacts at the study intersections.

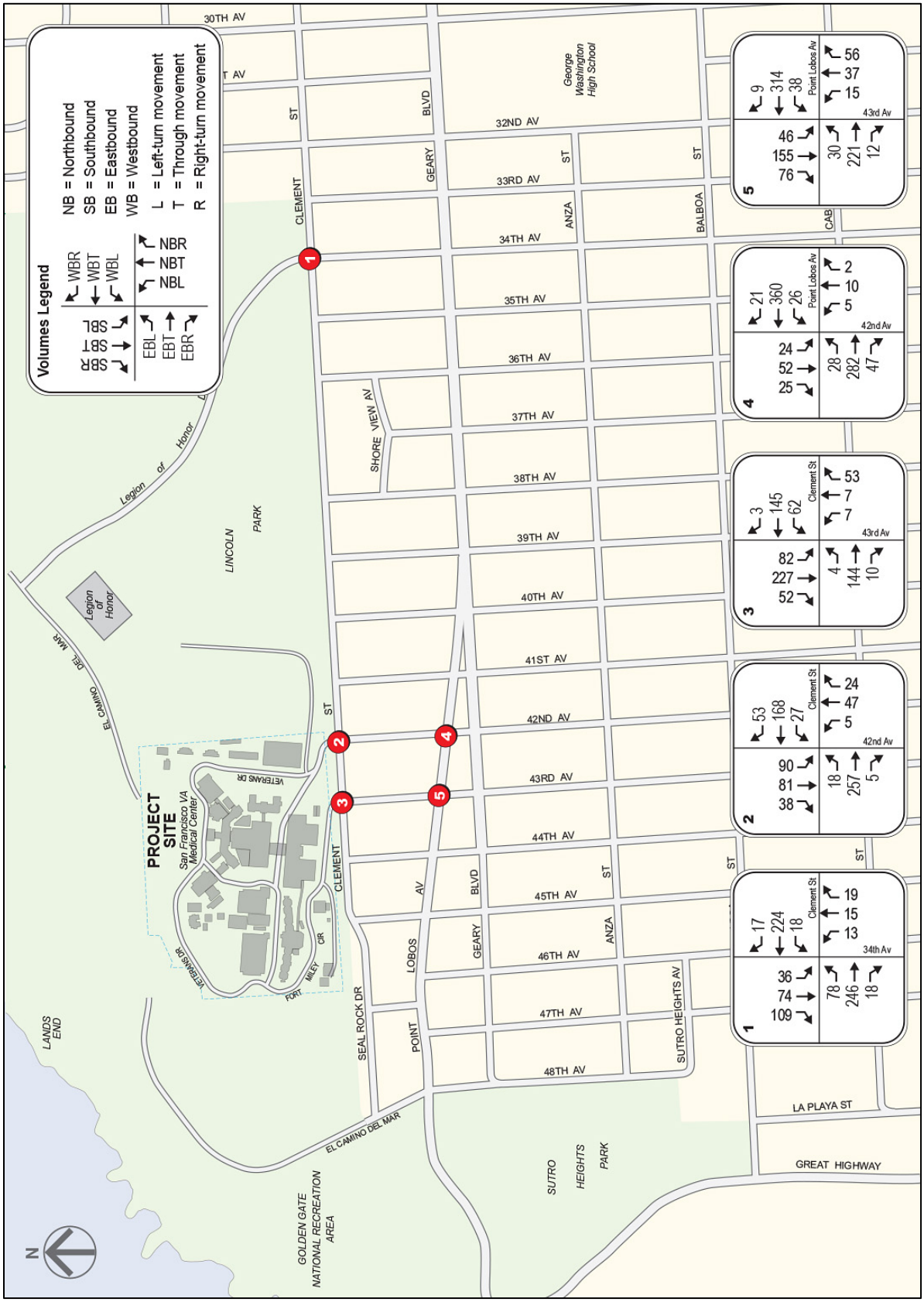
Roadway Segments

LOS results for the study roadway segments are summarized in Table 3.13-27. As shown, all study roadway segments are projected to operate at acceptable conditions (LOS D or better) during the weekday p.m. peak hour under 2020 Alternative 4 Short-Term Conditions. Because no additional vehicle trips would be generated at the Campus, Alternative 4 would result in minor operational impacts along the study roadway segments.

Table 3.13-27: Roadway Segment Levels of Service—2020 Alternative 4 Short-Term Conditions, Weekday P.M. Peak Hour

	Intersection	Direction	Existing Conditions		2020 Alternative 4 Short-Term Conditions	
			LOS	v/c Ratio	LOS	v/c Ratio
1	42nd Avenue/Clement Street *Between Clement Street and Point Lobos Avenue*	Northbound	A	0.16	A	0.17
		Southbound	A	0.24	A	0.25
2	43rd Avenue/Clement Street *Between Clement Street and Point Lobos Avenue*	Northbound	A	0.16	A	0.17
		Southbound	C	0.64	C	0.66

Notes: LOS = level of service; v/c = volume-to-capacity
Source: VA, 2014c



Source: VA, 2014c

Figure 3.13-16: Intersection Traffic Volumes—2020 Alternative 4 Short-Term Conditions

Transit

Table 3.13-28 summarizes ridership, capacity, and capacity utilization of transit services in the Geary Corridor under 2020 Alternative 4 Short-Term Conditions. As shown in Table 3.13-28, ridership would increase from Existing Conditions, but overall capacity improvements in the corridor as a result of BRT and the TEP would help to reduce overall capacity utilization. Because no additional transit trips would be generated, Alternative 4 would not result in operational impacts on Muni ridership and capacity.

Table 3.13-28: San Francisco Municipal Railway Transit Ridership and Capacity—2020 Short-Term Alternative 4 Conditions, Weekday P.M. Peak Hour

Direction	Existing Conditions			2020 Alternative 4 Short-Term Conditions		
	Ridership	Capacity	Utilization	Ridership	Capacity	Utilization
Inbound	908	1,777	51%	1,142	2,820	41%
Outbound	1,814	2,528	72%	2,359	3,826	62%

Notes:
Ridership data based on conditions at the maximum load point for each line.
Sources: SFMTA, 2014; VA, 2014c

Pedestrian

Under Alternative 4 Short-Term Conditions, there would be no net change in land use at the existing SFVAMC Fort Miley Campus. Although existing facilities may be renovated or seismically retrofitted, there would be no net increase in travel demand at the Campus. As a result, no impacts on pedestrian safety or operations are anticipated.

Bicycle

Under Alternative 4 Short-Term Conditions, there would be no net change in land use at the existing SFVAMC Fort Miley Campus. Although existing facilities may be renovated or seismically retrofitted, there would be no net increase in travel demand at the Campus. As a result, no impacts on bicycle conditions are anticipated.

Loading

Under Alternative 4 Short-Term Conditions, there would be no net change in land use at the existing SFVAMC Fort Miley Campus. Although existing facilities may be renovated or seismically retrofitted, no impacts related to the demand for and supply of loading spaces or the accessibility and usability of delivery loading facilities would be anticipated.

Site Access and Circulation

Under Alternative 4 Short-Term Conditions, there would be no net change in land use at the existing SFVAMC Fort Miley Campus. Although existing facilities may be renovated or seismically retrofitted, there would be no

expected changes to travel times and access routes for emergency vehicles. Overall, there would be no operational impact on emergency vehicle access under Alternative 4.

Parking

Under Alternative 4 Short-Term Conditions, there would be no net change in land use at the existing SFVAMC Fort Miley Campus. Although existing facilities may be renovated or seismically retrofitted, there would be no net increase in parking demand at the Campus. As a result, no impact on parking is anticipated.

Long-Term Projects

Construction

No construction or retrofitting of existing buildings would occur at the existing SFVAMC Fort Miley Campus or in the Mission Bay area under 2027 Alternative 4 Long-Term Conditions. Thus, no construction-related transportation, traffic, or parking impacts would occur.

Operation

Traffic

As discussed previously under the evaluation of Alternative 4 in the short-term time frame, the continued operation of existing facilities at the SFVAMC Fort Miley Campus would not generate additional vehicle trips to or from the Campus as part of Alternative 4. Ambient growth in traffic as a result of planned development both within and outside of the study area was used to develop traffic volumes for 2027 Alternative 4 Long-Term Conditions.

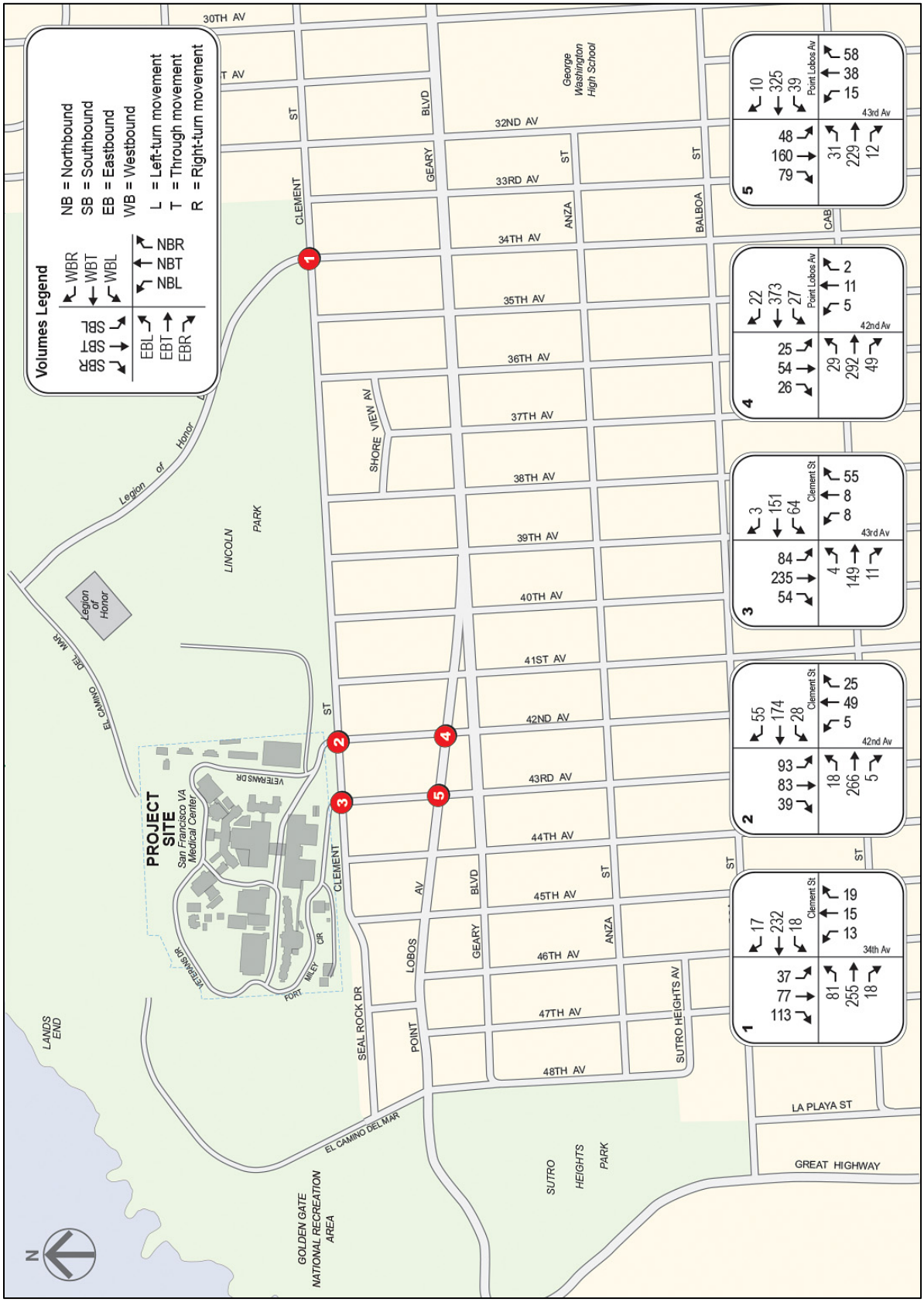
Intersections

The resulting traffic volumes for 2027 Alternative 4 Long-Term Conditions at the study intersections are illustrated in Figure 3.13-17. The LOS results for the study intersections are summarized in Table 3.13-29.

Table 3.13-29: Intersection Levels of Service—2027 Alternative 4 Long-Term Conditions, Weekday P.M. Peak Hour

	Intersection	Existing Conditions		2020 Short-Term Conditions		2027 Long-Term Conditions	
		LOS	Delay[1]	LOS	Delay[1]	LOS	Delay[1]
1	34th Avenue/Clement Street	B	11.8	B	12.4	B	12.9
2	42nd Avenue/Clement Street	B	11.0	B	11.4	B	11.8
3	43rd Avenue/Clement Street	B	11.7	B	12.3	B	12.8
4	42nd Avenue/Point Lobos Avenue	B	12.4	B	13.1	B	13.7
5	43rd Avenue/Point Lobos Avenue	B	14.2	C	15.1	C	16.2

Notes: LOS = level of service
[1] Delay presented in seconds per vehicle.
Source: VA, 2014c



Source: VA, 2014c

Figure 3.13-17: Intersection Traffic Volumes—2027 Alternative 4 Long-Term Conditions

As shown in Table 3.13-29, under 2027 Alternative 4 Long-Term Conditions, all five study intersections are projected to operate at acceptable conditions (LOS D or better) during the weekday p.m. peak hour. Because no additional vehicle trips would be generated at the SFVAMC Fort Miley Campus, Alternative 4 would result in minor operational impacts at the study intersections.

Roadway Segments

LOS results for the study roadway segments are summarized in Table 3.13-30. As shown in Table 3.13-30, all study roadway segments are projected to operate at acceptable conditions (LOS D or better) during the weekday p.m. peak hour under 2027 Alternative 4 Long-Term Conditions. Because no additional vehicle trips would be generated at the Campus, Alternative 4 would result in minor operational impacts along the study roadway segments.

Table 3.13-30: Roadway Segment Levels of Service—2027 Alternative 4 Long-Term Conditions, Weekday P.M. Peak Hour

	Intersection	Direction	Existing Conditions		2020 Alternative 4 Short-Term Conditions		2027 Alternative 4 Long-Term Conditions	
			LOS	v/c Ratio	LOS	v/c Ratio	LOS	v/c Ratio
1	42nd Avenue/Clement Street *Between Clement Street and Point Lobos Avenue*	Northbound	A	0.16	A	0.17	A	0.18
		Southbound	A	0.24	A	0.25	A	0.26
2	43rd Avenue/Clement Street *Between Clement Street and Point Lobos Avenue*	Northbound	A	0.16	A	0.17	A	0.18
		Southbound	C	0.64	C	0.66	C	0.69

Notes: LOS = level of service; v/c = volume-to-capacity
Source: VA, 2014c

Transit

Table 3.13-31 summarizes ridership, capacity, and capacity utilization of transit services in the Geary Corridor under 2027 Long-Term Alternative 4 Conditions. As shown in Table 3.13-31, ridership would increase from Existing Conditions, but overall capacity improvements in the corridor as a result of BRT and the TEP would help to reduce overall capacity utilization. Because no additional transit trips would be generated, Alternative 4 would not result in operational impacts on Muni ridership and capacity.

Table 3.13-31: San Francisco Municipal Railway Transit Ridership and Capacity—2027 Alternative 4 Long-Term Conditions, Weekday P.M. Peak Hour

Direction	Existing Conditions			2020 Alternative 4 Short-Term Conditions			2027 Alternative 4 Long-Term Conditions		
	Ridership	Capacity	Utilization	Ridership	Capacity	Utilization	Ridership	Capacity	Utilization
Inbound	908	1,777	51%	1,142	2,820	41%	1,324	2,820	47%
Outbound	1,814	2,528	72%	2,359	3,826	62%	2,783	3,826	73%

Notes:
Ridership data based on conditions at the maximum load point for each line.
Source: SFMTA, 2014; VA, 2014c

Pedestrian

Under Alternative 4 Long-Term Conditions, there would be no net change in land use at the existing SFVAMC Fort Miley Campus. Although existing facilities may be renovated or seismically retrofitted, there would be no net increase in travel demand at the Campus. As a result, no impacts on pedestrian safety or operations are anticipated.

Bicycle

Under Alternative 4 Long-Term Conditions, there would be no net change in land use at the existing SFVAMC Fort Miley Campus. Although existing facilities may be renovated or seismically retrofitted, there would be no net increase in travel demand at the Campus. As a result, no impacts on bicycle conditions are anticipated.

Loading

Under Alternative 4 Long-Term Conditions, there would be no net change in land use at the existing SFVAMC Fort Miley Campus. Although existing facilities may be renovated or seismically retrofitted, no impacts related to the demand for and supply of loading spaces or the accessibility and usability of delivery loading facilities would be anticipated.

Site Access and Circulation

Under Alternative 4 Long-Term Conditions, there would be no net change in land use at the existing SFVAMC Fort Miley Campus. Although existing facilities may be renovated or seismically retrofitted, there would be no expected changes to travel times and access routes for emergency vehicles. Overall, there would be no operational impact on emergency vehicle access under Alternative 4.

Parking

Under Alternative 4 Long-Term Conditions, there would be no net change in land use at the existing SFVAMC Fort Miley Campus. Although existing facilities may be renovated or seismically retrofitted, there would be no net increase in parking demand at the Campus. As a result, no impact on parking is anticipated.

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3.14 UTILITIES

This section describes the existing physical and regulatory setting related to water supply, wastewater, electricity, and natural gas utilities and discusses the potential effects of the EIS Alternatives on these utilities.

3.14.1 Affected Environment

Water Supply

The existing SFVAMC Fort Miley Campus and the Mission Bay area are served by the San Francisco Public Utilities Commission (SFPUC), which is a department of the City and County of San Francisco. Approximately 96 percent of SFPUC's water supply is conveyed through the Regional Water System (RWS), which is made up of a combination of runoff into local Bay Area reservoirs and diversions from the Tuolumne River through the Hetch Hetchy Water and Power Project. A small portion of San Francisco's water demand is also met by locally produced groundwater and secondary-treated recycled water.

Regional Water System

SFPUC's RWS stretches from the Sierra Nevada to the Bay Area and serves approximately 2.5 million residential, commercial, and industrial customers in the Bay Area and the Sierra Nevada foothills (SFPUC, 2011a). Through the RWS's three integrated water supply and conveyance systems (Hetch Hetchy, Alameda, and Peninsula Systems), SFPUC provides an average of approximately 265 million gallons per day (mgd) to users in Tuolumne, Alameda, Santa Clara, San Mateo, and San Francisco Counties (SFPUC, 2011b).

Most of the water supply for the RWS originates in the upper Tuolumne River watershed high in the Sierra Nevada. This water, referred to as Hetch Hetchy water, is transported in pipes and tunnels to the Bay Area, requiring only primary disinfection and pH adjustment to control pipeline corrosion. The RWS travels 160 miles via gravity from Yosemite to the Alameda East Portal at Sunol Valley. On average, the Hetch Hetchy Reservoir provides more than 85 percent of the water delivered to the Bay Area. During times of drought, the water received from the Hetch Hetchy system can amount to more than 93 percent of the total water delivered.

On average, Bay Area reservoirs (Calaveras, San Antonio, Crystal Springs, San Andreas, Stone Dam, and Pilarcitos Reservoirs) provide approximately 15 percent of the water delivered by SFPUC's RWS. Reservoir storage allows the system to carry over part of its water supply from year to year. The Alameda watershed, located in Alameda and Santa Clara Counties, collects surface water for storage in Calaveras and San Antonio Reservoirs. In addition, the Sunol Filter Galleries near the town of Sunol provide groundwater that contributes less than 1 percent of San Francisco's water supply. The Peninsula watershed in San Mateo County captures surface water for storage in lower and upper Crystal Springs and San Andreas Reservoirs, and in a smaller reservoir, Pilarcitos. The six reservoirs in Alameda, Santa Clara, and San Mateo Counties capture rain and local runoff and store some Hetch Hetchy water. All local water from the Alameda and Peninsula watersheds is treated and filtered before it is delivered. A small portion of retail demand is met by locally produced groundwater, which is used primarily for irrigation at local parks and on highway medians, and by recycled water, which is used for wastewater treatment process water, sewer box flushing, and similar washdown operations. SFPUC also retails groundwater (pumped from the Pleasanton well field) to the Castlewood development in Alameda County.

San Francisco's retail water supply is conveyed through the Peninsula System to San Francisco by several major pipelines. On the east side of the City's water distribution system, two pipelines terminate at University Mound near John McLaren Park. On the west side of the distribution system, two pipelines terminate at Sunset Reservoir and one terminates at Merced Manor Reservoir. Ten reservoirs and eight water tanks store the water, and 18 pump stations and approximately 1,250 miles of pipelines move water throughout the system and deliver water to homes, businesses, and institutions in San Francisco. SFPUC is engaged in a systemwide water system improvement plan (WSIP) to repair, replace, and seismically upgrade portions of the regional water system. The program, scheduled for completion in 2015, includes improvements to the system's aging pipelines, tunnels, dams, reservoirs, pump stations, and storage tanks.

Local Water Supply Sources

San Francisco is located atop all or part of seven groundwater basins: the Westside, Lobos, Marina, Downtown, Islais Valley, South, and Visitacion Valley Basins. The Lobos, Marina, Downtown, and South Basins are located wholly within the city limits, and the other three extend south into San Mateo County. The portion of the Westside Basin aquifer located within San Francisco is referred to as the North Westside Basin. All of the basins except the Westside and Lobos Basins are generally inadequate to supply a significant amount of groundwater for municipal supply because their yields are low. For the past several decades, groundwater has been pumped from wells located in Golden Gate Park and at the San Francisco Zoo within the North Westside Basin; based on flow meter data, approximately 1.5 mgd is produced by these wells (SFPUC, 2011b). The groundwater from the North Westside Basin is mostly used by the City's Recreation and Park Department for irrigation in Golden Gate Park and at the zoo. The California Department of Water Resources (DWR) has not identified the North Westside Basin as overdrafted, nor as projected to be overdrafted in the future (SFPUC, 2011b).

In addition to local water supply sources, local recycled water provides a small percentage of San Francisco's water. The Harding Park, Pacifica, and proposed Westside and Eastside recycled water projects are being developed in San Francisco (retail service area). The Harding Park and Pacifica projects are currently under construction, the proposed Westside recycled water project is in the preliminary design stage, and the proposed Eastside recycled water project is in the planning stage. Together, these projects will provide up to 6 mgd of recycled water to a variety of users in San Francisco, primarily for landscape irrigation and toilet flushing. Recycled water produced as part of these projects will undergo tertiary treatment, which will result in water quality sufficient to meet the needs and requirements associated with each end use (SFPUC, 2011b).

Water Supply Reliability Planning

The WSIP is a multiyear program to upgrade SFPUC's RWS and local water systems. The WSIP will implement capital improvements that promote SFPUC's ability to provide reliable, affordable, high-quality drinking water to its regional retail customers in Alameda, Santa Clara, and San Mateo Counties, as well as San Francisco customers, in an environmentally sustainable manner. The WSIP is structured to cost-effectively meet water quality requirements, improve seismic and delivery reliability goals through the year 2030, and meet water supply objectives until the year 2018 (SFPUC, 2010).

The California Urban Water Management Act of 1983 (Water Code Sections 10610–10657) requires that all urban water suppliers providing water for municipal purposes to more than 3,000 customers or supplying more than 3,000 acre-feet of water annually prepare an urban water management plan (UWMP). These plans were first submitted to DWR in 1985; updated plans must be submitted to DWR every 5 years. In June 2011, SFPUC adopted the most recent UWMP for the City and County of San Francisco. The UWMP forecasts a slight increase in residential water demand as a result of San Francisco's estimated 0.4 percent average growth rate per year through 2035 (SFPUC, 2011b). The demand is expected to be offset by increased efficiency (e.g., more efficient plumbing in newer and remodeled housing). As population grows, so does the demand for health care. The UWMP forecasts increased water usage for "services," which include health care (SFPUC, 2011b).

Water Demand

From 2007 to 2010, San Francisco customers used an average of 68 mgd of water. A little more than half the city's water use is residential, the majority for multifamily residences. Nonresidential users, which include the manufacturing, transportation, trade, finance, and government sectors, represent about 29 percent of consumption. The remainder is "unaccounted-for water," which refers to unmetered water uses such as pipe flushing and street cleaning, as well as meter inaccuracies and system water losses. In 2009–2010, San Francisco's gross per-capita use, including all residential, commercial, and municipal users, was less than 80 gallons per capita per day. In the same year, residential per-capita use was estimated to be approximately 50 gallons per capita per day.

SFPUC provides water to the existing SFVAMC Fort Miley Campus. The water system infrastructure supporting the Campus, which transports the Campus's potable water as well as water for the Campus's fire suppression system, was originally constructed in 1934; however, several building additions and expansions, which also included expansions of the original water distribution system, have been completed since that time. The system distributes water throughout the Campus via a loop system. The system consists of the following components:

- One 500,000-gallon reservoir located in Building 29, on the southwestern part of the Campus
- Three pumps, including a primary pump (P-1), a secondary pump (P-2), and a fire pump (P-3) located in Building 30 (pump station), adjacent to Building 29 on the southwestern part of the Campus
- One 40,000-gallon water tower, termed Structure 206, on the northwestern part of the Campus

The reservoir is fed from the City's water distribution system through primary and secondary connection points located on Clement Street. From the reservoir, the primary and secondary pumps (P-1 and P-2) pressurize the existing SFVAMC Fort Miley Campus's loop water system and feed the water tower. The water tower maintains system pressure when the pumps are not running.

Between 2004 and 2011,[1] the existing SFVAMC Fort Miley Campus had an average water demand of approximately 46.6 million gallons per year, or approximately 0.13 mgd.

[1] Water demand for 2011 was projected to be approximately 48.1 million gallons per year.

Wastewater and Stormwater

SFPUC oversees San Francisco's wastewater collection and conveyance infrastructure. This infrastructure consists of a combined sewer system for both sewage and stormwater that collects, conveys, treats, and discharges the water. The system uses natural watershed areas wherever possible to take advantage of gravity flow for the collection, transport, treatment, and discharge of wastewater and stormwater. The conveyance infrastructure consists of approximately 24,800 manholes, 25,000 catch basins, 19 small lift stations, and more than 976 miles of sewers ranging from 8 inches in diameter to large multicompartmental structures measuring up to 44 feet by 25 feet (SFPUC, 2010). The wastewater and stormwater that flow to facilities for treatment are ultimately discharged into San Francisco Bay or the Pacific Ocean through outfall structures along the shoreline (SFPUC, 2009).

San Francisco is divided into two major drainage areas, Oceanside and Bayside. The City operates three wastewater treatment facilities: The Southeast Water Pollution Control Plant (SEP), Oceanside Water Pollution Control Plant (OSP), and North Point Wet Weather Treatment Facility. The SEP and OSP both operate year-round, while the North Point Water Pollution Control Facility operates only during wet weather.

The SEP, built in 1952 and expanded between 1977 and 1982, is located on the east side of San Francisco near Third Street and Evans Avenue in the Bayview District. The plant treats all eastside sewage flows, including flows in the Mission Bay area, during dry weather; the SEP treats an average dry-weather flow of 67 mgd. The SEP can treat up to 250 mgd during wet weather (i.e., primary treatment capacity of 250 mgd and secondary treatment capacity of 150 mgd). The SEP would treat flows from the potential new SFVAMC Mission Bay Campus.

The OSP, the City's newest treatment facility, was completed in 1993. This facility, located off the Great Highway near the San Francisco Zoo, serves the city's west side, including the existing SFVAMC Fort Miley Campus. The OSP treats an average dry-weather flow of approximately 17 mgd and can treat up to 65 mgd during wet weather (i.e., primary treatment capacity of 65 mgd and secondary treatment capacity of 43 mgd). The plant provides primary- and secondary-level treatment before discharging treated effluent into the Pacific Ocean through the 4.5-mile Southwest Ocean Outfall (SFPUC, 2009).

The North Point Water Pollution Control Plant has operated since 1951. This facility is located on Bay Street and the Embarcadero near lower Telegraph Hill and the North Waterfront area. The plant operates only during rain events, providing primary treatment to combined flows collected during storms, and has a treatment capacity of 150 mgd. On average, the facility operates 30 times per year.

SFPUC's sewer system discharges treated wastewater through two outfall pipes, one to San Francisco Bay and the other to the Pacific Ocean. The average dry-weather flow is approximately 80 mgd. During wet weather, the system can treat up to 575 mgd of combined stormwater and wastewater (SFPUC, 2014).

SFPUC is evaluating the potential implementation of a sewer system improvement program to address issues of aging infrastructure and system deficiencies related to climate change, and to improve operational efficiency and reduce community impacts.

The existing wastewater system serving the SFVAMC Fort Miley Campus is a combined system that collects both wastewater from the buildings and stormwater. Stormwater runoff is collected from parking lots, streets, pedestrian walkways, landscaped areas, and building roofs. It is then concentrated in gutters and drain pipes and conveyed to SFPUC's combined sewer interceptor on Clement Street. A small separate storm drainage system conveys stormwater off-site on the north side of the Campus along the slope facing the Golden Gate Bridge. This system is described further in Section 3.8, "Hydrology and Water Quality."

It is estimated that 78 percent of total domestic water used by SFVAMC ends up as wastewater (SFVAMC, 2012). Therefore, on average, the existing SFVMAMC Fort Miley Campus would generate an estimated average of approximately 36.3 million gallons of wastewater per year, or approximately 0.10 mgd.

Electricity and Natural Gas

Pacific Gas and Electric Company (PG&E), which is regulated by the California Public Utilities Commission (CPUC), provides electricity and natural gas to approximately 15 million people throughout a 70,000-square-mile service area in northern and central California, including the existing SFVAMC Fort Miley Campus and the Mission Bay area (PG&E, 2011). Electricity to the Mission Bay area is served by the Potrero and Embarcadero Substations. Specific information about electric and natural gas service is provided below.

Electricity

Approximately 5.1 million customers receive electricity through 141,215 circuit miles of electric distribution lines and 18,616 circuit miles of interconnected transmission lines. PG&E produces its power from a mixture of sources, including hydropower, gas-fired steam, and nuclear energy, and acquires electricity from more than 400 plants owned by independent power producers and some out-of-state power producers.

San Francisco uses approximately 5,000 gigawatt-hours of electricity per year, with peak usage (the highest hourly demand) at approximately 0.9 gigawatt. Hospital and health care uses account for approximately 3 percent. Office uses represent the largest category of electricity consumption at approximately 36 percent. Citywide, total yearly electricity consumption grew by 9 percent between 1994 and 2000 but decreased by approximately 2.4 percent by 2001 (the last year for which annual data were available).

The 2002 Electricity Resource Plan (2002 ERP) prepared by SFPUC and the San Francisco Department of the Environment discusses electricity sources and projected citywide demand to identify a plan for meeting the City's goal of having a greenhouse gas–free electrical system by 2030. The 2011 Update of San Francisco's 2002 ERP describes the next steps to achieving this goal and summarizes the progress made thus far.

The primary goal of the 2002 ERP, closing down the Hunters Point and Potrero Power Plants, has been achieved; these power plants were closed in May 2006 and February 2011, respectively. In 2002, all electric transmission lines serving San Francisco ran up the Peninsula, creating transmission constraints that required these two power plants to remain in operation to maintain reliable electrical service (SFPUC, 2011c). The 2002 ERP provided the framework for the City to identify transmission upgrades that, once completed, allowed for the 2006 shutdown of the Hunters Point Power Plant. The Potrero Power Plant was shut down after the TransBay Cable began commercial operation. The TransBay Cable is a 53-mile, high-voltage direct-current transmission line that runs underneath San Francisco Bay and increases the ability to deliver power into San Francisco by 400 megawatts

(MW). The 2002 ERP proposed that SFPUC construct 200 MW of new in-city generation (known as the San Francisco Energy Reliability Project); however, the TransBay Cable project along with other transmission system improvements was identified as an alternative approach to closing the Potrero Power Plant while maintaining reliability. The new investment in transmission infrastructure, along with in-City demand reduction and supply resources, precludes the need to build a large-scale, central generation plant in the City in the foreseeable future (SFPUC, 2011c).

PG&E provides electric services to the existing SFVAMC Fort Miley Campus through the existing power distribution system, which consists of 15-kilovolt (kV) PG&E service cables, 15-kV metal-clad switchgear, 12 substations and load centers, various switchboards, panel boards, and motor control centers. From 2006 through 2011,[2] the Campus had an average electricity demand of approximately 22,144 megawatt-hours (MWh) per year.

The existing system is being upgraded through the Electrical Systems Upgrades Project. As part of this project, PG&E is upgrading an existing feeder line along Clement Street to convert the existing secondary service to the existing SFVAMC Fort Miley Campus to a low-level transmission service (Ketcherside, pers. comm., 2011). To make use of the increased loads, SFVAMC is replacing and upgrading the existing infrastructure to provide adequate and reliable power to the Campus, and to accommodate future building loads. Specifically, the existing underground 4.16-kV ring bus feeders will be replaced with new underground 15-kV double ring bus feeders, cable pull boxes, and feeder loop isolation switches around the Campus's perimeter. A total of 12 substation transformers and electrical distribution panels will provide power to the various buildings at 480-volts or 208/120-volts. Further, additional substation transformers and distributions can be installed to the 15-kV feeder loop to provide capacity for future load growth.

SFVAMC's electrical needs are also supported by an existing backup power system consisting of stationary engine generators, as well as one portable engine-generator:

- One 1,000-kilowatt (kW) engine-generator unit located in Building 203 serves the critical and life-safety loads for Buildings 200 and 203.
- Two 675-kW engine-generators located in Building 205 are connected to a paralleling switchgear that feeds all other critical loads on the existing SFVAMC Fort Miley Campus.
- One stand-alone 35-kW engine-generator is located in Building 17.
- One new 1,000-kW engine-generator has been installed in the existing paralleling switchgear located in Building 205.
- One portable trailer–mounted 1,000-kW engine-generator is available for use in the event of failure at any stationary unit.

The overall total capacity of the backup power system is 4.385 kW, more than 50 percent of the expected full future load, making the backup system's capacity adequate to support future critical and life-safety power needs.

[2] Electricity consumption for 2011 was projected to be approximately 23,338 megawatts.

In an effort to further help meet VA's requirements under the Energy Policy Act of 2005 (described below in Section 3.14.2, "Regulatory Framework") at the SFVAMC Fort Miley Campus, VA has proposed to install solar photovoltaic (PV) systems at five locations at the Campus: four locations on existing rooftops (Buildings 12, 200, 203, and 205) and one location on an existing parking structure (Building 209). This solar PV system has the potential to provide an annual electricity output of approximately 941.5 MWh, or about 4.4 percent of electricity usage at the SFVAMC Fort Miley Campus in 2012 (VA, 2012). The purpose of the project is to increase energy efficiency through the use of an on-site system for generating renewable electricity; reduce energy consumption costs and decrease reliance on off-site electricity supplies; and contribute toward the achievement of energy efficiency and greenhouse gas reduction goals established by VA and Executive Order 13514.

To date, a 255-kW solar PV system has been installed on top of Building 209, consisting of 1,022 Samsung modules integrated into a steel structure that was built on top of the existing parking structure. Electricity generated from this newly installed solar PV system was integrated into SFVAMC's electricity distribution system as of fall 2013. This solar PV system helps VA meet the overall goal of increased renewable energy use.

Natural Gas

Natural gas is delivered to PG&E's 4.3 million natural gas customers through approximately 42,141 miles of distribution pipeline and 6,438 miles of transportation pipelines from three major sources: California, the southwestern United States, and Canada. San Francisco's annual demand for natural gas is approximately 27 million metric British thermal units (MMBtu).

Natural gas is fed to the existing SFVAMC Fort Miley Campus through a single main gas line from PG&E. This line is a 4-inch-diameter high-pressure line that runs from the 4300 block of Clement Street onto the southwestern part of the Campus near Building 30. A pressure regulator at this location lowers the incoming pressure to 11 pounds per square inch for all of the Campus piping. A meter adjacent to the pressure regulator tracks the Campus's natural gas usage. Most of the Campus's natural gas service is firm gas with no automatic shut-off valves, with the exception of a 6-inch-diameter line that feeds into Building 205 (Energy Plant). This line is equipped with an earthquake valve (located at the southeast corner of the building), which will close when activated by an earthquake of a specific magnitude. The emergency natural gas shutoff valve is controlled by the energy plant operators. From 2006 through 2011,[3] the Campus had an average natural gas demand of approximately 131,000 MMBtu.

3.14.2 Regulatory Framework

Safe Drinking Water Act

Originally enacted in 1974, the Safe Drinking Water Act aimed to protect public health by regulating the nation's public drinking water supply. The law was amended in 1986 and 1996 and requires many actions to protect drinking water and its sources: rivers, lakes, reservoirs, springs, and groundwater wells. The Safe Drinking Water Act authorizes the U.S. Environmental Protection Agency (EPA) to set national health-based standards for drinking water to protect against both naturally occurring and human-made contaminants that may be found in

[3] The natural gas demand of the existing SFVAMC Fort Miley Campus in 2011 was projected to be approximately 123,000 cubic feet.

drinking water. Construction and operation of the EIS Alternatives may result in impacts on water sources and/or water distribution systems that provide public drinking water. Therefore, the EIS Alternatives are subject to the regulations set forth under the Safe Drinking Water Act.

Combined Sewer Overflow Control Policy

In 1994, EPA adopted the Combined Sewer Overflow (CSO) Control Policy (50 *Federal Register* 18688, April 11, 1994), which established a two-phase control program for communities with combined sewer systems. In the first phase of this program, communities receiving permits from EPA for their combined sewer systems must implement a series of nine technology-based controls designed to reduce the frequency of CSOs and limit their effects on receiving waters. In the second phase, permit recipients also must either:

- ensure that, on average, no more than four CSO events will occur per year;
- provide primary treatment (remove floatables and settleable solids) for at least 85 percent of the total discharge; or
- remove enough pollutants before they enter the sewer system to prevent degradation of receiving waters.

In 1997, San Francisco completed the improvements identified in the City's wastewater master plan, bringing the City into compliance with EPA's CSO Control Policy. These improvements consisted mainly of constructing storage culverts and installing discharge weirs (e.g., screens) and skimmers at all CSO outlets. The added storage reduced the frequency of CSOs, and the discharge facilities allow the City to provide at least primary treatment for 100 percent of its stormwater and wastewater discharges. Therefore, although the City averages approximately 10 CSOs each year, it is currently in compliance with the CSO Control Policy as a result of the removal of solids and the primary treatment provided. As a facility sited in San Francisco, SFVAMC would need to facilitate the City's compliance with the CSO Control Policy.

Department of Veteran Affairs Strategic Sustainability Performance Plan

The *Department of Veteran Affairs Strategic Sustainability Performance Plan* (VA SSPP) was prepared in response to a directive in Section 8 of Executive Order 13514, "Federal Leadership in Environmental, Energy, and Economic Performance." That directive requires federal agencies to "develop, implement, and annually update an integrated Strategic Sustainability Performance Plan that will prioritize agency actions" to meet sustainability objectives identified in statutes, regulations, and executive orders. The VA SSPP provides approaches to addressing sustainability goals for a variety of resource areas, including energy and water conservation and alternative fuels, for VA facilities. The EIS Alternatives would be subject to the performance goals and sustainability measures established in the VA SSPP because the Alternatives involve a VA facility operated by the Veterans Health Administration.

Energy Policy Act of 2005

The Energy Policy Act of 2005, signed by President George W. Bush on August 8, 2005, seeks to reduce reliance on nonrenewable energy resources, and provides incentives to reduce the current demand on these resources. For example, under the Energy Policy Act, consumers and businesses may obtain federal tax credits for purchasing fuel-efficient appliances and products. Driving fuel-efficient vehicles and installing energy-efficient appliances

can provide many benefits, such as lower energy bills, increased indoor comfort, and reduced air pollution; therefore, businesses are eligible for tax credits for buying hybrid vehicles, building energy-efficient buildings, and improving the energy efficiency of commercial buildings. Additionally, tax credits are given for installing qualified fuel cells, stationary microturbine power plants, and solar-powered equipment.

3.14.3 Environmental Consequences

Significance Criteria

A NEPA evaluation must consider the context and intensity of the environmental effects that would be caused by, or result from, the EIS Alternatives. Other environmental assessment documents were reviewed and the following criteria were selected for the evaluation.

An Alternative analyzed in this EIS is considered to result in an adverse impact related to utilities if it would:

- require or result in the construction of new electricity or natural gas generation or transmission facilities, the construction of which could cause significant environmental effects;
- require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects; or
- require or result in the construction of new stormwater drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects.

For the purposes of this analysis, utility impacts are considered adverse if the construction of new or expanded utility infrastructure or facilities under an EIS Alternative would cause a significant effect.

Assessment Methodology

To assess potential impacts of the EIS Alternatives related to water, wastewater, electricity, and natural gas, SFVAMC's existing water, electricity, and natural gas infrastructure and demands were reviewed first. To evaluate the impacts of a particular EIS Alternative, projections were generated for these utilities based on the square footage of the proposed facilities. Current utility use was then compared to the projected future utility demands of each Alternative. Specifically, water use rates were based on the Commercial Buildings Energy Consumption Survey (CBECS): Energy Characteristics and Energy Consumed in Large Hospital Buildings in the United States in 2007 (US EIA, 2012). Electricity and natural gas consumption rates were based on consumption rates contained in the California Emissions Estimator Model (CalEEMod). The wastewater generation rate has been agreed upon between SFVAMC and SFPUC.

Alternative 1: SFVAMC Fort Miley Campus Buildout Alternative

Short-Term Projects

Construction

Alternative 1 short-term projects would involve the construction of 17 projects over 7 years, with completion anticipated by August 2020. These short-term projects would involve construction of 600,992 gross square feet (gsf) (384,452 gsf of which would be net new) at the existing SFVAMC Fort Miley Campus. Construction of Alternative 1 short-term projects would require the relocation of utility infrastructure in some cases, as well as a temporary increase in energy consumption and fuel use.

Existing utility systems would require alteration as necessary to support the new, expanded, and modified facilities at the SFVAMC Fort Miley Campus. New infrastructure may need to be installed or existing utility systems may require modification to provide service to new buildings. Unneeded utility infrastructure would be removed and/or abandoned.

Utility Service Systems

Construction of Alternative 1 short-term projects would involve the use of construction equipment and vehicles, which would temporarily increase energy consumption and fuel use for the duration of construction. Using this construction equipment, however, would not adversely affect the existing SFVAMC Fort Miley Campus's utility service systems, such as electricity or natural gas, because the construction equipment and vehicles would likely be fueled primarily off-site. Further, impacts of energy consumption by construction vehicles and equipment on utility service systems would be short term. Impacts would be minor.

Water Supply

Implementing Alternative 1 short-term projects would require improvements to the existing water distribution system at the SFVAMC Fort Miley Campus because of utility conflicts with proposed facilities and other site improvements. Improving the water system would involve removing and abandoning existing water mains within the footprints of proposed buildings and installing new water mains to provide potable water and fire suppression water to new buildings. Specifically, new domestic-water service connections would be established to provide potable water to the buildings, and new fire hydrants and fire sprinkler system services would be installed to meet National Fire Protection Association Fire Code requirements.

In addition, the existing 40,000-gallon water tower (Structure 206) would be relocated to the northwest corner of the SFVAMC Fort Miley Campus as part of Alternative 1 short-term projects, to make room for the proposed Building 40. The water tower receives water from the reservoir in Building 29 and then back-feeds the water distribution system when the pumps are not running; it provides backup water that can serve the SFVAMC Fort Miley Campus fully for at least 8 hours, if needed. The water tower is essential to proper functioning of the Campus's water system, to meet needs for both potable water and fire-suppression water. After being relocated, the water tower would continue to serve the Campus's water distribution needs, providing the same capacity and function as it currently serves at its existing location. Impacts would be minor.

Fire Suppression System

Several utility lines that serve the existing SFVAMC Fort Miley Campus are located within the footprint of the Alternative 1 short-term projects. These lines would be relocated as necessary before construction of the new short-term facilities to prevent service interruptions during construction. To accomplish this, project engineers would prepare and implement a plan to provide alternate service to these buildings before demolition and during construction. Domestic water, fire suppression water, and combined storm/sanitary sewer lines, underground electric, natural gas, and compressed air lines would require relocation.

