

PARKMERCED PROJECT

Volume 1 - Chapters I-VIII



**CITY AND COUNTY OF SAN FRANCISCO
PLANNING DEPARTMENT: CASE NO. 2008.0021E**

STATE CLEARINGHOUSE NO. 2009052073

DRAFT EIR PUBLICATION DATE: MAY 12, 2010

DRAFT EIR PUBLIC HEARING DATE: JUNE 17, 2010

DRAFT EIR PUBLIC COMMENT PERIOD: MAY 12, 2010 TO JUNE 28, 2010

Written comments should be sent to:

Environmental Review Officer
San Francisco Planning Department
1650 Mission Street, Suite 400
San Francisco, CA 94103



SAN FRANCISCO PLANNING DEPARTMENT

DATE: May 12, 2010
TO: Distribution List for the Parkmerced Project Draft EIR
FROM: Bill Wycko, Environmental Review Officer
SUBJECT: Request for the Final Environmental Impact Report for the Parkmerced Project (Planning Department File No. 2008.0021E)

This is the Draft of the Environmental Impact Report (EIR) for the Parkmerced Project. A public hearing will be held on the adequacy and accuracy of this document. After the public hearing, our office will prepare and publish a document titled "Comments and Responses," which will contain [a summary of] all relevant comments on this Draft EIR and our responses to those comments. It may also specify changes to this Draft EIR. Those who testify at the hearing on the Draft EIR will automatically receive a copy of the Comments and Responses document, along with notice of the date reserved for certification; others may receive a copy of the Comments and Responses and notice by request or by visiting our office. This Draft EIR together with the Comments and Responses document will be considered by the Planning Commission in an advertised public meeting and will be certified as a Final EIR if deemed adequate.

After certification, we will modify the Draft EIR as specified by the Comments and Responses document and print both documents in a single publication called the Final EIR. The Final EIR will add no new information to the combination of the two documents except to reproduce the certification resolution. It will simply provide the information in one document, rather than two. Therefore, if you receive a copy of the Comments and Responses document in addition to this copy of the Draft EIR, you will technically have a copy of the Final EIR.

We are aware that many people who receive the Draft EIR and Comments and Responses have no interest in receiving virtually the same information after the EIR has been certified. To avoid expending money and paper needlessly, we would like to send copies of the Final EIR [in Adobe Acrobat format on a CD] to private individuals only if they request them. Therefore, if you would like a copy of the Final EIR, please fill out and mail the postcard provided inside the back cover to the Major Environmental Analysis division of the Planning Department within two weeks after certification of the EIR. Any private party not requesting a Final EIR by that time will not be mailed a copy. Public agencies on the distribution list will automatically receive a copy of the Final EIR.

Thank you for your interest in this project.

1650 Mission St.
Suite 400
San Francisco,
CA 94103-2479

Reception:
415.558.6378

Fax:
415.558.6409

Planning
Information:
415.558.6377

PARKMERCED PROJECT

Volume 1 - Chapters I-VIII

CITY AND COUNTY OF SAN FRANCISCO
PLANNING DEPARTMENT: CASE NO. 2008.0021E

STATE CLEARINGHOUSE NO. 2009052073

DRAFT EIR PUBLICATION DATE: MAY 12, 2010

DRAFT EIR PUBLIC HEARING DATE: JUNE 17, 2010

DRAFT EIR PUBLIC COMMENT PERIOD: MAY 12, 2010 TO JUNE 28, 2010

Written comments should be sent to:

Environmental Review Officer
San Francisco Planning Department
1650 Mission Street, Suite 400
San Francisco, CA 94103

PARKMERCED PROJECT
DRAFT ENVIRONMENTAL IMPACT REPORT

VOLUME 1 – Chapters I-VIII

TABLE OF CONTENTS

I.	INTRODUCTION	I.1
A.	Purpose of this Environmental Impact Report	I.1
B.	Project Overview	I.2
C.	Environmental Review Process	I.3
II.	SUMMARY.....	II.1
III.	PROJECT DESCRIPTION.....	III.1
A.	Project Overview	III.1
B.	Project Sponsor’s Objectives.....	III.3
C.	Project Location and Existing Conditions.....	III.4
D.	Project Characteristics.....	III.15
E.	Project Phasing and Construction.....	III.54
F.	Intended Uses of the EIR.....	III.66
IV.	PLANS AND POLICIES.....	IV