In addition, the existing 40,000-gallon water tower (Structure 206) would be relocated as part of Alternative 1 short-term projects to make room for the proposed Building 40. Distribution lines for both potable water and fire-suppression water are connected to the water tower, which acts as backup supply for the SFVAMC Fort Miley Campus. The water tower would be relocated to the northwest corner of the SFVAMC Fort Miley Campus as part of Alternative 1 short-term projects and would continue to serve the Campus's water distribution needs. Project engineers would prepare and implement a plan to maintain water service to the Campus during relocation so that service would not be disrupted. Before relocation of the water tower, water to the tank would be shut off, the tank would be drained, and all power would be disconnected to remove the potential for flooding or electrical hazards.

A dedicated fire-water line for the facility's fire suppression system would be installed between the point of connection for the new facilities' fire water and the relocated water lines. A domestic-water line would also be installed between the point of connection for the new facilities' domestic water and the relocated water lines. Landscaping irrigation would be provided via existing irrigation systems or via new water feeds from existing water lines at the existing SFVAMC Fort Miley Campus. Because no interruption to the fire suppression system is anticipated and existing water supplies would be able to serve the projects' fire suppression system, no impacts would occur during construction of Alternative 1 short-term projects.

Operation

Operation of the existing SFVAMC Fort Miley Campus following the completion of construction would result in an increase in water demands, wastewater generation, and electricity and natural gas demands, as well as an increase of 4 percent (0.69 acre) in the Campus's overall impervious area.

Water Supply

From 2004 through 2011, the Campus had an average water demand of approximately 46.6 million gallons per year (0.13 mgd). Based on the average water consumption per square foot for large hospitals, as reported in the Commercial Buildings Energy Consumption Survey (CBECS): Energy Characteristics and Energy Consumed in Large Hospital Buildings in the United States in 2007 (US EIA, 2012), the Alternative 1 short-term projects would increase water demand by an estimated 10.3 million gallons per year (0.028 mgd).[4] Projected water demand would total 56.9 million gallons per year (0.156 mgd) through 2020.

[4] This value is based on an increase of 152,200 square feet as proposed as part of the short-term projects (not including new parking, as parking does not have an associated water demand) and a rate of 67.7 gallons/square foot/year.

These estimates assume that the current water consumption rate would continue and that no water conservation measures would be implemented. The VA SSPP, however, establishes water conservation goals for VA facilities that are to be achieved by 2020. Specifically, the VA SSPP states that VA facilities have a target to reduce the use of potable water by 26 percent[5] by 2020, as compared to the base year (2007); in addition, VA facilities have a target to reduce industrial and landscaping water use by 20 percent by 2020, as compared to the base year (2010). Therefore, implementing water conservation measures as part of Alternative 1 short-term projects and applying those measures to existing water usage to meet the maximum reduction targets specified in the VA SSPP would result in an estimated water demand total of 45.5 million gallons per year (0.125 mgd).

Table 3.14-1 summarizes the projected water demands of Alternative 1 short-term projects.

Table 3.14-1: Projected Water Demands of Short-Term Projects for Alternatives 1 and 2 through 2020

Projection Type	Increase in Water Demand[1] (million gallons)		Total Water Demand[2] (million gallons)	
	Per Year	Per Day	Per Year	Per Day
Without VA SSPP Reduction Target	10.3	0.028	56.9	0.156
With SSPP Reduction Target[3]	8.24	0.023	45.5	0.125

Notes: VA SSPP = *Department of Veteran Affairs Strategic Sustainability Performance Plan*

1 The increase in water demand represents the water demand associated with short-term projects only.

2 The total water demand represents existing water demands plus estimated water demands associated with short-term projects.

3 The VA SSPP states that VA facilities have a target to reduce potable-water use by 26 percent and a target to reduce landscaping/ industrial water use by 20 percent by 2020. Because the water demand projections do not distinguish between demands for potable and nonpotable water, this analysis conservatively assumes an overall 20 percent reduction in all water demands by 2020.

Source: Water demand calculated by AECOM in 2014; US EIA, 2012.

SFPUC has confirmed that the growth projections used in SFPUC's 2010 UWMP included implementation of Alternative 1 short-term projects (Petrick, pers. comm., 2011; Lau, pers. comm., 2014). Regardless of whether SFVAMC implements the VA SSPP's reduction target, SFPUC would be able to accommodate the short-term projects, and those projects would not require a major expansion of the existing water utility system.

Given the projected incremental increase in the percentage of San Francisco's total increased water demand and the consideration of short-term projects for Alternative 1 in SFPUC's UWMP, operational impacts of Alternative 1 short-term projects on water supply would be minor.

Wastewater and Stormwater

As discussed previously, the existing SFVAMC Fort Miley Campus is located within the service area of the City's combined sewer system; therefore, both domestic wastewater and stormwater flow into the sewers. The only exception is a small separate storm drainage system on the north side of the existing Campus, along the north-facing slope, that conveys stormwater off-site. Specifically, stormwater runoff collected from parking lots,

5 Although the VA SSPP requires VA facilities to meet targets of a 26 percent reduction in potable water use by 2020 and a 20 percent reduction in industrial and landscaping water use by 2020, SFVAMC has committed to a 30 percent reduction target; therefore, the projected calculations provided are considered to be conservative. In addition, since the water demand projections do not distinguish between demands for potable and nonpotable water, the analysis throughout this EIS conservatively assumes an overall 20 percent reduction in all water demands by 2020.

streets, pedestrian walkways, landscaped areas, and building roofs is concentrated in gutters and drain pipes and conveyed to SFPUC's combined sewer interceptor on Clement Street or to the smaller separate storm drainage system on the north side of the Campus. This method of discharge would generally continue with implementation of Alternative 1 short-term projects.

Alternative 1 short-term projects would not significantly alter land use or impervious site characteristics adversely; however, there would be a 4 percent increase (0.69 acre) in impervious area as compared to existing conditions. In addition, landscaping and sustainable features (e.g., green roofs) would be incorporated as part of building design. These features would provide improved ground/soil absorption of runoff and control erosion and pollution, and would improve the quality of stormwater runoff. The use of energy dissipaters to prevent concentrated flows would also minimize the impact of stormwater flows. Site drainage would flow via at-grade catch basins and area drains to landscaped areas and underground gravity lines. All buildings and the site contours would be designed to minimize stormwater runoff to the extent practicable.

Because construction at the SFVAMC Fort Miley Campus, a federal facility, under Alternative 1 short-term projects would have a net new footprint greater than 5,000 gsf, SFVAMC would be required to comply with Section 438 of the Energy Independence and Security Act (EISA) and to implement Low Impact Development (LID) techniques. (See the discussion of EISA in Section 3.8.2, "Regulatory Framework," of Section 3.8, "Hydrology and Water Quality.") Examples of LID techniques include bioretention areas, permeable pavements, cisterns/recycling, and green roofs. LID techniques must mimic predevelopment stormwater runoff conditions by using site design techniques that store, infiltrate, evaporate, and detain runoff.

In addition, SFVAMC would be required to comply with Article 4.2 of the San Francisco Public Works Code (Webster, pers. comm., 2015). Article 4.2, as described in Section 3.8.2, "Regulatory Framework," of Section 3.8, "Hydrology and Water Quality," requires proponents of development projects to submit and receive approval of a stormwater control plan that meets guidelines adopted by SFPUC. These guidelines contain requirements pertaining to the type, design, sizing, and maintenance of postconstruction stormwater best management practices (BMPs). Because part of the SFVAMC Fort Miley Campus is located within the combined sewer area and existing imperviousness is greater than 50 percent, the stormwater runoff rate and volume from the Campus would have to decrease by 25 percent from the 2-year, 24-hour design storm. In the northern portion of the Campus, which is located within the separate sewer area, the requirement is to capture and treat the rainfall from a design storm of 0.75 inch. As detailed design of wastewater and stormwater infrastructure has not yet been completed, Alternative 1 short-term projects may result in direct adverse impacts related to wastewater and stormwater.

SFVAMC must develop a maintenance plan for all proposed stormwater controls. In addition, Management Measure HYD-1, as described in Section 3.8, "Hydrology and Water Quality," would be implemented at the SFVAMC Fort Miley Campus to ensure proper sizing of infrastructure to handle stormwater and wastewater flows. With implementation of Management Measure HYD-1, in addition to requirements to reduce stormwater runoff rates and volumes relative to existing conditions, potentially adverse operational impacts from Alternative 1 short-term projects related to stormwater would be reduced to a minor level. For additional discussion of stormwater runoff from the site as it relates to CSO events and flooding, see Section 3.8, "Hydrology and Water Quality," including Management Measure HYD-1.

Sewer service to the existing SFVAMC Fort Miley Campus is provided via connections to existing wastewater lines. Wastewater generated at the Campus is treated by the OSP. As discussed previously, the average water demand for the Campus from 2004 through 2011 was approximately 46.6 million gallons per year (0.13 mgd). It is estimated that 78 percent of total domestic water used at the SFVAMC Fort Miley Campus ends up as wastewater; therefore, the Campus would have an existing average wastewater generation rate of 36.3 million gallons per year (0.10 mgd).

Table 3.14-2 lists the projected wastewater generation rates for Alternative 1 short-term projects with and without implementation of the VA SSPP reduction target for water consumption.

Table 3.14-2: Projected Wastewater Generation Rates for Short-Term Projects for Alternatives 1 and 2 through 2020

Projection Type	Increase in Wastewater Generation[1] (million gallons)		Total Wastewater Generation[2] (million gallons)	
	Per Year	Per Day	Per Year	Per Day
Without VA SSPP Reduction Target	8.0	0.022	44.4	0.122
With SSPP Reduction Target[3]	6.4	0.018	35.5	0.097

Notes: VA SSPP = *Department of Veteran Affairs Strategic Sustainability Performance Plan*

1 The increase in wastewater generation represents the wastewater associated with short-term projects only.

2 The total wastewater generation represents existing wastewater plus estimated wastewater generation associated with short-term projects.

3 The VA SSPP states that VA facilities have a target to reduce potable-water use by 26 percent and a target to reduce landscaping/ industrial water use by 20 percent by 2020. Because the water demand projections do not distinguish between demands for potable and nonpotable water, this analysis conservatively assumes an overall 20 percent reduction in all water demands by 2020.

Source: Wastewater generation calculated by AECOM in 2014 assuming that 78 percent of water demand = wastewater generated; SFVAMC, 2012.

Short-term projects under Alternative 1 would involve adding some new buildings that would support medical uses similar to those at the existing SFVAMC Fort Miley Campus; however, the changes would not substantially change the quantity of wastewater discharged. Further, Alternative 1 short-term projects would involve implementing the VA SSPP, which would provide guidelines and practices for making stormwater and sewer improvements. Following these guidelines would reduce the impact of potentially increasing stormwater and sewer water loads on the existing infrastructure and its limited capacity. Specifically, the increase in wastewater generation under Alternative 1 short-term projects would represent an increase of only 0.104 percent[6] in dry-weather flows at the OSP, which serves the Campus. Increased sanitary flows would not adversely affect the OSP (Braswell, pers. comm., 2011).

In addition, compliance with Section 438 of the EISA and Article 4.2 of the San Francisco Public Works Code would reduce impacts from increased impervious area and associated stormwater, because SFVAMC would be required to reduce stormwater runoff rates and volumes relative to existing conditions. Therefore, no expansion of existing wastewater/stormwater facilities or infrastructure would be required and implementation of Management Measure HYD-1 would ensure proper sizing of new infrastructure to handle stormwater and wastewater flows.

6 The OSP treats an average dry-weather flow of approximately 17 mgd. The percent increase is calculated as: 1 - ((17 mgd - 0.018 mgd)/17 mgd) = 0.095 percent.

Operational impacts of Alternative 1 short-term projects related to wastewater and stormwater would be minor with implementation of Management Measure HYD-1.

Electricity and Natural Gas

Although Alternative 1 short-term projects would involve expanding the existing SFVAMC Fort Miley Campus, overall energy efficiency would likely improve with the decommissioning, demolition, and replacement of older, energy-intensive buildings. Consistent with the VA SSPP, SFVAMC intends to incorporate physical features and operational measures to sustain and improve environmental efficiencies by implementing a sustainable-design master plan to achieve a 30 percent reduction in greenhouse gas emissions by 2020. The improvements in the Sustainable Design Master Plan include the use of stand-alone technologies such as installing photovoltaic panels on the roofs of new and/or existing buildings, as partial shades over windows, or in open land areas as a method of providing buildings with electrical power on-site.

Table 3.14-3 summarizes the projected electricity demands of Alternative 1 short-term projects with and without implementation of VA SSPP targets for reduction of greenhouse gas emissions.[7] Usage of electricity and natural gas would be reduced as needed to meet the VA SSPP reduction targets, which may not directly translate into a 30 percent reduction in electricity and natural gas usage. However, for the purpose of estimating VA SSPP reductions for this EIS, a 30 percent reduction in electricity and natural gas usage is presented. Without implementation of the VA SSPP reduction target, the projected demand for operation of the short-term projects for Alternative 1 would increase electricity consumption at the SFVAMC Fort Miley Campus by an estimated 15 percent over existing consumption (22,144 MWh per year). This increase would be accommodated by the Electrical Systems Upgrades Project, which is being implemented on the Campus; therefore, no further system upgrades or infrastructure modifications would be necessary.

Table 3.14-3: Projected Electricity and Natural Gas Demands of Short-Term Projects for Alternatives 1 and 2 through 2020[1]

Projection Type	Electricity Demand per Year (MWh/yr)		Natural Gas Demand per Year (MMBtu/yr)	
	Increase in Demand	Total Demand[2]	Increase in Demand	Total Demand[2]
Without VA SSPP Reduction Target	3,328	25,472	19,687	150,687
With VA SSPP Reduction Target[3]	2,343	17,844	13,859	105,559

Notes: MMBtu/yr = million metric British thermal units per year; MWh/yr = megawatt-hours per year; VA SSPP = *Department of Veteran Affairs Strategic Sustainability Performance Plan*

1 Parking garage square footage is not included in electricity and natural gas demand projections because associated demands are assumed to be minimal.

2 Total demands include existing demands (22,144 MWh/yr for electricity and 131,000 MMBtu/yr for natural gas) in addition to the short-term projects' demands.

3 The VA SSPP has a target to reduce greenhouse gas emissions by 30 percent by 2020 for buildings and by 29.6 percent by 2020 for the fleet (vehicles). Although these targets may not directly translate into 30 percent reductions in electricity and natural gas usage, for the purpose of this EIS, a 30 percent reduction is presented as an estimate.

Source: Electrical and natural gas demands calculated by AECOM in 2014; CalEEMod Version 2013.2.2.

7 The VA SSPP has a 30 percent greenhouse gas reduction target for buildings by 2020 and a 29.6 percent greenhouse gas reduction target for the fleet (vehicles) by 2020.

To ensure that the emergency power supply would be adequate in the event of a power failure, a 1,000-kW engine-generator has been installed at the existing paralleling switchgear located in Building 205 to accommodate the increased demand associated with Alternative 1 short-term projects. This addition has increased the overall total capacity of the backup power system to 3,385 kW, thus making the backup system adequate to support future mission-critical and life-safety power needs.

In September 2013, SFVAMC installed solar PV systems at the SFVAMC Fort Miley Campus that generate electricity that is integrated into SFVAMC's distribution system, providing 941.5 MWh per year. A geothermal system was also installed in 2014 to provide heating and cooling to several buildings. These on-site electricity systems reduce the need to purchase electricity from off-site supplies and help SFVAMC achieve the goals for energy efficiency and greenhouse gas reduction that have been established by VA and Executive Order 13514 (VA, 2011a and 2011b). These solar PV and geothermal systems would also serve to offset a portion of the increased electricity demand generated by Alternative 1 short-term projects in terms of reducing demands on off-site electricity supplies.

Natural gas is provided to the existing SFVAMC Fort Miley Campus via a single 4-inch-diameter high-pressure line that extends north from the 4300 block of Clement Street to near Building 30 on the southwestern part of the Campus. The Campus currently uses 131,000 MMBtu per year. Table 3.14-3 summarizes the natural gas demands of Alternative 1 short-term projects without implementation of the VA SSPP's greenhouse gas reduction target of 30 percent by 2020. Without implementation of the VA SSPP's reduction target, the projected demand for operation of Alternative 1 short-term projects would increase natural gas consumption at the Campus by 15 percent. Existing infrastructure capacity is considered adequate to accommodate anticipated demand at the Campus. Should on-site improvements and connections be required, such improvements would be coordinated with PG&E during the continued planning of the short-term projects. The new electric and natural gas distribution lines would be constructed and operated in compliance with federal, State, and local regulatory requirements, minimizing the potential for adverse impacts. As a result, operational impacts of Alternative 1 short-term projects related to electricity and natural gas would be minor.

Long-Term Projects

The Alternative 1 long-term project would involve adding one new building at the existing SFVAMC Fort Miley Campus at the site of the existing Building 12, which would be demolished as part of the short-term projects for this alternative. Thus, the development footprint for the Alternative 1 long-term project would take up 0 net new acre within the previously developed areas of the existing 29-acre Campus. Improvements to the water distribution, sewer, stormwater, and energy systems would be similar to improvements for the short-term projects under Alternative 1.

Construction

The long-term project for Alternative 1 would involve construction of one project for Building 213 (Clinical Addition Building) over 24 months. The Alternative 1 long-term project would involve construction of 170,000 gsf, which would all be net new gsf, at the existing SFVAMC Fort Miley Campus. Construction impacts of the Alternative 1 long-term project would be similar to those of Alternative 1 short-term projects. Any impacts of construction on utility systems would range in significance from no impact to minor.

Operation

Water Supply

Impacts of the Alternative 1 long-term project on water supply would be similar to those of Alternative 1 short-term projects. Without implementation of the VA SSPP reduction target, the increase in water demand under the Alternative 1 long-term project through 2027 is projected to be 11.5 million gallons per year (0.032 mgd), for a total water demand of 68.4 million gallons per year (0.187 mgd). (Total water demand includes existing water demands as well as water demands for short-term and long-term projects.)

However, should SFVAMC achieve the VA SSPP's reduction target goal by 2020, the increase in water demand through 2027 is projected to be 9.2 million gallons per year (0.025 mgd), for a total water demand of 54.7 million gallons per year (0.150 mgd). (Again, total water demand would include existing, short-term project, and long-term project water demands.)

Table 3.14-4 summarizes the projected water demands of the Alternative 1 long-term project.

Table 3.14-4: Projected Water Demands of Long-Term Projects for Alternatives 1 and 2 through 2027

Projection Type	Increase in Water Demand[1] (million gallons)		Total Water Demand[2] (million gallons)	
	Per Year	Per Day	Per Year	Per Day
Without VA SSPP Reduction Target	11.5	0.032	68.4	0.187
With SSPP Reduction Target[3]	9.2	0.025	54.7	0.150

Notes:
VA SSPP = *Department of Veteran Affairs Strategic Sustainability Performance Plan*
1 The increase in water demand represents the water demand associated with long-term projects only.
2 The total water demand represents existing water demands plus estimated water demands associated with short-term and long-term projects.
3 The VA SSPP states that VA facilities have a target to reduce potable water use by 26 percent and a target to reduce landscaping/ industrial water use by 20 percent by 2020. Because the water demand projections do not distinguish between demands for potable and nonpotable water, this analysis conservatively assumes an overall 20 percent reduction in all water demands by 2020.
Source: Water demand calculated by AECOM in 2014; US EIA, 2012

SFPUC has confirmed that the growth projections used in SFPUC's 2010 UWMP included implementation of the long-term project for Alternative 1; regardless of whether SFVAMC implements the VA SSPP's reduction target, SFPUC would be able to accommodate the long-term project (Petrick, pers. comm., 2011; Lau, pers. comm., 2014). Therefore, implementing the Alternative 1 long-term project would not require a major expansion of the existing water utility system, and operational impacts on water supply are anticipated to be minor.

Wastewater and Stormwater

The impacts of the Alternative 1 long-term project related to wastewater and stormwater would be similar to those of Alternative 1 short-term projects. Without implementation of the SSPP reduction target, the increase in wastewater generation under the Alternative 1 long-term project through 2027 is projected to be 9.0 million gallons per year (0.025 mgd), and the total annual wastewater generation at the existing SFVAMC Fort Miley Campus is estimated to be 53.4 million gallons per year (0.146 mgd). (Total annual wastewater generation

includes existing wastewater generation as well as wastewater generated by Alternative 1 short-term and long-term projects.)

However, should SFVAMC achieve the VA SSPP's reduction target goals, the increase in wastewater generation through 2027 as a result of the Alternative 1 long-term project is projected to be 7.2 million gallons per year (0.020 mgd) and the total annual wastewater generation at the Campus is estimated to be 42.7 million gallons per year (0.117 mgd). (Again, total annual wastewater generation would include existing wastewater generation as well as wastewater generated by Alternative 1 short-term and long-term projects.) Table 3.14-5 summarizes the projected wastewater generation rates for Alternative 1 long-term projects.

Table 3.14-5: Projected Wastewater Generation Rates of Long-Term Projects for Alternatives 1 and 2 through 2027

Projection Type	Increase in Wastewater Generation[1] (million gallons)		Total Wastewater Generation[2] (million gallons)	
	Per Year	Per Day	Per Year	Per Day
Without VA SSPP Reduction Target	9.0	0.025	53.4	0.146
With VA SSPP Reduction Target[3]	7.2	0.020	42.7	0.117

Notes: VA SSPP = *Department of Veteran Affairs Strategic Sustainability Performance Plan*

1 The increase in wastewater generation represents the wastewater associated with long-term projects only.

2 The total wastewater generation represents existing wastewater generation plus estimated wastewater generation associated with short-term and long-term projects.

3 The VA SSPP states that VA facilities have a target to reduce potable-water use by 26 percent and a target to reduce landscaping/ industrial water use by 20 percent by 2020. Because the water demand projections do not distinguish between demands for potable and nonpotable water, this analysis conservatively assumes an overall 20 percent reduction in all water demands by 2020.

Source: Wastewater generation calculated by AECOM in 2014 assuming 78 percent of water demand = wastewater generated; SFVAMC, 2012.

As described for short-term projects under Alternative 1, complying with Section 438 of the EISA and Article 4.2 of the San Francisco Public Works Code would reduce impacts from increased impervious area and associated stormwater, because SFVAMC would be required to reduce stormwater runoff rates and volumes relative to existing conditions. However, as detailed design of wastewater and stormwater infrastructure has not yet been completed, Alternative 1 long-term projects may result in direct adverse impacts related to wastewater and stormwater. Management Measure HYD-1 would be implemented at the SFVAMC Fort Miley Campus to ensure that infrastructure would be properly sized to handle stormwater and wastewater flows. This management measure would require the implementation of sustainable stormwater design BMPs to achieve predevelopment stormwater runoff conditions at the site after construction. For the same reasons as described for Alternative 1 short-term projects, operational impacts of the Alternative 1 long-term project related to wastewater/stormwater are anticipated to be reduced to a minor level with implementation of Management Measure HYD-1.

Electricity and Natural Gas

The impacts of the Alternative 1 long-term project related to electricity and natural gas would be similar to those of Alternative 1 short-term projects. Table 3.14-6 summarizes the projected increase in electricity and natural gas demand under the Alternative 1 long-term project through 2027 with and without implementation of the VA SSPP's greenhouse gas reduction target. Without implementation of the SSPP reduction target, the projected

demand for operation of the short-term and long-term projects would increase SFVAMC's electricity and natural gas consumption by approximately 32 percent compared to current usage. The increase in electrical consumption would be accommodated by the Electrical Systems Upgrades Project, currently being implemented on the SFVAMC Fort Miley Campus. The increase in electricity demand would also be partially offset by the recent installation of solar PV and geothermal systems at the SFVAMC Fort Miley Campus to reduce demands on off-site electricity supplies. Operational impacts of the Alternative 1 long-term project related to electricity and natural gas are anticipated to be minor.

Table 3.14-6: Projected Electricity and Natural Gas Demands of Long-Term Projects for Alternatives 1 and 2 through 2027[1]

Projection Type	Electricity Demand per Year (MWh)		Natural Gas Demand per Year (MMBtu)	
	Increase in Demand	Total Demand[2]	Increase in Demand	Total Demand[2]
Without VA SSPP Reduction Target	3,812	29,284	22,552	173,239
With VA SSPP Reduction Target[3]	2,684	20,528	15,877	121,436

Notes: MMBtu/yr = million metric British thermal units per year; MWh/yr = megawatt-hours per year; VA SSPP = *Department of Veteran Affairs Strategic Sustainability Performance Plan*

1 Parking garage square footage is not included in electricity and natural gas demand projections because associated demands are assumed to be minimal.

2 The total demand represents existing demand (22,144 MWh/yr for electricity and 131,000 MMBtu/yr for natural gas) plus estimated demand associated with short-term and long-term projects.

3 The VA SSPP has a target to reduce greenhouse gas emissions by 30 percent by 2020 for buildings and by 29.6 percent by 2020 for the fleet (vehicles). Although these targets may not directly translate into 30 percent reductions in electricity and natural gas usage, for the purpose of this EIS, a 30 percent reduction is presented as an estimate.

Source: Electrical and natural gas demands calculated by AECOM in 2014; CalEEMod Version 2013.2.2.

Alternative 2: SFVAMC Fort Miley Campus Buildout Alternative

Short-Term Projects

Construction

As with construction of Alternative 1 short-term projects, construction of Alternative 2 short-term projects would involve the use of construction equipment and vehicles, which would temporarily increase energy consumption and fuel use for the duration of construction. Alternative 2 short-term projects include construction of a total of 485,445 gsf, which is 115,547 gsf less than for short-term projects under Alternative 1 Therefore, construction impacts of Alternative 2 short-term projects would be similar to or less than those of Alternative 1 short-term projects. Any impacts on utility systems resulting from construction would range in significance from no impact to minor.

Operation

Operation of Alternative 2 short-term projects would be the same as operation of Alternative 1 short-term projects, because the net new gross square footage would be identical (Table 2-1 and Figure 2-1). Therefore, the impacts of Alternative 2 short-term projects related to utility service systems would be the same as those of Alternative 2 short-term projects. These impacts would be minor.

Long-Term Projects

Construction

Alternative 2 long-term projects include construction of a total of 285,487 gsf, which is 115,487 gsf more than under Alternative 1, because Alternative 2 includes construction of Building 213 in addition to the seismic retrofit of Buildings 1, 6, and 8. Therefore, construction impacts of Alternative 2 long-term projects would be similar to, although slightly greater than, those of Alternative 1 long-term projects. Any impacts of construction on utility systems would range in significance from no impact to minor.

Operation

Operation of Alternative 2 long-term projects would be the same as operation of the Alternative 1 long-term project (Tables 2-2 and 2-4 and Figures 2-2 and 2-4). Therefore, the impacts of Alternative 2 long-term projects would be the same as the impacts of Alternative 2 short-term projects. These impacts would be minor.

Alternative 3: SFVAMC Fort Miley Campus Plus Mission Bay Campus Alternative

Short-Term Projects

Alternative 3 short-term projects (during both construction and operation) would be the same as the short-term projects for Alternative 1 (Table 2-1 and Figure 2-1). Therefore, the impacts of Alternative 3 short-term projects would be the same as the impacts of Alternative 1 short-term projects. These impacts would be minor.

Long-Term Projects

Alternative 3 long-term projects (during both construction and operation) would involve development of ambulatory care and parking structure uses at a potential new SFVAMC Mission Bay Campus (Table 2-5 and Figure 2-5).

Construction

Construction impacts of Alternative 3 long-term projects would be similar to those of Alternative 1 short-term and long-term projects; therefore, any impacts on utility systems resulting from construction would range in significance from no impact to minor.

Operation

Water Supply

Based on demand data provided in the Commercial Buildings Energy Consumption Survey (CBECS): Energy Characteristics and Energy Consumed in Large Hospital Buildings in the United States in 2007 (US EIA, 2012), the total water demand associated with Alternative 3 long-term projects at the potential new SFVAMC Mission Bay Campus through 2027 is projected to be 9.5 million gallons per year (0.026 mgd) (Table 3.14-7). However, should SFVAMC implement water conservation measures to achieve the VA SSPP's maximum reduction targets,

the total water demand for Alternative 3 long-term projects at the potential new Campus would be 7.6 million gallons per year (0.021 mgd) (Table 3.14-7).

Table 3.14-7: Projected Water Demands of Alternative 3 Long-Term Projects through 2026 (at the Existing SFVAMC Fort Miley Campus) and through 2027 (at the Potential New SFVAMC Mission Bay Campus)

Projection Type	Total Water Demand[1] (million gallons)	
	Per Year	Per Day
Water Demand at the Existing SFVAMC Fort Miley Campus (through 2026)[2]		
Without VA SSPP Reduction Target	56.9	0.156
With VA SSPP Reduction Target[4]	45.5	0.125
Water Demand at the Potential New SFVAMC Mission Bay Campus (through 2027)[3]		
Without VA SSPP Reduction Target	9.5	0.026
With VA SSPP Reduction Target[4]	7.6	0.021
Totals		
Without VA SSPP Reduction Target—through 2027 at Both Campuses	**66.4**	**0.182**
With VA SSPP Reduction Target—through 2027 at Both Campuses[4]	**53.1**	**0.145**

Notes: SFVAMC = San Francisco Veterans Affairs Medical Center; VA SSPP = *Department of Veteran Affairs Strategic Sustainability Performance Plan*

1 The total water demand represents existing water demands (i.e., 46.6 million gallons per year (0.128 million gallons per day) at the SFVAMC Fort Miley Campus and 0 million gallons per year (0 million gallons per day) at the potential new SFVAMC Mission Bay Campus) plus estimated water demands associated with short-term and long-term projects.

2 No additional projects are proposed at the SFVAMC Fort Miley Campus under Alternative 3 long-term projects. Therefore, total water demands are those associated with existing demands and short-term projects described in Table 3.14-2.

3 These values are based on an increase of 140,000 square feet as proposed as part of Alternative 3 long-term projects (not including new parking, as parking does not have an associated water demand) and a rate of 67.7 gallons per square foot per year. There are no existing SFVAMC water demands at the potential new SFVAMC Mission Bay Campus.

4 The VA SSPP states that VA facilities have a target to reduce potable-water use by 26 percent and a target to reduce landscaping/industrial water use by 20 percent by 2020. Because the water demand projections do not distinguish between demands for potable and nonpotable water, this analysis conservatively assumes an overall 20 percent reduction in all water demands by 2027.

Source: Water demand calculated by AECOM in 2014; US EIA, 2012

The overall total (existing, short-term, and long-term) projected water demand at both SFVAMC Campuses under Alternative 3 is estimated to be 66.4 million gallons per year (0.182 mgd). However, with implementation of conservation measures for existing, short-term, and long-term project water demands to meet the VA SSPP's maximum targets, the total projected water demand for both Campuses under Alternative 3 would be 53.1 million gallons per year (0.145 mgd).

In addition, recycled water could be used at the potential new SFVAMC Mission Bay Campus in the future for nonpotable uses such as toilet flushing, cooling, and irrigation, thereby reducing demands for potable water. The City and County of San Francisco's Recycled Water Ordinance requires property owners to install recycled-water systems in new construction, modified, or remodel projects. Because the potential new SFVAMC Mission Bay Campus would be located within a designated recycled-water-use area and involve the construction of more than

40,000 square feet, SFVAMC would be required to install recycled-water systems at the potential new Campus and use recycled water there (when it becomes available) for all uses authorized by the State of California, unless otherwise exempted.

SFPUC has confirmed that the growth projections used in SFPUC's 2010 UWMP included implementation of the potential new SFVAMC Mission Bay Campus (Petrick, pers. comm., 2011; Lau, pers. comm., 2014a) and that the existing water supply would be able to support the facilities under Alternative 3. In addition, SFPUC has confirmed that the existing distribution infrastructure in the Mission Bay area should be able to accommodate the potential new Campus as proposed under Alternative 3 long-term projects (Lau, pers. comm., 2014b). Furthermore, the new water distribution lines for this new facility would be constructed and operated in compliance with federal, State, and local regulatory requirements, minimizing the potential for adverse impacts. Therefore, operational impacts of Alternative 3 long-term projects on water supply would be minor.

Wastewater and Stormwater

Wastewater generation by long-term projects at the potential new SFVAMC Mission Bay Campus under Alternative 3 through 2027 is expected to be an estimated 7.4 million gallons per year (0.020 mgd) without implementation of the VA SSPP's reduction target and 5.9 million gallons per year (0.016 mgd) with implementation (Table 3.14-8). Because the facilities would be new, Alternative 3 long-term projects at the potential new Campus would likely require construction of additional wastewater lines to service new buildings and new stormwater systems. The new wastewater lines would be constructed and operated in compliance with federal, State, and local regulatory requirements, minimizing the potential for significant environmental impacts.

The overall total (existing, short-term, and long-term) estimated wastewater generation at both SFVAMC Campuses under Alternative 3 is estimated to be 60.8 million gallons per year (0.166 mgd). With implementation of conservation measures to meet the VA SSPP's maximum targets for existing, short-term project, and long-term project wastewater generation as part of Alternative 3, the estimated total wastewater generation for both Campuses would be 48.6 million gallons per year (0.133 mgd) (Table 3.14-8). It should be noted, however, that wastewater from the two campuses would be treated at different wastewater treatment plants; wastewater from the SFVAMC Fort Miley Campus would be treated at the OSP and wastewater at the potential new SFVAMC Mission Bay Campus would be treated at the SEP.

The long-term projects under Alternative 3 would involve adding landscaping and sustainable features such as green roofs as part of building design, which would reduce the amount of impervious surface on the site. These features would also reduce the amount of nonpermeable surfaces, which would improve ground/soil absorption of runoff, control erosion and pollution, and improve the quality of stormwater runoff. The use of energy dissipaters to prevent concentrated flows would also minimize the impact of stormwater flows. Site drainage would flow via at-grade catch basins and area drains to landscaped areas, and to underground gravity lines. In addition, the buildings and the site contours would be designed to minimize stormwater runoff to the extent practicable.

Table 3.14-8: Projected Wastewater Generation Rates for Alternative 3 Long-Term Projects through 2026 (at the Existing SFVAMC Fort Miley Campus) and through 2027 (at the Potential New SFVAMC Mission Bay Campus)

Projection Type	Total Wastewater Generation[1] (million gallons)	
	Per Year	Per Day
Wastewater Generation at the Existing SFVAMC Fort Miley Campus (through 2026)[2]		
Without VA SSPP Reduction Target	44.4	0.122
With VA SSPP Reduction Target[4]	35.5	0.097
Wastewater Generation at the Potential New SFVAMC Mission Bay Campus (through 2027)[3]		
Without VA SSPP Reduction Target	7.4	0.020
With VA SSPP Reduction Target[4]	5.9	0.016
Totals		
Without VA SSPP Reduction Target—through 2027 at Both Campuses	**60.8**	**0.166**
With VA SSPP Reduction Target—through 2027 at Both Campuses[4]	**48.6**	**0.133**

Notes:
SFVAMC = San Francisco Veterans Affairs Medical Center; VA SSPP = *Department of Veteran Affairs Strategic Sustainability Performance Plan*

1 The total wastewater generation represents existing wastewater (i.e., 36.3 million gallons per year (0.100 million gallons per day) at the SFVAMC Fort Miley Campus and 0 million gallons per year (0 million gallons per day) at the potential new SFVAMC Mission Bay Campus) plus estimated wastewater generation associated with short-term and long-term projects.

2 No additional projects are proposed at the SFVAMC Fort Miley Campus under Alternative 3 long-term projects. Therefore, total wastewater generation consists of existing generation and wastewater associated with short-term projects described in Table 3.14-2.

3 These values are based on an increase of 140,000 square feet as proposed as part of Alternative 3 long-term projects (not including new parking, as parking does not generate wastewater). There is no existing SFVAMC wastewater generation at the potential new SFVAMC Mission Bay Campus.

4 The VA SSPP states that VA facilities have a target to reduce potable-water use by 26 percent and a target to reduce landscaping/industrial water use by 20 percent by 2020. Because the water demand projections do not distinguish between demands for potable and nonpotable water, this analysis conservatively assumes an overall 20 percent reduction in all water demands by 2020.

Source: Wastewater generation calculated by AECOM in 2014 assuming 78 percent of water demand = wastewater generated; SFVAMC, 2012.

At this time, the acreage of new impermeable area at the site is unknown; however, SFVAMC would be required to comply with Section 438 of the EISA and implement LID techniques because construction at this federal facility would have a net new footprint greater than 5,000 gsf. In addition, SFVAMC would be required to comply with Article 4.2 of the San Francisco Public Works Code, which requires submittal and approval of a stormwater control plan for development projects that meets guidelines adopted by SFPUC. If the potential new SFVAMC Mission Bay Campus would be located within the combined sewer area and existing imperviousness is greater than 50 percent, the stormwater runoff rate and volume from the site would have to decrease by 25 percent from the 2-year, 24-hour design storm. If the potential new SFVAMC Mission Bay Campus would be located in the separate sewer area, the requirement would be to capture and treat the rainfall from a design storm of 0.75 inch. SFVAMC also must develop a maintenance plan for all proposed stormwater controls. As detailed design of wastewater and stormwater infrastructure has not yet been completed, Alternative 3 long-term projects may result in direct adverse impacts related to wastewater and stormwater.

Management Measure HYD-1 would be implemented at the potential new SFVAMC Mission Bay Campus to ensure that infrastructure would be properly sized to handle stormwater and wastewater flows. In addition, the use of LID or other techniques described in Management Measure HYD-1 to infiltrate, evaporate, and detain stormwater would ensure that predevelopment stormwater runoff conditions would be maintained and aid SFVAMC in complying with Section 438 of the EISA and Article 4.2 of the San Francisco Public Works Code. Operational impacts from Alternative 3 long-term projects related to stormwater and wastewater would be reduced to a minor level with implementation of Management Measure HYD-1 as well compliance with requirements to reduce stormwater runoff rates and volumes relative to existing conditions. For additional discussion of stormwater runoff from the site as it relates to CSO events, see Section 3.8, “Hydrology and Water Quality.”

Overall, operational impacts of Alternative 3 long-term projects on wastewater and stormwater would be reduce to a minor level with implementation of Management Measure HYD-1.

Electricity and Natural Gas

The potential new SFVAMC Mission Bay Campus proposed under Alternative 3 would have an anticipated electricity demand of approximately 3,139 MWh per year and an estimated natural gas demand of 18,572 MMBtu per year from 2024 through 2027 without implementation of the VA SSPP’s target for reduction of greenhouse gas emissions (Table 3.14-9). Total electricity demand for SFVAMC Alternative 3, including existing demand and demand for short-term and long-term projects, is projected to be 28,611 MWh per year and natural gas demand is projected to be 169,259 MMBtu per year.

To support this demand, Alternative 3 long-term projects would require the installation of additional distribution lines to provide the potential new SFVAMC Mission Bay Campus with electrical and natural gas service. PG&E has indicated that its existing electricity and natural gas infrastructure in the vicinity would have sufficient capacity to support the new Campus (Ketcherside, pers. comm., 2011b). Nonetheless, because the facilities would be new, Alternative 3 long-term projects at the potential new Campus would likely require construction of distribution lines to service the new buildings. The new electric and natural gas distribution lines would be constructed and operated in compliance with federal, State, and local regulatory requirements, minimizing the potential for adverse impacts. Therefore, operational impacts of Alternative 3 long-term projects on electricity and natural gas are anticipated to be minor.

Table 3.14-9: Projected Electricity and Natural Gas Demands of Alternative 3 Long-Term Projects through 2026 (at the Existing SFVAMC Fort Miley Campus) and through 2027 (at the Potential New SFVAMC Mission Bay Campus)[1]

Projection Type	Electricity Demand per Year (MWh)		Natural Gas Demand per Year (MMBtu)	
	Increase in Demand	Total Demand[4]	Increase in Demand	Total Demand[4]
Electricity and Natural Gas Demand at the Existing SFVAMC Fort Miley Campus (through 2026)[2]				
Without VA SSPP Reduction Target	0	25,472	0	150,687
With VA SSPP Reduction Target[5]	0	17,844	0	105,559
Electricity and Natural Gas Demand at the Potential New SFVAMC Mission Bay Campus (through 2027)[3]				
Without VA SSPP Reduction Target	3,139	3,139	18,572	18,572
With VA SSPP Reduction Target[5]	2,210	2,210	13,075	13,075
Totals				
Without VA SSPP Reduction Target—through 2027 at Both Campuses		28,611		169,259
With VA SSPP Reduction Target—through 2027 at Both Campuses[5]		20,054		118,634

Notes: MMBtu/yr = million metric British thermal units per year; MWh/yr = megawatt-hours per year; VA SSPP = *Department of Veteran Affairs Strategic Sustainability Performance Plan*

1 Parking garage square footage is not included in electricity and natural gas demand projections because associated demands are assumed to be minimal.

2 No additional projects are proposed at the SFVAMC Fort Miley Campus under Alternative 3 long-term projects. Therefore, total electricity and natural gas demands are those associated with existing demands in addition to short-term projects described in Table 3.14-3).

3 There is no existing SFVAMC-related electricity or natural gas demand at the potential new Mission Bay Campus.

4 The total demand represents the existing demand (22,144 MWh/yr for electricity and 131,000 MMBtu/yr for natural gas) plus estimated demands associated with short-term and long-term Alternative 3 projects.

5 The VA SSPP has a target to reduce greenhouse gas emissions by 30 percent by 2020 for buildings and by 29.6 percent by 2020 for the fleet (vehicles). Although these targets may not directly translate into 30 percent reductions in electricity and natural gas usage, for the purpose of this EIS, a 30 percent reduction is presented as an estimate.

Source: Electrical and natural gas demands calculated by AECOM in 2014; CalEEMod Version 2013.2.2.

Alternative 4: No Action Alternative

Short-Term and Long-Term Projects

Construction

Under Alternative 4, there would be no new construction or retrofitting of existing buildings. Therefore, no construction-related impacts on utility service systems, water supply, or fire suppression systems would occur.

Operation

Under Alternative 4, the LRDP would not be implemented, and the existing facility would continue to function at its current capacity. Therefore, no impacts on existing water supply, wastewater and stormwater, or electricity and natural gas infrastructure would occur.

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3.15 WILDLIFE AND HABITAT

This section describes the existing physical affected environment and regulatory framework related to wildlife and habitat and discusses the potential effects of the EIS Alternatives related to wildlife and habitat.

3.15.1 Affected Environment

Existing-Resources Evaluation

The evaluation of existing resource conditions consisted of pre-field research, review of existing information, and field reconnaissance visits to the existing SFVAMC Fort Miley Campus and surrounding area.

Vegetation/Habitat Types

Existing SFVAMC Fort Miley Campus

The existing SFVAMC Fort Miley Campus is located along a bluff overlooking the northwestern edge of San Francisco and the Pacific Ocean. The existing Campus is bordered by the Golden Gate National Recreation Area (GGNRA) to the north, east, and west, and by the residential outer Richmond District neighborhood to the south. The Campus sits at an elevation of 300–350 feet relative to mean sea level, and is higher than the areas in its immediate vicinity. The land to the north and west of the site drops sharply downward toward the Pacific Ocean, while the terrain to the east slopes more gently through the Lincoln Park Golf Course and toward the Seacliff neighborhood (see Figures 1-1 and 1-2).

Reconnaissance-level biological surveys for special-status plant and wildlife species were conducted (in June and September 2008) of vegetated areas both on and adjacent to the SFVAMC Fort Miley Campus and in the area that surrounds the Campus.

Habitat within the SFVAMC Fort Miley Campus is largely developed and consists of landscaped and planted trees; however, the areas along the northern, eastern, and western perimeters of the Campus are less developed. The vegetation assemblages observed on the property in 2008 and 2012 by AECOM staff members were primarily nonnative and included a high-level tree canopy of Monterey pine (*Pinus radiata*) and Monterey cypress (*Cupressus macrocarpa*) (VA, 2010a). The year 2012 serves as the baseline year for this EIS.

As mentioned in Chapter 2.0, "Alternatives," there are currently an estimated 232 trees within the landscaped portions of the Campus (VA, 2010b). Dominant tree species on the Campus include Monterey pine (71 individuals), purple leaf plum (*Prunus cerasifera 'Atropurpurea'*; 25 individuals), Monterey cypress (21 individuals), Japanese flowering cherry (*Prunus serrulata*; 19 individuals), and Lagunaria (*Lagunaria patersonii*; 17 individuals). The remaining trees consist of small numbers of various nonnative and native trees used as landscaping throughout the Campus. Large nonnative tree[1] cover comprises about 30.2 acres (nearly 50 percent of the study area for wildlife and habitat). Cape ivy (*Delairea odorata*), a nonnative species, infested about 6.3 acres (or about 10 percent) of the study area.

[1] In the study, Monterey cypress and Monterey pine were considered "nonnative" because they are not historically native to the San Francisco Peninsula. Eucalyptus (*Eucalyptus globulus*) was the third most frequent nonnative tree species found.

Understory assemblages are dominated by English ivy (*Hedera helix*), German ivy (*Senecio mikanioides*), Himalayan blackberry (*Rubus discolor*), and passion flower (*Passiflora* sp.). Although both Monterey pine and Monterey cypress are species native to California, they are commonly planted as a landscape species and are not native to the San Francisco Peninsula. It was observed during previous surveys that open areas are relatively uncommon and dominated by nonnative annual grasses and invasive species. Native species are rare; however, California blackberry (*Rubus ursinus*) and coyote brush (*Baccharis pilularis*) were observed growing within the larger and more dominant thickets of Himalayan blackberry (VA, 2010a).

A portion of the existing SFVAMC Fort Miley Campus was also included in a floristic survey conducted on June 9, 2010, for the North Slope Seismic/Geologic Stabilization Project (North Slope Project) (VA, 2010c). Nonnative plant species, primarily Himalayan blackberry and ornamental trees, shrubs, vines, and herbaceous species, dominated vegetation on the slopes within the North Slope Project area. Like the surveys conducted in 2008 for the current project, the Environmental Assessment (EA) for the North Slope Project noted that California blackberry occurs where Himalayan blackberry, Monterey pine, and Monterey cypress are found. In the western portion of the North Slope Project area, small patches of arroyo willow (*Salix lasiolepis*) were found along the slope. There were some remnant coastal scrub species in the North Slope Project area, primarily California sagebrush (*Artemisia californica*), coyote bush, and bush lupine (*Lupinus arboreus*). However, these species were in the minority in both numbers and cover compared to the nonnative species. During the 2012 survey, it was noted that southern portions of the North Slope Project area had been developed into an ornamental garden containing an assemblage of native and nonnative flowering plants, including various clarkias (*Clarkia* spp.) and azaleas (*Rhododendron* spp.) (VA, 2012). There is no wetland habitat on the Campus.

Mission Bay Area

Mission Bay is an urban area that was developed for industrial uses including rail yards, truck terminals, construction-related operations, warehouses, and maritime activities. Development has occurred in the area, but vacant areas remain. Open areas of Mission Bay are vegetated predominantly with nonnative, annual species of grasses and forbs. The Mission Bay planning area encompasses the entire Mission Creek Channel (Figure 2-5 in Chapter 2.0, “Alternatives”). A minor amount of wetland vegetation in the form of a fringe of pickleweed (*Salicornia virginica*) occurs above the high-tide line on the unlined, dirt banks of the Mission Creek Channel. Nonnative annual grasses and forbs common to disturbed urban areas occur on the channel sides above the pickleweed. For the 1996 LRDP EIR, potential new sites were surveyed on foot to assess the potential for occurrence of sensitive species.

Wildlife typical of the Mission Bay area includes domesticated rock dove (*Columba livia*) and Muscovy duck (*Cairina moschata*), and common native bird species including mourning dove (*Zenaida macroura*), mallard (*Anas platyrhynchos*), and killdeer (*Charadrius vociferous*). Other species of native water birds would be expected to occur along the Mission Creek Channel, including gulls, egrets, herons, and ducks.

Because of the Mission Bay area’s history of development and industrial uses, only limited to no natural vegetation or habitat communities remain in the area. Waterfront in this area is generally developed and contains riprap, seawalls, or other development to control tidal influence from San Francisco Bay. This development limits the use of any shoreline wildlife in the area. According to the draft Environmental Impact Report prepared for the *Natural Areas Management Plan* (SF Planning, 2011), there are no natural areas in the Mission Bay area.

Federally Listed Plant Species

Existing SFVAMC Fort Miley Campus

Because the EIS Alternative selected would be undertaken by a federal agency on federally owned property, only federally protected species are subject to review. Information about federally listed plant species with potential to occur at the SFVAMC Fort Miley Campus was compiled by performing database searches of the following sources:

- The U.S. Fish and Wildlife Service's (USFWS's) database of federally listed endangered and threatened species (USFWS, 2011)
- The California Natural Diversity Database (CNDDB) (2012a), maintained by the California Department of Fish and Wildlife (CDFW) (formerly known as the California Department of Fish and Game [DFG])
- The California Native Plant Society's (CNPS's) Inventory of Rare and Endangered Vascular Plants (CNPS, 2010)

Overall, the queries resulted in a list of seven federally listed plant species (Table 3.15-1) with known or historic occurrences in the surrounding area. Because of dense urbanization and development, these federally listed plant species are generally limited to the Presidio and GGNRA lands, and these populations are now often carefully managed and protected. Typical habitat requirements for these species are often very specialized and include serpentine-derived soils or outcrops, chaparral, coastal scrub, sand dunes, wetlands, and native grasslands. Generally, these habitats are absent from the SFVAMC Fort Miley Campus or are severely degraded.

As mentioned above, remnant coastal scrub habitat is present in the northern undeveloped area of the SFVAMC Fort Miley Campus; however, the habitat is largely dominated by nonnative species and therefore is generally low-quality habitat for listed plant species. Aside from this area, none of the aforementioned habitats (serpentine-derived soils or outcrops, chaparral, coastal scrub, sand dunes, wetlands, and native grasslands) were observed on the remainder of the Campus (VA, 2010a). Although some of these habitats historically existed on the Campus, the significant development and landscaping that have occurred on the Campus over time (over 100 years, whether by VA or by U.S. Army in prior years) have eliminated natural habitats (VA, 2010a).

No federally listed plants were observed on or immediately adjacent to the SFVAMC Fort Miley Campus during previous field surveys. Furthermore, other recent SFVAMC EAs have also concluded that no federally listed or special-status plants were observed during appropriately timed plant surveys, and no federally listed or special-status plants are expected to occur because of the dominance and density of nonnative vegetation or the developed and disturbed nature of the area (VA, 2010c, 2011a, and 2011b). Because of the lack of suitable habitat, no federally listed plant species are anticipated to be present on the Campus.

Mission Bay Area

Because the Mission Bay area is heavily developed and/or otherwise previously disturbed, no natural vegetation communities are present that could support federally listed plant species known to occur in the San Francisco area. Table 3.15-1 provides a summary of these species. No extant populations of federally listed plants are known to persist in the Mission Bay area.

Table 3.15-1: Federally Listed Plant Species Potentially Occurring near the Existing SFVAMC Fort Miley Campus and the Mission Bay Area

Plants	Species	USFWS[1]	Habitat	Potential for Occurrence—SFVAMC Fort Miley Campus	Potential for Occurrence—Mission Bay Area
Franciscan manzanita	*Arctostaphylos franciscana*	PE	Serpentine maritime chaparral Bloom: February–April	Low: Limited habitat exists on the property. This species is only known to exist in a small number of select and managed locations within the Presidio, and thus, is unlikely to occur within the SFVAMC Fort Miley Campus.	None: No suitable habitat is present in the Mission Bay area.
Presidio manzanita	*Arctostaphylos hookeri* ssp. *ravenii*	E	Chaparral, coastal prairie, coastal scrub/serpentine chaparral Bloom: February–March	Low: Low-quality habitat exists on the property to the north of the developed area. Because only one population of the species is presumed extant (in the Presidio), it is unlikely that this species would be present (CNDDB, 2012a).	None: No suitable habitat is present in the Mission Bay area.
Marsh sandwort	*Arenaria paludicola*	E	Marshes and swamps (freshwater or brackish), sandy openings Bloom: May–August	None: No suitable habitat is present on the SFVAMC Fort Miley Campus. This species is believed to be extirpated from San Francisco (CNDDB, 2012a).	None: No suitable habitat is present in the Mission Bay area.
Presidio clarkia	*Clarkia franciscana*	E	Coastal scrub, valley and foothill grassland/ serpentine soils Bloom: May–July	Low: No suitable serpentine grasslands are present on the SFVAMC Fort Miley Campus. Only two extant populations persist in San Francisco, neither of which is located near the Campus (CNDDB, 2012a).	Low: Some serpentine soils are present in the Mission Bay area; however, no development would occur in these areas.
Marin western flax	*Hesperolinon congestum*	T	Chaparral, valley and foothill grassland; serpentine soils Bloom: April–July	Low: No suitable habitat for the species is present on the SFVAMC Fort Miley Campus.	None: No suitable habitat is present in the Mission Bay area.
Beach layia	*Layia carnosa*	E	Coastal dunes, coastal scrub/ sandy soils Bloom: April–July	None: No suitable habitat for the species is present on the SFVAMC Fort Miley Campus.	None: No suitable habitat is present in the Mission Bay area.

Table 3.15-1: Federally Listed Plant Species Potentially Occurring near the Existing SFVAMC Fort Miley Campus and the Mission Bay Area

Plants	Species	USFWS[1]	Habitat	Potential for Occurrence—SFVAMC Fort Miley Campus	Potential for Occurrence—Mission Bay Area
San Francisco lessingia	*Lessingia germanorum*	E	Coastal scrub/remnant dunes Bloom: June–November	Low: Habitat on the SFVAMC Fort Miley Campus is not characteristic of habitats where this species is generally found.	None: No suitable habitat is present in the Mission Bay area.
White-rayed pentachaeta	*Pentachaeta bellidiflora*	E	Cismontane woodland, valley and foothill grassland/often serpentinite Bloom: March–May	None: This species is only known to exist in a small number of locations containing serpentine grasslands along the San Francisco Peninsula in San Mateo County (CNDDB, 2012a).	None: This species is only known to exist in a small number of locations containing serpentine grasslands along the San Francisco Peninsula in San Mateo County (CNDDB, 2012a).

Notes:
[1] Listing status under the federal Endangered Species Act: PE = Proposed Endangered; E= Endangered; T =Threatened
Sources: CNDDB, 2012a; CNPS, 2010; USFWS, 2011a and 2011b

Federally Listed Wildlife Species and Migratory Birds

Existing SFVAMC Fort Miley Campus

The close proximity to urbanization and the highly disturbed nature of the existing SFVAMC Fort Miley Campus greatly reduces the potential for the presence of federally listed wildlife species at the Campus. Only common wildlife such as red-tailed hawk (*Buteo jamaicensis*) was observed during the 2008 surveys (VA, 2010a). Similarly, no federally listed wildlife species or migratory birds were noted in several other EAs prepared for various projects at the Campus (VA, 2010c, 2011a, and 2011b).

Information about federally listed wildlife species with potential to occur within the San Francisco North 7.5-minute Quadrangle was compiled by performing database searches of the CNDDB (2012a) and the USFWS (2011a) database of federally endangered and threatened species.[2]

Overall, the queries identified 28 federally listed species of animals. Table 3.15-2 provides a summary of the potential for federally listed wildlife to occur on the SFVAMC Fort Miley Campus. Of the 28 species identified by the queries conducted, 20 are pelagic or marine, or otherwise live in open water, which is not present in the vicinity of the SFVAMC Fort Miley Campus. Therefore, only terrestrial species known to occur in San Francisco have been included in Table 3.15-2.

Mission Bay Area

Because of the relatively developed nature of the Mission Bay area and its associated waterfront on San Francisco Bay, no suitable habitat for federally listed species is present. A small patch of saltmarsh habitat (mainly pickleweed) is present along the Mission Creek Channel; however, this area is too small and isolated to act as a suitable refuge for federally listed wildlife species and attract species such as California clapper rail and/or salt marsh harvest mouse. Table 3.15-2 provides a summary of the potential for federally listed wildlife to occur in the Mission Bay area.

Other Species of Special Regional Concern

Existing SFVAMC Fort Miley Campus

The presence of trees and shrubs on and adjoining the existing SFVAMC Fort Miley Campus and the Campus's location along the Pacific Flyway create the likelihood for various migratory birds to exist in the area. Raptors and other native birds are protected under the federal Migratory Bird Treaty Act (MBTA), discussed below in Section 3.15.2, "Regulatory Framework." As noted above, a red-tailed hawk was observed perching in the trees around the Campus. Other raptors that may be present include sharp-shinned hawk (*Accipiter striatus*), red-shouldered hawk (*Buteo lineatus*), and American kestrel (*Falco sparverius*). It is unlikely that these species nest at the site because of the activity on the property; however, nesting may occur within the GGNRA lands bordering the Campus.

[2] Because the selected EIS Alternative would be undertaken by a federal agency on federally owned property, only federally protected species are subject to review.

Table 3.15-2: Federally Listed Animal Species Potentially Occurring near the Existing SFVAMC Fort Miley Campus and the Mission Bay Area

Species		USFWS[1]	Habitat	Potential for Occurrence—SFVAMC Fort Miley Campus	Potential for Occurrence—Mission Bay Area
Invertebrates					
Bay checkerspot butterfly	*Euphydryas editha bayensis*	T	San Francisco Peninsula to southern Santa Clara County; dependent on dwarf plantain (*Plantago erecta*) and purple owl's clover (*Castilleja densiflorus* or *C. exserta*), which grow on serpentine soil	None: No suitable habitat or required host plants are present on the property.	None: No suitable habitat or required host plants are present in the Mission Bay area.
Mission blue butterfly	*Icaricia icarioides missionensis*	E	Coastal chaparral and coastal grassland within San Francisco Bay region; larvae feed on lupine (*Lupinus* sp.) species and adults feed on a variety of plant species	None: No suitable habitat or required host plants are present on the property.	None: No suitable habitat or required host plants are present in the Mission Bay area.
Callippe silverspot butterfly	*Speyeria callippe callippe*	E	Grassland habitat bordering San Francisco Bay; dependent on California golden violet (*Viola pedunculata*)	None: No suitable habitat or required host plants are present on the property.	None: No suitable habitat or required host plants are present in the Mission Bay area.
Amphibians					
California red-legged frog	*Rana draytonii*	T	Lowlands and foothills with permanent sources of deep water with dense emergent vegetation; disperse through upland habitat	None: No suitable breeding or upland habitat is present on the property or in the surrounding area. This species has not been observed in the area since 1972 and is believed to be extirpated.	None: No suitable breeding or upland habitat is present in the Mission Bay area.

Table 3.15-2: Federally Listed Animal Species Potentially Occurring near the Existing SFVAMC Fort Miley Campus and the Mission Bay Area

Species		USFWS[1]	Habitat	Potential for Occurrence—SFVAMC Fort Miley Campus	Potential for Occurrence—Mission Bay Area
Birds					
California clapper rail	*Rallus longirostris obsoletus*	E	San Francisco Bay Area salt marsh; highly dependent on dense vegetation cover dominated by pickleweed and cordgrass	None: No salt marsh habitat is present on the property.	Low: Small patches of salt marsh habitat are present along Mission Creek Channel; however, these areas are too small and isolated from larger habitat areas to support the species.
California least tern	*Sterna antillarum browni*	E	Coastal waters with open sandy beaches or banks	None: No suitable breeding or foraging habitat is present on the property.	Low: The Mission Bay area borders San Francisco Bay, which contains potential low-quality foraging habitat; however, no beaches or other potential breeding habitat are present in the area.
Western snowy plover	*Charadrius alexandrinus nivosus*	T	Coastal and inland sand dunes or other sandy substrates	None: No suitable breeding or foraging habitat is present on the property.	Low: The Mission Bay area borders San Francisco Bay, which contains potential low-quality foraging habitat; however, no beaches or other potential breeding habitat are present in the area.
Mammals					
Salt marsh harvest mouse	*Reithrodontomys raviventris*	E	San Francisco Bay Area salt marsh; highly dependent on dense vegetation cover dominated by pickleweed	None: No suitable breeding or foraging habitat is present on the property.	Low: Small patches of salt marsh habitat are present along the Mission Creek Channel; however, these areas are too small and isolated from larger habitat areas to support the species.

Notes:
[1] Listing status under the federal Endangered Species Act: PE = Proposed Endangered; E= Endangered; T =Threatened
Sources: CNDDB, 2012a; CNPS, 2010; USFWS, 2011a and 2011b

The species described below have been reported near the existing SFVAMC Fort Miley Campus (Table 3.15-3), and although they are not federally listed, they could become candidate species for listing under the federal Endangered Species Act (ESA).[3]

- Western pond turtle (*Emys marmorata*) is known to occur within Golden Gate Park, approximately 2 miles south of the SFVAMC Fort Miley Campus (CNDDB, 2012b). The western pond turtle is considered by DFG (CDFW) to be a species of concern (CNDDB, 2012b). This species is not expected to occur on the SFVAMC Fort Miley Campus because there are no aquatic features within or adjacent to the Campus.

- Western red bat (*Lasiurus blossevillii*) is known to occur in Golden Gate Park, approximately 2 miles south of the Campus (CNDDB, 2012b). The western red bat is considered by DFG (CDFW) to be a species of concern (CNDDB, 2012b). Western red bats roost in trees and other dense foliage and have the potential to utilize native and nonnative trees within and surrounding the Campus.

- One record of bank swallow (*Riparia riparia*) was noted along the shore cliffs approximately 1 mile southwest of the SFVAMC Fort Miley Campus (CNDDB, 2012b). This record is from the 1960s and the species is presumed extant. The bank swallow typically nests in burrows in vertical banks, cliffs, and bluffs near a water source. The Campus does not contain any cliff or bank habitat and does not provide appropriate habitat for foraging. Bank swallows are not expected to occur at the Campus.

- Several CNPS-listed plant species and two DFG (CDFW)–listed plant species have known occurrences near the Campus; however, many of these occurrences are believed to have been extirpated. With the exception of three species—San Francisco Bay spineflower (*Chorizanthe cuspidata* var. *cuspidata*), Franciscan thistle (*Cirsium andrewsii*), and Kellogg's horkelia (*Horkelia cuneata* var. *sericea*)—the species all have low to no potential to occur on the Campus.

Mission Bay Area

Because of a lack of suitable habitat, no other species of special regional concern occur in the Mission Bay area.

Habitat Linkages and Corridors

Wildlife movement includes migration (usually one direction per season), interpopulation movement (e.g., long-term genetic exchange), and small travel pathways (e.g., daily movement corridors within an animal's territory). Small travel pathways usually facilitate movement for daily home range activities, such as foraging or escape from predators; they also provide connections between outlying populations, permitting gene flow between populations, thereby buffering against the adverse effects of small population sizes.

By definition, habitat fragmentation is an event that creates a greater number of habitat patches that are smaller than the original contiguous tract(s) of habitat. Fragmentation of primary habitat types can hinder local and/or regional wildlife movements.

[3] Because of the 10.5-year time frame of implementation of the selected EIS Alternative, the listing status of these species could change, with the species potentially becoming listed.

Table 3.15-3: Special-Status Plant Species Potentially Occurring near the Existing SFVAMC Fort Miley Campus

Species		Status[1]		Habitat	Potential for Occurrence
		DFG (CDFW)	CNPS		
Alkali milkvetch	*Astragalus tener* var. *tener*	–	1B	Playas, valley and foothill grassland/adobe clay, vernal pools/alkaline Bloom: March–June	None: Habitat on the property is not likely to support species. Occurrence in Potrero Hill possibly extirpated (CNDDB, 2012b).
Bristly sedge	*Carex comosa*	–	2	Coastal prairie, marshes and swamps/lake margins, valley and foothill grassland Bloom: May–September	None: Habitat on the property is not likely to support species. Occurrence possibly extirpated (CNDDB, 2012b).
San Francisco Bay spineflower	*Chorizanthe cuspidate* var. *cuspidata*	–	1B	Coastal bluff scrub, coastal dunes, coastal prairie, coastal scrub Bloom: April–August	Moderate: Limited habitat exists on the property. One population possibly extirpated and two other presumed extant, including one in the Presidio (CNDDB, 2012b).
Franciscan thistle	*Cirsium andrewsii*	–	1B	Broadleaf upland forest, coastal bluff scrub, coastal prairie, coastal scrub Bloom: March–July	Moderate: Limited habitat exists on the property. One population presumed extant in the Presidio (CNDDB, 2012b).
Round-headed Chinese houses	*Collinsia corymbosa*	–	1B	Coastal dunes Bloom: April–June	Low: Habitat on the property is not likely to support species. One population presumed extant in the Presidio (CNDDB, 2012b).
San Francisco collinsia	*Collinsia multicolor*	–	1B	Closed-cone coniferous forest, coastal scrub/ sometimes serpentinite Bloom: March–May	Low: Habitat on the property is not likely to support species. One population presumed extant in Glen Park (CNDDB, 2012b).
Point Reyes bird's beak	*Cordylanthus maritimus* ssp. *palustris*	–	2	Marshes and swamps, coastal salt marsh Bloom: June–October	None: No suitable habitat on the property. One transplanted population presumed extant in the Presidio (CNDDB, 2012b).
Fragrant fritillary	*Fritillaria liliacea*	–	1B	Cismontane woodland, coastal prairie, coastal scrub, valley and foothill grassland/often serpentinite Bloom: March–February	None: Habitat on the property is not likely to support species. One population possibly extirpated and one presumed extant on Twin Peaks (CNDDB, 2012b).
Blue coast (Dune) gilia	*Gilia capitata* ssp. *chamissonis*	–	1B	Coastal dunes, coastal scrub Bloom: April–July	None: Habitat on the property is not likely to support species. Two presumed extant populations are located in the Presidio and Lands End (CNDDB, 2012b)

Table 3.15-3: Special-Status Plant Species Potentially Occurring near the Existing SFVAMC Fort Miley Campus

Species		Status[1]		Habitat	Potential for Occurrence
		DFG (CDFW)	CNPS		
Dark-eyed gilia	*Gilia millefoliata*	–	1B	Coastal dunes Bloom: April–July	None: Habitat on the property is not likely to support species. Occurrence possibly extirpated (CNDDB, 2012b).
San Francisco gumplant	*Grindelia hirsutula* var. *maritima*	–	1B	Coastal bluff scrub, coastal scrub, valley and foothill grassland/sandy or serpentine Bloom: June–September	Low: Habitat on the property is not likely to support species. Several populations presumed extant (CNDDB, 2012b).
Kellogg's horkelia	*Horkelia cuneata* ssp. *sericea*	–	1B	Closed-cone coniferous forest, chaparral/ maritime, coastal dunes, coastal scrub/sandy or gravelly openings Bloom: April–September	Moderate: Limited habitat exists on the property. Two populations (one transplanted) presumed extant (CNDDB, 2012b).
Rose leptosiphon	*Leptosiphon rosaceus*	–	1B	Coastal bluff scrub Bloom: April–July	Low: Habitat on the property is not likely to support species. Population possibly extirpated (CNDDB, 2012b).
Marsh microseris	*Microseris paludosa*	–	1B	Closed-cone coniferous forest, cismontane woodland, coastal scrub, valley and foothill grassland Bloom: April–July	Low: Habitat on the property is not likely to support species. Occurrence extirpated (CNDDB, 2012b).
Choris' popcorn-flower	*Plagiobothrys chorisianus* var. *chorisianus*	–	1B	Chaparral, coastal prairie, coastal scrub/mesic Bloom: March–June	None: Habitat on the property is not likely to support species. Population in Golden Gate Park presumed extant (CNDDB, 2012b).
San Francisco popcorn-flower	*Plagiobothrys diffusus*	E	1B	Coastal prairie, valley and foothill grassland Bloom: March–June	None: Habitat on the property is not likely to support species. One population in the Presidio presumed extant (CNDDB, 2012b)
Hairless popcorn-flower	*Plagiobothrys glaber*	–	1A	Meadows and seeps/alkaline, marshes and swamps/coastal salt Bloom: March–May	None: No suitable habitat on the property. This occurrence is extirpated (CNDDB, 2012b).
Adobe sanicle	*Sanicula maritima*	R	1B	Chaparral, coastal prairie, meadows and seeps, valley and foothill grassland/clay/serpentinite Bloom: February–May	Low: Habitat on the property is not likely to support species. Historical occurrence in Potrero Hill possibly extirpated (CNDDB, 2012b).

Table 3.15-3: Special-Status Plant Species Potentially Occurring near the Existing SFVAMC Fort Miley Campus

Species		Status[1]		Habitat	Potential for Occurrence
		DFG (CDFW)	CNPS		
San Francisco campion	*Silene verecunda* ssp. *verecunda*	–	1B	Coastal bluff scrub, chaparral, coastal prairie, coastal scrub, valley and foothill grassland/ sandy Bloom: March–August	Low: Habitat on the property is not likely to support species. Occurrence in the Presidio presumed extant as well as two transplanted populations to the Presidio (CNDDB, 2012b).
Santa Cruz microseris	*Stebbinsoseris decipiens/ Microseris decipiens*	–	1B	Broadleaf upland forest, closed-cone coniferous forest, chaparral, coastal prairie, coastal scrub, valley and foothill grassland/ open areas/sometime serpentinite Bloom: April–May	None: Habitat on property is not likely to support species. Only known occurrence is from Angel Island and is presumed extant (CNDDB, 2012b).
San Francisco owl's clover	*Triphysaria floribunda*	–	1B	Coastal prairie, coastal scrub, valley and foothill grassland/usually serpentinite Bloom: April–June	Low: Habitat on the property is not likely to support species. Potrero Hill occurrence extirpated, but two populations in the Presidio presumed extant (CNDDB, 2012b).
Coastal triquetrella (moss)	*Triquetrella californica*	–	1B	Coastal bluff scrub, coastal scrub/soil Bloom: Not listed	Low: Habitat on property is not likely to support species. The one occurrence is presumed extant on Clarendon Heights (CNDDB, 2012b).

Notes:
[1] Legal Status Definitions
DFG (CDFW) = California Department of Fish and Game, now California Department of Fish and Wildlife (the agency's name changed in January 2013)
CNPS = California Native Plant Society

California Department of Fish and Game (California Department of Fish and Wildlife)
State Listing Categories
E = Endangered
T =Threatened
R=Rare

California Native Plant Society Categories
1A= Plant species presumed extinct in California
1B= Plant species considered rare or endangered in California and elsewhere (but not legally protected under federal Endangered Species Act [ESA] or California Endangered Species Act [CESA])
2= Plant species considered rare or endangered in California but more common elsewhere (not protected under ESA or CESA)
3=More information is needed to define status (Under review)

Sources: CNDDB, 2012b; CNPS, 2010

Existing SFVAMC Fort Miley Campus

The SFVAMC Fort Miley Campus is located adjacent to GGNRA lands that act as a migratory corridor or stopover for birds moving north and south along California's coast, including from areas of Marin and San Mateo Counties. Although the Campus itself contains limited or marginal habitat to support migratory birds, it is crossed by wildlife moving through the San Francisco area.

Mission Bay Area

Because limited natural habitat is present in the Mission Bay area, the area does not contain the habitat that would be attractive for stopovers used by wildlife (primarily birds) migrating along San Francisco Bay. It is anticipated that wildlife migrating through eastern San Francisco would bypass the Mission Bay area.

3.15.2 Regulatory Framework

Endangered Species Act

Under the ESA, the Secretary of the Interior (represented by USFWS) and the Secretary of Commerce (represented by the National Marine Fisheries Service) have joint authority to list a species as threatened or endangered. USFWS has jurisdiction over plants, wildlife, and resident fish, while the National Marine Fisheries Service has jurisdiction over anadromous fish and marine fish and mammals.

Section 9 of the ESA prohibits the "take" of federally listed species. Take is defined under the ESA (Section 3[19]), in part, as killing, harming, or harassment of such species. USFWS defines "harm" to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing behavioral patterns such as breeding, feeding, or sheltering. USFWS defines "harass" as actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavior patterns that include but are not limited to breeding, feeding, or sheltering.

All federal agencies are to protect species and preserve their habitats. Section 7 of the ESA says that federal agencies such as VA must utilize their authorities to conserve listed species and make sure that their actions do not jeopardize the continued existence of listed species. Therefore, VA must analyze potential impacts on federally listed species of all of its actions, including the EIS Alternatives.

Migratory Bird Treaty Act

The MBTA, as amended, makes it illegal for anyone to take, possess, import, export, transport, sell, purchase, barter, or offer for sale, purchase, or barter, any migratory bird, or the parts, nests, or eggs of such a bird except under the terms of a valid permit issued by USFWS. The MBTA does protect the habitat of migratory birds. Permits are issued to qualified applicants for only the following types of activities: falconry, raptor propagation, scientific collecting, special purposes (rehabilitation, educational, migratory game bird propagation, and salvage), take of depredating birds, taxidermy, and waterfowl sale and disposal.

Federal agencies such as VA are required to comply with federal laws, including the MBTA; thus, VA must analyze the potential impacts on migratory birds of all of its actions, including the EIS Alternatives.

3.15.3 Environmental Consequences

Significance Criteria

A NEPA evaluation must consider the context and intensity of the environmental effects that would be caused by, or result from, the EIS Alternatives. The Council on Environmental Quality's national guidance suggests that direct and indirect effects and their significance be discussed. These effects are defined below. Effects may also include those resulting from actions, which may have both beneficial and detrimental effects:

(a) Direct effects are caused by the action and occur at the same time and place.

(b) Indirect effects are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable.

An Alternative analyzed in this EIS is considered to result in an adverse impact on wildlife and habitat if its direct effects would:

- cause disruption to or removal of an endangered or threatened species, its habitat, migration corridors, or breeding areas; or
- result in the loss of a substantial number of native plant or animal species that could affect abundance or diversity beyond normal variability.

In addition, an Alternative analyzed in this EIS is considered to result in an adverse impact on wildlife and habitat if it would substantially cause the following indirect effects:

- increased noise levels that could disrupt the behavior of sensitive animals,
- increased urban runoff on downstream plant communities and sensitive plant populations, or
- exotic species invasions into native communities.

Assessment Methods

This section analyzes the potential effects of the EIS Alternatives on biological resources, specifically wildlife and habitat. For purposes of this analysis, it is assumed that all the biological resources within the footprint of each Alternative would be permanently, directly affected (i.e., these resources would be displaced by development). Therefore, there is no analysis for temporary direct or indirect effects on on-site resources. All indirect effects from the Alternatives would be limited to biological resources adjacent to the development footprint. Temporary indirect effects would arise from construction activities, while permanent indirect effects would arise from the ongoing operation of the Alternatives.

Areas with the potential to support federally listed species were evaluated at two levels. Pursuant to the ESA, the EIS Alternatives were evaluated to determine a finding of either "no effect" or "may effect" on listed species. In addition, pursuant to NEPA, the habitats that could potentially support federally listed species were evaluated to determine whether the EIS Alternatives would result in an "adverse impact" on these habitats.

Alternative 1: SFVAMC Fort Miley Campus Buildout Alternative

Short-Term Projects

Construction

Alternative 1 short-term projects would involve construction of 17 projects over 7 years, with completion anticipated by August 2020. Alternative 1 short-term projects would involve construction of 600,992 gross square feet (gsf) (384,452 of which would be net new) at the existing SFVAMC Fort Miley Campus. These short-term projects would involve construction on 0.69 acre of the existing Campus for an estimated total duration of 85 months. All construction staging would occur on the Campus itself, in previously disturbed areas.

Vegetation/Habitat

During construction of Alternative 1 short-term projects, approximately 65 of the estimated 232 trees on-site (largely Monterey pine, Monterey cypress, purple leaf plum, and plume albizia individuals) would be removed because of their potential for tree-fall and limb breakage hazards identified in previous tree surveys. In addition, approximately five trees would be removed along the eastern edge of the SFVAMC Fort Miley Campus to accommodate construction of Buildings 22 and 24. In some areas, removed trees would be replaced with tree species more adapted to the windy conditions at the Campus. Specifically, trees would be planted along internal circulation roads, in surface parking lots, and near the two Campus entrances.

For the purposes of this analysis, it is assumed that a significant portion of the understory would be removed as part of Alternative 1 short-term projects. Removal of landscape species such as Monterey pine and Monterey cypress and the understory would not constitute an adverse impact on vegetation and habitats because these species are not native to the area. This direct impact would be minor. See the analysis under “Other Species of Special Regional Concern” below for a discussion of the effects of vegetation removal on migratory bird and bat species. Activities for Alternative 1 short-term projects would comply with VA Specification Section 015719, “Temporary Environmental Controls” (see Section 3.8, “Hydrology and Water Quality”) and with the San Francisco Public Works Code, Construction General Permit; therefore, no indirect effects on off-site vegetation and habitat would result from an increase in urban runoff. The existing landscaping would be replaced with similar vegetation. Because the existing and proposed landscaped vegetation on the Campus is not invasive, no exotic species are expected to invade the neighboring GGNRA lands. Therefore, no direct or indirect impacts on vegetation and habitat would result from construction of Alternative 1 short-term projects.

Federally Listed Plant Species

All of the plant species listed in Table 3.15-1 have low to no potential of occurrence on the SFVAMC Fort Miley Campus. In addition, recent SFVAMC EAs have stated that no federally listed plant species were observed on the existing Campus. Furthermore, no federally listed species were observed during the 2008 or 2012 field surveys. As a result, no direct construction-related impacts on federally listed plants are anticipated to result from construction of Alternative 1 short-term projects. In addition, no indirect effects on federally listed plants in the adjacent area are anticipated.

Federally Listed Wildlife Species

No suitable habitat for federally listed wildlife is present on the SFVAMC Fort Miley Campus. Thus, no direct construction-related impacts on federally listed wildlife species are anticipated to result from construction of Alternative 1 short-term projects. In addition, no indirect effects on federally listed wildlife species in the surrounding area are anticipated.

Other Species of Special Regional Concern

Vegetation removal during construction of Alternative 1 short-term projects could result in potentially adverse effects on other species of special regional concern. Specifically, construction activities such as tree removal have the potential to affect nesting birds protected under the MBTA, or to affect the western red bat. Vegetation removal conducted during the avian nesting season (approximately February through August) could adversely affect nesting birds and bats using the area. Vegetation removal conducted outside of the nesting season would be considered a short-term adverse impact on bird species and bats that use the vegetation on the existing SFVAMC Fort Miley Campus. However, implementing Mitigation Measure WH-1 would reduce any potential impact by requiring wildlife surveys and avoidance of the breeding season.

Mitigation Measure WH-1: Conduct Wildlife Surveys and Avoid Vegetation Removal During the Breeding Season for Nesting Birds and Bats

SFVAMC will implement the following measures to avoid potential effects on nesting birds and bats, should potential nesting or roosting habitat be identified within 150 feet of the proposed development area:

- *Removal of shrubs, trees, or any vegetative cover will be conducted outside of the breeding season, roughly from September to January 31 (breeding season is typically February through August).*

- *Should vegetation removal be required during the breeding season (approximately March through August), a qualified biologist will conduct a survey for native nesting birds and bats no earlier than 14 days before the removal of trees, shrubs, or buildings. The biologist will determine the time period that the results will remain valid, based on the seasonal timing. The area surveyed will include all locations of vegetation or building removal, as well as areas within 150 feet.*

- *If no active nests or roosts are found, no further action is required. If an active nest or roost is discovered in the areas to be cleared, or in other habitats within 150 feet of construction boundaries, clearing and construction will be postponed for at least 2 weeks or until a wildlife biologist has determined that the young have left the nest or roost, the nest or roost is vacated, and there is no evidence of second nesting attempts.*

The construction period for Alternative 1 short-term projects is anticipated to be approximately 7 years and 1 month (85 months). Therefore, it may be necessary to implement the aforementioned measures repeatedly during this time frame. Implementation of Mitigation Measure WH-1 would reduce this impact to a minor level.

Habitat Linkages and Corridors

The SFVAMC Fort Miley Campus does not contain habitat used by any species as a linkage or corridor, and construction of the Alternative 1 short-term projects would not result in changes to surrounding linkages and corridors. Therefore, no impacts on habitat linkages or corridors would occur.

Operation

Vegetation/Habitat

No effects on vegetation and habitat would result from operation of Alternative 1 short-term projects. Because the footprint of operations at the SFVAMC Fort Miley Campus would remain generally the same, the condition of surrounding habitat is not anticipated to change or become degraded. Therefore, no direct or indirect impacts on vegetation and habitat would occur.

Federally Listed Plant Species

No federally listed plant species occur on the existing SFVAMC Fort Miley Campus; thus, no effects on federally listed plant species would result from operation of Alternative 1 short-term projects. Therefore, no direct or indirect impacts on federally listed plant species would occur.

Federally Listed Wildlife Species

No federally listed wildlife species occur on the existing SFVAMC Fort Miley Campus; thus, no effects on federally listed wildlife species would result from operation of Alternative 1 short-term projects. Therefore, no direct or indirect impacts on federally listed wildlife species would occur.

Other Species of Special Regional Concern

No species of regional concern occur on the existing SFVAMC Fort Miley Campus; thus, no effects on other species of regional concern would result from operation of Alternative 1 short-term projects. Therefore, no direct or indirect impacts on other species of special regional concern would occur.

Habitat Linkages and Corridors

Operation of Alternative 1 short-term projects would not result in changes to the overall quality or quantity of surrounding habitat use by species as linkages and corridors. Therefore, no direct or indirect impacts on these surrounding linkages and corridors would occur.

Long-Term Projects

Construction

The Alternative 1 long-term project would involve construction of approximately 170,000 net new gsf on 0.25 acre of previously disturbed area within the existing SFVAMC Fort Miley Campus over an estimated total duration of approximately 2 years.

Vegetation/Habitat

All construction staging for Alternative 1 short-term projects would occur on the SFVAMC Fort Miley Campus itself, in previously disturbed areas, and would result in limited effects on natural vegetation or wildlife habitat. In addition, tree removal would be conducted primarily during implementation of the short-term projects for Alternative 1, thus reducing the potential effects of the long-term project for this alternative on vegetation. Although some vegetation removal may be necessary, the vegetation that would be removed is primarily ornamental and unlikely to support local wildlife. Therefore, no direct or indirect impacts related to vegetation and habitat would result from construction of the Alternative 1 long-term project.

Federally Listed Plant Species

All of the plant species listed in Table 3.15-1 have low to no potential for occurrence on the SFVAMC Fort Miley Campus. In addition, recent SFVAMC EAs have stated that federally listed plant species were not observed on the existing Campus. Furthermore, no federally listed species were observed during 2008 or 2012 field surveys. As a result, no direct impacts on federally listed plants are anticipated to result from construction of Alternative 1 long-term projects. Similarly, no indirect impacts on federally listed plants are anticipated in the adjacent area.

Federally Listed Wildlife Species

No suitable habitat for federally listed wildlife species is present within the SFVAMC Fort Miley Campus, and thus, no direct effects on federally listed wildlife species are anticipated to result from construction of the Alternative 1 long-term project. Similarly, no indirect impacts on federally listed wildlife species are anticipated in the adjacent area.

Other Species of Special Regional Concern

Vegetation removal for construction of the Alternative 1 long-term project could result in potentially adverse impacts on other species of special regional concern. Specifically, construction activities, including vegetation removal, have the potential to affect nesting birds protected under the MBTA, or to affect the western red bat. Vegetation removal conducted during the avian nesting season (approximately February through August) could adversely affect nesting birds and bats using the area. Vegetation removal conducted outside of the nesting season would be considered a short-term adverse impact on bird species and bats that use the vegetation on the existing SFVAMC Fort Miley Campus. However, implementing Mitigation Measure WH-1 would reduce this impact to a minor level by requiring wildlife surveys and avoidance of the breeding season.

Habitat Linkages and Corridors

The SFVAMC Fort Miley Campus does not contain habitat used by any species as a linkage or corridor. Because construction of the Alternative 1 long-term project would not result in changes to surrounding linkages and corridors, no impacts on habitat linkages or corridors would occur.

Operation

Vegetation/Habitat

No effects on vegetation and habitat would result from operation of the Alternative 1 long-term project. Because the footprint of operations at SFVAMC Fort Miley Campus would remain generally the same, the condition of surrounding habitat is not anticipated to change or become degraded. Therefore, no direct or indirect impacts on vegetation and habitat would occur.

Federally Listed Plant Species

No federally listed plant species occur on the existing SFVAMC Fort Miley Campus; thus, no effects on federally listed plant species would result from operation of the Alternative 1 long-term project. Therefore, no direct or indirect impacts on federally listed plant species would occur.

Federally Listed Wildlife Species

No federally listed wildlife species occur on the existing SFVAMC Fort Miley Campus; thus, no effects on federally listed wildlife species would result from operation of the Alternative 1 long-term project. Therefore, no direct or indirect impacts on federally listed wildlife species would occur.

Other Species of Special Regional Concern

No species of regional concern occur on the existing SFVAMC Fort Miley Campus; thus, no effects on other species of regional concern would result from operation of the Alternative 1 long-term project. Therefore, no direct or indirect impacts on other species of special regional concern would occur.

Habitat Linkages and Corridors

Operation of the Alternative 1 long-term project would not result in changes to the overall quality or quantity of surrounding habitat used by species as linkages and corridors. Therefore, no direct or indirect impacts on these surrounding linkages and corridors would occur.

Alternative 2: SFVAMC Fort Miley Campus Buildout Alternative

Short-Term Projects

Alternative 2 short-term projects at the existing SFVAMC Fort Miley Campus would be the same as Alternative 1 short-term projects, with one exception. Specifically, retrofitting of the existing Buildings 1, 6, and 8 would not occur as part of Alternative 2 short-term projects (Table 2-3 and Figure 2-3), but would instead be accomplished in the long term. Alternative 2 short-term projects include construction of a total of 485,445 gsf, which is 115,547 gsf less than for short-term projects under Alternative 1. Any vegetation removal conducted outside of the nesting season would be considered a short-term adverse impact on bird species and bats that use the vegetation on the existing SFVAMC Fort Miley Campus. However, implementing Mitigation Measure WH-1 would reduce any potential impact by requiring wildlife surveys and avoidance of the breeding season. Therefore,

impacts of Alternative 2 short-term projects would be similar to or less than those of Alternative 1 short-term projects. Wildlife and habitat impacts would range in significance from no impact to minor with mitigation.

Construction

Vegetation/Habitat

During construction of Alternative 2 short-term projects, approximately 65 of the estimated 232 trees on-site (largely Monterey pine, Monterey cypress, purple leaf plum, and plume albizia individuals) would be removed because of their potential for tree-fall and limb breakage hazards identified in previous tree surveys. In addition, approximately five trees would be removed along the eastern edge of the SFVAMC Fort Miley Campus to accommodate construction of Buildings 22 and 24. Trees would be addressed in the same manner under Alternative 2 long-term projects as described for Alternative 1 short-term projects. Some removed trees would be replaced with tree species more adapted to the windy conditions at the Campus. Trees would be planted along internal circulation roads, in surface parking lots, and near the two Campus entrances.

For the purposes of this analysis, it is assumed that a significant portion of the understory would be removed as part of Alternative 2 short-term projects. Removal of landscape species such as Monterey pine and Monterey cypress and the understory would not constitute an adverse impact on vegetation and habitats because these species are not native to the area. This direct impact would be minor. See the analysis under “Other Species of Special Regional Concern” below for a discussion of the effects of vegetation removal on migratory bird and bat species. Activities for Alternative 2 short-term projects would comply with VA Specification Section 015719, “Temporary Environmental Controls” (see Section 3.8, “Hydrology and Water Quality”) and with the San Francisco Public Works Code, Construction General Permit; therefore, no indirect effects on off-site vegetation and habitat would result from an increase in urban runoff. The existing landscaping would be replaced with similar vegetation. Because the existing and proposed landscaped vegetation on the Campus is not invasive, no exotic species are expected to invade the neighboring GGNRA lands. Therefore, no direct or indirect impacts on vegetation and habitat would result from construction of Alternative 2 short-term projects.

Federally Listed Plant Species

All of the plant species listed in Table 3.15-1 have low to no potential of occurrence on the SFVAMC Fort Miley Campus. In addition, recent SFVAMC EAs have stated that no federally listed plant species were observed on the existing Campus. Furthermore, no federally listed species were observed during the 2008 or 2012 field surveys. As a result, no direct construction-related impacts on federally listed plants are anticipated to result from construction of Alternative 2 short-term projects. In addition, no indirect effects on federally listed plants in the adjacent area are anticipated.

Federally Listed Wildlife Species

No suitable habitat for federally listed wildlife is present on the SFVAMC Fort Miley Campus. Thus, no direct construction-related impacts on federally listed wildlife species are anticipated to result from construction of Alternative 2 short-term projects. In addition, no indirect effects on federally listed wildlife are anticipated in the adjacent area.

Other Species of Special Regional Concern

Vegetation removal during construction of Alternative 2 short-term projects could result in potentially adverse effects on other species of special regional concern. Specifically, construction activities such as tree removal have the potential to affect nesting birds protected under the MBTA, or to affect the western red bat. Vegetation removal conducted during the avian nesting season (approximately February through August) could adversely affect nesting birds and bats using the area. Vegetation removal conducted outside of the nesting season would be considered a short-term adverse impact on bird species and bats that use the vegetation on the existing SFVAMC Fort Miley Campus. However, implementing Mitigation Measure WH-1 would reduce any potential impact by requiring wildlife surveys and avoidance of the breeding season.

Alternative 2 short-term projects would involve construction of 16 projects over approximately 6 years. Therefore, it may be necessary to implement the aforementioned measures repeatedly during this time frame. Implementing Mitigation Measure WH-1 would reduce this impact to a minor level.

Habitat Linkages and Corridors

The SFVAMC Fort Miley Campus does not contain habitat used by any species as a linkage or corridor, and construction of the Alternative 2 short-term projects would not result in changes to surrounding linkages and corridors. Therefore, no impacts on habitat linkages or corridors would occur.

Operation

Vegetation/Habitat

No effects on vegetation and habitat would result from operation of Alternative 2 short-term projects. Because the footprint of operations at SFVAMC Fort Miley Campus would remain generally the same, the condition of surrounding habitat is not anticipated to change or become degraded. Therefore, no direct or indirect impacts on vegetation and habitat would occur.

Federally Listed Plant Species

No federally listed plant species occur on the existing SFVAMC Fort Miley Campus; thus, no effects on federally listed plant species would result from operation of Alternative 2 short-term projects. Therefore, no direct or indirect impacts on federally listed plant species would occur.

Federally Listed Wildlife Species

No federally listed wildlife species occur on the existing SFVAMC Fort Miley Campus; thus, no effects on federally listed wildlife species would result from operation of Alternative 2 short-term projects. Therefore, no direct or indirect impacts on federally listed wildlife species would occur.

Other Species of Special Regional Concern

No species of regional concern occur on the existing SFVAMC Fort Miley Campus; thus, no effects on other species of regional concern would result from operation of Alternative 2 short-term projects. Therefore, no direct or indirect impacts on other species of special regional concern would occur.

Habitat Linkages and Corridors

Operation of Alternative 2 short-term projects would not result in changes to the overall quality or quantity of surrounding habitat use by species as linkages and corridors. Therefore, no direct or indirect impacts on these surrounding linkages and corridors would occur.

Long-Term Projects

Alternative 2 long-term projects at the existing SFVAMC Fort Miley Campus would be the same as the Alternative 1 long-term project, with one exception. Specifically, three additional existing buildings—Buildings 1, 6, and 8—would be retrofitted as part of Alternative 2 long-term projects (Table 2-4 and Figure 2-4). Alternative 2 long-term projects include construction of a total of 285,487 gsf, which is 115,487 gsf more than under the Alternative 1 long-term project, because Alternative 2 includes construction of Building 213 along with the seismic retrofit of Buildings 1, 6, and 8. Therefore, construction impacts of Alternative 2 long-term projects would be similar to, although slightly greater than, than those of the Alternative 1 long-term project. Wildlife and habitat impacts would be minor. Alternative 2 long-term projects would involve construction of approximately 170,000 net new gsf on 0.25 acre of previously disturbed area within the existing SFVAMC Fort Miley Campus over an estimated total duration of approximately 5.5 years.

Vegetation/Habitat

All construction staging for Alternative 2 long-term projects would occur within the SFVAMC Fort Miley Campus itself, in previously disturbed areas, and would result in limited effects on natural vegetation or wildlife habitat. In addition, tree removal would be conducted primarily during implementation of the short-term projects for Alternative 2, thus reducing the potential effects of Alternative 2 long-term projects on vegetation. Some vegetation removal may be necessary, but the vegetation that would be removed is primarily ornamental and unlikely to support local wildlife. Therefore, no direct or indirect impacts related to vegetation and habitat would result from construction of Alternative 2 long-term projects.

Federally Listed Plant Species

All of the plant species listed in Table 3.15-1 have low to no potential for occurrence on the SFVAMC Fort Miley Campus. In addition, recent SFVAMC EAs have stated that federally listed plant species were not observed on the existing Campus. Furthermore, no federally listed species were observed during 2008 or 2012 field surveys. As a result, no direct impacts on federally listed plants are anticipated to result from construction of Alternative 2 long-term projects. Similarly, no indirect impacts on federally listed plants are anticipated in the adjacent area.

Federally Listed Wildlife Species

No suitable habitat for federally listed wildlife species is present on the SFVAMC Fort Miley Campus, and thus, no direct effects on federally listed wildlife species are anticipated to result from construction of Alternative 2 long-term projects. Similarly, no indirect impacts on federally listed wildlife species are anticipated in the adjacent area.

Other Species of Special Regional Concern

Vegetation removal for construction of Alternative 2 long-term projects could result in potentially adverse impacts on other species of special regional concern. Specifically, construction activities, including vegetation removal, have the potential to affect nesting birds protected under the MBTA, or to affect the western red bat. Vegetation removal conducted during the avian nesting season (approximately February through August) could adversely affect nesting birds and bats using the area. Vegetation removal conducted outside of the nesting season would be considered a short-term adverse impact on bird species and bats that use the vegetation on the existing SFVAMC Fort Miley Campus. However, implementing Mitigation Measure WH-1 would reduce this impact to a minor level by requiring wildlife surveys and avoidance of the breeding season.

Habitat Linkages and Corridors

The SFVAMC Fort Miley Campus does not contain habitat used by any species as a linkage or corridor. Because construction of Alternative 2 long-term projects would not result in changes to surrounding linkages and corridors, no impacts on habitat linkages or corridors would occur.

Operation

Vegetation/Habitat

No effects on vegetation and habitat would result from operation of Alternative 2 long-term projects. Because the footprint of operations at the SFVAMC Fort Miley Campus would remain generally the same, the condition of surrounding habitat is not anticipated to change or become degraded. Therefore, no direct or indirect impacts on vegetation and habitat would occur.

Federally Listed Plant Species

No federally listed plant species occur on the existing SFVAMC Fort Miley Campus; thus, no effects on federally listed plant species would result from operation of Alternative 2 long-term projects. Therefore, no direct or indirect impacts on federally listed plant species would occur.

Federally Listed Wildlife Species

No federally listed wildlife species occur on the existing SFVAMC Fort Miley Campus; thus, no effects on federally listed wildlife species would result from operation of Alternative 2 long-term projects. Therefore, no direct or indirect impacts on federally listed wildlife species would occur.

Other Species of Special Regional Concern

No species of regional concern occur on the existing SFVAMC Fort Miley Campus; thus, no effects on other species of regional concern would result from operation of Alternative 2 long-term projects. Therefore, no direct or indirect impacts on other species of special regional concern would occur.

Habitat Linkages and Corridors

Operation of Alternative 2 long-term projects would not result in changes to the overall quality or quantity of surrounding habitat used by species as linkages and corridors. Therefore, no direct or indirect impacts on these surrounding linkages and corridors would occur.

Alternative 3: SFVAMC Fort Miley Campus Plus Mission Bay Campus Alternative

Short-Term Projects

Alternative 3 short-term projects (during both construction and operation) would be the same as short-term projects for Alternative 1 (Table 2-1 and Figure 2-1); thus, all Alternative 3 short-term projects would be located at the SFVAMC Fort Miley Campus. The impacts of Alternative 3 short-term projects would be the same as the impacts of Alternative 1 short-term projects. These impacts would range in significance from no impact to minor with mitigation (Mitigation Measure WH-1).

Long-Term Projects

Alternative 3 long-term projects (during both construction and operation) located at the existing SFVAMC Fort Miley Campus would be the same as Alternative 1 long-term projects, except that the ambulatory care center would be located at the potential new SFVAMC Mission Bay Campus under Alternative 3 (Table 2-5 and Figure 2-5).

Construction

Alternative 3 long-term projects at the potential new SFVAMC Mission Bay Campus would involve construction of approximately 170,000 net new gsf on 0.98 acre of land somewhere in the Mission Bay area over a total duration of approximately 3 years and 6 months (from late 2025 to late 2027).

Vegetation/Habitat

Because of the area's long history of industrial use, the undeveloped portions of the Mission Bay area provide no natural vegetation or habitat. Therefore, construction of an approximately 170,000-gsf medical center campus in this area under Alternative 3 long-term projects is anticipated to have no impact on vegetation or habitat.

Federally Listed Plant Species

Because of the area's long history of industrial use, the undeveloped portions of the Mission Bay area contain limited vegetation and no federally listed plant species. Therefore, construction of an approximately 170,000-gsf

medical center campus in this area under Alternative 3 long-term projects is anticipated to have no impact on federally listed plant species.

Federally Listed Wildlife Species

Because of the area's long history of industrial use, the undeveloped portions of the Mission Bay area provide no habitat for federally listed wildlife species. Therefore, construction of an approximately 170,000-gsf medical center campus in this area under Alternative 3 long-term projects is anticipated to have no impact on federally listed wildlife species.

Other Species of Special Regional Concern

Because of the area's long history of industrial use, the undeveloped portions of the Mission Bay area provide no habitat for other species of special regional concern. Mature trees in the vicinity may provide nesting habitat for birds or bats. Therefore, construction of an approximately 170,000-gsf medical center campus in this area under Alternative 3 long-term projects could have a minor impact on other species of special regional concern, if present. Implementation of Mitigation Measure WH-1 would further reduce the likelihood or level of severity of any potential impact on species of special regional concern.

Habitat Linkages and Corridors

The Mission Bay area does not contain habitat used by species as a linkage or corridor, and construction of an approximately 170,000-gsf medical center campus in this area under Alternative 3 long-term projects would not result in changes to other surrounding linkages and corridors. Therefore, no impacts on habitat linkages or corridors would occur.

Operation

Vegetation/Habitat

The Mission Bay area is mostly developed or previously disturbed by current and past land use, and minimal habitat or natural vegetation is present. Therefore, no direct or indirect impacts on vegetation and habitat are anticipated to result from operation of Alternative 3 long-term projects.

Federally Listed Plant Species

No suitable habitat or known occurrences of federally listed plant species are present in the Mission Bay area. Therefore, no direct or indirect impacts on federally listed plant species would result from operation of Alternative 3 long-term projects.

Federally Listed Wildlife Species

No suitable habitat or known occurrences of federally listed wildlife species are present in the Mission Bay area. Therefore, no direct or indirect impacts on federally listed wildlife species would result from operation of Alternative 3 long-term projects.

Other Species of Special Regional Concern

No suitable habitat or known occurrences of species of regional concern are present in the Mission Bay area. Therefore, no direct or indirect impacts on other species of regional concern would result from operation of Alternative 3 long-term projects.

Habitat Linkages and Corridors

No suitable habitat linkages or corridors are present in the Mission Bay area. Therefore, no direct or indirect impacts on habitat linkages or corridors are anticipated result from operation of Alternative 3 long-term projects.

Alternative 4: No Action Alternative

Short-Term and Long-Term Projects

Construction

Under Alternative 4, there would be no new construction and no retrofitting of existing buildings. Therefore, no direct or indirect construction-related impacts on wildlife and habitat would occur.

Operation

Under Alternative 4, the LRDP would not be implemented. Therefore, no direct or indirect operational impacts on wildlife and habitat would occur.

3.15.4 References

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4.0 CUMULATIVE IMPACTS

4.1 CUMULATIVE SIGNIFICANCE CRITERIA

This cumulative impact analysis was developed to be consistent with guidance published by the Council on Environmental Quality (CEQ) (January 1997) and the U.S. Environmental Protection Agency (May 1999). In addition, CEQ issued further guidance to federal agencies in June 2005 regarding the consideration of past actions in analyses of cumulative effects. The guidance directs the agency preparing a National Environmental Policy Act (NEPA) document to determine what relevant information pertaining to past actions could be useful in illuminating or predicting the reasonably foreseeable direct and indirect effects of a proposed action (CEQ, 2005).

A cumulative impact is the effect on the environment that could result from the incremental impact of the proposed action when added to other past, present, or reasonably foreseeable future actions. Cumulative impacts can result from individually minor but collectively significant actions that take place over time. Accordingly, a cumulative impact analysis identifies and defines the scope of other actions and their interrelationship with the proposed action or its alternatives if there is an overlap in space and time.

4.2 CUMULATIVE ANALYSIS APPROACH

The process of analyzing cumulative effects involves the traditional components of an environmental impact assessment: scoping, describing the affected environment, and determining the environmental consequences (CEQ, 1997). For a summary of cumulative environmental impacts, see the end of this chapter.

4.2.1 Cumulative Projects

Scoping of cumulative projects for this EIS entailed contacting the following agencies for information regarding past, ongoing, and reasonable foreseeable actions near the locations of the EIS Alternatives that would be appropriate to analyze in combination with the EIS Alternatives:

- National Park Service, Golden Gate National Recreation Area (NPS GGNRA)
- San Francisco Planning Department (SF Planning)
- City and County of San Francisco as a Successor to San Francisco Redevelopment Agency (SF Redevelopment)
- San Francisco Recreation and Park Department (SFRPD)
- San Francisco Public Utilities Commission (SFPUC)
- San Francisco Department of Public Works
- Transbay Joint Powers Authority
- Port of San Francisco (SF Port)
- University of California, San Francisco (UCSF)

Projects identified as having the potential to contribute incrementally to cumulative environmental impacts are shown in Figures 4-1 and 4-2 and listed in Tables 4-1 and 4-2.[1] These listed projects were completed

[1] Where applicable, environmental analysis of the projects listed in Tables 4-1 and 4-2 has been or will be conducted separately, with the results of those analyses incorporated into environmental review documents prepared specifically for these projects.

recently[2] or are anticipated to be completed within the next 30 years.[3] The cumulative projects listed in Table 4-1 were used to determine the cumulative impacts associated with the existing SFVAMC Fort Miley Campus (Alternatives 1 and 2 and the Alternative 3 short-term projects). The cumulative projects listed in Table 4-2 were used to determine the cumulative impacts of the potential new SFVAMC Mission Bay Campus (Alternative 3 long-term projects).

Alternative 3 consists of short-term projects at the existing SFVAMC Fort Miley Campus and long-term projects at the potential new SFVAMC Mission Bay Campus. Alternative 3 short-term projects are identical to Alternative 1 short-term projects; therefore, the cumulative impacts associated with the short-term projects of Alternatives 1 and 3 are identical. No cumulative impact analysis for the No Action Alternative (Alternative 4) is necessary, because no project would contribute toward potential cumulative impacts.

4.2.2 Cumulative Context

To describe the affected environment as it relates to cumulative projects for this EIS, the following context was identified for each EIS resource area: geographic area, time frame, and type of projects.

4.2.3 Cumulative Impact Methodology

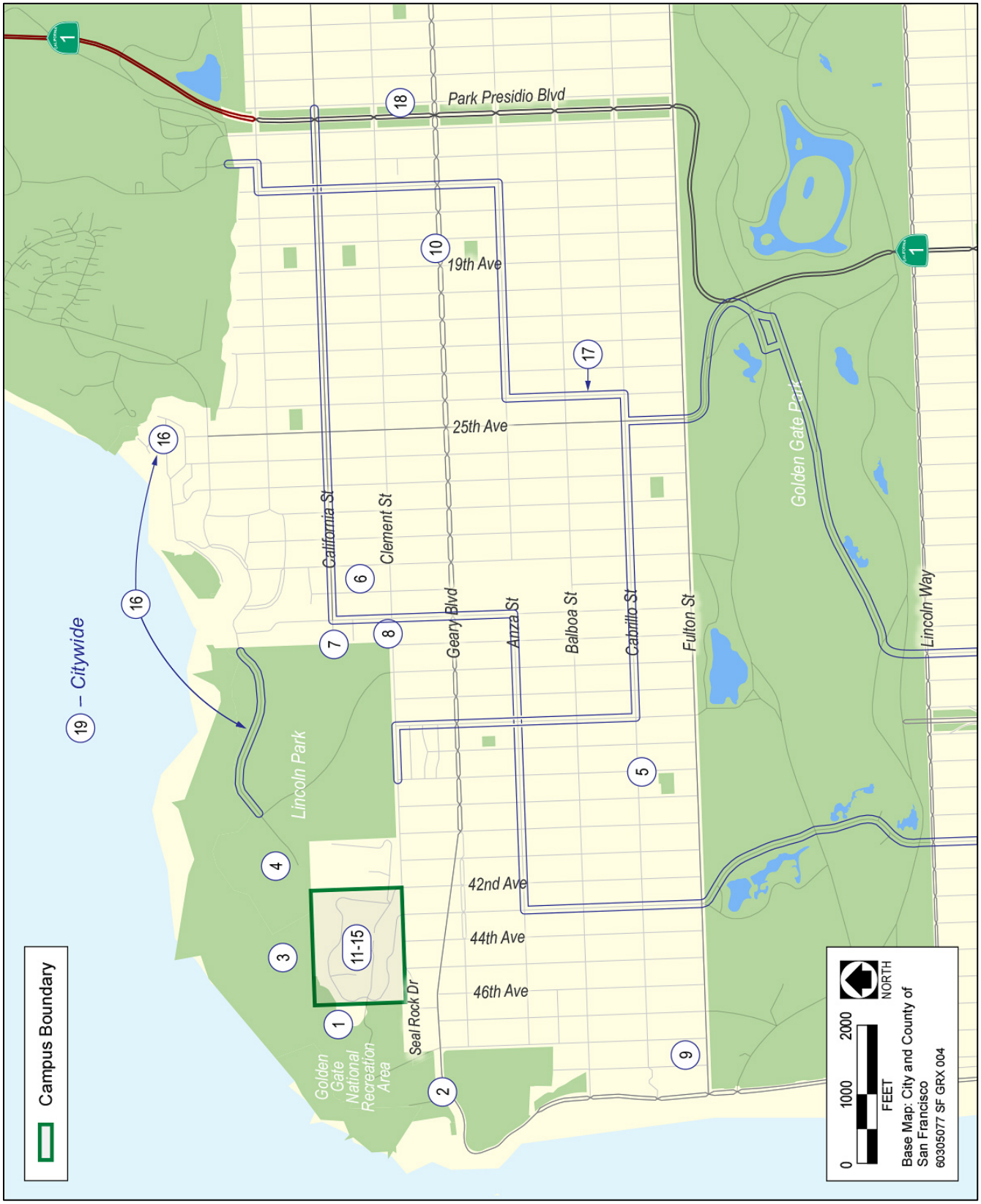
Once the context was established, relevant cumulative projects listed in Tables 4-1 and 4-2 that could contribute to cumulative construction-related or operational impacts were identified for each analysis resource. The cumulative projects relevant to a particular resource were then referred to in the analysis of that resource as the "identified cumulative projects." Thus, the cumulative projects identified in this chapter vary by resource, and sometimes by whether they apply to construction-related or operational impacts. Because no overall impact areas resulted in a conclusion of "no impact" at the Proposed Action level, all impact areas were assessed for cumulative impacts.

Finally, to determine the cumulative environmental impacts for the EIS Alternatives, the following process was followed for each resource area for both the construction and operational phases:

- For each EIS Alternative, determine whether an adverse cumulative impact could occur. (If not, the cumulative impact would be minor.)
- For any adverse cumulative impacts, determine whether an EIS Alternative's contribution to the cumulative impact would be considerable. (If not, the cumulative impact would be minor.) To determine whether the contribution of the Alternative would be cumulatively considerable, the following factors were considered: absolute size of the contribution; relative size of the contribution; comparative size of the other contributors; effect of the contribution, or effect combined with other contributors, on the environment; and ability to mitigate the impact if this type of contribution were not mitigated.
- For any cumulatively considerable impacts, provide feasible mitigation measures to avoid or minimize an Alternative's contribution to the adverse cumulative impact.

[2] "Recent" projects are those completed in the past 15 years.

[3] CEQ regulations do not require agencies to catalogue or exhaustively list and analyze all individual cumulative projects; rather, agencies must summarize the most pertinent cumulative projects. However, cumulative projects included in Tables 4-1 and 4-2 are reasonably foreseeable.



Sources: Aviles, pers. comm., 2011; Beyer, 2011; Lindsay, pers. comm., 2011; Pearson, pers. comm., 2014; SFPUC, 2013, 2014a, 2014b, and 2014d; SF Planning, 2014; data compiled by AECOM in 2014

Figure 4-1: Cumulative Projects in the Vicinity of the SFVAMC Fort Miley Campus

Table 4-1: Cumulative Projects in the Vicinity of the SFVAMC Fort Miley Campus

Project No.	Agency Jurisdiction	Project Name and Location	Approved or Proposed Uses	Completion Date
1	National Park Service	*USS San Francisco* Memorial Parking Lot Renovation (within NPS GGNRA lands)	Renovation of *USS San Francisco* Memorial parking lot	Completed in 2011
2	National Park Service	Merrie Way Visitor Center (within NPS GGNRA lands)	Development of 4,000-sf visitor center (including gift shop, food service, and bathrooms) adjacent to Merrie Way parking lot	Completed in 2012
3	National Park Service	Golden Gate National Recreation Area Dog Management Plan (within NPS GGNRA lands)	Allowance of on-leash dogs along some GGNRA trails within the East Fort Miley area	2012 and beyond
4	National Park Service	Golden Gate National Recreation Area General Management Plan (within NPS GGNRA lands)	Preservation and enhancement of historic structures and landscapes. East and West Fort Miley landscape and access improvements to enhance appearance and better connect sites to their surroundings, including the community, Lands End, and the SFVAMC Fort Miley Campus. Improvement of picnicking and group camping facilities and opportunities for outdoor learning and leadership programs. Development of safe and more direct vehicle and trail access to East Fort Miley to better support future use and preservation. If maintenance functions were to be relocated to a more suitable site, historic structures could be made available for environmental education or other public uses. Enhancement of West Fort Miley setting for outdoor learning and leadership. Rehabilitation of Marine Exchange Lookout Station (Octagon House) to interpret history and provide for park or public uses	2015 and beyond
5	SFRPD	Cabrillo Playground Renovation (38th Avenue and Cabrillo Street)	Repair and renovation of the clubhouse, upgrade to the children's play areas, renewal of the picnic areas, and improvement of the courts	Completed in summer 2013
6	SFRPD	DuPont Tennis Courts Restroom Renovation	Renovation or replacement of restrooms at the DuPont Tennis Courts	(Currently on hold)
7	SFRPD	Lincoln Park Steps Improvement	Potential accessibility improvements to the steps and preparation of steps, bench, and retaining walls to receive ceramic tiles	Completed in 2015
8	SF Planning	Albertsons Reuse (3132 Clement Street)	Conversion of a 43,800-sf, vacant Albertsons to a CVS Pharmacy and Fresh & Easy Market	Completed in 2011
9	SF Planning	Safeway Redevelopment (850 La Playa Street)	Demolition of a 40,000-sf Safeway and construction of a 65,000-sf grocery store, 49 residential units, and a 3,500-sf retail building	2017
10	SF Planning	5400 Geary Boulevard	Reuse of commercial uses and construction of 39 residential units and a restaurant	Completed in 2013
11	SFVAMC	Geothermal System	Installation and operation of suitable, appropriately	Completed in

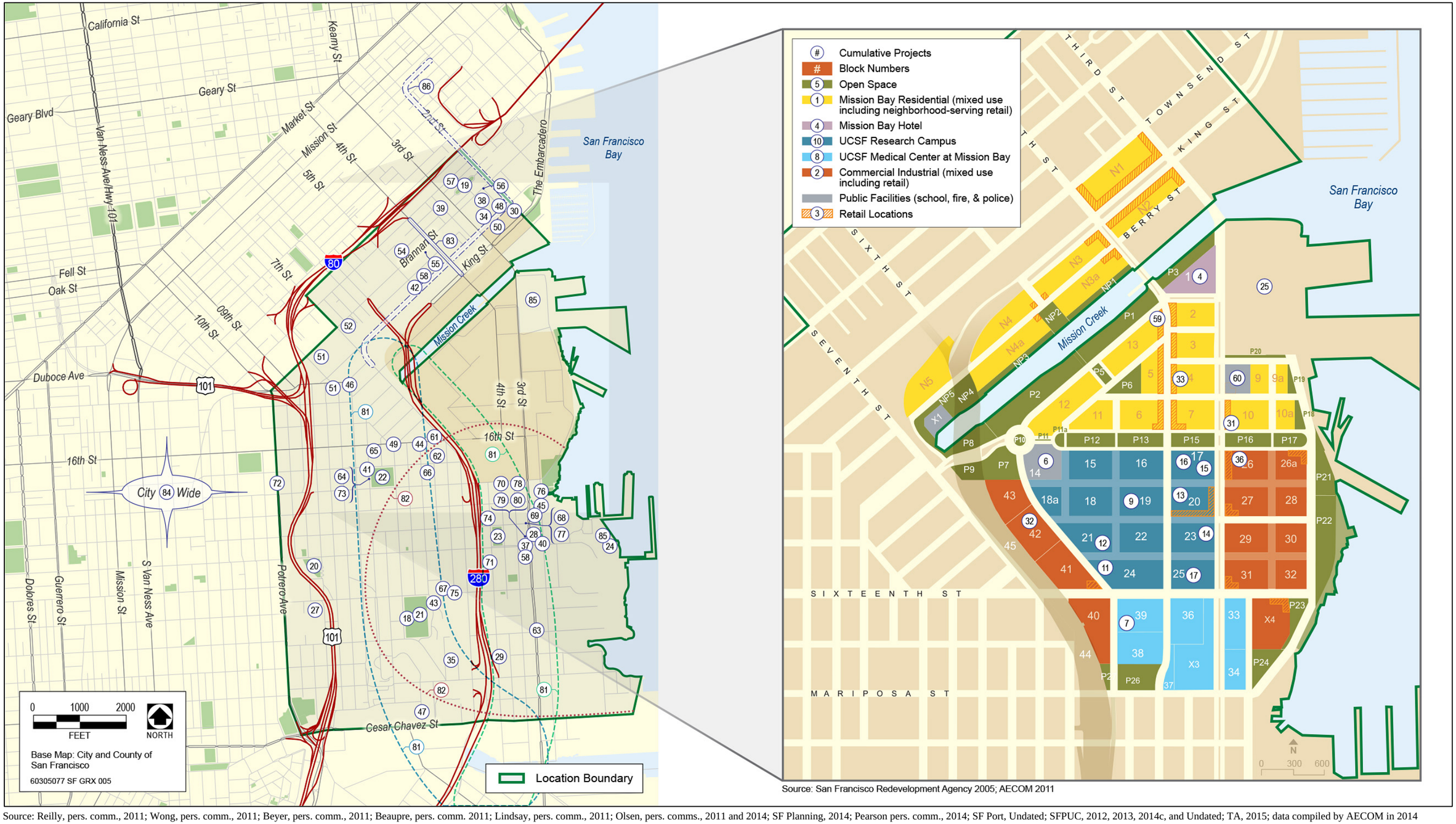
Table 4-1: Cumulative Projects in the Vicinity of the SFVAMC Fort Miley Campus

Project No.	Agency Jurisdiction	Project Name and Location	Approved or Proposed Uses	Completion Date
		(SFVAMC Fort Miley Campus)	sized, engineered ground-source heat pump (geothermal) systems in, and associated with, up to eight buildings	2014
12	SFVAMC	Solar Photovoltaic System (SFVAMC Fort Miley Campus)	Installation and operation of a solar photovoltaic system including up to seven rooftop and parking structure locations	Completed in fall 2013, and ongoing
13	SFVAMC	North Slope Seismic/ Geologic Stabilization (SFVAMC Fort Miley Campus)	Construction of two retaining walls and stormwater drainage improvements on the northern Campus perimeter and grounds	Completed in December 2011
14	SFVAMC	Electrical System Upgrade Exterior Work (SFVAMC Fort Miley Campus)	Repair, replacement, and installation of primary or secondary electrical distribution systems	Completed in August 2012
15	SFVAMC	Mental Health Patient Parking Addition (SFVAMC Fort Miley Campus)	Construction of a two-story parking garage structure (also known as Building 212) with 160 spaces on the SFVAMC Fort Miley Campus near the main Campus entrance	Completed in December 2011
16	SFPUC	Baker Beach Green Streets	Construction of a green infrastructure project to manage stormwater at Baker Beach at two locations: (1) El Camino del Mar between the Legion of Honor and the Lands End Trailhead and (2) on Sea Cliff Avenue from 26th Avenue to 25th Avenue	Summer 2016
17	SFPUC	Westside Recycled Water	Construction of a pipeline associated with delivery of recycled water for irrigation uses in the Presidio and golf courses	April 2019
18	SFPUC	Emergency Firefighting Water System (also known as Auxiliary Water Supply System) Seismic Upgrades	Seismic upgrade of the City's Emergency Firefighting Water Supply System, including pipeline replacement (i.e., possible Richmond Pipeline Extension along 43rd Avenue, Anza Street, 32nd Avenue, and California Street) and cistern construction, among other projects	2034–2046, depending on the alternative chosen
19	SFPUC	Wastewater Enterprise Renewal and Replacement Program	Ongoing work to address deficiencies in the collection system and treatment facilities throughout San Francisco, involving sewer repair and replacement	Ongoing
			Net Total of 4,000 sf of visitor center uses, 28,500 sf of commercial uses, 160 parking spaces, and 88 residential units	

Notes: City = City and County of San Francisco; GGNRA = Golden Gate National Recreation Area; NPS = National Park Service; sf = square feet; SF Planning = San Francisco Planning Department; SFPUC = San Francisco Public Utilities Commission; SFRPD = San Francisco Recreation and Park Department; SFVAMC = San Francisco Veterans Affairs Medical Center

Sources: Aviles, pers. comm., 2011; Beyer, pers. comm., 2011; Olsen, pers. comms., 2011 and 2014; data provided by SFVAMC in 2011; Pearson, pers. comm., 2014; SFPUC, 2013, 2014a, 2014b, and 2014d; SF Planning, 2014.

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Source: San Francisco Redevelopment Agency 2005; AECOM 2011

Source: Reilly, pers. comm., 2011; Wong, pers. comm., 2011; Beyer, pers. comm., 2011; Beaupre, pers. comm. 2011; Lindsay, pers. comm., 2011; Olsen, pers. comms., 2011 and 2014; SF Planning, 2014; Pearson pers. comm., 2014; SF Port, Undated; SFPUC, 2012, 2013, 2014c, and Undated; TA, 2015; data compiled by AECOM in 2014

Figure 4-2: Cumulative Projects in the Vicinity of the Potential New SFVAMC Mission Bay Campus

Table 4-2: Cumulative Projects in the Vicinity of the Potential New SFVAMC Mission Bay Campus

Project No.	Agency Jurisdiction	Project Name	Approved or Proposed Uses	Completion Date
1	City and County of San Francisco as Successor to SF Redevelopment	Mission Bay North and South Redevelopment Project Areas (303 acres of land between San Francisco Bay and Interstate 280)	Development of 6,000 housing units, with 1,700 (28%) affordable to moderate-, low-, and very-low-income households on Blocks 2–7, 9–13, and N1–N5	2030
2	City and County of San Francisco as Successor to SF Redevelopment	Mission Bay North and South Redevelopment Project Areas (303 acres of land between San Francisco Bay and Interstate 280)	Development of 3.9 million sf of office/life science/biotechnology commercial space on Blocks 26–32, X3, 36, and 38–43; includes the Warriors Arena, 5.5-acre park, 90,000 sf retail, and two office/lab towers on Blocks 29–32	2022
3	City and County of San Francisco as Successor to the SF Redevelopment	Mission Bay North and South Redevelopment Project Areas (303 acres of land between San Francisco Bay and Interstate 280)	Development of 500,000 sf of city and neighborhood-serving retail space along Fourth Street on the Fourth Street side edges of Blocks 2–7 and 13, and along Third Street on the Third Street side edge of Blocks 10 and 20	2030
4	City and County of San Francisco as a Successor to SF Redevelopment	Mission Bay North and South Redevelopment Project Areas (303 acres of land between San Francisco Bay and Interstate 280)	Development of a 500-room hotel on Block 1	2021
5	City and County of San Francisco as a Successor to SF Redevelopment	Mission Bay North and South Redevelopment Project Areas (303 acres of land between San Francisco Bay and Interstate 280)	Development of 41 acres of new public open space, including parks along Mission Creek and along San Francisco Bay, plus 8 acres of open space within the UCSF Research Campus	2030
6	City and County of San Francisco as a Successor to SF Redevelopment	Mission Bay North and South Redevelopment Project Areas (303 acres of land between the San Francisco Bay and Interstate 280)	Development of a new 500-student public school, a new public library, and new fire and police stations and other community facilities on Block 14	2016
7	UCSF	UCSF Medical Center at Mission Bay: Phase I	Development of 1.79 million sf, excluding parking, including: • 289-bed hospital (621,000 gsf) • outpatient building (213,500 gsf) • 430 surface parking spaces • 626 parking structure spaces	2014–2015
8	UCSF	UCSF Medical Center at Mission Bay: Future Phase	Development of 793,500 sf, excluding parking; includes 261-bed hospital and between 225 and 925 parking spaces, as well as 500,000 sf of office, biotechnology research, and possibly outpatient clinics with up to 500 parking spaces (Blocks 33/34)	2022–2030
	*Total UCSF Medical Center at Mission Bay space **(south side of 16th Street)** within Alternative 2 Mission Bay area*		*2.58 million sf on 18 acres*	

Table 4-2: Cumulative Projects in the Vicinity of the Potential New SFVAMC Mission Bay Campus

Project No.	Agency Jurisdiction	Project Name	Approved or Proposed Uses	Completion Date
9	UCSF	UCSF Research Campus at Mission Bay: Neurosciences Research Building, Block 19A	Development of a 237,000-sf, five-story, neuroscience research building located on Block 19A off the Koret Quad adjacent to Rock Hall on the UCSF Mission Bay campus. Building proposed to house the Department of Neurology, Institute for Neurodegenerative Diseases, and W. M. Keck Foundation Center for Integrative Neuroscience	April 2012
10	UCSF	UCSF Research Campus at Mission Bay: UC Hall Seismic Replacement	Development of the following uses: 315,000 sf of laboratory research and research support space 15,000 sf of instructional facilities 21,000 sf of campus administration and campus community functions 20,000 sf of academic support space 14,000 sf of logistical support space	August 2002
11	UCSF	UCSF Research Campus at Mission Bay: Mission Bay Developmental Biology and Genetics Building, Building 19B and Mission Bay Campus Community Center, Building 21B	Development of the following uses: 385,000 sf of research, instruction, and support space Phase 1 landscaping, parking, and infrastructure improvements New public street, Fourth Street, running north-south through the UCSF Research Campus site	2003
12	UCSF	UCSF Research Campus at Mission Bay: QB3 and Building 21A Parking Garage	Development of the following uses: 153,000 sf of research, instruction, and support space 4,200 off-street parking spaces	July 2005
13	UCSF	UCSF Research Campus at Mission Bay: Block 20 Housing	Development of the following uses: 400,000 sf of residential uses 14,595 sf of retail and community services 6,775 sf of office/logistics support	2005
14	UCSF	UCSF Research Campus at Mission Bay: Block 23B Parking Garage	Development of the following within a nine-level parking garage: 1,180 parking spaces 70 bicycle parking spaces 130 motorcycle parking spaces 6,500 sf of retail or office space within the ground floor of the garage	2007
15	UCSF	UCSF Research Campus at Mission Bay: Block 17C Cancer Research Building	Development of 162,000 sf for wet laboratory research space to expand School of Medicine research programs in neurological surgery, urology, and Cancer Center–related research space for laboratory support, desktop research, office/administrative support, a vivarium, and logistics	December 2007
16	UCSF	UCSF Research Campus at Mission Bay: Cardiovascular Research Building 17A/B	Development of 236,000 sf for a five-story clinical research and basic research facility for the UCSF School of Medicine	2010
17	UCSF	UCSF Research Campus at Mission Bay: Block 25 Faculty Office Building (currently unprogrammed space)	Development of 252,000 sf for a six-story faculty office building associated with the UCSF Medical Center at Mission Bay	2014–2015

Table 4-2: Cumulative Projects in the Vicinity of the Potential New SFVAMC Mission Bay Campus

Project No.	Agency Jurisdiction	Project Name	Approved or Proposed Uses	Completion Date
	*Total UCSF Research Campus at Mission Bay space **(north side of 16th Street)** within Alternative 2 Mission Bay area*		*2.24 million square feet on 43 acres*	
18	SFRPD	Potrero Hill Landscape and Playground Improvements (bounded by 22nd, 23rd, and Wisconsin Streets)	Reconfiguration of Arkansas Street entry to provide disabled access, renovation of tot playground and north softball field and fencing; new site furniture and paving; planting; and fencing around the perimeter of the recreation center	September 2011
19	SFRPD	South Park Renovation	Renovation of the children's play area, site accessibility, and related amenities	Construction to begin in spring 2015
20	SFRPD	McKinley Square Hillside Improvement Project	Improvement by adding native plants, a drinking fountain, connecting paths, lighting, and kiosk	Design is complete
21	SFRPD	Potrero Hill Recreation Center Renovation	Improvement of natural turf playfields and dog park area	Planning to begin in 2015
22	SFRPD	Jackson Playground	Renovation of play area, clubhouse, restrooms, conversion of sports fields to synthetic turf, replacement of irrigation system, improvement of drainage, replacement of fencing/wall, relocation of baseball diamond, expansion of park into adjacent street rights-of-way	2016–2024
23	SFRPD	Esprit Park	Construction of dog play area, repair of irrigation system, installation of table/benches, replacement of surface by tables, upgrade to outdoor athletic course, and lighting and vegetation replacement	2016–2024
24	SF Port	Pier 70 Master Plan (located at the foot of Potrero Hill along San Francisco's Central Waterfront)	Maintenance of 17 acres for ship repair and development of 50 acres of historic shipyard area with: • 2,000 residential units • 700,000 sf of new uses within historic buildings • 11 acres of open space along the shoreline (including Crane Cove Park and Slipways Park) and 9 acres of open space within development • 3 million sf of infill development • Infrastructure construction and environmental remediation	2032

Table 4-2: Cumulative Projects in the Vicinity of the Potential New SFVAMC Mission Bay Campus

Project No.	Agency Jurisdiction	Project Name	Approved or Proposed Uses	Completion Date
25	SF Port	China Basin Seawall Lot 337 & Pier 48 (just south of AT&T Park and immediately adjacent to the emerging Mission Bay neighborhood)	Development of a mixed-use, waterfront community that includes: • 11.17 acres of open space (which includes a 6.2-acre waterfront park) • 875 residential units • 244,590 sf of retail • 1,037,400 sf of office • 181,200 sf of exhibition space • 0.33 acre of recreation space • 163 shared parking spaces Revitalization of Historic Pier 48 to host events, shows, and expositions	2027
26	SF Port	Agua Vista Park	Renovation of the 20,000-sf park at Terry Francois Boulevard at 16th Street to connect to Bayfront Park. Improvement with new pathways, seating areas, and interpretation and fishing facility improvements	August 2015
27	SF Planning	1001 Potrero Avenue	Rebuild of San Francisco General Hospital to new requirements, development of a new 419,070-sf hospital building, and reuse of 129,706 sf of Building 5	2012
28	SF Planning	2235 Third Street	Development of 5,339 sf of commercial uses and 196 residential units	2012
29	SF Planning	1301 Indiana Street	Removal of 9,800 sf of commercial uses and development of 71 residential uses	Unknown
30	SF Planning	750 Second Street	Removal of 2,710 sf of commercial uses and development of 14 residential units	2013
31	SF Planning	1455 Third Street	Development of 380,999 sf of commercial uses	2014
32	SF Planning	1600 Owens Street	Development of 219,000 sf of outpatient clinic uses (Kaiser Medical Office Building)	2014
33	SF Planning	555 Mission Rock Street	Development of 150 residential units	2014
34	SF Planning	166 Townsend Street	Removal of 73,625 sf of commercial uses and development of 66 residential units	December 2011
35	SF Planning	1004 Mississippi Street	Development of 28 residential units	October 2016
36	SF Planning	455 Mission Bay Boulevard South	Development of 333,945 sf of commercial uses	2014
37	SF Planning	2298 Third Street	Development of 14,000 sf of commercial uses and 69 residential units	2014
38	SF Planning	345 Brannan Street	Development of 53,030 sf of commercial uses	2014
39	SF Planning	246 Ritch Street	Removal of 4,130 sf of commercial uses and development of 19 residential units	2014
40	SF Planning	616 20th Street	Development of 6,340 sf of commercial uses and 269 residential units	2014

Table 4-2: Cumulative Projects in the Vicinity of the Potential New SFVAMC Mission Bay Campus

Project No.	Agency Jurisdiction	Project Name	Approved or Proposed Uses	Completion Date
41	SF Planning	1717 17th Street	Removal of 13,369 sf of commercial uses and development of 41 residential units	2016
42	SF Planning	690 Fifth Street	Removal of 13,500 sf of office uses and development of 41,000 sf of hotel/visitor uses and 5,000 sf of retail uses	2016
43	SF Planning	1 Turner Terrace	Replacement of 606 units of housing with 1,400–1,700 residential units (1,094 net units) and 30,000 sf of commercial uses	2018
44	SF Planning	1000 16th Street	Development of 26,500 sf of commercial uses and 450 residential units	2018
45	SF Planning	740 Illinois Street	Removal of 8,500 sf of commercial uses and development of 70 residential units	2018
46	SF Planning	1-25 Division Street	Removal of 35,453 sf of commercial uses and development of 100 residential units	October 2016
47	SF Planning	1263 Connecticut Street	Development of 26,500 sf of commercial uses	2013
48	SF Planning	72 Townsend Street	Development of 74 residential units	2013
49	SF Planning	1150 16th Street	Development of 1,155 sf of commercial uses and 15 residential units	October 2016
50	SF Planning	144 King Street	Development of 44,000 sf of hotel/visitor uses	April 2016
51	SF Planning	801 Brannan/1 Henry Adams Street	Removal of Concourse Exhibit Hall (125,000 sf) and development of 560 residential units and 8,000 sf of commercial uses	April 2016
52	SF Planning	603 Seventh Street	Removal of existing uses and development of 4,666 net sf of commercial uses	March 2015
53	SF Planning	85 Bluxome Street	Removal of existing uses (27,646 sf) and development of 33,000 net sf of office uses	October 2015
54	SF Planning	598 Brannan Street	Removal of 38,200 sf of industrial uses and development of 692,568 net sf of office uses	April 2017
55	SF Planning	501 Brannan Street	Removal of parking lot and construction of 10,130 sf of retail uses and 132,095 sf of office uses	November 2016
56	SF Planning	333 Brannan Street (aka 329 Brannan Street)	Removal of 13,740 sf of industrial uses and development of 175,881 sf of office uses and 2,572 sf of retail uses	June 2015
57	SF Planning	482 Bryant Street	Development of 4,857 sf of commercial uses	October 2015
58	SF Planning	901 Tennessee Street	Removal of 9,000 sf of existing warehouse uses and development of 39 residential units	April 2016
59	SF Planning	1000 Fourth Street	Development of 150 residential units	2015
60	SF Planning	1351 Third Street	Development of a 264,000-sf office/commercial space to be used as a police headquarters and fire station	Unknown

Table 4-2: Cumulative Projects in the Vicinity of the Potential New SFVAMC Mission Bay Campus

Project No.	Agency Jurisdiction	Project Name	Approved or Proposed Uses	Completion Date
61	SF Planning	1006 16th Street	Development of 393 residential units	October 2016
62	SF Planning	1200 17th Street	Removal of 105,000 sf of industrial uses and office uses and development of approximately 200 residential units, 144,113 net sf of office uses, and 26,000 net sf of retail uses	October 2016
63	SF Planning	1201–1225 Tennessee Street	Removal of existing commercial uses and development of approximately 300 residential units and 5,000 sf of retail uses (net 139,594 sf of commercial uses)	October 2016
64	SF Planning	1717 17th Street	Removal of commercial buildings and construction of 20 residential units and 4,840 sf of production/distribution/repair (net 18,209 sf of office uses)	Completed 2014
65	SF Planning	1301 16th Street	Removal of 38,600 sf of industrial uses and development of 276 residential units	April 2017
66	SF Planning	131 Missouri Street	Removal of 5,296 sf of industrial uses and development of nine residential units	October 2016
67	SF Planning	1395 22nd Street	Development of 251 residential units and 29,780 sf of production/distribution/repair	April 2017
68	SF Planning	2146 Third Street	Removal of a building and development of seven residential units (12,000 sf)	March 2016
69	SF Planning	2171 Third Street	Removal of 23,654 sf of industrial/office uses and development of 109 residential units (154,509 gsf) and 3,143 sf of retail uses (net 20,511 sf added)	October 2016
70	SF Planning	2230 Third Street	Removal of existing commercial uses and development of 37 residential units and 2,399 sf of commercial uses	April 2017
71	SF Planning	800 Indiana Street	Removal of the existing Opera Warehouse (78,240 sf) and development of 340 residential units	December 2016
72	SF Planning	480 Potrero Avenue	Development of 84 residential units (85,490 sf)	January 2016
73	SF Planning	580 De Haro Street	Removal of existing office uses and six residential units and development of nine residential units (three net units)	January 2017
74	SF Planning	630 Indiana Street	Removal of existing uses and development of 111 residential units (114,700 sf) and 1,900 sf of retail uses	April 2017
75	SF Planning	645 Texas Street	Development of 94 residential units	April 2016
76	SF Planning	650 Illinois Street	Removal of 15,349 sf of existing uses and development of 97 residential units (71,225 sf)	October 2016
77	SF Planning	777 Tennessee Street	Removal of 15,500 sf of light industrial uses and development of 59 residential units	Unknown
78	SF Planning	815 Tennessee Street	Removal of 32,000 sf at 815–825 Tennessee (retaining the brick façade) and development of 88 residential units	October 2016

Table 4-2: Cumulative Projects in the Vicinity of the Potential New SFVAMC Mission Bay Campus

Project No.	Agency Jurisdiction	Project Name	Approved or Proposed Uses	Completion Date
79	SF Planning	851 Tennessee Street	Development of a 2,790-sf new school	Unknown
80	SF Planning	888 Tennessee Street	Removal of 38,520 sf existing uses and development of 110 residential units, 2,155 sf of retail uses, and 10,073 sf of courtyard open space	April 2017
81	SFPUC	Central Bayside System Improvement Project (potential alignments between Channel Pump Station and Southeast Treatment Plant)	Construction of a tunnel to provide conveyance and storage of wastewater flows from the Channel Pump Station. Development of a range of potential green and grey infrastructure improvements	2023
82	SFPUC	Emergency Firefighting Water System (also known as Auxiliary Water Supply System or AWSS) Seismic Upgrades	Seismic upgrade of City's Emergency Firefighting Water Supply System	2034–2046, depending on the alternative chosen
83	SFPUC	Central Subway Sewer Improvements	Sewer improvements (rehabilitation and installation) on Fourth Street from Bryant to King Street	December 2015
84	SFPUC	Wastewater Enterprise Renewal and Replacement Program	Correction of deficiencies in collection system and treatment facilities throughout the City, involving sewer repair and replacement	Ongoing
85	SFPUC	San Francisco Eastside Recycled Water Project	Construction of a pipeline associated with delivery of 2 mgd of recycled water for nonpotable uses on the east side of the City, including Mission Bay. Potential treatment facility sites have been identified at Seawall Lot 337, Pier 70, as well as 3 additional potential sites south of Cesar Chavez Street	December 2021 (project is currently paused)
86	Transbay Joint Powers Authority	Transbay Transit Center/Caltrain Downtown Extension Project	Extension of Caltrain 1.3 miles from Fourth and King Streets to new Transit Center with accommodations for future high-speed rail service	2019; however, on hold because of significant funding gap
	Total SFRPD, SF Port, SF Planning, and SFPUC space within Alternative 3 Mission Bay area		*Net Total of 6,085,382 sf of commercial (retail and industrial), 14,938 residential units, 4,538,070 sf of medical (hospital and research), 86.23 acres of park/open space/recreation, 22,762,546 sf of office, 500-room hotel, 85,000 sf of hotel/visitor/exhibition, 163 parking spaces, and two public schools/public library/fire and police stations/other community facilities*	
	Total Space within Alternative 3 Mission Bay Area		**Net Total of 6,085,382 sf of commercial (retail and industrial), 14,938 residential units, 9,359,440 sf of medical (hospital and research), 86.23 acres of park/open space/recreation, 22,762,546 sf of office, 500-room hotel, 85,000 sf of hotel/visitor/exhibition, 8,024 parking spaces, and two public schools/public library/fire and police stations/other community facilities**	

Table 4-2: Cumulative Projects in the Vicinity of the Potential New SFVAMC Mission Bay Campus

Project No.	Agency Jurisdiction	Project Name	Approved or Proposed Uses	Completion Date

Note: AWSS = Auxiliary Water Supply System; gsf = gross square feet; mgd = million gallons per day; sf = square feet; SF Planning = San Francisco Planning Department; SF Port = Port of San Francisco; SFPUC = San Francisco Public Utilities Commission;
SF Redevelopment = San Francisco Redevelopment Agency; SFRPD = San Francisco Recreation and Park Department;
UC = University of California; UCSF = University of California, San Francisco

Sources: Reilly, pers. comm., 2011; Wong, pers. comm., 2011; Beyer, pers. comm., 2011; Beaupre, pers. comm., 2011; Olsen, pers. comms., 2011 and 2014; SF Planning, 2014; Pearson, pers. comm., 2014; SF Port, Undated; SFPUC, 2012, 2013, 2014c, and Undated; TA, 2015

4.3 CUMULATIVE IMPACT ANALYSIS

See Table 4-3 for the cumulative impact discussions for the EIS Alternatives. The table also identifies those other cumulative past, present, and future cumulative projects from Tables 4-1 and 4-2 that are relevant to the assessments. Following Table 4-3 is a detailed cumulative impact analysis for resource areas that have the potential for an adverse cumulative impact.

It should be noted that the discussion of Alternative 3 cumulative impacts in Table 4-3 includes only the long-term projects at the potential new SFVAMC Mission Bay Campus. The analysis of impacts of Alternative 3 short-term projects at the existing SFVAMC Fort Miley Campus is the same as Alternative 1 short-term projects in Table 4-3.

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Table 4-3: Cumulative Environmental Impacts

Impact Area	Other Past, Present, and Future Projects in Cumulative Study Area for Alternatives 1 and 2 (see Table 4-1 for details) [4]		Cumulative Impact of Alternatives 1 and 2	Other Past, Present, and Future Projects in Cumulative Study Area for Alternative 3 (see Table 4-2 for details)		Cumulative Impact of Alternative 3
	Past Actions	Present and Future Actions		Past Actions	Present and Future Actions	
AESTHETICS						
Construction: Views and Visual Character	4, 12, and 14	4 and 12	**Minor cumulative impact.** Construction activity and the use of construction materials could be required for Alternative 1 or 2 and the identified cumulative projects at the same time. However, dense vegetation exists within the GGNRA and visually screens much of the GGNRA from outside view locations. Similarly, portions of the existing SFVAMC Fort Miley Campus are screened by vegetation on GGNRA lands and/or by existing buildings on the Campus. Because views of GGNRA land and the Campus from any one location are relatively limited, construction activity and the use of construction materials for Alternative 1 or 2 would not be cumulatively visually intrusive, even if construction were to occur concurrently with other cumulative projects. Therefore, this would be a minor cumulative impact.	N/A	1–5, 8, 21–25, 29, 60, 81–82, and 84–86	**Minor cumulative impact.** The occurrence of construction activity and presence of construction materials associated with Alternative 3 could change views of and from the potential new SFVAMC Mission Bay Campus and could change the visual character of the Mission Bay area. However, it is reasonable to assume that the aesthetic effect that would result from implementing Alternative 3 would not be cumulatively considerable, even though the exact location of a site in Mission Bay has not been identified and no project plans are available. Based on the overall amount of development anticipated to occur in the Mission Bay area over the next two decades, construction sites and construction activities will continue to be part of the visual character of the Mission Bay area. Therefore, this would be a minor cumulative impact.
Construction: Light	12	12	**Minor cumulative impact.** Because construction activity would occur during daylight hours, lighting of construction areas during construction activities is not anticipated. However, the use of some low-level nighttime security lighting in construction areas would be necessary. This lighting would be limited to facility footprints that are currently lit at night and/or experience light spillage from nearby lighting sources. It is not anticipated that lighting for construction under Alternative 1 or 2 would be visually intrusive, even when considering other projects in the area. Therefore, this would be a minor cumulative impact.	7, 9–17, 18, 27–28, 30–34, 36–40, 47–48, and 64	1–8, 17, 19–26, 29, 35, 41–46, 49–63, and 65–86	**Minor cumulative impact.** Based on the substantial amount of development anticipated to occur in the Mission Bay area in the next three decades, it is reasonable to assume that construction activity for Alternative 3 has the potential to occur at the same time as other construction projects in the Mission Bay area. It is anticipated that construction activity would occur during daylight hours; therefore, lighting of construction areas during construction activities is not anticipated. However, the use of some low-level nighttime security lighting in construction areas may be necessary. It is not anticipated that lighting for construction of Alternative 3 would be visually intrusive, even when considering other projects in the Mission Bay area. Therefore, this would be a minor cumulative impact.

[4] Ongoing projects are listed as both past and present/future cumulative projects where applicable.

Table 4-3: Cumulative Environmental Impacts

Impact Area	Other Past, Present, and Future Projects in Cumulative Study Area for Alternatives 1 and 2 (see Table 4-1 for details) [4]		Cumulative Impact of Alternatives 1 and 2	Other Past, Present, and Future Projects in Cumulative Study Area for Alternative 3 (see Table 4-2 for details)		Cumulative Impact of Alternative 3
	Past Actions	Present and Future Actions		Past Actions	Present and Future Actions	
Operation: Views and Visual Character	4	4	**Minor cumulative impact.** Dense vegetation exists within the GGNRA and visually screens much of the GGNRA from outside view locations. Similarly, portions of the existing SFVAMC Fort Miley Campus are screened by vegetation on GGNRA lands and/or by existing buildings on the Campus. Because views of GGNRA land and the existing Campus from any one location are relatively limited, the new permanent structures associated with this Alternative would not be visually intrusive when combined with cumulative projects in the same viewshed, and the visual character of the area would not change substantially. Therefore, this would be a minor cumulative impact.	N/A	1–5, 8, 21–25, 29, 60, 81–82, and 84–86	**Minor cumulative impact.** Implementing Alternative 3 could change the visual character of the Mission Bay area, and could change the views of and from the site in the Mission Bay area that may be developed as part of a new SFVAMC Mission Bay Campus. It is not possible to definitively determine the level of cumulative impact that would result from this Alternative because the exact location of the project site and a detailed project design are unknown at this time. Although SFVAMC intends to locate the potential new SFVAMC Mission Bay Campus on federal lands, it must follow San Francisco Planning Code requirements related to zoning, height, and bulk restrictions when preparing the site. However, based on the substantial amount of development anticipated to occur in the Mission Bay area over the next two decades, it is reasonable to assume that the change in visual character that would result from new SFVAMC buildings in the Mission Bay area would not be cumulatively considerable. Therefore, this would be a minor cumulative impact.
Operation: Light and Glare	4	4	**Minor cumulative impact.** The amount of light and glare at the existing SFVAMC Fort Miley Campus may increase with implementation of Alternative 1 or 2, and it is possible that certain activities for the identified cumulative projects would result in increased lighting levels adjacent to the GGNRA. Cumulative Project 12 could result in additional glare, because it would involve installing solar panels on tops of existing SFVAMC buildings; however, such rooftop installation would limit the amount of glare that would be seen by people on Campus and in the nearby GGNRA and areas of San Francisco. In addition, the amount of new light and glare associated with Alternative 1 or 2 would not be cumulatively substantial. Therefore, this would be a minor cumulative impact.	7, 9–18, 27–28, 30–34, 36–40, 47–48, and 64	1–8, 17, 19–26, 29, 35, 41–46, 49–63, and 65–86	**Minor cumulative impact.** New sources of light and glare would likely result from SFVAMC development under Alternative 3, but it is not possible to definitively determine the level of cumulative impact, because the exact location of the project site and a detailed project design are unknown at this time. Based on the substantial amount of development anticipated to occur in the Mission Bay area over the next three decades, it is reasonable to assume that the light and glare contribution of this Alternative would not be cumulatively considerable. Therefore, this would be a minor cumulative impact.

Table 4-3: Cumulative Environmental Impacts

Impact Area	Other Past, Present, and Future Projects in Cumulative Study Area for Alternatives 1 and 2 (see Table 4-1 for details) [4]		Cumulative Impact of Alternatives 1 and 2	Other Past, Present, and Future Projects in Cumulative Study Area for Alternative 3 (see Table 4-2 for details)		Cumulative Impact of Alternative 3
	Past Actions	Present and Future Actions		Past Actions	Present and Future Actions	
AIR QUALITY						
Construction: Criteria Air Pollutants	4 and 10	4, 7, and 9	**Potential for significant cumulative impact.** Retained for further, or more detailed, analysis of potential cumulative impacts. See "Cumulative Impact Analysis—Air Quality (Alternatives 1 and 2)."	7, 17–18, 20–21, 27–28, 30–34, 36–40, 47–48, and 64	1–8, 17, 20–21, 26, 35, 41–46, 49–63, and 65–86	**Potential for significant cumulative impact.** Retained for further, or more detailed, analysis of potential cumulative impacts. See "Cumulative Impact Analysis—Air Quality (Alternative 3)."
Construction: Localized TAC and PM Emissions	1, 4, and 11–15	4 and 12	**Potential for significant cumulative impact.** Retained for further, or more detailed, analysis of potential cumulative impacts. See "Cumulative Impact Analysis—Air Quality (Alternatives 1 and 2)."	7, 17–18, 27–28, 30–34, 36–40, 47–48, and 64	1–8, 17, 20–21, 26, 35, 41–46, 49–63, and 65–86	**Potential for significant cumulative impact.** Retained for further, or more detailed, analysis of potential cumulative impacts. See "Cumulative Impact Analysis—Air Quality (Alternative 3)."
Construction: Odors	4	4	**Potential for significant cumulative impact.** Retained for further, or more detailed, analysis of potential cumulative impacts. See "Cumulative Impact Analysis—Air Quality (Alternatives 1 and 2)."	7, 9–18, 27–28, 30–34, 36–40, 47–48, and 64	1–8, 17, 19–26, 29, 35, 41–46, 49–63, and 65–86	**Potential for significant cumulative impact.** Retained for further, or more detailed, analysis of potential cumulative impacts. See "Cumulative Impact Analysis—Air Quality (Alternative 3)."
Operation: Criteria Air Pollutants	2, 4–5, 8, 10, and 12	4, 7, 9, and 12	**Potential for significant cumulative impact.** Retained for further, or more detailed, analysis of potential cumulative impacts. See "Cumulative Impact Analysis—Air Quality (Alternatives 1 and 2)."	7, 9–18, 27–28, 30–34, 36–40, 47–48, and 64	1–8, 17, 19–26, 29, 35, 41–46, 49–63, and 65–86	**Potential for significant cumulative impact.** Retained for further, or more detailed, analysis of potential cumulative impacts. See "Cumulative Impact Analysis—Air Quality (Alternatives 1 and 2)."
Operation: Localized CO Emissions	1, 2, 4–5, 8, 10–15, and 19	4, 6–7, 9, 12, and 16–19	**Potential for significant cumulative impact.** Retained for further, or more detailed, analysis of potential cumulative impacts. See "Cumulative Impact Analysis—Air Quality (Alternatives 1 and 2)."	7, 9–18, 27–28, 30–34, 36–40, 47–48, and 64	1–8, 17, 19–26, 29, 35, 41–46, 49–63, and 65–86	**Potential for significant cumulative impact.** Retained for further, or more detailed, analysis of potential cumulative impacts. See "Cumulative Impact Analysis—Air Quality (Alternatives 1 and 2)."
Operation: Localized TAC and PM Emissions	1, 4, and 11–15	4 and 12	**Potential for significant cumulative impact.** Retained for further, or more detailed, analysis of potential cumulative impacts. See "Cumulative Impact Analysis—Air Quality (Alternatives 1 and 2)."	7, 17–18, 27–28, 30–34, 36–40, 47–48, and 64	1–8, 17, 20–21, 26, 35, 41–46, 49–63, and 65–86	**Potential for significant cumulative impact.** Retained for further, or more detailed, analysis of potential cumulative impacts. See "Cumulative Impact Analysis—Air Quality (Alternatives 1 and 2)."
Operation: Odors	1, 3–4, and 10–12	4, 9, and 12	**Potential for significant cumulative impact.** Retained for further, or more detailed, analysis of potential cumulative impacts. See "Cumulative Impact Analysis—Air Quality (Alternatives 1 and 2)."	7, 9–18, 27–28, and 30–34, 36–40, 47–48, and 64	1–8, 17, 19–26, 29, 35, 41–46, 49–63, and 65–86	**Potential for significant cumulative impact.** Retained for further, or more detailed, analysis of potential cumulative impacts. See "Cumulative Impact Analysis—Air Quality (Alternative 3)."

Table 4-3: Cumulative Environmental Impacts

Impact Area	Other Past, Present, and Future Projects in Cumulative Study Area for Alternatives 1 and 2 (see Table 4-1 for details) [4]		Cumulative Impact of Alternatives 1 and 2	Other Past, Present, and Future Projects in Cumulative Study Area for Alternative 3 (see Table 4-2 for details)		Cumulative Impact of Alternative 3
	Past Actions	Present and Future Actions		Past Actions	Present and Future Actions	
COMMUNITY SERVICES						
Construction: Fire Protection Services	4 and 10	4 and 7	**Minor cumulative impact.** Construction activities for Alternative 1 or 2 projects, in combination with the identified cumulative projects, could result in an incremental increase in demand for fire services. However, because of the location and scope of identified projects, any increase in demand for fire protection services would be minimal. Under Alternative 1 or 2, construction-related impacts including street closures or temporary obstruction would be subject to National Fire Protection Association emergency access standards, requirements, and review (with consideration of the San Francisco Fire Code), which would further reduce construction-related effects on fire access and response times. In addition, all identified cumulative projects would be required to comply with applicable fire and building codes. It is assumed that all cumulative projects would be designed and constructed in compliance with all applicable building and fire codes, and that fire system capacity would be analyzed as part of the design process of any new buildings, building upgrades, or site utility improvements. Therefore, cumulative impacts related to fire protection services during the construction phase would be minor.	7, 9–18, 27–28, 30–34, 36–40, 47–48, and 64	1–8, 17, 19–26, 29, 35, 41–46, 49–63, and 65–86	**Minor cumulative impact.** The level of development for Alternative 3 projects, together with the projects listed in Table 4-2 has the potential to substantially affect demand for fire protection services and fire and EMS access and response times, especially if multiple projects were constructed close to one another at the same time. It is assumed that all cumulative projects would be designed and constructed in compliance with all applicable building and fire codes, and that fire system capacity would be analyzed as part of the design process of any new buildings, building upgrades, or site utility improvements. As a result, cumulative fire protection impacts would be minor, but would require further evaluation at the time that a specific location has been selected for a potential new SFVAMC Mission Bay Campus.
Construction: Fire Hazards	4	4, 7, and 16–17	**Minor cumulative impact.** Construction activities for Alternative 1 or 2 projects, in combination with the identified cumulative projects, which are located adjacent to or near a wildland urban interface area, could result in an incremental increase in the risk of fire. Under Alternative 1 or 2, certain construction equipment, materials, and activities, such as welding may increase fire risk at the existing SFVAMC Fort Miley Campus. To minimize fire risk, the construction contractor would be required to prepare a fire safety plan in accordance with VA Specification Section 010000, "General Requirements," and 29 Code of Federal Regulations 1926, and conduct safety briefings in accordance with OSHA requirements. In addition, all identified cumulative projects would be required to comply with applicable fire safety	N/A	N/A	**Minor cumulative impact.** The Mission Bay area is designated as an urbanized area and, therefore, is not considered susceptible to wildland fires. Because the Mission Bay area is not located at a wildland urban interface area or adjacent to forested land, no cumulative impact related to fire hazards would occur during construction.

Table 4-3: Cumulative Environmental Impacts

Impact Area	Other Past, Present, and Future Projects in Cumulative Study Area for Alternatives 1 and 2 (see Table 4-1 for details) [4]		Cumulative Impact of Alternatives 1 and 2	Other Past, Present, and Future Projects in Cumulative Study Area for Alternative 3 (see Table 4-2 for details)		Cumulative Impact of Alternative 3
	Past Actions	Present and Future Actions		Past Actions	Present and Future Actions	
			requirements. Therefore, cumulative impacts related to fire hazards during the construction phase would be minor.			
Construction: Law Enforcement Services	4 and 10	4 and 9	**Minor cumulative impact.** Construction of Alternative 1 or 2 projects, in conjunction with the identified cumulative projects would not place undue demand on any one police provider, given the multiple law enforcement jurisdictions (SFPD, NPS, and VA) that are represented by the identified projects. The existing SFVAMC Fort Miley Campus is under exclusive federal jurisdiction and police protection service is provided by the VA Police force. The identified projects that would occur within NPS lands are under the jurisdiction of two NPS law enforcement divisions the U.S. Park Police and the Law Enforcement Rangers.[5] The remaining three projects would be under the jurisdiction of the local SFPD. Therefore, any increase in demand for police protection services at the Campus would be accommodated by the VA Police force and would not affect the NPS law enforcement divisions or SFPD. Because any increase in demand would be absorbed across three separate police agencies (VA Police, NPS law enforcement, and SFPD), cumulative impacts related to police protection services during the construction phase would be minor.	7, 9–18, 27–28, 30–34, 36–40, 47–48, and 64	1–8, 17, 19–26, 29, 35, 41–46, 49–63, and 65–86	**Minor cumulative impact.** Long-term development under Alternative 3 would be under the jurisdiction of VA Police.[6] It is anticipated that VA Police would be responsible for providing law enforcement and security services to the potential new SFVAMC Mission Bay Campus during construction of Alternative 3 long-term projects. Because the 86 cumulative projects listed in Table 4-2 are under the jurisdiction of the local SFPD, a minor cumulative construction-related police protection impact would occur.
Construction: Parks and Recreation	2–5, 8, and 10	4, 7, 9, and 16–19	**Minor cumulative impact.** The short-term construction impacts that would result from implementing Alternative 1 or 2 were considered together with the effects of identified cumulative projects. Four of the cumulative projects would occur on NPS lands near the existing SFVAMC Fort Miley Campus. These projects mostly involve enhancement and restoration efforts. Adverse impacts of construction activities under Alternative 1 or 2 would involve primarily noise and potential temporary detours of Fort Miley Campus access roads. These impacts are anticipated to have little or no	7, 9–18, 27–28, 30–34, 36–40, 47–48, and 64	1–8, 17, 19–26, 29, 35, 41–46, 49–63, and 65–86	**Minor cumulative impact.** The impact of constructing Alternative 3 long-term projects on recreation was considered together with the effects of the identified cumulative projects. The cumulative construction impact of Alternative 3 on recreation is anticipated to be minor; however, without knowing where construction under Alternative 3 would occur, it is not possible to come to a definitive conclusion. A more detailed analysis would be required once a location has been selected.

[5] The GGNRA is served by independent law enforcement divisions within NPS—U.S. Park Police and Law Enforcement Rangers. Patrol operations cover all GGNRA lands (GGNRA, 2011:282).

[6] Although property owned by VA is considered federal property and outside the jurisdiction of SFPD, SFPD may provide backup support in the event of an emergency.

Table 4-3: Cumulative Environmental Impacts

Impact Area	Other Past, Present, and Future Projects in Cumulative Study Area for Alternatives 1 and 2 (see Table 4-1 for details) [4]		Cumulative Impact of Alternatives 1 and 2	Other Past, Present, and Future Projects in Cumulative Study Area for Alternative 3 (see Table 4-2 for details)		Cumulative Impact of Alternative 3
	Past Actions	Present and Future Actions		Past Actions	Present and Future Actions	
			effect on park accessibility and usage. Cumulative impacts related to recreation would be minor during construction.			
Operation: Fire Protection Services	1, 2, 4–5, and 8–9	4, 7, 9, and 18–19	**Minor cumulative impact.** Implementing Alternative 1 or 2 in combination with the identified cumulative projects could result in an incremental increase in demand for fire services. Implementing Alternative 1 or 2 could result in an incremental increase in demand for fire services due to increases in daily population at the existing SFVAMC Fort Miley Campus. However, San Francisco Fire Department personnel have indicated that Alternative 1 or 2 would not have a substantial effect on their services. The existing Campus is currently served by Station 34, and it is anticipated that some of the other cumulative projects would also be served by Fire Station 34. However, related projects are anticipated to generate a low net total of 88residential. Therefore, implementing Alternative 1 or 2 in combination with identified cumulative projects is not anticipated to create a demand for fire protection services beyond the San Francisco Fire Department's ability to maintain acceptable service ratios, response times, or other performance objectives. Furthermore, these services are subject to an annual budgeting process during which Citywide priorities are established and service levels are monitored, allowing for adjustments where needed. In addition, there is sufficient capacity in the existing SFVAMC Fort Miley Campus's existing fire flow system to meet Fire Code requirements; however, the SFVAMC LRDP recommends conducting a more thorough analysis of system capacity as a part of the design of any new buildings, building upgrades, or site utility improvements. With the SFVAMC Fort Miley Campus under Alternative 1 or 2 and the identified cumulative projects adhering to all applicable national and local fire regulations, operational cumulative impacts related to fire protection services would be minor.	7, 9–18, 27–28, 30–34, 36–40, 47–48, and 64	1–8, 17, 19–26, 29, 35, 41–46, 49–63, and 65–86	**Minor cumulative impact.** Without knowing where Alternative 3 long-term development would occur, it is not possible to determine which cumulative projects listed in Table 4-2 should be evaluated in conjunction with Alternative 3 for cumulative fire protection impacts. The square footage that would be developed in the Mission Bay area under Alternative 3 (170,000 square feet), together with the 86 cumulative projects listed in Table 4-2, has the potential to substantially affect demand for fire protection services, fire and EMS response times, emergency access, and fire flow as compared to the anticipated demand. However, new development will be required to comply with requirements for fire protection and impacts would be anticipated to be minor. However, a specific location and design for a new SFVAMC campus in the Mission Bay area is currently unknown, further quantitative analysis would be required once a specific location and site plan for a new SFVAMC campus in the Mission Bay area is identified.

Table 4-3: Cumulative Environmental Impacts

Impact Area	Other Past, Present, and Future Projects in Cumulative Study Area for Alternatives 1 and 2 (see Table 4-1 for details) [4]		Cumulative Impact of Alternatives 1 and 2	Other Past, Present, and Future Projects in Cumulative Study Area for Alternative 3 (see Table 4-2 for details)		Cumulative Impact of Alternative 3
	Past Actions	Present and Future Actions		Past Actions	Present and Future Actions	
Operation: Fire Hazards	N/A	18–19	**Minor cumulative impact.** Implementing Alternative 1 or 2 in conjunction with the identified cumulative projects, which are located adjacent or near the wildland urban interface area, would result in an incremental increase in the risk of fire. Implementing Mitigation Measure GHG-1 identified in Section 3.7, "Greenhouse Gas Emissions and Climate Change," would reduce the potentially adverse wildfire risk of Alternative 1 or 2. Alternative 1 or 2 would not make a cumulatively considerable contribution to a cumulative construction impact. Therefore, cumulative impacts related to fire hazards would be minor.	N/A	N/A	**Minor cumulative impact.** None of the projects listed in Table 4-2 are located at a wildland urban interface area or adjacent to forested land. Therefore, no cumulative impact related to fire hazards would occur during the operational phase.
Operation: Law Enforcement Services	1–2, 4–5, and 8–9	4, 7, and 9	**Minor cumulative impact.** Implementing Alternative 1 or 2, in conjunction with the identified cumulative projects, would not place undue demand on any one police provider, for the same reasons as described above. Therefore, cumulative impacts related to police protection services during the operational phase would be minor.	7, 9–18, 27–28, 30–34, 36–40, 47–48, and 64	1–8, 17, 19–26, 29, 35, 41–46, 49–63, and 65–86	**Minor cumulative impact.** Long-term development under Alternative 3 would be under the jurisdiction of VA Police. It is anticipated that VA Police would be responsible for providing law enforcement and security services at the potential new SFVAMC Mission Bay Campus during the operational phase of Alternative 3 long-term projects. Because the cumulative projects listed in Table 4-2 are under the jurisdiction of the local SFPD or University of California Police, a minor cumulative operational police protection impact would occur.
Operation: Parks and Recreation	1–4	4	**Beneficial cumulative impact.** Implementing Alternative 1 or 2 would result in an increase in personnel, patients, and visitors at the SFVAMC Fort Miley Campus. This increase would occur gradually over a 20-year period. Cumulative projects listed in Table 4-1 are estimated to introduce a net total of 88 residential units. Introducing 88 residential units is not anticipated to substantially affect Citywide park demand. Four of the 19 projects listed in Table 4-1 involve park improvements within the NPS system. In particular, Cumulative Project 4 (GGNRA General Management Plan) aims to better connect sites to their surroundings, including Lands End and the existing SFVAMC Fort Miley Campus. The GGNRA General Management Plan, along with the other NPS projects included in Table 4-1, is anticipated to beneficially affect park accessibility and overall enjoyment of the park system. Thus, there would be a beneficial	7, 9–18, 27–28, 30–34, 36–40, 47–48, and 64	1–8, 17, 19–26, 29, 35, 41–46, 49–63, and 65–86	**Minor cumulative impact.** Implementing Alternative 3 would introduce a new daily population to an as-yet-undetermined site in the Mission Bay area. Medical personnel and, to a lesser extent, patients and visitors associated with Alternative 3 projects might use surrounding parks, open space, and recreational facilities. Implementing the cumulative projects listed in Table 4-2 is estimated to introduce a net total of 14,938 residential units. Introducing 14,938 residential units has the potential to substantially affect demand for park and recreational resources in the Mission Bay neighborhood. However, new development will be required to comply with requirements for recreation and impacts would be anticipated to be minor. Further evaluation would be required once a specific site for a potential new SFVAMC Mission Bay Campus is identified

Table 4-3: Cumulative Environmental Impacts

Impact Area	Other Past, Present, and Future Projects in Cumulative Study Area for Alternatives 1 and 2 (see Table 4-1 for details) [4]		Cumulative Impact of Alternatives 1 and 2	Other Past, Present, and Future Projects in Cumulative Study Area for Alternative 3 (see Table 4-2 for details)		Cumulative Impact of Alternative 3
	Past Actions	Present and Future Actions		Past Actions	Present and Future Actions	
			cumulative impact related to recreation during operation.			
CULTURAL RESOURCES						
Construction: Archaeological Resources and Human Remains	4 and 11	4	**Potential for significant cumulative impact.** Retained for further, or more detailed, analysis of potential cumulative impacts. See "Cumulative Impact Analysis—Cultural Resources (Alternatives 1 and 2)."	4 and 11	4	**Potential for significant cumulative impact.** Retained for further, or more detailed, analysis of potential cumulative impacts. See "Cumulative Impact Analysis—Cultural Resources (Alternative 3)."
Construction: Historic Properties	1–4 and 11–15	4 and 12	**Potential for significant cumulative impact.** Retained for further, or more detailed, analysis of potential cumulative impacts. See "Cumulative Impact Analysis—Cultural Resources (Alternatives 1 and 2)."	1–4 and 11–15	4 and 12	**Potential for significant cumulative impact.** Retained for further, or more detailed, analysis of potential cumulative impacts. See "Cumulative Impact Analysis—Cultural Resources (Alternative 3)."
Operation: Archaeological Resources	N/A	N/A	**No cumulative impact.** None of the identified cumulative projects have the potential to disturb archaeological sites during the operational phase, because it is assumed that no ground-disturbing activities would occur after construction. Therefore, no operational cumulative impacts on archaeological resources would occur.	N/A	N/A	**Potential for significant cumulative impact.** Retained for further, or more detailed, analysis of potential cumulative impacts. See "Cumulative Impact Analysis—Cultural Resources (Alternative 3)."
Operation: Historic Resources	N/A	N/A	**No cumulative impact.** None of the identified cumulative projects would be anticipated to alter historic structures during the operational phase, because it is assumed that no potential exists for alterations to historic structures after completion of the construction phase. Therefore, no operational cumulative impacts on historic resources would occur.	N/A	N/A	**Minor cumulative impact.**

Table 4-3: Cumulative Environmental Impacts

Impact Area	Other Past, Present, and Future Projects in Cumulative Study Area for Alternatives 1 and 2 (see Table 4-1 for details) [4]		Cumulative Impact of Alternatives 1 and 2	Other Past, Present, and Future Projects in Cumulative Study Area for Alternative 3 (see Table 4-2 for details)		Cumulative Impact of Alternative 3
	Past Actions	Present and Future Actions		Past Actions	Present and Future Actions	
FLOODPLAINS, WETLANDS, AND COASTAL MANAGEMENT						
Short-Term Project Impacts						
Construction: Wetlands Alteration	N/A	N/A	**No cumulative impact.** Because there are no wetlands or waters of the United States on or near the existing SFVAMC Fort Miley Campus that could be affected by implementing Alternative 1 or 2 short-term projects, no construction-related cumulative wetlands alteration impact would occur.	1–6, 7–26, and 28–86	1–26 and 28–86	**Minor cumulative impact.** The identified cumulative projects in the Mission Bay area watershed lands have the potential to affect wetlands indirectly by causing erosion and sedimentation, if the projects are located adjacent to or down-gradient from wetlands, or directly by causing the loss of wetlands if located within wetland areas. The proponents for the identified cumulative projects, as well as SFVAMC when implementing Alternative 3 long-term projects, would be required to comply with the federal CWA, the NPDES, the San Francisco Construction site Runoff Control Ordinance, and Article 4.1 of the San Francisco Public Works Code, which specifies implementation of a SWPPP with BMPs for construction activities. In addition, SFVAMC would be required to comply with erosion and sediment controls outlined in VA Specification Section 015719 when implementing Alternative 3. These requirements include such measures as setting work-area limits, protecting the landscape, reducing exposure of unprotected soils, protecting disturbed areas, installing erosion and sediment control devices, implementing hazardous-material spill prevention measures, managing spoil areas, and following good-housekeeping procedures. This would result in a minor cumulative impact related to indirect alteration of wetlands as a result of erosion or sedimentation from construction activities. However, because a final location has not been determined for Alternative 3, an adverse cumulative impact could occur if the potential new SFVAMC Mission Bay Campus were located where a loss of jurisdictional wetlands would result. Should wetlands appear to be present on a proposed site for Alternative 3, a qualified wetland biologist would conduct a wetlands assessment as part of a future project-level NEPA

Table 4-3: Cumulative Environmental Impacts

Impact Area	Other Past, Present, and Future Projects in Cumulative Study Area for Alternatives 1 and 2 (see Table 4-1 for details) [4]		Cumulative Impact of Alternatives 1 and 2	Other Past, Present, and Future Projects in Cumulative Study Area for Alternative 3 (see Table 4-2 for details)		Cumulative Impact of Alternative 3
	Past Actions	Present and Future Actions		Past Actions	Present and Future Actions	
						review, in compliance with Executive Order 11990, to determine the quantity and type of wetlands that would be avoided or mitigated. A qualified biologist would develop a conceptual wetland mitigation plan. The plan would include appropriate wetland replacement ratios as determined by the U.S. Army Corps of Engineers, U.S. Fish and Wildlife Service, and San Francisco Bay Conservation and Development Commission. Other cumulative projects would require compliance with Executive Order 11990 and similar wetlands mitigation measures. Thus, with implementation of the above regulatory requirements, Alternative 3 would result in a minor cumulative impact related to wetlands.
Construction: Degradation of Coastal Resources	1–2, 4–5, 8, 10–15, and 19	4, 6–7, 9, 12, and 16–19	**Minor cumulative impact.** Implementation of the identified cumulative projects within the GGNRA and outer Richmond District watershed lands in conjunction with Alternative 1 or 2 has the potential to affect the water quality of coastal resources by causing erosion and sedimentation, including as a result of dewatering discharges during construction. The proponents of the identified cumulative projects, as well as SFVAMC when implementing Alternative 1, must comply with the federal CWA, the NPDES, the San Francisco Construction site Runoff Control Ordinance, and Article 4.1 of the San Francisco Public Works Code, which specifies implementation of a SWPPP with BMPs for construction activities. In addition, SFVAMC would be required to comply with erosion and sediment controls outlined in VA Specification Section 015719 when implementing Alternative 1 or 2. All these aforementioned regulations are designed to protect regional water quality and incorporate measures to protect beneficial uses of water bodies within the relevant watershed lands and surrounding drainages. Therefore, construction-related cumulative impacts on coastal resources would be minor.	1–26 and 28–86	1–26 and 28–86	**Minor cumulative impact.** The proponents for the identified cumulative projects in the Mission Bay area watershed lands would be required to comply with the federal CWA, the NPDES, the San Francisco Construction site Runoff Control Ordinance, and Article 4.1 of the San Francisco Public Works Code, which specifies implementation of a SWPPP with BMPs for construction activities. In addition, SFVAMC would be required to comply with erosion and sediment controls outlined in VA Specification Section 015719 when implementing Alternative 3. Implementing all these aforementioned regulatory requirements would result in a minor cumulative impact related to degradation of coastal resources as a result of construction activities.

Table 4-3: Cumulative Environmental Impacts

Impact Area	Other Past, Present, and Future Projects in Cumulative Study Area for Alternatives 1 and 2 (see Table 4-1 for details) [4]		Cumulative Impact of Alternatives 1 and 2	Other Past, Present, and Future Projects in Cumulative Study Area for Alternative 3 (see Table 4-2 for details)		Cumulative Impact of Alternative 3
	Past Actions	Present and Future Actions		Past Actions	Present and Future Actions	
Operation: Flooding	N/A	N/A	**No cumulative impact.** The existing SFVAMC Fort Miley Campus is not situated within a designated floodplain. Therefore, no cumulative flooding impact would result from operational location within a floodplain.	1–26 and 28–86	1–26 and 28–86	**Minor cumulative impact.** Proponents for the identified cumulative projects located within a floodplain would be required to comply with the San Francisco Floodplain Management Ordinance. Ordinance requirements include locating the first floor of structures above the floodplain or flood proofing the structures. Compliance with the Floodplain Management Ordinance would be required. Therefore, no cumulative flooding impact would result from operational location within a floodplain.
Operation: Degradation of Wetlands and Coastal Resources	N/A	N/A	**Minor cumulative impact.** Long-term operations of identified cumulative projects would cause a further reduction in permeable acreage and changes in the intensity and types of land use. Thus, these projects have some potential to exceed the capacity of existing and planned sewers, degrade the quality of stormwater discharged to those sewers, and contribute to the frequency or severity of CSO events that discharge to the Pacific Ocean. However, individual cumulative projects disturbing 5,000 square feet or more of the ground surface would be required to comply with the *San Francisco Stormwater Design Guidelines.* Because a federal facility would be involved, SFVAMC would be required to comply with Section 438 of the EISA when implementing Alternative 1 or 2. Under the EISA, LID techniques (e.g., bioretention areas, permeable pavements, cisterns/recycling, and green roofs) would be implemented to mimic the predevelopment stormwater runoff conditions by using site design techniques that store, infiltrate, evaporate, and detain runoff. In addition, cumulative projects would be required to comply with Article 4.2 of the San Francisco Public Works Code, which requires that the project proponent submit a stormwater control plan that meets guidelines established by SFPUC. These planning efforts and policies are all designed to protect regional water quality and incorporate measures to protect beneficial uses of water bodies based on overall consideration of past, present, and future conditions in the region. With incorporation of these efforts and policies, the	1–26 and 28–86	1–26 and 28–86	**Minor cumulative impact.** Stormwater from the Mission Bay area, part of the Bayside Drainage, is collected in the combined sewer system and treated at the City's Southeast Water Pollution Control Plant, pursuant to the effluent discharge limitations set by the NPDES permit, before being discharged to San Francisco Bay. If stormwater runoff from the cumulative projects would flow into a separate stormwater system, runoff would have to comply with SFPUC's Stormwater Design Guidelines, which would incorporate LID or other practices to protect water quality. Implementing SFPUC's *San Francisco Sewer System Master Plan* and *Sewer System Improvement Plan* would accommodate the need for additional sewer/stormwater system capacity for planned future development through 2027 by implementing capital improvements. Identified cumulative projects would likely be required to provide on-site treatment and reduce peak runoff from storm events using LID features. Such features would provide improved ground/soil absorption of runoff and control erosion, improve stormwater runoff quality, and minimize the impact of stormwater flows. Proponents for the identified cumulative projects would be required to comply with the *San Francisco Stormwater Design Guidelines* and Article 4.2 of the San Francisco Public Works Code. As a result of these planning efforts and policies, operational cumulative impacts, wetlands alteration, impacts on coastal resources from increased frequency or

Table 4-3: Cumulative Environmental Impacts

Impact Area	Other Past, Present, and Future Projects in Cumulative Study Area for Alternatives 1 and 2 (see Table 4-1 for details) [4]		Cumulative Impact of Alternatives 1 and 2	Other Past, Present, and Future Projects in Cumulative Study Area for Alternative 3 (see Table 4-2 for details)		Cumulative Impact of Alternative 3
	Past Actions	Present and Future Actions		Past Actions	Present and Future Actions	
			operational cumulative impact on coastal resources from increased frequency or severity of CSO events and/or downstream flooding, or water quality degradation caused by changes in land use or increases of impervious surfaces, would be minor.			severity of CSO events and/or downstream flooding, or water quality degradation caused by changes in land use or increases in impervious surfaces would be minor.
GEOLOGY, SOILS, AND PALEONTOLOGICAL RESOURCES						
Construction: Geology and Soils	4	4	**Minor cumulative impact.** Construction of Alternative 1 or 2 projects would not contribute to a cumulative impact related to geology and soils while considering the construction of Cumulative Project 4, because both projects would seismically retrofit or construct facilities consistent with seismic standards. Therefore, this would be a minor cumulative impact.	1–26 and 28–86	1–26 and 28–86	**Minor cumulative impact.** The alteration of topography is a site-specific impact and would be considered on a cumulative level only if two or more projects would overlap in a site area. The potential new SFVAMC Mission Bay Campus considered under Alternative 3 would not overlap in site area with any projects listed in Table 4-2.[7] Therefore, Alternative 3 would not result in any cumulative impact related to the alteration of topography. An NPDES general permit for stormwater discharges associated with construction activities (Construction General Permit; State Water Resources Control Board Order No. 99-08-DWQ) would be required for the potential new Campus and all cumulative projects. In addition, the construction of Alternative 3 and cumulative projects that would disturb 1 acre or more and drain to the separate sewer system would require compliance with the Construction General Permit and preparation and implementation of a SWPPP that meets Construction General Permit conditions. The construction of Alternative 3 and cumulative projects that would disturb 5,000 square feet or more would require application for a Construction Site Runoff Control Permit and submittal of an erosion and sediment control plan (ESCP) or copy of the SWPPP. The Alternative 3 long-term projects may contribute incrementally to cumulative erosion impacts; however, adherence to standard construction practices and requirements would limit the magnitude of cumulative

[7] City and County of San Francisco as Successor to SF Redevelopment Projects 1–6, UCSF Projects 7–8 and 17, SFRPD Projects 18 and 20–21, SF Port Projects 26–28, SF Planning Projects 30–80, SFPUC Projects 81–85, and Transbay Joint Powers Authority Project 86.

Table 4-3: Cumulative Environmental Impacts

Impact Area	Other Past, Present, and Future Projects in Cumulative Study Area for Alternatives 1 and 2 (see Table 4-1 for details) [4]		Cumulative Impact of Alternatives 1 and 2	Other Past, Present, and Future Projects in Cumulative Study Area for Alternative 3 (see Table 4-2 for details)		Cumulative Impact of Alternative 3
	Past Actions	Present and Future Actions		Past Actions	Present and Future Actions	
						impacts from these projects and other cumulative projects. This would be a minor cumulative impact.
Construction: Paleontological Resources	1 and 3	N/A	**Minor cumulative impact.** The identified cumulative projects would entail ground-disturbing activities. Fossil discoveries resulting from excavation and earthmoving activities for development are occurring with increasing frequency throughout the state. The value or importance of different fossil groups varies depending on the age and depositional environment of the rock unit that contains the fossils, their rarity, the extent to which they have already been identified and documented, and the ability to recover similar materials under more controlled conditions (such as for a research project). Unique, scientifically important fossil discoveries are relatively rare, and the likelihood of encountering them is based on the type of specific geologic rock formations found underground. These geologic formations vary from location to location. A records search of the University of California Museum of Paleontology's Paleontology Collections database in Berkeley did not identify any previously recorded fossil localities within or immediately adjacent to the existing SFVAMC Fort Miley Campus. Furthermore, the geologic formations that are present underneath the Campus (i.e., artificial fill, dune sand, and the Franciscan Assemblage) either are too young to contain fossils or would not contain unique vertebrate fossils because of the mechanism by which the formation was created. However, the identified cumulative projects would entail ground-disturbing activities that could occur in paleontologically sensitive geologic formations. Thus, the identified cumulative projects could themselves result in adverse impacts on paleontological resources. However, because Alternative 1 or 2 would not result in adverse impacts on unique vertebrate fossils, implementing Alternative 1 or 2 would not result in a cumulatively considerable incremental contribution to an adverse cumulative impact. Therefore, this would be a minor cumulative impact.	1–26 and 28–86	1–26 and 28–86	**Minor cumulative impact.** Construction of the identified cumulative projects would entail varying amounts of ground-disturbing activities. Fossil discoveries resulting from excavation and earthmoving activities for development are occurring with increasing frequency throughout the state. The value or importance of different fossil groups varies depending on the age and depositional environment of the rock unit that contains the fossils, their rarity, the extent to which they have already been identified and documented, and the ability to recover similar materials under more controlled conditions (such as for a research project). Unique, scientifically important fossil discoveries are relatively rare, and the likelihood of encountering them is site-specific and is based on the type of specific geologic rock formations found underground. These geologic formations vary from location to location. A records search of the University of California Museum of Paleontology's Paleontology Collections database in Berkeley did not identify any previously recorded fossil localities in the Mission Bay area. Furthermore, the geologic formations that are present underneath the Mission Bay area of Alternative 3 (Holocene alluvium, artificial fill, dune sand, and the Franciscan Assemblage) either are too young to contain fossils or would not contain unique vertebrate fossils because of the mechanism by which the formation was created. When construction activities encounter unique, scientifically important fossils, the subsequent opportunities for data collection and study generally provide a benefit to the scientific community. Because of the site-specific nature of unique paleontological resources; the low probability that any project would encounter unique, scientifically important fossils; and the benefits that would occur from recovery and further study of those fossils if encountered, development of the Mission Bay area under Alternative 3 would not result

Table 4-3: Cumulative Environmental Impacts

Impact Area	Other Past, Present, and Future Projects in Cumulative Study Area for Alternatives 1 and 2 (see Table 4-1 for details) [4]		Cumulative Impact of Alternatives 1 and 2	Other Past, Present, and Future Projects in Cumulative Study Area for Alternative 3 (see Table 4-2 for details)		Cumulative Impact of Alternative 3
	Past Actions	Present and Future Actions		Past Actions	Present and Future Actions	
						in a cumulatively considerable incremental contribution to an adverse cumulative impact. Therefore, this would be a minor cumulative impact.
Operation: Geology and Soils	3–4	4	**Minor cumulative impact.** Potential effects on geologic and soil conditions are typically considered site specific. Therefore, the geographic context for the analysis of potential cumulative geology and soils impacts under Alternative 1 or 2 consists of the SFVAMC Fort Miley Campus and the immediately adjacent properties. The seismic retrofitting of several existing buildings in combination with the preservation and enhancement of historic structures would result in a beneficial cumulative impact related to the operation of the sites. Operational impacts related to seismically induced ground shaking and failure, landslide, or slope failure are specific to the existing SFVAMC Fort Miley Campus or the GGNRA site (Cumulative Project 4). Consequently, no cumulative operational cumulative impact would result from Alternative 1 or 2 and the impact would be minor.	1–26 and 28–86	1–26 and 28–86	**Minor cumulative impact.** All new VA buildings would be structurally designed and constructed in compliance with VA Seismic Design Requirements H-18-8 and the International Building Code. A geotechnical report for new structures would be prepared before construction and would include recommendations to protect against seismic impacts. All new structures would be designed and built to the recommended seismic specifications for the site-specific conditions of the potential new SFVAMC Mission Bay Campus. Further, all adjacent cumulative projects would be required to conduct a detailed site-specific assessment of geologic hazards in areas delineated with seismic hazards, landslides, expansive or corrosive soils, and liquefaction, as required by the Community Safety Element of the *San Francisco General Plan*. Filled land and geologic hazards such as landslides and shoreline erosion are addressed in the Environmental Protection Element of the *San Francisco General Plan*. In addition, all cumulative projects would be required to comply with the San Francisco Building Code (Municipal Code Title 17, Chapter 17.04), which consists of the 2006 International Building Code. Although new facilities and other projects would be constructed in eastern San Francisco in the future, the increase in risk to people or property from seismic events would be minimal because new development would be designed and constructed to site-specific geotechnical standards and other established San Francisco standards, and policies would be implemented to minimize potential impacts. Therefore, this would be a minor cumulative impact.
Operation: Paleontological Resources	N/A	N/A	**No cumulative impact.** Because operation of cumulative projects would not result in ground-disturbing activities, no cumulative impact on paleontological resources is anticipated to occur.	1–26 and 28–86	1–26 and 28–86	**Minor cumulative impact.** Because no ground-disturbing activities are anticipated after construction, no cumulative impact on paleontological resources would occur during the operational phase of Alternative 3.

Table 4-3: Cumulative Environmental Impacts

Impact Area	Other Past, Present, and Future Projects in Cumulative Study Area for Alternatives 1 and 2 (see Table 4-1 for details) [4]		Cumulative Impact of Alternatives 1 and 2	Other Past, Present, and Future Projects in Cumulative Study Area for Alternative 3 (see Table 4-2 for details)		Cumulative Impact of Alternative 3
	Past Actions	Present and Future Actions		Past Actions	Present and Future Actions	
GREENHOUSE GAS EMISSIONS AND CLIMATE CHANGE						
Construction: Greenhouse Gas Emissions	4 and 10	4 and 7	**Potential for significant cumulative impact.** Retained for further, or more detailed, analysis of potential cumulative impacts. See "Cumulative Impact Analysis—Greenhouse Gas Emissions and Climate Change (Alternatives 1 and 2)."	1–26 and 28–86	1–26 and 28–86	**Potential for significant cumulative impact.** Retained for further, or more detailed, analysis of potential cumulative impacts. See "Cumulative Impact Analysis—Greenhouse Gas Emissions and Climate Change (Alternative 3)."
Operation: Greenhouse Gas Emissions	1–2, 4–5, 8, 10–12, and 14	4, 7, 9, and 12	**Potential for significant cumulative impact.** Retained for further, or more detailed, analysis of potential cumulative impacts. See "Cumulative Impact Analysis—Greenhouse Gas Emissions and Climate Change (Alternatives 1 and 2)."	1–26 and 28–86	1–26 and 28–86	**Potential for significant cumulative impact.** Retained for further, or more detailed, analysis of potential cumulative impacts. See "Cumulative Impact Analysis—Greenhouse Gas Emissions and Climate Change (Alternative 3)."
Impact of Climate Change: Sea Level Rise, Wildfire Threat, and Extreme Heat Events	1–4, 11–15, and 19	4, 7, 12, 16, and 19	**Potential for significant cumulative impact.** Retained for further, or more detailed, analysis of potential cumulative impacts. See "Cumulative Impact Analysis—Greenhouse Gas Emissions and Climate Change (Alternatives 1 and 2)."	7–18, 29, 31–32, 34, 37, and 39	1–7, 17, 29, 49, and 86	**Potential for significant cumulative impact.** Retained for further, or more detailed, analysis of potential cumulative impacts. See "Cumulative Impact Analysis—Greenhouse Gas Emissions and Climate Change (Alternative 3)."
HYDROLOGY AND WATER QUALITY						
Construction: Water Quality Degradation	1–2, 4, 8, 10–13, 15, and 19	4, 9, 12, and 16–19	**Minor cumulative impact.** Construction of Alternative 1 or 2 projects in conjunction with the identified cumulative projects on the nearby GGNRA and outer Richmond District watershed lands could affect regional water quality by causing erosion and sedimentation or from dewatering discharges. Proponents for the identified projects, as well as SFVAMC in implementing Alternative 1 or 2, would be required to comply with the federal Clean Water Act, the National Pollutant Discharge Elimination System (NPDES), and Article 4.1 of the San Francisco Public Works Code, which specifies implementation of a storm water pollution prevention plan (SWPPP) with best management practices (BMPs) for construction activities. In addition, SFVAMC would be required to comply with erosion and sediment controls outlined in VA Specification Section 015719 when implementing Alternative 1 or 2. As described in more detail under San Francisco Public Works Code, Article 4.2,	7, 9–18, 27–28, 30–34, 36–40, 47–48, and 64	1–8,17, 24–26, 29, 35, 41–46, 49–63, and 65–86	**Minor cumulative impact.** Construction of the identified cumulative projects in conjunction with Alternative 3 long-term projects within the Bayside Drainage has the potential to affect regional water quality by causing erosion and sedimentation or resulting in dewatering discharges. Proponents for the identified cumulative projects, as well as SFVAMC when implementing Alternative 3 long-term projects, would be required to comply with the federal Clean Water Act, the NPDES, the San Francisco Construction site Runoff Control Ordinance, and Article 4.1 of the San Francisco Public Works Code, which specifies implementation of a SWPPP with BMPs for construction activities. Using erosion and sediment-control BMPs specified construction techniques and postconstruction stormwater BMPs would reduce the potential for runoff and the release, mobilization, and exposure of pollutants from the project sites. In addition, SFVAMC would be required

Table 4-3: Cumulative Environmental Impacts

Impact Area	Other Past, Present, and Future Projects in Cumulative Study Area for Alternatives 1 and 2 (see Table 4-1 for details) [4]		Cumulative Impact of Alternatives 1 and 2	Other Past, Present, and Future Projects in Cumulative Study Area for Alternative 3 (see Table 4-2 for details)		Cumulative Impact of Alternative 3
	Past Actions	Present and Future Actions		Past Actions	Present and Future Actions	
			projects disturbing more than 5,000 square feet are subject to the City's Construction Site Runoff Control Ordinance and must submit a Construction Site Runoff Control Permit application and an ESCP or copy of the SWPPP to the SFPUC for review. These regulations are designed to protect regional water quality and incorporate measures to protect beneficial uses of water bodies within the relevant watershed lands and surrounding drainages. Therefore, construction-related cumulative impacts on water quality would be minor.			to comply with erosion and sediment controls outlined in VA Specification Section 015719 when implementing Alternative 3 long-term projects. These regulations are designed to protect regional water quality and incorporate measures to protect beneficial uses of water bodies within the Bayside Drainage. Therefore, construction-related cumulative impacts related to water quality would be minor.
Construction: Depletion of Groundwater Resources	1–2, 4, 8, 10–13, 15, and 19	4, 9, 12, and 16–19	**Minor cumulative impact.** With respect to depletion of groundwater supplies or interference with recharge, the groundwater basins underlying the SFVAMC Fort Miley Campus are not a substantial source of water supply for San Francisco or VA. Groundwater recharge in San Francisco results from infiltration of rainfall, landscape irrigation, and leakage of water and sewer pipes. Recharge caused by leaky municipal water and sewer pipes accounted for approximately half of the total recharge of groundwater in San Francisco. Construction of Alternative 1 or 2 projects in conjunction with the identified projects would not deplete groundwater supplies and cause a net deficit in aquifer volume or substantial interference with recharge. In fact, cumulative development projects in San Francisco may positively contribute to recharge by implementing Low Impact Development (LID) measures that would increase infiltration and reduce runoff to the combined sewer. Dewatering activities for the construction of multiple projects within a groundwater basin could temporarily lower the water table; however, this effect would be short term. Thus, construction of Alternative 1 or 2 projects in conjunction with the identified cumulative projects would have a minor cumulative impact on groundwater supplies and recharge.	7, 9–18, 27–28, 30–34, 36–40, 47–48, and 64	1–8, 17, 24–26, 29, 35, 41–46, 49–63, and 65–86	**Minor cumulative impact.** Multiple dewatering projects within a groundwater basin could reduce a water table temporarily; however, this effect would be short term. In addition, the increase in impervious surface that would result from Alternative 3 long-term projects, when considered with the identified cumulative projects, would result in a minor cumulative impact on infiltration characteristics because much of the Mission Bay area is already covered by impervious surfaces. In fact, cumulative projects in San Francisco may positively contribute to recharge by implementing LID measures that would increase infiltration and reduce runoff to the combined sewer. Groundwater would not be used as a source of drinking water or consumptive water supply during construction. Thus, there would be a minor cumulative impact on groundwater supply and recharge.
Operation: Water Quality Degradation	1–2, 4, 8, 10–13, 15, and 19	4, 9, 12, and 16–19	**Minor cumulative impact.** Long-term operations of identified cumulative projects could exceed the capacity of the existing and planned sewer systems and degrade the	7, 9–18, 27–28, 30–34, 36–40, 47–	1–8, 17, 24–26, 29, 35, 41–46, 49–63, and 65–	**Minor cumulative impact.** Long-term operations of the identified cumulative projects in the Mission Bay area watershed lands would further increase impervious surfaces

Table 4-3: Cumulative Environmental Impacts

Impact Area	Other Past, Present, and Future Projects in Cumulative Study Area for Alternatives 1 and 2 (see Table 4-1 for details) [4]		Cumulative Impact of Alternatives 1 and 2	Other Past, Present, and Future Projects in Cumulative Study Area for Alternative 3 (see Table 4-2 for details)		Cumulative Impact of Alternative 3
	Past Actions	Present and Future Actions		Past Actions	Present and Future Actions	
and Increase in Combined Sewer Overflow Events			quality of stormwater discharged to those sewer systems because the cumulative projects would further increase impervious acreage and cause changes in the intensity and types of land use. However, the San Francisco Stormwater Design Guidelines require new development and redevelopment disturbing 5,000 square feet or more of the ground surface to manage stormwater on-site. In combined sewer areas under SFPUC jurisdiction, projects must reduce the flow rate and volume of stormwater going into the combined system by achieving Leadership in Energy and Environmental Design (LEED®) Sustainable Sites Credit 6.1, "Stormwater Design: Quantity Control." LEED® Sustainable Sites Credit 6.1 states that for sites where the existing imperviousness is greater than 50 percent, the project must "implement a stormwater management plan that results in a 25 percent decrease in the volume of stormwater runoff from the two-year 24-hour design storm." As a federal facility, SFVAMC is not required to comply with the San Francisco Stormwater Design Guidelines for implementation of Alternative 1 or 2. It must comply with Section 438 of the Energy Independence and Security Act (EISA), however, because construction at the federal SFVAMC Fort Miley Campus would have a footprint greater than 5,000 square feet. LID site design techniques (e.g., bioretention areas, permeable pavements, cisterns/recycling, and green roofs) must be implemented to store, infiltrate, evaporate, and detain runoff, and thus to mimic predevelopment stormwater runoff conditions. Cumulative projects under the City's jurisdiction would be required to comply with Article 4.2 of the San Francisco Public Works Code, which requires that the project proponent submit a stormwater control plan that meets SFPUC guidelines. These planning efforts and policies are all designed to protect regional water quality and incorporate requirements for on-site management of stormwater and implementation	48, and 64	86	and would cause changes in intensity and types of land use. Therefore, these projects have the potential to exceed the capacity of existing and planned sewers and degrade the quality of stormwater discharged to those sewers. The precise location of the potential new SFVAMC Mission Bay Campus under Alternative 3 is unknown at this time. However, stormwater from the Mission Bay area is part of the Bayside Drainage and is collected in the combined sewer system and treated at the City's Southeast Water Pollution Control Plant, pursuant to the effluent discharge limitations set by the NPDES permit, before being discharged to San Francisco Bay. If stormwater runoff from the potential new SFVAMC Mission Bay Campus would flow into a separate stormwater system, runoff would have to comply with the San Francisco Stormwater Design Guidelines, which would incorporate LID or other practices to protect water quality. In addition, cumulative projects would be required to comply with the San Francisco Stormwater Design Guidelines and Article 4.2 of the San Francisco Public Works Code. As a federal facility, SFVAMC would not be required to comply with the San Francisco Stormwater Guidelines, but would be required to comply with Section 438 of the EISA. Incorporating LID or other techniques required under the EISA would also serve to protect water quality during project operation. Sustainable stormwater design (e.g., green roofs, vegetated swales, storm water detention) would provide on-site stormwater treatment before off-site discharge. These planning efforts and policies are all designed to protect regional water quality and incorporate measures to protect beneficial uses of water bodies based on overall consideration of past, present, and future conditions within the region. With incorporation of these efforts and policies, operational cumulative impacts on the frequency or severity of CSO combined sewer overflow events and/or downstream flooding or water quality degradation caused by changes in land use or increases of impervious surfaces

Table 4-3: Cumulative Environmental Impacts

Impact Area	Other Past, Present, and Future Projects in Cumulative Study Area for Alternatives 1 and 2 (see Table 4-1 for details) [4]		Cumulative Impact of Alternatives 1 and 2	Other Past, Present, and Future Projects in Cumulative Study Area for Alternative 3 (see Table 4-2 for details)		Cumulative Impact of Alternative 3
	Past Actions	Present and Future Actions		Past Actions	Present and Future Actions	
			of stormwater management plans to reduce the volume of stormwater runoff reaching the combined sewer system. With incorporation of these efforts and policies, the operational cumulative impact on the frequency or severity of CSO combined sewer overflow events and/or downstream flooding, or water quality degradation caused by changes in land use or increases of impervious surfaces, would be minor.			would be minor.
LAND USE						
Construction: Land Uses and Plans	N/A	N/A	**No cumulative impact.** Land use impacts are assessed based on the proposed land use, rather than construction activities. Therefore, no cumulative construction-related impacts on land use would occur.	N/A	N/A	**No cumulative impact.** There would be no construction-related land use impacts under Alternative 3 long-term projects. Thus, no cumulative construction-related land use impacts are anticipated to occur.
Operation: Land Uses and Plans	3–4 and 10–15	4, 9, 12, and 16–17	**Minor cumulative impact.** The geographic context for the analysis of potential cumulative land use impacts is at a local scale. Land use compatibility issues are relevant at a local level, because they involve the interrelationship between land uses for the Alternatives and neighboring properties. Cumulative Projects 3 (GGNRA Dog Management Plan), 4 (GGNRA General Management Plan), 11 (Geothermal Systems), 12 (Solar Photovoltaic System), 13 (North Slope Seismic/Geologic Stabilization), 14 (Electrical System Upgrade Exterior Work), and 15 (Mental Health Patient Parking Addition) would not alter the existing land uses in the adjacent Fort Miley area. When Cumulative Projects 3 and 4 are considered from a cumulative perspective, potential cumulative land use impacts are limited. These NPS projects apply only to GGNRA lands and would not substantially affect land uses beyond the GGNRA, and the plans are programmatic documents with no project-specific land use impacts that would be cumulatively considerable. Neither projects would cause changes to land use or nearby communities such that they would result in a cumulative impact on land use. The other identified cumulative projects are not likely to	1–26 and 28–86	1–26 and 28–86	**Minor cumulative impact.** The geographic context for the analysis of potential cumulative land use impacts is at the local level, because of the interrelationship between land uses for Alternative 3 and the land uses of neighboring properties in and near the Mission Bay area. Development of adjacent cumulative projects would be compatible with operation of a potential new SFVAMC Mission Bay Campus. None of the identified cumulative projects would result in changes to land use or nearby communities such that they would have a cumulative impact on land use, because it is anticipated that they would be consistent with City zoning, plans, and policies. At the program level, Alternative 3 would not contribute to a significant cumulative land use impact.

Table 4-3: Cumulative Environmental Impacts

Impact Area	Other Past, Present, and Future Projects in Cumulative Study Area for Alternatives 1 and 2 (see Table 4-1 for details) [4]		Cumulative Impact of Alternatives 1 and 2	Other Past, Present, and Future Projects in Cumulative Study Area for Alternative 3 (see Table 4-2 for details)		Cumulative Impact of Alternative 3
	Past Actions	Present and Future Actions		Past Actions	Present and Future Actions	
			have substantial land use impacts, because the projects would be expected to follow local planning plans and policies and to be compatible with surrounding land uses. In addition, when the cumulative projects are viewed in combination with Alternative 1 or 2, there are no anticipated land use effects or conflicts with applicable land use plans and policies that could be compounded through this combination. Alternative 1 or 2 would not contribute to a significant cumulative land use impact. This would be a minor cumulative impact.			
NOISE AND VIBRATION						
Construction: Noise	4 and 12	4 and 12	**Potential for significant cumulative impact.** Retained for further, or more detailed, analysis of potential cumulative impacts. See "Cumulative Impact Analysis—Noise and Vibration (Alternatives 1 and 2)."	1–26 and 28–86	1–26 and 28–86	**Potential for significant cumulative impact.** Retained for further, or more detailed, analysis of potential cumulative impacts. See "Cumulative Impact Analysis—Noise and Vibration (Alternative 3)."
Construction: Vibration	4 and 12	4 and 12	**Potential for significant cumulative impact.** Retained for further, or more detailed, analysis of potential cumulative impacts. See "Cumulative Impact Analysis—Noise and Vibration (Alternatives 1 and 2)."	1–26 and 28–86	1–26 and 28–86	**Potential for significant cumulative impact.** Retained for further, or more detailed, analysis of potential cumulative impacts. See "Cumulative Impact Analysis—Noise and Vibration (Alternative 3)."
Operation: Noise	1–5, 8, 10–15, and 19	4, 6–7, 9, 12, and 16–19	**Potential for significant cumulative impact.** Retained for further, or more detailed, analysis of potential cumulative impacts. See "Cumulative Impact Analysis—Noise and Vibration (Alternatives 1 and 2)."	1–26 and 28–86	1–26 and 28–86	**Potential for significant cumulative impact.** Retained for further, or more detailed, analysis of potential cumulative impacts. See "Cumulative Impact Analysis—Noise and Vibration (Alternative 3)."
Operation: Vibration	1–5, 8, 10–15, and 19	4, 6–7, 9, 12, and 16–19	**Potential for significant cumulative impact.** Retained for further, or more detailed, analysis of potential cumulative impacts. See "Cumulative Impact Analysis—Noise and Vibration (Alternatives 1 and 2)."	1–26 and 28–86	1–26 and 28–86	**Potential for significant cumulative impact.** Retained for further, or more detailed, analysis of potential cumulative impacts. See "Cumulative Impact Analysis—Noise and Vibration (Alternative 3)."
SOCIOECONOMICS AND ENVIRONMENTAL JUSTICE						
Construction: Population and Employment	4 and 10	4 and 7	**No cumulative impact.** Construction of Alternative 1 or 2 projects in conjunction with the identified projects is anticipated to require construction crews derived from the local labor pool, depending on the various construction schedules. Both the greater Bay Area and San Francisco	7, 17–18, 27–28, 30–34, 36–40, 47–48, and 64	1–8, 17, 20–21, 26, 35, 41–46, 49–63, and 65–86	**Minor cumulative impact.** Construction of Alternative 3 long-term projects in conjunction with the identified cumulative projects is anticipated to require construction crews derived from the local labor pool, depending on the various construction schedules. Both the greater Bay Area

Table 4-3: Cumulative Environmental Impacts

Impact Area	Other Past, Present, and Future Projects in Cumulative Study Area for Alternatives 1 and 2 (see Table 4-1 for details) [4]		Cumulative Impact of Alternatives 1 and 2	Other Past, Present, and Future Projects in Cumulative Study Area for Alternative 3 (see Table 4-2 for details)		Cumulative Impact of Alternative 3
	Past Actions	Present and Future Actions		Past Actions	Present and Future Actions	
			proper have experienced a notable reduction in employment availability, including construction jobs, over the last decade. Thus, adding construction jobs that could be filled by Bay Area and/or San Francisco residents would be considered a beneficial cumulative impact related to growth inducement. In addition, construction of Alternative 1 or 2 projects in conjunction with the identified cumulative projects is not anticipated to impede residential or business activity in the community surrounding the existing SFVAMC Fort Miley Campus. Thus, there would be no displacement of persons, residences, or businesses, and no cumulative displacement impact would occur.			and San Francisco proper have experienced a notable reduction in employment availability, including construction jobs, over the last decade (between 2000 and 2010). Therefore, adding construction jobs that could be filled by Bay Area and/or San Francisco residents would be a beneficial cumulative impact related to growth inducement. The specific location of the potential new SFVAMC Mission Bay Campus proposed under Alternative 3 is unknown. Thus, it is unknown whether construction of Alternative 3 long-term projects in conjunction with the identified projects could impede residential or business activity in the surrounding community. However, displacement of persons, residences, or businesses is not anticipated to occur. The exact location of the potential new SFVAMC Mission Bay Campus and a detailed project design are unknown at this time and would require further evaluation when a location in the Mission Bay area is identified; therefore, this cumulative impact is anticipated to be minor.
Construction: Environmental Justice	1–5, 8, 10–15, and 19	4, 6–7, 9, 12, and 16–19	**Minor cumulative impact** with implementation of LRDP-specific mitigation measures identified in this EIS	1–26 and 28–86	1–26 and 28–86	**Minor cumulative impact.** Construction of Alternative 3 long-term projects at the potential new SFVAMC Mission Bay Campus could have a minor cumulative impact. However, because the exact location of the potential Mission Bay Campus is unknown, a project-level NEPA analysis would be required once a specific location and site plan are determined.
Operation: Population and Employment	2, 8, and 10	7 and 9	**No cumulative impact.** Aside from the development of 49 residential units under Cumulative Project 9 (Safeway Redevelopment) and 39 residential units under Cumulative Project 10 (5400 Geary Boulevard), none of the cumulative projects listed in Table 4-1 include housing that could result in permanent residents. In addition, Alternatives 1 and 2 would not entail housing. Therefore, there would be no cumulative growth-inducement impact related to population and housing.	7, 17–18, 27–28, 30–34, 36–40, 47–48, and 64	1–8, 17, 20–21, 26, 35, 41–46, 49–63, and 65–86	**No cumulative impact.** Cumulative residential projects listed in Table 4-2 would result in a permanent population. However, Alternative 3 long-term projects would not entail housing. Therefore, there would be no cumulative growth-inducement impact related to population and housing. Project operation under Alternative 3 long-term projects in conjunction with the cumulative commercial and office projects listed in Table 4-2 would result in a cumulative increase in daily employment population. Both the greater

Table 4-3: Cumulative Environmental Impacts

Impact Area	Other Past, Present, and Future Projects in Cumulative Study Area for Alternatives 1 and 2 (see Table 4-1 for details) [4]		Cumulative Impact of Alternatives 1 and 2	Other Past, Present, and Future Projects in Cumulative Study Area for Alternative 3 (see Table 4-2 for details)		Cumulative Impact of Alternative 3
	Past Actions	Present and Future Actions		Past Actions	Present and Future Actions	
			Project operation under Alternative 1 or 2 in conjunction with Cumulative Projects 2 (Merrie Way Visitor Center), 7 (Lincoln Park Steps Improvement), 8 (Albertsons Reuse), and 9 (Safeway Redevelopment) would result in a cumulative increase in daily employment population. Both the greater Bay Area and San Francisco proper have experienced a notable reduction in employment availability over the last decade (between 2000 and 2010); thus, the addition of jobs that could be filled by Bay Area and/or San Francisco residents would result in a beneficial cumulative growth-inducement impact.			Bay Area and San Francisco proper have experienced a notable reduction in employment availability over the last decade (between 2000 and 2010); therefore, adding jobs that could be filled by Bay Area and/or San Francisco residents would result in a beneficial cumulative growth-inducement impact.
Operation: Environmental Justice	1–5, 8, 10–15, and 19	4, 6–7, 9, 12, and 16–19	**Minor cumulative impact** with implementation of LRDP-specific mitigation measures identified in this EIS.	1–26 and 28–86	1–26 and 28–86	**Minor cumulative impact.** Operation of Alternative 3 long-term projects at the potential new SFVAMC Mission Bay Campus could have a minor cumulative impact. However, because the exact location of the potential Mission Bay Campus is unknown, a project-level NEPA analysis would be required once a specific location and site plan are determined.
SOLID AND HAZARDOUS MATERIALS AND HAZARDS						
Construction: Solid Waste Generation	4 and 10	4 and 9	**Minor cumulative impact.** The level of cumulative impacts related to solid waste is based on a determination of whether the facilities constructed under Alternative 1 or 2 would be served by a landfill whose permitted capacity would be exceeded by accommodating the projected solid-waste disposal needs. The construction of three projects Cumulative Projects 4 (GGNRA General Management Plan), 9 (Safeway Redevelopment), and 10 (5400 Geary Boulevard)—may occur concurrently with Alternative 1 or 2. The total construction disposal volumes for the cumulative projects are unknown; however, construction activities for these cumulative projects and Alternative 1 or 2 would increase the demand on regional landfill capacity. In accordance with City Ordinance No. 27-06, the Construction and Demolition Debris Recovery Ordinance, which regulates construction and demolition debris for projects under City jurisdiction, at least 65 percent of waste generated during	N/A	2, 4, 8, and 24–25	**Minor cumulative impact.** The total construction disposal volumes for the cumulative projects are unknown; however, construction activities for these projects and Alternative 3 long-term projects would increase the demand on regional landfill capacity. In accordance with City Ordinance No. 27-06, the Construction and Demolition Debris Recovery Ordinance, which regulates construction and demolition debris for projects under City jurisdiction, at least 65 percent of waste generated during construction of these projects would be reused or recycled and diverted from landfills. In addition, in accordance with the VA SSPP, at least 50 percent of waste generated during construction of Alternative 3 long-term projects would be reused or recycled and diverted from landfills. Further, the landfills located in the region, including Keller Canyon and Redwood Sanitary, both currently have ample capacity and at least 20 years of

Table 4-3: Cumulative Environmental Impacts

Impact Area	Other Past, Present, and Future Projects in Cumulative Study Area for Alternatives 1 and 2 (see Table 4-1 for details) [4]		Cumulative Impact of Alternatives 1 and 2	Other Past, Present, and Future Projects in Cumulative Study Area for Alternative 3 (see Table 4-2 for details)		Cumulative Impact of Alternative 3
	Past Actions	Present and Future Actions		Past Actions	Present and Future Actions	
			construction of these cumulative projects would be reused or recycled and diverted from landfills. In addition, in accordance with the VA SSPP, at least 50 percent of waste generated during construction of Alternative 1 or 2 projects would be reused or recycled and diverted from landfills. Further, the landfills located in the region, including Keller Canyon (Pittsburg) and Redwood Sanitary (Novato), both currently have ample capacity and at least 20 years of remaining capacity to receive waste from their service areas. Therefore, there would be a minor cumulative impact related to solid waste and landfill capacity during construction.			remaining capacity to receive waste from their service areas. Therefore, there would be a minor cumulative impact related to landfill capacity during construction.
Construction: Hazardous Materials Exposure and Hazards and Public Safety	4 and 10	4 and 9	**Minor cumulative impact.** The level of cumulative impacts related to hazardous materials is based on determining whether the facilities constructed and operated under Alternative 1 or 2 would create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials; or would create a significant hazard to the public or environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment and exposing the public to unhealthy levels of hazardous materials. As described previously under "Solid Waste," the construction of Cumulative Projects 4 (GGNRA General Management Plan), 9 (Safeway Redevelopment), and 10 (5400 Geary Boulevard) may occur concurrently with Alternative 1 or 2. These projects could result in generation of hazardous wastes such as asbestos from friable building materials, lead-based paint on building surfaces, and hazardous wastes from lighting fixtures. In addition, previously unknown contamination, possibly the result of improper disposal or housekeeping activities, may be discovered as structures are demolished. Cumulative development could expose construction workers to health or safety risks through exposure to hazardous materials,	N/A	2, 4, 8, and 24–25	**Minor cumulative impact.** The level of cumulative impacts related to hazardous materials is based on a determination of whether the facilities constructed and operated under Alternative 3 would create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials; or create a significant hazard to the public or environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment and exposing the public to unhealthy levels of hazardous materials. The construction of several cumulative projects listed in Table 4-2—City and County of San Francisco as Successor to SF Redevelopment Projects 2 and 4, UCSF Project 8, and SF Port Projects 24–25—may occur concurrently with Alternative 3 long-term projects. These projects could result in generation of hazardous wastes such as asbestos from friable building materials, lead-based paint on building surfaces, and hazardous wastes from lighting fixtures. In addition, previously unknown contamination, possibly the result of improper disposal or housekeeping activities, may be discovered as structures are demolished. Cumulative development could expose construction workers to health or safety risks by exposing them to hazardous materials,

Table 4-3: Cumulative Environmental Impacts

Impact Area	Other Past, Present, and Future Projects in Cumulative Study Area for Alternatives 1 and 2 (see Table 4-1 for details) [4]		Cumulative Impact of Alternatives 1 and 2	Other Past, Present, and Future Projects in Cumulative Study Area for Alternative 3 (see Table 4-2 for details)		Cumulative Impact of Alternative 3
	Past Actions	Present and Future Actions		Past Actions	Present and Future Actions	
			although the individual workers potentially affected would vary from project to project. Construction activities of the cumulative development (e.g., trenching and operation of large equipment) could also pose a risk to public safety. To minimize construction risks from exposure to hazardous materials, all hazardous materials would be stored, used, transported, and disposed of in strict accordance with all local, State, and federal hazardous waste regulations. Occupational Safety and Health Administration (OSHA) regulations also mandate an initial training course and subsequent annual training for hazardous waste workers. Worker safety regulations would require the preparation and implementation of site-specific health and safety plans in accordance with OSHA requirements. Further, SFVAMC would be required to adhere to the regulations and standards for inspection, abatement, exposure, and disposal of hazardous building materials, including lead, polychlorinated biphenyls (PCBs), and mercury, identified in VA Specification Section 028333.13, "Lead-Based Paint Removal and Disposal." In addition, the construction contractor would be required to submit a site-specific environmental protection plan in accordance with Section 015719 of the VA Specifications. This plan would describe the BMPs that would be implemented to minimize the risks from the use, storage, handling, and transport of hazardous materials and the contingency protocols to be implemented in the event of an accidental release or exposure during construction. Standard construction BMPs such as exclusion fencing around active construction zones would minimize impacts on public safety. Therefore, there would be a minor cumulative impact related to hazardous materials exposure and to hazards and public safety during construction.			although the individual workers potentially affected would vary from project to project. Construction activities of the cumulative development (e.g., trenching and operation of large equipment) could also pose a risk to public safety. To minimize construction risks from exposure to hazardous materials, all hazardous materials would be stored, used, transported, and disposed of in strict accordance with all local, State, and federal hazardous waste regulations. Further, SFVAMC would be required to adhere to the regulations and standards for inspection, abatement, exposure, and disposal of hazardous building materials, including lead, PCBs, and mercury, identified in VA Specification Section 028333.13, "Lead-Based Paint Removal and Disposal." In addition, the construction contractor would be required to submit an environmental protection plan in accordance with Section 015719 of the VA Specifications. This plan would describe the BMPs that would be implemented to minimize the risks from the use, storage, handling, and transport of hazardous materials and the contingency protocols to be implemented in the event of an accidental release or exposure during construction. Standard construction BMPs such as exclusion fencing around active construction zones would minimize impacts on public safety. Compliance with this environmental protection plan and applicable federal, State, and local hazardous waste regulations would minimize the cumulative contribution of Alternative 3 long-term projects to potential hazardous materials exposure and to hazards and public safety. Therefore, there would be a minor cumulative impact related to hazardous materials exposure during construction.
Operation: Solid Waste Generation	2 and 10	9	**Minor cumulative impact.** The level of cumulative impacts related to solid waste is based on a determination of whether the facilities operated under Alternative 1 or 2 would be served by a landfill whose permitted capacity would be	1–26 and 28–86	1–26 and 28–86	**Minor cumulative impact.** An increase in the generation of solid waste during operation of Alternative 3 long-term projects is anticipated; however, the VA SSPP has a nonhazardous solid-waste diversion target intended to

Table 4-3: Cumulative Environmental Impacts

Impact Area	Other Past, Present, and Future Projects in Cumulative Study Area for Alternatives 1 and 2 (see Table 4-1 for details) [4]		Cumulative Impact of Alternatives 1 and 2	Other Past, Present, and Future Projects in Cumulative Study Area for Alternative 3 (see Table 4-2 for details)		Cumulative Impact of Alternative 3
	Past Actions	Present and Future Actions		Past Actions	Present and Future Actions	
			exceeded by accommodating the projected solid-waste disposal needs. An increase in the generation of solid waste during operation of Alternative 1 or 2 projects as well as Cumulative Projects 2 (Merrie Way Visitor Center), 9 (Safeway Redevelopment), and 10 (5400 Geary Boulevard) is anticipated. However, the VA SSPP has a nonhazardous solid waste diversion target of 50 percent by 2015, which is intended to minimize the amount of waste transported to landfills. Further, the anticipated volume of solid waste could be accommodated by landfills located in the region, including Keller Canyon with approximately 84 percent remaining capacity and Redwood Sanitary with approximately 67 percent remaining capacity. Therefore, there would be a minor cumulative impact.			minimize the amount of waste transported to landfills. Further, the anticipated volume of solid waste from Alternative 3 long-term projects and all of the cumulative projects identified in Table 4-2 could be accommodated by landfills located in the region. These landfills include Keller Canyon with approximately 84 percent remaining capacity and Redwood Sanitary with approximately 67 percent remaining capacity. Therefore, there would be a minor cumulative impact related to landfill capacity during operation.
Operation: Hazards and Public Safety	1–5, 8, 10–15, and 19	4, 6–7, 9, 12, and 16–19	**Minor cumulative impact.** The level of cumulative impacts related to hazardous materials is based on determining whether the facilities operated under Alternative 1 or 2 would create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials; or would create a significant hazard to the public or environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment and exposing the public to unhealthy levels of hazardous materials. Operation of Alternative 1 or 2 projects and the identified cumulative projects would not permanently alter the quantity of hazardous materials routinely used, transported, and stored compared to baseline conditions, because operation of cumulative projects would be similar to operation under existing conditions. Further, facilities where hazardous materials are used must be operated in compliance with current laws and regulations, which require that hazardous materials be stored to minimize exposure to people or the environment and the potential for inadvertent releases. These materials would be used, stored, and disposed of in accordance with applicable laws and regulations. This would	7, 9–12, and 15–17	2, 7–8, and 17	**Minor cumulative impact.** Alternative 3 would not create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials; or create a significant hazard to the public or environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment and exposing the public to unhealthy levels of hazardous materials. In addition to Alternative 3 long-term projects, other cumulative projects, particularly those involving development of medical and research facilities, which include City and County of San Francisco as Successor to SF Redevelopment Project 2 and UCSF Projects 7–12 and 15–17, are anticipated to require the routine use of hazardous materials. Facilities where hazardous materials are used must be operated in compliance with current laws and regulations, which require that hazardous materials be stored in a manner that minimizes exposure to people or the environment and the potential for inadvertent releases. These materials must also be labeled to inform users of potential risks and to instruct them in appropriate storage, handling, and disposal procedures and the use of hazardous materials. Generation of wastes would continue to be

Table 4-3: Cumulative Environmental Impacts

Impact Area	Other Past, Present, and Future Projects in Cumulative Study Area for Alternatives 1 and 2 (see Table 4-1 for details) [4]		Cumulative Impact of Alternatives 1 and 2	Other Past, Present, and Future Projects in Cumulative Study Area for Alternative 3 (see Table 4-2 for details)		Cumulative Impact of Alternative 3
	Past Actions	Present and Future Actions		Past Actions	Present and Future Actions	
			require facilities to update their existing hazardous-materials certificates of registration, and to maintain updated site maps, inventories of hazardous materials, training plans, and emergency operation plans. Materials must also be labeled to inform users of potential risks and to instruct them in appropriate storage and handling. Disposal procedures and the use of hazardous materials and generation of wastes would continue to be regulated under the authority of the San Francisco Hazardous Materials Unified Program Agency under a compliance certificate. All potentially foreseeable projects would be required to comply with applicable statutes and regulations, which would ensure that impacts related to the transport, use, storage, and disposal of hazardous materials would not be adverse. Adherence to these regulations would also minimize the risk of upset or accident related to the handling of hazardous materials. For the aforementioned reasons, there would be a minor cumulative impact related to hazardous materials exposure during operation.			regulated under the authority of the San Francisco Hazardous Materials Unified Program Agency under a compliance certificate. All potentially foreseeable projects would be required to comply with applicable statutes and regulations, which would ensure that impacts related to the transport, use, storage, and disposal of hazardous materials, would not be adverse. Adherence to these regulations would also minimize the risk of upset or accident related to the handling of hazardous materials. There would be a minor cumulative impact.
TRANSPORTATION, TRAFFIC, AND PARKING						
Construction: Traffic, Transit, and Parking	1–2, 4–5, 8, 10–15, and 19	4, 6–7, 9, 12, and 16–19	**Potential for significant cumulative impact.** Retained for further, or more detailed, analysis of potential cumulative impacts. See "Cumulative Impact Analysis—Transportation, Traffic, and Parking (Alternatives 1 and 2)."	1–26 and 28–86	1–6, 7–17, 18–23, 24–26, 28–80, 81–85, and 86	**Potential for significant cumulative impact.** Retained for further, or more detailed, analysis of potential cumulative impacts. See "Cumulative Impact Analysis—Transportation, Traffic, and Parking (Alternative 3)."
Operation: Traffic, Transit, and Parking	1–5, 8, 10–15, and 19	4, 6–7, 9, 12, and 16–19	**Potential for significant cumulative impact.** Retained for further, or more detailed, analysis of potential cumulative impacts. See "Cumulative Impact Analysis—Transportation, Traffic, and Parking (Alternatives 1 and 2)."	1–26 and 28–86	1–26 and 28–86	**Potential for significant cumulative impact.** Retained for further, or more detailed, analysis of potential cumulative impacts. See "Cumulative Impact Analysis—Transportation, Traffic, and Parking (Alternative 3)."
UTILITIES						
Construction: Water Supply	1–2, 4, 10–15, and 19	4, 9, 12, 14, 17, and 19	**Minor cumulative impact.** Construction activities for the identified cumulative projects in conjunction with Alternative 1 or 2 would not result in a substantial amount of water consumption. Thus, construction of identified cumulative projects in conjunction with Alternative 1 or 2	7 and 17	1–8, 17, 19–25, 81, and 84–86	**Minor cumulative impact.** Construction activities for the identified projects in conjunction with Alternative 3 would not result in a substantial amount of water consumption. Thus, construction of identified projects in conjunction with Alternative 3 would not require or result in the construction

Table 4-3: Cumulative Environmental Impacts

Impact Area	Other Past, Present, and Future Projects in Cumulative Study Area for Alternatives 1 and 2 (see Table 4-1 for details) [4]		Cumulative Impact of Alternatives 1 and 2	Other Past, Present, and Future Projects in Cumulative Study Area for Alternative 3 (see Table 4-2 for details)		Cumulative Impact of Alternative 3
	Past Actions	Present and Future Actions		Past Actions	Present and Future Actions	
			would not require or result in the construction of new water distribution infrastructure or expansion of existing facilities, the construction of which could cause significant environmental effects. Thus, there would be a minor cumulative water supply impact.			of new water distribution infrastructure or expansion of existing facilities, the construction of which could cause significant environmental effects. Therefore, there would be a minor cumulative water supply impact.
Construction: Wastewater	4 and 10	4 and 9	**No cumulative impact.** Construction activities for the identified cumulative projects in conjunction with Alternative 1 or 2 would not result in a substantial amount of wastewater reaching SFPUC's combined wastewater/stormwater system. Therefore, construction of the identified projects in conjunction with Alternative 1 or 2 would not require or result in the construction of new combined wastewater/stormwater drainage infrastructure or expansion of existing facilities, the construction of which could cause significant environmental effects. Therefore, no cumulative wastewater impact would occur during construction.	7 and 17	1–8, 17, 19–25, 81, and 84–86	**No cumulative impact.** Construction activities for the identified projects in conjunction with Alternative 3 would not result in a substantial amount of wastewater reaching SFPUC's combined wastewater/stormwater system. Thus, construction of the identified projects in conjunction with Alternative 3 long-term projects would not require or result in the construction of new combined wastewater/ stormwater drainage infrastructure or expansion of existing facilities, the construction of which could cause significant environmental effects. Therefore, no cumulative wastewater impact would occur during construction.
Construction: Electricity and Natural Gas	1–2, 4–5, 8, 10–15, and 19	4, 6–7, 9, 12, and 16–19	**Minor cumulative impact.** Construction activities for the identified projects in conjunction with Alternative 1 or 2 would not result in a substantial amount of electricity consumption, and would result in no natural gas consumption. Thus, construction of the identified projects in conjunction with Alternative 1 or 2 would not require or result in the construction of new electricity or natural gas generation or transmission facilities or expansion of existing facilities, the construction of which could cause significant environmental effects. Thus, there would be a minor cumulative electricity and natural gas impact.	7 and 17	1–8, 17, 19–25, 81, and 84–86	**Minor cumulative impact.** Construction activities by the identified projects in conjunction with Alternative 3 long-term projects would not result in a substantial amount of electricity consumption or any natural gas consumption. Construction of identified cumulative projects in conjunction with Alternative 3 long-term projects would not require or result in the construction of new electricity or natural gas generation or transmission facilities or expansion of existing facilities, the construction of which could cause significant environmental effects. Thus, there would be a minor cumulative electricity and natural gas impact.
Operation: Water Supply	2, 4, 8, 10–13, and 19	4, 9, 12, and 16	**Minor cumulative impact.** SFPUC's regional water system provides water to 2.4 million people, as well as to retail and wholesale customers in San Francisco, San Mateo, Santa Clara, Alameda, and Tuolumne Counties. As part of its planning for future water supply needs, SFPUC has conducted comprehensive planning studies to assess water	1–26 and 28–86	1–26 and 28–86	**Minor cumulative impact.** As part of its planning for future water supply needs, SFPUC has conducted comprehensive planning studies to assess water demands through the year 2035. SFPUC has adequate supplies to meet the demand for water in its service area through 2035, and is in the process of identifying future supplies and

Table 4-3: Cumulative Environmental Impacts

Impact Area	Other Past, Present, and Future Projects in Cumulative Study Area for Alternatives 1 and 2 (see Table 4-1 for details) [4]		Cumulative Impact of Alternatives 1 and 2	Other Past, Present, and Future Projects in Cumulative Study Area for Alternative 3 (see Table 4-2 for details)		Cumulative Impact of Alternative 3
	Past Actions	Present and Future Actions		Past Actions	Present and Future Actions	
			demands through the year 2030. SFPUC has adequate supplies to meet the demand for water within its service area through 2030, and is in the process of identifying future supplies and establishing conservation programs to meet demand in the event of a 3-year drought. In addition, San Francisco's Green Building Ordinance requires new buildings to reduce their water consumption, which also helps address the need to accommodate additional water needs for planned future development. Furthermore, as described in Section 3.14, "Utilities," growth projections used in SFPUC's 2010 Urban Water Management Plan for San Francisco included implementation of Alternative 1 or 2. As a result of the City's and SFPUC's planning efforts, implementing identified cumulative projects in conjunction with Alternative 1 or 2 would not require or result in the construction of new water treatment facilities, construction of new water facilities, or expansion of existing facilities, the construction of which could cause significant environmental effects. Thus, there would be a minor cumulative water supply impact.			establishing conservation programs to meet demand in the event of a 3-year drought. In addition, San Francisco's Green Building Ordinance requires new buildings to reduce their water consumption, which also helps address the need to accommodate additional water needs for planned future development. Alternative 3 would also involve implementing the VA SSPP, including a 26 percent reduction target in potable water use and a 20 percent reduction in industrial and landscaping water use by 2020. Because of these water conservation measures and as a result of SFPUC's planning efforts, implementing the identified projects in conjunction with Alternative 3 long-term projects would not require or result in the construction of new water treatment facilities, construction of new water facilities, or expansion of existing facilities, the construction of which could cause significant environmental effects. Thus, there would be a minor cumulative water supply impact.
Operation: Wastewater	1–2, 4, 8, 10–11, and 15	4 and 9	**Minor cumulative impact.** SFPUC's *San Francisco Sewer System Master Plan* and *Sewer System Improvement Plan* were implemented to accommodate the need for additional sewer system capacity for planned future development through 2030 by implementing capital improvements. In addition, San Francisco's Green Building Ordinance requires new buildings to reduce their water consumption, which in turn reduces wastewater generation by planned future development. Furthermore, as described in Section 3.14, "Utilities," SFPUC is currently evaluating the implementation of a Sewer System Improvement Program to address issues associated with aging infrastructure and system deficiencies related to climate change, and to improve operational efficiency and reduce community impacts. As a result of the City's and SFPUC's planning efforts, implementing the identified projects in conjunction with	1–26 and 28–86	1–26 and 28–86	**Minor cumulative impact.** Implementing SFPUC's *San Francisco Sewer System Master Plan* and *Sewer System Improvement Plan* would accommodate the need for additional sewer system capacity for planned future development through 2030 by implementing capital improvements. In addition, San Francisco's Green Building Ordinance requires new buildings to reduce their water consumption, which in turn reduces wastewater generation by planned future development. Alternative 3 would also involve implementing the VA SSPP, which would provide guidelines and practices regarding water conservation and stormwater management. Implementing these guidelines would reduce the impact of potentially increased wastewater loads on existing infrastructure and its limited capacity, and would reduce stormwater runoff rates and volumes as compared to existing conditions.

Table 4-3: Cumulative Environmental Impacts

Impact Area	Other Past, Present, and Future Projects in Cumulative Study Area for Alternatives 1 and 2 (see Table 4-1 for details) [4]		Cumulative Impact of Alternatives 1 and 2	Other Past, Present, and Future Projects in Cumulative Study Area for Alternative 3 (see Table 4-2 for details)		Cumulative Impact of Alternative 3
	Past Actions	Present and Future Actions		Past Actions	Present and Future Actions	
			Alternative 1 or 2 would not require or result in the construction of new wastewater treatment facilities, construction of new wastewater facilities, or expansion of existing facilities, the construction of which could cause significant environmental effects. Thus, there would be a minor cumulative water supply impact.			As a result of these planning efforts and conservation features, implementing the identified projects in conjunction with Alternative 3 long-term projects would not require or result in the construction of new wastewater treatment facilities, construction of new wastewater facilities, or expansion of existing facilities, the construction of which could cause significant environmental effects. Thus, there would be a minor cumulative impact related to wastewater.

Table 4-3: Cumulative Environmental Impacts

Impact Area	Other Past, Present, and Future Projects in Cumulative Study Area for Alternatives 1 and 2 (see Table 4-1 for details) [4]		Cumulative Impact of Alternatives 1 and 2	Other Past, Present, and Future Projects in Cumulative Study Area for Alternative 3 (see Table 4-2 for details)		Cumulative Impact of Alternative 3
	Past Actions	Present and Future Actions		Past Actions	Present and Future Actions	
Operation: Electricity and Natural Gas	1–2, 4, 8, 10, and 15	4 and 9	**Minor cumulative impact.** San Francisco's Green Building Ordinance requires new buildings to reduce their energy consumption, which also helps address the need to accommodate additional energy needs for planned future development. In addition, the VA SSPP requires SFVAMC to incorporate physical features and operational measures that sustain and improve environmental efficiencies through a sustainable design master plan to achieve a 26.6 percent reduction in GHG emissions, which would result in a decrease in electricity and natural gas consumption. Furthermore, as described in Section 3.14, "Utilities," the existing system at the SFVAMC Fort Miley Campus has been upgraded through the Electrical Systems Upgrades Project and solar photovoltaic and geothermal systems have been constructed to reduce the need to purchase electricity from off-site supplies, which contribute to achieving energy efficiency and GHG reduction goals established by VA and Executive Order 13514. As a result of the City's and SFVAMC's energy efficiency efforts, implementing the identified cumulative projects in conjunction with Alternative 1 or 2 would not require or result in the construction of new electricity or natural gas generation or transmission facilities or expansion of existing facilities, the construction of which could cause significant environmental effects. Thus, there would be a minor cumulative impact related to electricity consumption and natural gas consumption during operation of Alternative 1 or 2 projects.	1–26 and 28–86	1–26 and 28–86	**Minor cumulative impact.** San Francisco's Green Building Ordinance requires new buildings to reduce their energy consumption, which also helps address the need to accommodate additional energy needs for planned future development. In addition, the VA SSPP requires SFVAMC to incorporate physical features and operational measures that sustain and improve environmental efficiencies through a sustainable design master plan to achieve a 30 percent reduction in GHG emissions for buildings and a 29.6 percent reduction for the fleet (vehicles) by 2020, which would result in a decrease in electricity and natural gas consumption. As a result of the City's and SFVAMC's energy efficiency efforts, implementing the identified projects in conjunction with Alternative 3 long-term projects would not require or result in the construction of new electricity or natural gas generation or transmission facilities or expansion of existing facilities, the construction of which could cause significant environmental effects. Thus, there would be a minor cumulative impact related to electricity or natural gas consumption during the operational phase.
WILDLIFE AND HABITAT						
Construction: Vegetation/Habitat	4	4	**Minor cumulative impact.** Cumulative impacts on trees (i.e., removal) could occur during various construction activities for the preservation and enhancement of historic structures and landscapes, and the improvement of picnicking and group camping facilities in the GGNRA under Cumulative Project 4 (GGNRA General Management Plan) in conjunction with construction under Alternative 1 or 2. Landscape and access improvements to East and West	7, 17–18, 27–28, 30–34, 36–40, 47–48, and 64	1–8, 17, 20–21, 26, 35, 41–46, 49–63, and 65–86	**No cumulative impact.** Because of the area's long history of industrial use, the undeveloped portions of Mission Bay provide no vegetation or habitat.

Table 4-3: Cumulative Environmental Impacts

Impact Area	Other Past, Present, and Future Projects in Cumulative Study Area for Alternatives 1 and 2 (see Table 4-1 for details) [4]		Cumulative Impact of Alternatives 1 and 2	Other Past, Present, and Future Projects in Cumulative Study Area for Alternative 3 (see Table 4-2 for details)		Cumulative Impact of Alternative 3
	Past Actions	Present and Future Actions		Past Actions	Present and Future Actions	
			Fort Miley undertaken as part of Cumulative Project 4 also could result in tree removal. It is assumed that portions of the understory also would be removed during tree removal. Much of the area surrounding the existing SFVAMC Fort Miley Campus is covered with nonnative species. Although Monterey pine and Monterey cypress are native species, they were often planted. Eucalyptus is also found in the GGNRA. The selective removal of trees and associated understory would likely occur throughout the planning horizon of the GGNRA General Management Plan. According to the GGNRA (2009), the evolving preferred alternative for the Fort Miley and Lands End areas emphasizes protection of natural habitat values, including areas used by migrating birds. Thus, it is assumed that the GGNRA would remove trees from their lands with the goal of protecting areas used by migratory birds. Although localized cumulative impacts on migratory birds (and bats) could occur during construction, this would be a minor cumulative impact.			
Construction: Federally Listed Plant/Wildlife Species	4	4	**No cumulative impact.** The area of the Visitor Center at Merrie Way and Point Lobos Avenue (Cumulative Project 2) does not have habitat for the federally listed plant species that have the potential to occur in the area: Presidio manzanita, Presidio clarkia, beach layia, and San Francisco lessingia. Thus, no cumulative impact would result from construction of that project in conjunction with Alternative 1 or 2. Potential habitat for the Presidio manzanita is located outside of the footprint of Alternatives 1 and 2, and potential habitat may exist on the lands of GGNRA surrounding the existing SFVAMC Fort Miley Campus. Other coastal scrub species (such as Presidio clarkia, beach layia, and San Francisco lessingia) have low potential to occur on GGNRA lands as well. Projects proposed under Cumulative Project 4 (GGNRA General Management Plan) may have low potential to affect these species if present. As noted in Section 3.15, "Wildlife and Habitat," Alternative 1 (and 2) does not have the potential for an adverse impact on federally species specplant species during construction	7, 17–18, 27–28, 30–34, 36–40, 47–48, and 64	1–8, 17, 20–21, 26, 35, 41–46, 49–63, and 65–86	**No cumulative impact.** Because of the area's long history of industrial use, the undeveloped portions of Mission Bay provide no habitat for federally listed plants, federally listed wildlife species, and other species of special regional concern. Therefore no impact on federally listed plants, federally listed wildlife species, and other species of special regional concern is anticipated.

Table 4-3: Cumulative Environmental Impacts

Impact Area	Other Past, Present, and Future Projects in Cumulative Study Area for Alternatives 1 and 2 (see Table 4-1 for details) [4]		Cumulative Impact of Alternatives 1 and 2	Other Past, Present, and Future Projects in Cumulative Study Area for Alternative 3 (see Table 4-2 for details)		Cumulative Impact of Alternative 3
	Past Actions	Present and Future Actions		Past Actions	Present and Future Actions	
			activities. Therefore, no cumulative impact on federally listed plant species is anticipated to occur during construction. The California Natural Diversity Database notes one occurrence of the California red-legged frog within the Lands End area of the GGNRA. While projects proposed under within GGNRA lands may have the potential to affect this species, Alternatives 1 and 2 do not have the potential for an adverse impact on California red-legged frog during construction activities. Thus, no cumulative operational impact on this species would occur during construction.			
Construction: Other Species of Special Regional Concern	4	4	**Minor cumulative impact**. The area of the Visitor Center at Merrie Way and Point Lobos Avenue (Cumulative Project 2) does not have habitat for the other species of special regional concern. Thus, no cumulative impact would result from the construction of that project in conjunction with Alternative 1 or 2. Potentially adverse effects on other species of special regional concern could occur because of vegetation removal as part of projects for Cumulative Project 4 (GGNRA General Management Plan). These effects could affect nesting birds, monarch butterfly, western red bat, hoary bat, and three plants (Franciscan manzanita, San Francisco Bay spineflower, and Franciscan thistle). Therefore, there would be a potentially adverse cumulative impact on species of regional concern. Section 3.15, "Wildlife and Habitat," evaluates the impacts of Alternatives 1 and 2 on these other species and proposed mitigation measures, which would reduce this impact to a minor level. Thus, with implementation of the project measures noted in Section 3.15, Alternative 1 or 2 would not contribute considerably to cumulative biological resource impacts noted above. Therefore, there would be a minor cumulative impact on species of special regional concern during construction.	7, 17–18, 27–28, 30–34, 36–40, 47–48, and 64	1–8, 17, 20–21, 26, 35, 41–46, 49–63, and 65–86	**No cumulative impact.** Because of the area's long history of industrial use, the undeveloped portions of Mission Bay provide no habitat for federally listed plants, federally listed wildlife species, and other species of special regional concern. Therefore no impact on federally listed plants, federally listed wildlife species, and other species of special regional concern is anticipated.

Table 4-3: Cumulative Environmental Impacts

Impact Area	Other Past, Present, and Future Projects in Cumulative Study Area for Alternatives 1 and 2 (see Table 4-1 for details) [4]		Cumulative Impact of Alternatives 1 and 2	Other Past, Present, and Future Projects in Cumulative Study Area for Alternative 3 (see Table 4-2 for details)		Cumulative Impact of Alternative 3
	Past Actions	Present and Future Actions		Past Actions	Present and Future Actions	
Construction: Habitat Linkages and Corridors	4	4	**No cumulative impact.** The area of the Visitor Center at Merrie Way and Point Lobos Avenue does not provide habitat linkages or corridors. Thus, no cumulative impact would result from the construction of that project in conjunction with Alternative 1 or 2. Projects within GGNRA lands may have the potential to disrupt habitat linkages and corridors by removing vegetation and creating greater access to areas that are currently not accessible. However, Alternatives 1 and 2 would have no impact on habitat linkages or corridors. Thus, no cumulative impact on habitat linkage and corridors would occur during construction.	17–18, 27–28, 30–34, 36–40, 47–48, and 64	17, 20–21, 26, 35, 41–46, 49–63, and 65–86	**No cumulative impact.** Because of the area's long history of industrial use, the undeveloped portions of Mission Bay do not provide habitat linkages or corridors. Therefore Alternative 3 long-term projects would have no impact on habitat linkages or corridors.
Operation: Vegetation/Habitat	1–4	4	**Minor cumulative impact.** Operation of Cumulative Project 2 (Merrie Way Visitor Center) does not involve tree removal, because operational activities would consist of facility maintenance activities; thus, no cumulative impact on wildlife or habitat would result from the operation of that project and Alternative 1 or 2. For the most part, the GGNRA cumulative projects (1–4 [8]) would have few operational impacts on vegetation or habitat, because operational activities would consist of maintenance activities that are similar to current activities. Thus, there would be a minor cumulative operational impact on vegetation or habitat.	1–26 and 28–86	1–26 and 28–86	**No cumulative impact.** Operation of the identified cumulative projects would not affect habitat linkages or corridors, because operational activities for these projects would consist of facility maintenance. Thus, no operational cumulative impacts would result.

[8] *USS San Francisco* Memorial Parking Lot Renovation, Merrie Way Visitor Center, GGNRA Dog Management Plan, and GGNRA General Management Plan.

Table 4-3: Cumulative Environmental Impacts

Impact Area	Other Past, Present, and Future Projects in Cumulative Study Area for Alternatives 1 and 2 (see Table 4-1 for details) [4]		Cumulative Impact of Alternatives 1 and 2	Other Past, Present, and Future Projects in Cumulative Study Area for Alternative 3 (see Table 4-2 for details)		Cumulative Impact of Alternative 3
	Past Actions	Present and Future Actions		Past Actions	Present and Future Actions	
Operation: Federally Listed Plant/Wildlife Species	1–4[9]	4	**No cumulative impact.** Operation of most identified cumulative projects would not affect federally listed plant or wildlife species, because operational activities would consist of facility maintenance within existing developed areas. In addition, identified cumulative projects within GGNRA lands would have few operational impacts on California red-legged frog, because operational activities would consist of maintenance activities that are similar to current activities. Thus, there would be a minor cumulative operational impact on this species.	N/A	N/A	**No cumulative impact.** Operation of the identified cumulative projects would not affect federally listed plants or wildlife species, because operational activities would consist of facility maintenance within existing developed areas. Thus, no cumulative impact would result from operation of cumulative projects.
Operation: Other Species of Special Regional Concern	4	4	**Minor cumulative impact.** Implementation of LRDP-specific mitigation measures identified in this EIS will ensure only a minor cumulative impact. Operation of Cumulative Project 2 (Merrie Way Visitor Center) would not affect other species of special regional concern because operational activities would consist of facility maintenance. Thus, no cumulative impact would be associated with the operation of that project and Alternative 1 or 2. For the most part, Cumulative Project 4 (GGNRA General Management Plan) would have few operational impacts on other species of special regional concern, because operational activities would consist of maintenance activities that are similar to current activities. Thus, little to no potential exists for cumulative operational impacts on those species.	N/A	N/A	**No cumulative impact.** Operation of the identified cumulative projects would not affect other species of regional concern, because operational activities would consist of facility maintenance. Thus, no cumulative impact would result from operation of cumulative projects.
Operation: Habitat Linkages and Corridors	4	4	**Minor cumulative impact.** Operation of Cumulative Project 2 (Merrie Way Visitor Center) would not affect other species of special regional concern, because operational activities would consist of facility maintenance. Thus, no cumulative impact would result from the operation of that project and Alternative 1 or 2. For the most part, Cumulative Project 4 (GGNRA General Management Plan) would have few operational impacts on linkages or corridors, because operational activities would consist of maintenance activities	N/A	N/A	**No cumulative impact.** Operation of the identified cumulative projects would not affect habitat linkages or corridors, because operational activities for these projects would consist of facility maintenance. Thus, no cumulative impact would result from the operation cumulative projects.

[9] *USS San Francisco* Memorial Parking Lot Renovation, Merrie Way Visitor Center, GGNRA Dog Management Plan, and GGNRA General Management Plan.

Table 4-3: Cumulative Environmental Impacts

Impact Area	Other Past, Present, and Future Projects in Cumulative Study Area for Alternatives 1 and 2 (see Table 4-1 for details) [4]		Cumulative Impact of Alternatives 1 and 2	Other Past, Present, and Future Projects in Cumulative Study Area for Alternative 3 (see Table 4-2 for details)		Cumulative Impact of Alternative 3
	Past Actions	Present and Future Actions		Past Actions	Present and Future Actions	
			that are similar to current activities. Thus, little to no potential exists for cumulative operational impacts. Therefore, there would be a minor cumulative operational impact on habitat linkages and corridors.			

Notes: BMP = best management practice; CSO = combined sewer overflow; CWA = Clean Water Act; EIS = environmental impact statement; EISA = Energy Independence and Security Act; EMS = emergency medical services; GGNRA = Golden Gate National Recreation Area; GHG = greenhouse gas; LID = Low Impact Development; LRDP = *Long Range Development Plan*; N/A = not applicable; NEPA = National Environmental Policy Act; NPDES = National Pollutant Discharge Elimination System; NPS = National Park Service; OSHA = Occupational Safety and Health Administration; SFPD = San Francisco Police Department; SF Planning = San Francisco Planning Department; SF Port = Port of San Francisco; SFPUC = San Francisco Public Utilities Commission; SF Redevelopment = San Francisco Redevelopment Agency; SFRPD = San Francisco Recreation and Park Department; SFVAMC = San Francisco Veterans Affairs Medical Center; SWPPP = storm water pollution prevention plan; VA = U.S. Department of Veterans Affairs; VA SSPP = *Department of Veteran Affairs Strategic Sustainability Performance Plan*

Source: Data compiled by AECOM in 2015

4.4 CUMULATIVE IMPACT TOPICS WITH FURTHER ANALYSIS

The following environmental resource areas are retained for further analysis and discussion.

4.4.1 Air Quality

Alternatives 1 and 2

Criteria Pollutants

Construction

The geographic context for the analysis of potential cumulative construction-related air quality impacts includes projects in the vicinity of the existing SFVAMC Fort Miley Campus that would be constructed between 2013 and 2027. Past, present, and probable future cumulative projects within these geographic and temporal contexts include most cumulative projects listed in Table 4-1. Therefore, the projects from Table 4-1 considered in this analysis of cumulative construction-related impacts from criteria pollutant emissions include Cumulative Projects 4 (GGNRA General Management Plan), 7 (Lincoln Park Steps Improvement), 9 (Safeway Redevelopment), and 10 (5400 Geary Boulevard). Implementing Alternative 1 or 2 in combination with the aforementioned cumulative projects could result in an increase in regional short-term construction-related criteria air pollutant and precursor emissions.

Criteria air pollutants are regional and cumulative by nature, and are controlled by local air district's air quality management plans and the State Implementation Plan (SIP). The *de minimis* evaluation performed for Alternatives 1 and 2 covers both project-specific and cumulative emissions by assessing the incremental contribution of both short- and long-term construction emissions of criteria pollutants to the region's budget. Additionally, each project mentioned in the previous paragraph would need to comply with the local air quality management plan or the SIP.

Under Alternative 1 or 2, the short-term projects would involve construction of an estimated 384,452 net new square feet and the long-term projects would involve construction of an additional 170,000 net new square feet. This is a large project relative to the other cumulative projects (see Table 4-1 for net totals of cumulative projects). However, construction would occur over a finite time period (2013–2027), and the emissions would occur only during this time period, unlike operational emissions, which would occur over the lifetime of the projects.

The *de minimis* thresholds would not be exceeded (even when overlapping construction and operational emissions were combined under the Alternative 1 scenario—see Tables 3.2-7 and 3.2-11 in Section 3.2, "Air Quality," for Alternative 1 and Tables 3.2-15 and 3.2-19 for Alternative 2). The other, aforementioned projects also would be required to meet applicable California Environmental Quality Act (CEQA) or NEPA thresholds. Therefore, implementing Alternative 1 or 2 would not make a considerable contribution to cumulative emissions of criteria pollutants, and this would be a minor cumulative impact.

Operation

The geographic context for the analysis of potential cumulative operational air quality impacts includes locations in which the projects listed in Table 4-1 would be operational after the year 2020. The projects from Table 4-1 considered in this analysis of cumulative operational impacts from criteria pollutant emissions include Cumulative Projects 2 (Merrie Way Visitor Center), 4 (GGNRA General Management Plan), 5 (Cabrillo Playground Renovation), 7 (Lincoln Park Steps Improvement), 8 (Albertsons Reuse), 9 (Safeway Redevelopment), 10 (5400 Geary Boulevard), and 12 (Solar Photovoltaic System). Implementing Alternative 1 or 2 in combination with the aforementioned cumulative projects could result in an increase in regional, long-term operational emissions of criteria air pollutants and precursors.

The *de minimis* evaluation performed for Alternatives 1 and 2 covers both project-specific and cumulative emissions by assessing the incremental contribution of both short- and long-term operational emissions of criteria pollutants to the region's budget. Additionally, all cumulative projects identified above would have to comply with the local air quality management plan or the SIP.

Under Alternative 1 or 2, an estimated 554,452 net new square feet would be constructed (a combination of the short-term and long-term projects). This total is large relative to the cumulative projects listed in Table 4-1; however, the *de minimis* thresholds would not be exceeded (even when overlapping construction and operational emissions were combined under the Alternative 1 scenario; see Tables 3.2-12 and 3.2-20 in Section 3.2, "Air Quality"). In addition, the other, aforementioned projects would be required to meet applicable NEPA thresholds. Therefore, implementing Alternative 1 or 2 would not make a considerable contribution to cumulative emissions of criteria pollutants during the operational phase, and this would be a minor cumulative impact.

Localized Carbon Monoxide Emissions

Operation

Implementing Alternative 1 or 2 in combination with the cumulative projects listed in Table 4-1 (except Cumulative Project 3 [GGNRA Dog Management Plan]) could result in an increase in vehicle volumes at local intersections. The area near the existing SFVAMC Fort Miley Campus is largely built out, and future traffic volumes, when added to those generated by Alternative 1 or 2, would not be sufficient to cause a carbon monoxide (CO) hotspot. (See the traffic study in Appendix E for future traffic volumes related to regional growth in the area and traffic volumes generated by the projects for Alternative 1 or 2.) Therefore, implementing Alternative 1 or 2 would not make a considerable contribution to CO hotspot formation during the operational phase, and this would be a minor cumulative impact.

Localized Emissions of Toxic Air Contaminants and Particulate Matter

Construction and Operation

To determine the significance of cumulative localized impacts of toxic air contaminants (TACs) and fine particulate matter ($PM_{2.5}$), Bay Area Air Quality Management District thresholds were used. Exposure of sensitive receptors to TACs and $PM_{2.5}$ would be considered cumulatively significant if the aggregate total of all past, present, and foreseeable future sources within a 1,000-foot radius of the fence line (or beyond, where appropriate)

for a source or from the location of a receptor, plus the contribution from Alternative 1 or 2, would exceed the following:

- an excess cancer risk level of more than 100 in 1 million or a chronic hazard index greater than 10 for TACs; or
- 0.8 microgram per cubic meter annual average $PM_{2.5}$.

A detailed health risk assessment was conducted for Alternative 1 and 2 short-term and long-term projects to determine the incremental contribution of those projects during construction to potential health risks in the area. Because the assessment of potential health risks from Alternatives 1 and 2 evaluated the incremental contribution of SFVAMC development combined with known existing and planned sources (i.e., cumulative projects), the assessment of project-level impacts is also considered to address cumulative impacts. As stated in Section 3.2, "Air Quality," of this EIS, localized construction emissions of TACs and $PM_{2.5}$ would be minor with implementation of Mitigation Measures AIR-1 and AIR-2, and the impacts of localized operational emissions of TACs and $PM_{2.5}$ under Alternatives 1 and 2 would be minor.

Odors

Construction

Implementing Alternative 1 or 2 in combination with the cumulative projects listed in Table 4-1 could result in an increase to local construction-related odor emissions. Localized odor emissions associated with construction could occur near sensitive receptors (patients at the existing SFVAMC Fort Miley Campus and nearby residents) during an 11-year period. However, these odors would be temporary, would occur during business hours during the construction period, and would disperse quickly given the wind in the area. In addition, because of the localized nature of construction-related odors and the distance to nearby cumulative projects (Cumulative Project 4 [GGNRA General Management Plan] is the closest to the existing SFVAMC Fort Miley Campus) and because these projects have already been constructed, the cumulative projects would not make a considerable contribution to localized odor emissions. This would be a minor cumulative impact.

Operation

Implementing Alternative 1 or 2 in combination with the cumulative projects listed in Table 4-1 could result in an increase in local operational odor emissions. Operational impacts related to exposure of sensitive receptors to odor emissions under Alternative 1 or 2 would be minor after mitigation. As described previously, there is currently no odor complaint history for the existing SFVAMC Fort Miley Campus that would affect off-site sensitive receptors, and there are no other odor sources in the vicinity that could affect on-site sensitive receptors. In addition, the Fort Miley area is windy, which reduces the chances of odor exposures, and none of the foreseeable future projects located within 2 miles of the existing SFVAMC Fort Miley Campus (Projects 1–8) would be considered major odor sources (see Table 3.2-6 in Section 3.2, "Air Quality"). It is unlikely that even foreseeable projects near the Campus (Cumulative Projects 1, 3, 4, and 9–12) would cause odor emissions. Therefore, operation of cumulative projects would not make a considerable contribution to localized odor emissions. This would be a minor cumulative impact.

Alternative 3

Criteria Pollutants

Construction

The geographic context for the analysis of potential cumulative construction-related air quality impacts includes locations in which the projects listed in Table 4-2 would be implemented after the year 2020. Only projects after 2020 are included in the geographic context, because the Alternative 3 analysis focuses only on long-term projects. Past, present, and probable future cumulative projects within these geographic and temporal contexts include all of the cumulative projects listed in Table 4-2 (thus, for the analysis, all 86 projects identified in Table 4-2).

Under Alternative 3, construction of approximately 170,000 square feet of building space in the Mission Bay area would occur in the long term, which is substantial relative to the other cumulative projects. However, construction would occur over a finite time period (2024–2027), and the emissions would occur only during this time period, unlike operational emissions, which would occur over the lifetime of the projects. Implementing Alternative 3 in combination with the aforementioned cumulative projects could result in an increase in regional, short-term construction-related emissions of criteria air pollutants and precursors.

The *de minimis* evaluation performed for Alternative 3 covers both project-specific and cumulative emissions by assessing the incremental contribution of long-term construction-related emissions of criteria pollutants to the region's budget. Additionally, each project mentioned in the previous paragraph would have to comply with the local air quality management plan or the SIP. The *de minimis* thresholds would not be exceeded (even when overlapping construction and operational emissions were combined under the Alternative 3 scenario; see Table 3.2-24 in Section 3.2, "Air Quality"). In addition, the other, aforementioned projects would be required to meet applicable CEQA or NEPA thresholds. Therefore, construction of cumulative projects would not make a considerable contribution to cumulative emissions of criteria pollutants, and this would be a minor cumulative impact.

Operation

Under Alternative 3, operation of approximately 554,452 square feet would occur in the long term (the sum of short- and long-term construction), which is large relative to the other, aforementioned projects (see Table 4-2 for net totals). The *de minimis* evaluation performed for Alternative 3 covers both project-specific and cumulative emissions by assessing the incremental contribution of long-term operational emissions of criteria pollutants to the region's budget. In addition, each project mentioned in the previous paragraph would have to comply with the local air quality management plan or the SIP.

The *de minimis* thresholds would not be exceeded (even when overlapping construction and operational emissions were combined under the Alternative 3 scenario; see Table 3.2-24 in Section 3.2, "Air Quality"). Therefore, operation of cumulative projects would not be considered to make a considerable contribution to cumulative impacts. This would be a minor cumulative impact.

Localized Carbon Monoxide Emissions

Operation

Implementing Alternative 3 in combination with all 86 cumulative projects listed in Table 4-2 could result in an increase in vehicle volumes at local intersections. Implementing Alternative 3 has the potential to add incremental operational CO emissions that could cause or contribute to an existing hotspot in the heavily trafficked Mission Bay area. When added to the operational CO emissions from cumulative projects listed in Table 4-2, it may be concluded that operation of cumulative projects could make a considerable contribution to existing or new CO hotspots, and this would be an adverse cumulative impact. Implementing Alternative 3 in combination with the aforementioned cumulative projects could result in an increase in regional, long-term operational emissions of criteria air pollutants and precursors.

There are no feasible mitigation measures to reduce future traffic volumes to which the potential new SFVAMC Mission Bay Campus would contribute. However, it should be noted that as vehicular emission rates continue to improve over time, CO concentrations would reasonably be anticipated to decrease as well, and CO hotspot formation is less likely in the long term.

Localized Emissions of Toxic Air Contaminants and Particulate Matter

Construction and Operation

Implementing Alternative 3 in combination with the cumulative projects listed in Table 4-2 could result in an increase in local TAC emissions. It is anticipated that cumulative projects in Table 4-2 that would be located more than 1,000 feet away from the site of Alternative 3 would not cumulatively contribute to the project's local TAC emissions. To determine the significance of cumulative localized impacts of TACs and $PM_{2.5}$, Bay Area Air Quality Management District thresholds were used. Exposure of sensitive receptors to TACs and $PM_{2.5}$ would be considered cumulatively significant if the aggregate total of all past, present, and foreseeable future sources within a 1,000-foot radius of the fence line (or beyond, where appropriate) for a source or from the location of a receptor, plus the contribution from Alternative 3, would exceed the following:

- an excess cancer risk level of more than 100 in 1 million or a chronic hazard index greater than 10 for TACs; or
- 0.8 microgram per cubic meter annual average $PM_{2.5}$.

With respect to construction activities at the existing SFVAMC Fort Miley Campus, a detailed health risk assessment was conducted for Alternative 1 worst-case conditions. The assessment resulted in higher emissions of diesel particulate matter than for Alternative 3. Alternative 3 would result in fewer emissions than Alternatives 1 and 2; thus, health risk impacts associated with construction of Alternative 3 projects would be less than those for Alternative 1 or 2. As stated in Section 3.2, "Air Quality," of this EIS, localized construction emissions of TACs and $PM_{2.5}$ under Alternative 1 or 2 projects would be minor with implementation of Mitigation Measures AIR-1 and AIR-2. Therefore, the impacts of localized operational emissions of TACs and $PM_{2.5}$ under Alternative 3 projects also would be minor.

The exact location of Alternative 3 long-term projects at the potential new SFVAMC Mission Bay Campus is unknown; thus, the number of potential foreseeable projects listed in Table 4-2 within a 1,000-foot radius of the Mission Bay location is also unknown. Under Alternative 3, construction and operation of approximately 170,000 square feet of building space would occur in the long term, which is large relative to the other potential foreseeable projects (see Table 4-2 for net totals). Because the Mission Bay area is heavily trafficked, the impact of localized construction and operational emissions of TACs and $PM_{2.5}$ under Alternative 3 projects would be potentially adverse. When considered with the many foreseeable projects listed in Table 4-2 (1–8, 17, 18, 20, 21, 26–28, and 30–86), it may be concluded that construction and operation of cumulative projects could make a considerable contribution to localized TAC and $PM_{2.5}$ emissions and exposure of sensitive receptors to TAC and $PM_{2.5}$ emissions (including patients at the Mission Bay hospital facilities and nearby residents). This would be a potentially adverse cumulative impact.

Any on-site or off-site stationary TAC sources would require permits, and would be subject to local air district review as well as CEQA and/or NEPA review; therefore, further mitigation would not be feasible or necessary for permitted sources. There are no feasible mitigation measures to reduce future traffic volumes to which the potential new SFVAMC Mission Bay Campus would contribute. The Mission Bay area is windy, and mobile TAC and $PM_{2.5}$ emissions are anticipated to decrease in the future because of State and federal regulatory requirements.

Odors

Construction

Localized odor emissions during construction could occur near sensitive receptors during a 2-year period. However, these odors would be temporary, would occur during business hours during the construction period, and would disperse quickly given the wind in the area. In addition, because of the localized nature of construction-related odors and the distance to nearby cumulative projects, construction of Alternative 3 projects would not make a considerable contribution to localized odor emissions. This would be a minor cumulative impact.

The Mission Bay area is windy, and mobile-source TAC and $PM_{2.5}$ emissions are anticipated to decrease in the future because of State and federal regulatory requirements, which would also reduce odors from construction-related diesel combustion.

Operation

Exposures of sensitive receptors to operational odor emissions under Alternative 3 projects would be potentially adverse. As described previously in Section 3.2, “Air Quality,” several existing odor sources and an existing odor complaint history related to the Mission Bay area could affect on-site sensitive receptors at the potential new SFVAMC Mission Bay Campus. Additionally, the potential new Campus has the potential to generate minor odors that could affect off-site sensitive receptors. Because the exact location of the potential new SFVAMC Mission Bay Campus in the Mission Bay area is unknown at this time, it would be speculative to estimate the effects of localized odor emissions on potential sensitive receptors and recommend mitigation/abatement measures to be incorporated into the facility design. However, any new odor sources permitted in the vicinity of the potential new Campus would be subject to odor control measures, and potential odors associated with medical

office use in general are considered minimal. Therefore, potential direct odor impacts would be minor. No indirect odor impacts are anticipated to occur.

No foreseeable future projects are located within 2 miles of the site of the potential new SFVAMC Mission Bay Campus (see the cumulative projects listed in Table 4-2) that, based on land use type, would be considered potential major odor sources. It is unlikely that even foreseeable projects close to the potential new Campus would cause substantial odor emissions. Furthermore and as noted above, the Mission Bay area is windy, and mobile-source TAC and $PM_{2.5}$ emissions are anticipated to decrease in the future because of State and federal regulatory requirements, which would also reduce odors from construction-related diesel combustion. As a result, operation of Alternative 3 would not make a considerable contribution to odor impacts in the area. Impacts would be minor.

4.4.2 Cultural Resources

This section addresses cumulative effects on only archaeological resources and historic properties, because none of the other resource types included in VA's definition of cultural resources are known to exist in the study area. (See Section 3.4, "Cultural Resources," for further discussion of the presence of cultural resources.)

Alternatives 1 and 2

Archaeological Resources

Construction

The geographic context for the analysis of potential cumulative construction-related impacts for archaeological resources consists of areas near the existing SFVAMC Fort Miley Campus and the Campus itself. Based on the geographic area, time frame, and types of projects listed in Table 4-1, identified cumulative projects for archaeological resources include Cumulative Projects 4 (GGNRA General Management Plan) and 11 (Geothermal System). Both identified projects would involve ground-disturbing activities that could result in the discovery or damage of archaeological sites. Implementing short-term development could result in adverse impacts on archaeological resources. Therefore, the identified cumulative projects in addition to Alternative 1 or 2 could result in adverse cumulative impacts on archaeological resources if no mitigation measures were to be implemented for Alternative 1 or 2. There would be no cumulative impacts for the remaining projects in the table because they do not pertain to archaeological resources or are located outside the geographic context being considered for archaeological resources.

Implementing Mitigation Measure CR-1 identified in Section 3.4, "Cultural Resources," would reduce potentially adverse impacts of Alternative 1 or 2. Effects that could result from inadvertent damage or destruction of presently undocumented significant archaeological resources and human remains during construction would be minor, because site-specific research, documentation, avoidance, and treatment measures would be implemented as required under Section 106 of the National Historic Preservation Act. Therefore, the contribution of Alternative 1 or 2 to a potentially adverse cumulative impact would not be considerable, and this would be a minor cumulative impact.

Operation

None of the projects listed in Table 4-1 have the potential to disturb archaeological sites during the operational phase, because it is assumed that no ground-disturbing activities would occur after construction. Therefore, no operational cumulative impacts on archaeological resources would occur.

Historic Resources

Construction

The geographic context for the analysis of potential cumulative construction-related impacts on historic resources includes those areas close to the existing SFVAMC Fort Miley Campus and the Campus itself. The time frame would include past, present, and probable future cumulative projects with a buildout date to 2027. The project type would be those projects that include nonarchaeological historic properties. Based on the geographic area, time frame, and type of projects listed in Table 4-1, Cumulative Projects 1–4 and 11–15[10] are the identified projects included in this cumulative analysis for historic resources. Cumulative Projects 1–4 (*USS San Francisco* Memorial Parking Lot Renovation, Merrie Way Visitor Center, GGNRA Dog Management Plan, GGNRA General Management Plan), 11 (Geothermal System), 13 (North Slope Seismic/Geologic Stabilization), and 14 (Electrical System Upgrade Exterior Work) would not cause a cumulative impact on historic resources. Cumulative Project 4 (GGNRA General Management Plan) will likely be beneficial to historic resources, because part of the purpose of that plan is preservation and enhancement of historic structures and landscapes.

Cumulative Project 12 (Solar Photovoltaic System), which is ongoing at the SFVAMC Fort Miley Campus, has the potential to result in adverse effects on the SFVAMC Historic District. However, because the project involves only minor construction, there would be only a minor impact of the SFVAMC Historic District. Therefore, there would be a minor cumulative impact on historic resources.

Cumulative Project 15 (Mental Health Patient Parking Addition) required the construction of a parking garage adjacent to buildings that contribute to SFVAMC Historic District, which resulted in a visual intrusion to the SFVAMC Historic District's setting. Therefore, there would be a minor cumulative impact on historic resources.

Operation

None of the projects listed in Table 4-1 would be anticipated to alter historic structures during the operational phase, because it is assumed that no potential exists for alterations to historic structures after completion of the construction phase. Therefore, no operational cumulative impacts on historic resources would occur.

[10] *USS San Francisco* Memorial Parking Lot Renovation, Merrie Way Visitor Center, GGNRA Dog Management Plan, GGNRA General Management Plan, Geothermal System, Solar Photovoltaic System, North Slope Seismic/Geologic Stabilization, Electrical System Upgrade Exterior Work, and Mental Health Patient Parking Addition.

Alternative 3

Archaeological Resources

Construction

The geographic context for the analysis of potential cumulative construction-related impacts for archaeological resources includes those areas near the Mission Bay area boundary for Alternative 3. Based on the geographic area, time frame (buildout date to 2027), and type of projects, all 86 cumulative projects listed in Table 4-2 are identified as cumulative projects for archaeological resources because these projects are located in an area that has a high potential for significant archaeological resources. The identified cumulative projects also involve ground-disturbing activities that could result in the discovery or damage of archaeological sites. In addition, implementing Alternative 3 could result in potentially adverse impacts on archaeological resources. Alternative 3, when considered with the cumulative projects listed in Table 4-2, could result in an adverse cumulative impact on archaeological resources.

Because Alternative 3 long-term projects in the Mission Bay area represent approximately 170,000 square feet of new development and the 86 cumulative projects listed in Table 4-2 represent more than 17.8 million square feet, Alternative 3 long-term projects would not constitute a considerable amount of the identified adverse cumulative impact. In addition, implementing Mitigation Measure CR-1 would help reduce the impact of inadvertent discoveries. Therefore, this would be a minor cumulative impact.

Operation

None of the projects listed in Table 4-2 have the potential to disturb archaeological sites during the operational phase because it is assumed that no ground-disturbing activities would occur after construction. Therefore, no cumulative impacts on archaeological resources would occur during the operational phase.

Historic Resources

Construction

The geographic context for the analysis of potential cumulative construction-related impacts on historic resources includes those areas close to the boundary for Alternative 3 in the Mission Bay area. The time frame would include past, present, and probable future cumulative projects with a buildout date to 2027. Based on the geographic area, time frame, and type of projects, all 86 cumulative projects listed in Table 4-2 are identified as cumulative projects for historic resources because they are located in an area that contains historic-era resources, some of which are likely historically significant. If projects are sited near or in place of historically significant buildings, constructing such projects may damage or alter those resources so that they no longer convey significance. For this reason, implementing Alternative 3 would be potentially adverse to historic resources.

Similarly, implementing the 86 cumulative projects listed in Table 4-2 would be potentially adverse to historic resources. Implementing Alternative 3 in addition to the identified cumulative projects would likely result in an adverse cumulative impact on historic resources. Because Alternative 3 long-term projects in the Mission Bay area represent approximately 170,000 square feet of new development and the 86 cumulative projects listed in

Table 4-2 represent more than 17.8 million square feet, Alternative 3 long-term projects would not constitute a considerable amount of the potentially adverse cumulative impact. In addition, implementing Mitigation Measure CR-1 would help reduce the impact of inadvertent discoveries. Therefore, this would be a minor cumulative impact.

Operation

None of the projects listed in Table 4-2 would disturb historic structures after construction. Therefore, no cumulative impacts on historic resources would occur during operation.

4.4.3 Greenhouse Gas Emissions and Climate Change

Alternatives 1 and 2

Greenhouse Gas Emissions

Because greenhouse gas (GHG) emissions are global air emissions with an atmospheric residence time of at least 200 years, construction-related and operational GHG emissions from most projects listed in Table 4-1 are considered in this cumulative analysis. Cumulative Project 3 (GGNRA Dog Management Plan) would not apply to this analysis because allowing on-leash dogs on existing NPS GGNRA trails near the existing SFVAMC Fort Miley Campus would not result in construction-related or operational GHG emissions. In addition, Cumulative Project 6 (DuPont Tennis Courts Restroom Renovation) would not apply because no construction GHG emissions and no net new operational GHG emissions would be associated with a change in the commercial uses of an existing building.

Construction

For this analysis, identified projects from Table 4-1 include Cumulative Projects 4 (GGNRA General Management Plan), 7 (Lincoln Park Steps Improvement), and 10 (5400 Geary Boulevard).

Construction of Alternative 1 or 2 projects in conjunction with the identified cumulative projects would result in cumulative emissions of metric tons of carbon dioxide equivalent ($MTCO_2e$) between 2013 and 2027. However, these construction-related GHG emissions would be spread out over a 14-year time period (2013–2027). In addition, total construction-related GHG emissions for Alternative 1 or 2 (i.e., 6,948 $MTCO_2e$ or 8,190 $MTCO_2e$, respectively) would be below the 25,000 $MTCO_2e$ per year threshold. Therefore, construction of Alternative 1 or 2 projects would not make a considerable contribution to cumulative GHG emissions and global climate change, and this would be a minor cumulative impact.

Operation

For this analysis, identified projects from Table 4-1 include Cumulative Projects 1–2, 4–5, 7–12, and 14.[11]

[11] *USS San Francisco* Memorial Parking Lot Renovation, Merrie Way Visitor Center, GGNRA General Management Plan, Cabrillo Playground Renovation, Lincoln Park Steps Improvement, Albertsons Reuse, Safeway Redevelopment, 5400 Geary Boulevard, Geothermal System, Solar Photovoltaic System, and Electrical System Upgrade Exterior Work.

Operation of the LRDP facilities under Alternative 1 in conjunction with the identified projects would generate cumulative emissions of carbon dioxide equivalent (CO_2e) each year once buildings become operational. These cumulative operational emissions of GHGs at full buildout of Alternative 1 or 2 (i.e., 4,711 $MTCO_2e$ per year without measures from the *Department of Veteran Affairs Strategic Sustainability Performance Plan* [VA SSPP]) would be below 25,000 $MTCO_2e$ per year; therefore, implementing Alternative 1 or 2 would not make a considerable contribution to cumulative GHG emissions and global climate change. This would be a minor cumulative impact.

Impacts of Climate Change Construction

Because impacts of climate change are operational, no cumulative impacts related to sea level rise, extreme heat events, or wildfire threat would be associated with the construction of cumulative projects.

Operation

The geographic context is the Pacific Ocean near San Francisco, and the temporal context is through 2100. Sea level rise for the Pacific Ocean near San Francisco is predicted to be up to 24 inches by 2050 and up to 66 inches by 2100 (NRC, 2012).

Past, present, and probable future cumulative projects within these geographic and temporal contexts include the operation of some of the cumulative projects listed in Table 4-1. Cumulative Projects 5 (Cabrillo Playground Renovation), 6 (DuPont Tennis Courts Restroom Renovation), 8 (Albertsons Reuse), 9 (Safeway Redevelopment), 10 (5400 Geary Boulevard), 17 (Westside Recycled Water), and 18 (Emergency Firefighting Water System) would not apply to this analysis, because these projects are or would be located at least 2,000 feet inland from the Pacific Ocean, are not located within or near a forested area, nor do they contain or involve patient-care uses. Therefore, for this analysis, the projects identified in Table 4-1 include Cumulative Projects 1–4, 7, 11–16, and 19.[12]

Based on sea-level-rise predictions of up to 24 inches by 2050 and up to 66 inches by 2100, sea level rise could cause flooding in some of the coastal areas of San Francisco. However, the identified cumulative projects are at higher elevations than the Pacific Ocean (approximately 75–320 feet above mean sea level versus 0 feet above mean sea level), and the SFVAMC Fort Miley Campus is situated approximately 300–350 feet above mean sea level. Thus, there would be no cumulative climate change–related sea level rise impacts to which Alternative 1 or 2 would contribute.

Cumulative SFVAMC and NPS projects could experience a cumulative climate change–related wildfire risk impact given their location within or proximate to the forested NPS lands. Therefore, the identified cumulative projects could be unprepared for environmental changes resulting from climate change, and thus could result in harm to persons or property or degradation of natural resources or ecosystems, representing a potentially adverse

[12] *USS San Francisco* Memorial Parking Lot Renovation, Merrie Way Visitor Center, GGNRA Dog Management Plan, GGNRA General Management Plan, Lincoln Park Steps Improvement, Geothermal System, Solar Photovoltaic System, North Slope Seismic/Geologic Stabilization, Electrical System Upgrade Exterior Work, Mental Health Patient Parking Addition, Baker Beach Green Streets, and Wastewater Enterprise Renewal and Replacement Program.

cumulative impact. However, with implementation of LRDP-specific mitigation measures, implementing Alternative 1 or 2 would not contribute considerably to this potentially adverse cumulative impact.

Alternative 3

Greenhouse Gas Emissions

GHG emissions are global air emissions with an atmospheric residence time of at least 200 years. All of the cumulative projects listed in Table 4-2 fall within these geographical and temporal contexts. Therefore, for this analysis, identified cumulative projects include all 86 cumulative projects listed in Table 4-2.

Construction

Construction of Alternative 3 long-term projects in conjunction with the identified cumulative projects would generate cumulative emissions of CO_2e between 2020 and 2027. Even though these construction-related GHG emissions would be spread out over a 7-year time period, this total still could represent a large quantity of GHG emissions. Therefore, construction of cumulative projects would make a considerable contribution to cumulative GHG emissions and global climate change, and this would be an adverse cumulative impact.

However, the contribution of approximately 1,019 $MTCO_2e$ by Alternative 3 long-term projects in the Mission Bay area to the total quantity of cumulative construction-related GHG emissions would not be considerable. Therefore, construction of Alternative 3 long-term projects would represent a minor contribution to this cumulative impact.

Operation

Operation of LRDP facilities under Alternative 3 long-term projects in conjunction with the identified cumulative projects would generate cumulative emissions of CO_2e each year by 2040. Because it is anticipated that cumulative operational GHG emissions would exceed 25,000 $MTCO_2e$ per year, implementing cumulative projects would make a considerable contribution to cumulative GHG emissions and global climate change. This would be an adverse cumulative impact.

However, under Alternative 3 long-term projects, the contribution of approximately 5,014 $MTCO_2e$ per year without VA SSPP measures to the total quantity of cumulative operational GHG emissions would not be considerable. Therefore, operation of the Alternative 3 long-term projects would represent a minor contribution to this cumulative impact.

Impacts of Climate Change

Construction

Because impacts of climate change are operational, no cumulative impacts related to sea level rise, extreme heat events, or wildfire threat would be associated with the construction of cumulative projects.

Operation

The geographic context is the San Francisco Bay near San Francisco, and the temporal context is through 2100. Sea level rise for the San Francisco Bay near San Francisco is predicted to be up to 24 inches by 2050 and up to 66 inches by 2100 (NRC, 2012).

Past, present, and probable future cumulative projects within these geographic and temporal contexts include the operation of some of the cumulative projects listed in Table 4-2. Many cumulative projects—SFRPD Projects 19–23, SF Port Projects 24–26, SF Planning Projects 28, 30, 33, 35–36, 38, 40–48, and 50–80, and SFPUC Projects 81–85—would not apply to this analysis, because these projects are or would be located at least 2,000 feet inland from San Francisco Bay, are not located within or near a forested area, nor contain or would involve patient-care uses. Therefore, for this analysis, identified cumulative projects from Table 4-2 include City and County of San Francisco as Successor to SF Redevelopment Projects 1–6, UCSF Projects 7–17, SFRPD Project 18, SF Planning Projects 29, 31–32, 34, 37, 39, and 49, and Transbay Joint Powers Authority Project 86.

Based on sea-level-rise predictions of 11 inches by 2050 and 36 inches by 2100, sea level rise could cause flooding in some of the coastal areas of San Francisco. Tidal flooding issues currently exist in the Mission Bay area and such flooding issues could be exacerbated by sea level rise. The potential new identified cumulative projects would be located on land that was previously marshland and would be vulnerable to sea level rise, particularly in combination with potential storm surges and/or extreme rainfall events by the middle and end of the century. This would represent an adverse cumulative impact related to sea level rise.

However, as part of construction of VA facilities at the potential new SFVAMC Mission Bay Campus, the ground elevation would be raised to a level that would avoid sea level rise–related inundation of VA structures and of the roadways and infrastructure that would serve the new facilities. In addition, VA facilities would be thoroughly assessed as a part of the design and approval process to satisfy building code and geotechnical requirements. Furthermore, a project-level environmental review would be conducted in the future when more specific project details are available. Thus, no climate change–related sea level rise impact would occur at the potential new SFVAMC Mission Bay Campus. Therefore, operation of the Alternative 3 long-term projects would not contribute to this cumulative impact.

4.4.4 Noise and Vibration

Alternatives 1 and 2

Noise

Construction

The geographic context for the analysis of cumulative noise impacts varies based on the type of noise impact being analyzed. For construction and stationary-source noise impacts, only the area around a development site (in this case, the existing SFVAMC Fort Miley Campus or potential new SFVAMC Mission Bay Campus) would be included. For example, construction noise dissipates/attenuates quickly as the distance between the construction site and the receptor increases. As a result, only those projects within 1,000 feet of the existing Campus or the site of the potential new Campus are considered for the analysis of cumulative construction noise impacts. Past,

present, and probable future cumulative projects within these geographic and temporal contexts include the construction of most cumulative projects listed in Table 4-1. As indicated in Table 4-1, Cumulative Projects 1–2, 5, 8, 10–11, and 13–15[13] were all completed by 2014. Cumulative Project 3 (GGNRA Dog Management Plan) would not apply to this analysis, because allowing on-leash dogs on existing NPS GGNRA trails near the existing SFVAMC Fort Miley Campus would not result in construction-related noise impacts. In addition, Cumulative Projects 6 (DuPont Tennis Courts Restroom Renovation), 7 (Lincoln Park Steps Improvement), and 16–19 (Baker Beach Green Streets, Westside Recycled Water, Emergency Firefighting Water System Seismic Upgrades, and Wastewater Enterprise Renewal and Replacement Program) would be located more than 1,000 feet from the Campus. Therefore, potential construction noise from Alternative 1 or 2 would not be considered cumulatively considerable with these projects because of the distance between sources. Therefore, for this analysis, identified projects (within 1,000 feet from the Campus) from Table 4-1 include Cumulative Projects 4 (GGNRA General Management Plan) and 12 (Solar Photovoltaic System).

Cumulative Project 4 would be located down-gradient from the existing SFVAMC Fort Miley Campus. The use of heavy equipment during construction of Cumulative Project 4 is anticipated to be minor and likely limited to one or two pieces of heavy construction equipment (e.g., backhoe/loader). Any concurrent construction activities that could result in cumulative noise increases would be limited to the northern portion of the existing Campus and portions of Lincoln Park located between Cumulative Project 4 and the existing Campus. Therefore, off-site residential structures located south of the existing Campus would not be exposed to potential cumulative construction noise levels. Construction activities at and around historic structures associated with Cumulative Project 4 would likely limit the number of visitors to Lincoln Park in that area.

Cumulative Project 12 involves installing a solar photovoltaic system at rooftop and parking structures on the SFVAMC Fort Miley Campus. Installation of the solar photovoltaic system would likely not require the use of heavy construction equipment (e.g., large excavator or bulldozer) and would likely be limited to one or two pieces of construction equipment (e.g., truck-mounted crane or backhoe). Any concurrent construction activities that could result in cumulative noise increases would be limited to the interior of the existing Campus. Therefore, cumulative noise impacts on the off-site residential structures would be minor. Furthermore, intervening terrain would limit the potential cumulative noise exposure to park visitors.

Combined with implementation of Mitigation Measures NOI-1 through NOI-3, which would reduce construction-related noise for construction, equipment, and worker vehicles, in addition to compliance with VA Specification Section 015719, “Temporary Environmental Controls,” Alternatives 1 and 2 would not make a cumulatively considerable contribution to a cumulative construction impact. Therefore, cumulative construction impacts associated with Alternative 1 or 2 would be minor.

Operation

The geographic context for the analysis of cumulative operational mobile-source (i.e., roadway) noise impacts is defined as the immediate area surrounding the roadways that would be affected by implementation of a particular Alternative, as well as cumulative development. The potential cumulative operational impacts related to roadway

[13] *USS San Francisco* Memorial Parking Lot Renovation, Merrie Way Visitor Center, Cabrillo Playground Renovation, Albertsons Reuse, 5400 Geary Boulevard, Geothermal System, North Slope Seismic/Geologic Stabilization, Electrical System Upgrade Exterior Work, and Mental Health Patient Parking Addition.

noise were analyzed based on the traffic condition at the year 2040, which includes both regional growth and the cumulative projects and EIS Alternatives.

Past, present, and probable future cumulative projects within the geographic and temporal contexts identified at the beginning of this section include the operation of the cumulative projects listed in Table 4-1. None of the cumulative projects identified in Table 4-1 are located within 1,000 feet of the existing SFVAMC Fort Miley Campus, nor would they include unique or substantial stationary noise sources beyond existing conditions. Therefore, cumulative impacts related to stationary-source noise would not occur.

With respect to operational mobile-source noise, the 19 cumulative projects listed in Table 4-1 could contribute additional vehicle trips to the local roadway network in the vicinity of the SFVAMC Fort Miley Campus. Those projects are therefore included within the geographic and temporal contexts for cumulative impacts of Alternative 1 or 2.

To examine the potential cumulative effects of traffic increases in the vicinity of the existing SFVAMC Fort Miley Campus, traffic noise levels associated with the Campus were calculated for nearby roadway segments. Traffic volumes for each study segment were derived from p.m. peak intersection turning movements (see Section 3.13, “Transportation, Traffic, Circulation, and Parking”) using a K Factor of 10 to compute the average daily trips on roadway segments. (A K Factor is a multiplication factor used to compute average daily traffic.) Vehicle speeds and truck volumes on local roadways were determined based on field observations conducted on and around the existing Campus.

Table 4-4 summarizes the modeled traffic noise levels at 50 feet from the centerline of affected roadway segments near the Campus. The modeling found that the largest potential change in ambient roadway noise levels under cumulative (2040) conditions would occur along 42nd Avenue between Clement Street and Point Lobos Avenue. The change in ambient roadway noise levels along that segment would be approximately 2.1 A-weighted decibels (dBA) day-night average sound level (L_{dn}), less than the threshold of 5.0 dBA for future roadway noise levels (applicable where the existing condition is less than 60 dBA L_{dn}).

Table 4-4: Predicted Cumulative Future Traffic Noise Levels (Alternative 1 or 2)

Roadway	Segment		L_{dn} at 50 Feet, dBA			
	From	To	Existing	Cumulative (2035) Conditions	Net Change	Substantial Increase?
Clement Street	43rd Avenue	42nd Avenue	62.0	63.1	1.1	No
Clement Street	42nd Avenue	34th Avenue	63.3	64.4	1.1	No
Clement Street	43rd Avenue	48th Avenue	60.7	61.6	0.9	No
43rd Avenue	Clement Street	Point Lobos Avenue	60.7	62.0	1.3	No
42nd Avenue	Clement Street	Point Lobos Avenue	57.5	59.6	2.1	No

Notes: dBA = A-weighted decibels; L_{dn} = day-night average noise level
Traffic noise levels are predicted at a standard distance of 50 feet from the roadway centerline and do not account for shielding from existing noise barriers or intervening structures. Traffic noise levels may vary depending on actual setback distances and localized shielding.
Source: Data modeled by AECOM in 2014.

The increase in daily vehicle operations at the existing SFVAMC Fort Miley Campus as a result of implementation of Alternative 1 or 2 would result in a minor cumulative impact on ambient traffic noise along local roadways.

Vibration

Construction

Past, present, and probable future cumulative projects within the geographic and temporal contexts identified at the beginning of this section include the construction of cumulative projects listed in Table 4-1. Groundborne vibration attenuates rapidly with distance. The potential vibration impacts with respect to building damage (e.g., a threshold of 0.12 inch per second peak particle velocity for older buildings) are generally limited to buildings and structures located close to the construction activities (with heavy construction equipment), i.e., within 20 feet. With respect to potential human annoyance (e.g., 80 vibration decibels), impacts are generally limited to typical heavy construction equipment (e.g., large bulldozer) operating within 50 feet of the affected receptors.

As described above, most of the cumulative projects were completed by 2014. The two identified projects (within 1,000 feet of the SFVAMC Fort Miley Campus) are Cumulative Projects 4 (GGNRA General Management Plan) and 12 (Solar Photovoltaic System). Cumulative Project 4 is located approximately 1,000 feet from the Campus. Therefore, there would not be a potential cumulative vibration impact from construction activities of Alternative 1 or 2 projects together with Cumulative Project 4. As described above, Cumulative Project 12 would likely not require the use of heavy construction equipment (e.g., large excavator or bulldozer). Therefore, potential vibration impacts from concurrent construction activities would occur only within 50 feet of multiple heavy construction equipment. Off-site receptors would be located more than 50 feet from the construction activities for Cumulative Project 12. Therefore, construction vibration from Alternative 1 or 2 would not be considered cumulatively considerable. Impacts would be minor.

Operation

Past, present, and probable future cumulative projects within the geographic and temporal contexts identified at the beginning of this section include the operation of the 19 cumulative projects listed in Table 4-1. As noted in the discussion of project impacts in Section 3.10, “Noise and Vibration,” the potential for operational vibration impacts is limited to areas subject to substantial heavy truck traffic or rail operations, neither of which would occur in the area of the existing SFVAMC Fort Miley Campus. Therefore, the potential for cumulative operational vibration impacts near the existing SFVAMC Fort Miley Campus is considered minimal. Impacts would be minor.

Alternative 3

Noise

Construction

Cumulative impacts related to construction activities under Alternative 3 short- and long-term projects at the existing SFVAMC Fort Miley Campus would be the same as those identified above for Alternatives 1 and 2.

Noise is a site-specific impact, and a specific site in the Mission Bay area has not been identified for the potential new SFVAMC Mission Bay Campus under Alternative 3; therefore, it is not possible to determine which of the 86 cumulative projects listed in Table 4-2 should be evaluated in conjunction with Alternative 3 to determine cumulative construction noise impacts. Nonetheless, future development of the potential new SFVAMC Mission Bay Campus would likely expose some receptors to elevated noise levels during construction.

To achieve a substantial cumulative effect in terms of construction noise levels, an additional source of high levels of construction noise would need to be close to a noise receptor. Construction activities within the cumulative context would be subject to the requirements of the San Francisco Noise Control Ordinance and would not occur during potentially noise-sensitive hours, unless a special permit issued by the City allows such activities. However, depending on the location of the cumulative project(s) in relation to the potential new Campus and any nearby receptors, cumulative noise levels could exceed City standards.

Because the exact location of the potential new SFVAMC Mission Bay Campus and a detailed project design are unknown at this time, this cumulative impact that would result from Alternative 3 long-term projects would be potentially adverse.

Operation

Because a specific site in the Mission Bay area has not been identified for the potential new SFVAMC Mission Bay Campus under Alternative 3, it is not possible to determine which of the 86 cumulative projects from Table 4-2 should be evaluated in conjunction with Alternative 3 long-term projects to determine cumulative construction noise impacts. Based on the anticipated square footage of the potential new Campus under this Alternative, the potential contribution of Alternative 3 long-term projects to roadway noise levels would be potentially cumulatively considerable and could contribute to a substantial permanent increase in roadway noise levels. The exact location of the potential new SFVAMC Mission Bay Campus and a detailed project design are unknown at this time and would require further evaluation when a location in the Mission Bay area is identified; therefore, this cumulative impact that would result from Alternative 3 long-term projects would be potentially adverse.

Vibration

Construction

Cumulative impacts related to construction activities under Alternative 3 short-term projects at the existing SFVAMC Fort Miley Campus would be the same as those identified above for Alternatives 1 and 2.

Because a specific site in the Mission Bay area has not been identified for the potential new SFVAMC Mission Bay Campus under Alternative 3, it is not possible to determine which cumulative projects from Table 4-2 should be evaluated in conjunction with Alternative 3 long-term projects to determine cumulative construction vibration impacts. As noted above for the evaluation of cumulative construction noise impacts, the potential for cumulative construction vibration impacts would depend on the location of a cumulative project or projects from Table 4-2 and a sensitive receptor relative to the potential new SFVAMC Mission Bay Campus. For example, should a cumulative project and the potential new Campus be located within 100 feet of a residential structure, vibration levels could exceed the Federal Transit Administration’s threshold for human annoyance and impacts would be

adverse. The exact location of the potential new SFVAMC Mission Bay Campus and a detailed project design are unknown at this time and would require further evaluation when a location in the Mission Bay area is identified; therefore, this cumulative impact that would result from Alternative 3 long-term projects would be potentially adverse.

Operation

Past, present, and probable future cumulative projects within the geographic and temporal contexts identified at the beginning of this section include the operation of the cumulative projects listed in Table 4-1. As noted in the impact discussion in Section 3.10, "Noise and Vibration," the potential for operational vibration impacts is limited to areas subject to substantial heavy-truck traffic or rail operations. Several of the cumulative projects listed in Table 4-2 could generate substantial heavy-truck and/or rail operations; however, the potential new SFVAMC Mission Bay Campus and facilities proposed at the existing SFVAMC Fort Miley Campus under Alternative 3 long-term projects would generate minimal truck traffic. Therefore, impacts of Alternative 3 long-term projects would not be considered cumulatively considerable with respect to operational vibration, and impacts would be minor.

4.4.5 Transportation, Traffic, and Parking Alternative 1

Traffic, Transit, and Parking

Construction

Past, present, and probable future cumulative projects within these geographic area shown in in Figure 4-1 and temporal contexts include the construction of the cumulative projects listed in Table 4-1 (except Cumulative Project 3 [GGNRA Dog Management Plan]). The cumulative construction projects located near the existing SFVAMC Fort Miley Campus (Cumulative Projects 4 [GGNRA General Management Plan], 7 [Lincoln Park Steps Improvement], and 10 [5400 Geary Boulevard]) either are located within the GGNRA or the existing Campus or involve renovating existing facilities and/or structures. As a result, the potential for cumulative traffic delays, impacts on transit circulation, and loss of local on-street parking spaces could occur. As stated in Section 3.13, "Transportation, Traffic, Circulation, and Parking," construction-related impacts related to traffic, transit, and parking would not be adverse; however, implementation of Management Measures TRANS-1 through TRANS-3 would further ensure that construction-related effects would be minor. Cumulative Project 7 is located more than 4,000 feet from the limits of the existing SFVAMC Fort Miley Campus; based on this distance from the Campus, impacts related to this project would not be considered cumulative with the construction traffic impacts of Alternative 1. Cumulative projects also would be required to coordinate construction activities through SFMTA and follow the regulations set forth in "The Blue Book." Therefore, cumulative traffic, transit, and parking impacts would be minor.

Operation

The cumulative analysis for transportation and parking evaluates conditions in Year 2040, including both short-term and long-term projects under Alternatives 1, 2, and 3; growth associated with planned and proposed future development; changes to the transportation network in the study area; and background growth in travel demand in San Francisco and the region.

Like the short- and long-term analyses, the cumulative analysis assumes a growth rate of 0.5 percent per year for background traffic for all study intersections. San Francisco Municipal Railway (Muni) ridership growth is calculated using the same methodology discussed under "Assessment Methods" in Section 3.13, "Transportation, Traffic, Circulation, and Parking."

The cumulative analysis assumes the same changes to the transportation network assumed in the analyses for short-term and long-term projects, as discussed in Section 3.13.

Past, present, and probable future cumulative projects within the same geographical and temporal contexts as Alternative 1 include the 19 cumulative projects listed in Table 4-1.

Growth in traffic as a result of planned development both within and outside of the SFVAMC Fort Miley Campus area was used to develop traffic volumes for 2040 Cumulative Alternative 1 Conditions. The resulting traffic volumes and levels of service (LOS) at the study intersections are summarized in Table 4-5 and illustrated in Figure 4-3.

Table 4-5: Intersection Levels of Service—2040 Cumulative Alternative 1 Conditions (Weekday P.M. Peak Hour)

	Intersection	Control Type	2040 Cumulative Conditions (No Action)		2040 Cumulative Alternative 1 Conditions	
			LOS	Delay[1]	LOS	Delay[1]
1	34th Avenue/Clement Street	All-way Stop	B	14.1	C	17.0
2	42nd Avenue/Clement Street	All-way Stop	B	12.7	C	16.9
3	43rd Avenue/Clement Street	All-way Stop	B	14.0	C	20.3
4	42nd Avenue/Point Lobos Avenue	All-way Stop	C	15.3	C	18.4
5	43rd Avenue/Point Lobos Avenue	All-way Stop	C	19.0	C	23.3

Notes: LOS = level of service
[1] Delay presented in seconds per vehicle.
Source: VA, 2014.

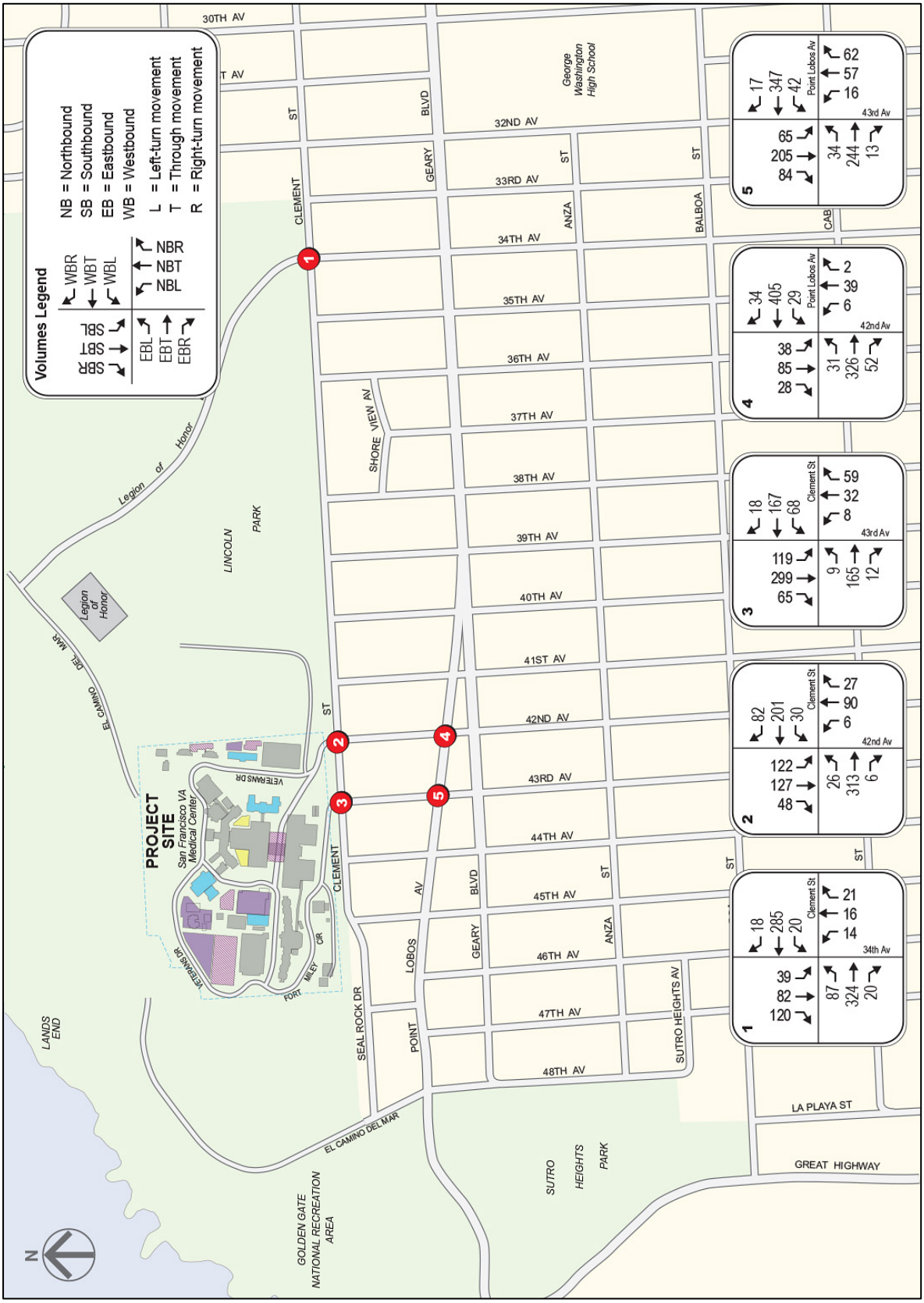
As shown in Table 4-5, under 2040 Cumulative Alternative 1 Conditions, all five study intersections are projected to operate at acceptable conditions (LOS D or better) during the weekday p.m. peak hour. Thus, implementing Alternative 1 would not result in adverse cumulative impacts on any study intersections.

LOS results for the study roadway segments are summarized in Table 4-6.

As shown in Table 4-6, both study roadway segments are projected to operate at acceptable conditions (LOS D or better) during the weekday p.m. peak hour. Thus, implementing Alternative 1 would not result in adverse cumulative impacts along any study roadway segments.

As shown in Table 3.13-12 in Section 3.13, "Transportation, Traffic, Circulation, and Parking," Alternative 1 would generate a total of approximately 215 transit trips (91 inbound to and 124 outbound from the SFVAMC Fort Miley Campus) during the weekday p.m. peak hour.

Muni ridership and capacity under 2040 Cumulative Alternative 1 Conditions are summarized in Table 4-7.



Source: VA, 2014.

Figure 4-3: Intersection Traffic Volumes—2040 Cumulative Alternative 1 Conditions

Table 4-6: Roadway Segment Levels of Service—2040 Cumulative Alternative 1 Conditions (Weekday P.M. Peak Hour)

	Intersection	Direction	2040 Cumulative Conditions (No Action)		2040 Cumulative Alternative 1 Conditions	
			LOS	v/c Ratio	LOS	v/c Ratio
1	42nd Avenue/Clement Street *Between Clement Street and Point Lobos Avenue*	Northbound	A	0.19	A	0.27
		Southbound	A	0.28	B	0.36
2	43rd Avenue/Clement Street *Between Clement Street and Point Lobos Avenue*	Northbound	A	0.19	A	0.24
		Southbound	D	0.73	D	0.84

Notes: LOS = level of service; v/c = volume-to-capacity
Source: VA, 2014.

Table 4-7: San Francisco Municipal Railway Ridership and Capacity—2040 Cumulative Alternative 1 Conditions (Weekday P.M. Peak Hour)

Direction	Existing Conditions			2040 Cumulative Conditions (No Action)			2040 Cumulative Alternative 1 Conditions		
	Ridership	Capacity	Utilization	Ridership	Capacity	Utilization	Ridership	Capacity	Utilization
Inbound	908	1,777	51%	1,661	2,820	59%	1,785	2,820	63%
Outbound	1,814	2,528	72%	**3,570**	**3,826**	**93%**	**3,661**	**3,826**	**96%**

Notes:
Ridership data based on conditions at the maximum load point for each line.
Sources: SFMTA, 2011; VA, 2014.

As discussed for the Alternative 1 short-term projects, the Campus's location at the outer end of the Geary Corridor means that the commute direction for the project constitutes the "reverse commute" direction. Trips heading inbound to the Campus would take outbound transit services in the Geary Corridor, and trips heading outbound from the Campus would take inbound transit services in the Geary Corridor.

In particular, outbound transit service in the Geary Corridor is expected to operate at 93 percent capacity utilization under 2040 Cumulative Conditions (No Action), exceeding the 85 percent threshold as shown in Table 4-7. Adding up to 91 passengers as a result of Alternative 1 would increase capacity utilization to 96 percent. However, this added ridership would contribute only 3.7 percent of the total ridership in the corridor, which would not represent a considerable contribution to the total ridership. In the opposite direction, inbound transit service in the Geary Corridor is expected to operate at only 59 percent capacity utilization during the weekday p.m. peak hour. Even with the addition of up to 124 new transit riders generated by Alternative 1, capacity utilization would still increase to only 63 percent, well below the 85 percent threshold.

Similar to 2020 short-term Alternative 1 Conditions, it is likely that only some of these 124 new transit riders leaving the Campus would choose to take Muni buses in the Geary Corridor. Many of these riders would be expected to use the commuter shuttle services provided by SFVAMC, so that the actual increase in capacity utilization on inbound buses in the Geary Corridor is expected to be less than as described above. Overall,

implementing Alternative 1 is not expected to result in or make a considerable contribution to an operational impact on Muni capacity in either direction in the Geary Corridor.

Parking conditions are expected to be similar to 2027 Long-Term Alternative 1 Conditions, as discussed in Section 3.13, "Transportation, Traffic, Circulation, and Parking." Thus, cumulative parking impacts would be minor.

Therefore, the potential cumulative impacts related to traffic, transit, and parking would be minor.

Alternative 2

As discussed in Section 3.13, "Transportation, Traffic, Circulation, and Parking," Alternative 2 is identical to Alternative 1 in terms of the total amount and type of operational space proposed, but it would involve different phasing and implementation schedules for some of the projects, resulting in a different construction schedule. Thus, the evaluation of transportation impacts distinguishes between these two Alternatives only when discussing construction-related transportation impacts. As under Alternative 1, however, impacts related to the identified cumulative projects listed in Table 4-1 would be minor because cumulative projects would be required to coordinate construction activities through SFMTA and follow the regulations set forth in "The Blue Book." As a result, cumulative traffic, transit, and parking impacts would be minor.

Alternative 3

The discussion below addresses the cumulative impacts of Alternative 3 long-term projects at the potential new SFVAMC Mission Bay Campus. For the analysis of impacts of Alternative 3 short-term projects at the existing SFVAMC Fort Miley Campus, see the discussion of Alternatives 1 and 2 above.

Traffic, Transit, and Parking

Construction

Because the potential new SFVAMC Mission Bay Campus would be located in the Mission Bay area, which is currently undergoing redevelopment, there may be construction activities around the potential new Campus in the cumulative time frame. Further analysis of construction impacts in the cumulative time frame would be required once a specific location for the potential new Campus has been determined. Thus, this cumulative impact would be potentially adverse.

Operation

Without knowing where the potential new SFVAMC Mission Bay Campus would be located under Alternative 3, it is not possible to determine which cumulative projects listed in Table 4-2 should be evaluated in conjunction with Alternative 3 long-term projects for cumulative traffic impacts at the potential new SFVAMC Mission Bay Campus. Nonetheless, based on the level of development anticipated under Alternative 3 long-term projects, the potential contribution of traffic generated by this Alternative to the local transportation network could be substantial in relation to available capacity. When taken into consideration with the projects listed in Table 4-2, potential decreases in intersection LOS and other traffic-related impacts could be exacerbated. As a result,

impacts could be adverse. Because the location of the potential new SFVAMC Mission Bay Campus is currently undetermined, further quantitative analysis would be required once a specific location and site plan for the potential new Campus is identified. Thus, this cumulative impact would be potentially adverse.

Growth in traffic as a result of planned development both within and outside of the SFVAMC Fort Miley Campus area was used to develop traffic volumes for 2040 Cumulative Alternative 3 Conditions. The resulting traffic volumes and LOS at the study intersections are summarized in Table 4-8 and illustrated in Figure 4-4.

Table 4-8: Intersection Levels of Service—2040 Cumulative Alternative 3 Conditions (Weekday P.M. Peak Hour)

	Intersection	Control Type	2040 Cumulative Conditions (No Action)		2040 Cumulative Alternative 3 Conditions	
			LOS	Delay[1]	LOS	Delay[1]
1	34th Avenue/Clement Street	All-way Stop	B	14.1	B	14.7
2	42nd Avenue/Clement Street	All-way Stop	B	12.7	B	13.2
3	43rd Avenue/Clement Street	All-way Stop	B	14.0	C	16.1
4	42nd Avenue/Point Lobos Avenue	All-way Stop	C	15.3	C	15.6
5	43rd Avenue/Point Lobos Avenue	All-way Stop	C	19.0	C	20.4

Notes:
LOS = level of service
[1] Delay presented in seconds per vehicle.
Source: VA, 2014.

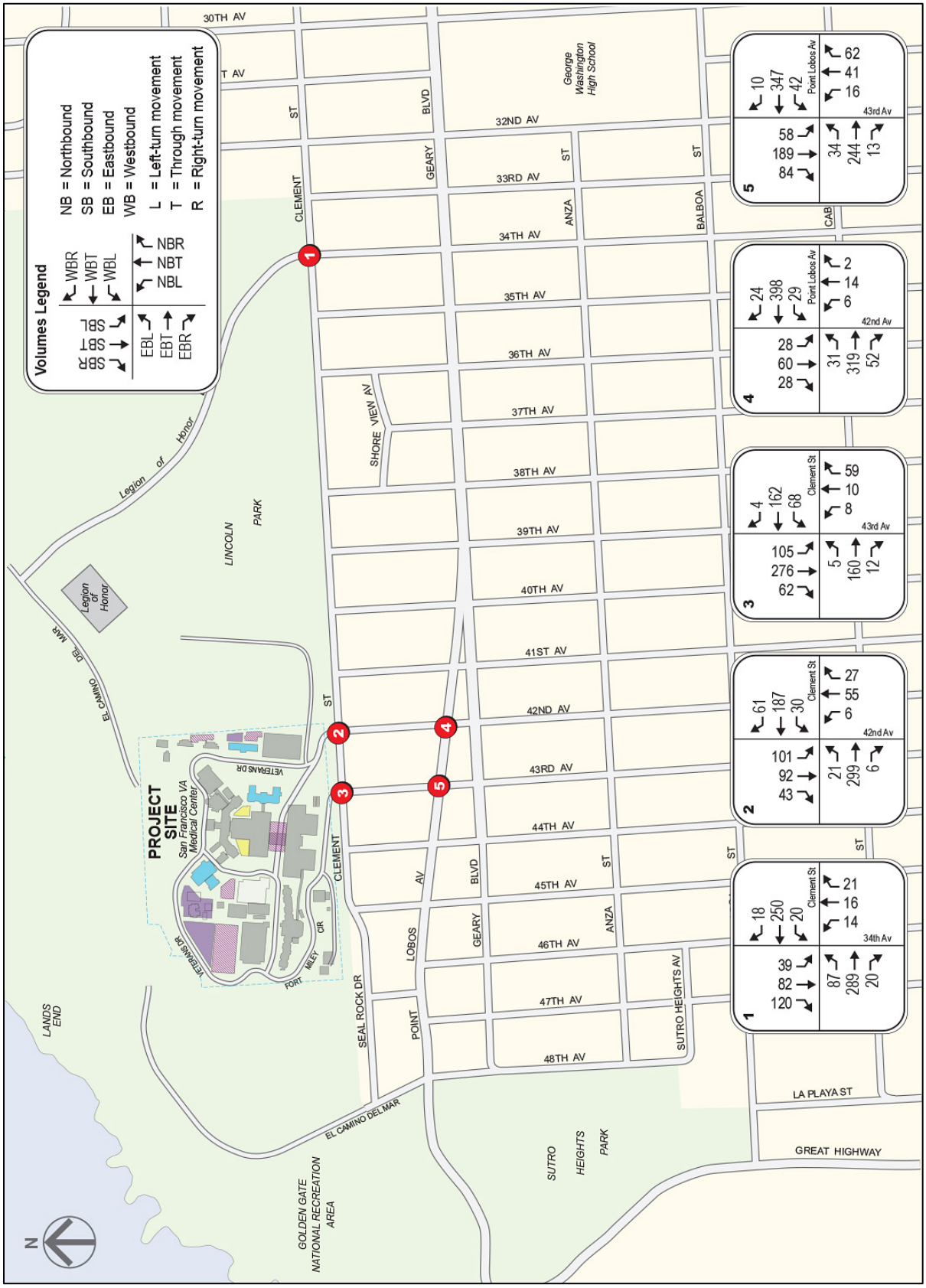
As shown in Table 4-8, under 2040 Cumulative Alternative 3 Conditions, all five study intersections are projected to operate at acceptable conditions (LOS D or better) during the weekday p.m. peak hour. Thus, Alternative 3 would not result in adverse cumulative impacts on any study intersections.

LOS results for the study roadway segments are summarized in Table 4-9.

Table 4-9: Roadway Segment Levels of Service—2040 Cumulative Alternative 3 Conditions (Weekday P.M. Peak Hour)

	Intersection	Direction	2040 Cumulative Conditions (No Action)		2040 Cumulative Alternative 3 Conditions	
			LOS	v/c Ratio	LOS	v/c Ratio
1	42nd Avenue/Clement Street *Between Clement Street and Point Lobos Avenue*	Northbound	A	0.19	A	0.19
		Southbound	A	0.28	B	0.28
2	43rd Avenue/Clement Street *Between Clement Street and Point Lobos Avenue*	Northbound	A	0.19	A	0.19
		Southbound	D	0.73	D	0.79

Notes:
LOS = level of service; v/c = volume-to-capacity
Source: VA, 2014.



Source: VA, 2014.

Figure 4-4: Intersection Traffic Volumes—2040 Cumulative Alternative 3 Conditions

As discussed in Section 3.13, impacts on transit operations would be minor under Alternative 3. Because Alternative 3 would generate fewer new transit trips in either direction than Alternative 1 or 2, no impacts on transit capacity are expected under Alternative 3. Alternative 3 is not expected to result in an adverse cumulative impact on transit capacity at the Campus. As discussed above, further analysis of transit impacts at the potential new SFVAMC Mission Bay Campus would be required once a specific location for the potential new Campus has been determined.

Both study roadway segments are projected to operate at acceptable conditions (LOS D or better) during the weekday p.m. peak hour (Table 4-9). Thus, implementing Alternative 3 would not result in adverse cumulative impacts along any study roadway segments.

Further analysis of traffic impacts at the potential new SFVAMC Mission Bay Campus would be required once a specific location for the potential new Campus has been determined. Thus, this cumulative impact would be potentially adverse.

As shown in Table 3.13-13 in Section 3.13, “Transportation, Traffic, Circulation, and Parking,” the existing SFVAMC Fort Miley Campus would generate a total of approximately 45 new transit trips (six inbound trips to and 39 outbound trips from the Campus) during the weekday p.m. peak hour under Alternative 3, substantially fewer than under Alternative 1. Muni ridership under 2040 Cumulative Conditions (No Action) is summarized in Table 4-6.

Parking conditions at the existing SFVAMC Fort Miley Campus are expected to be similar to 2027 Long-Term Alternative 3 Conditions, as discussed in Section 3.13, “Transportation, Traffic, Circulation, and Parking.” Cumulative parking impacts would be minor at the existing Campus. Further analysis of parking impacts at the potential new SFVAMC Mission Bay Campus would be required once a specific location for the potential new Campus has been determined. Thus, this cumulative impact would be potentially adverse.

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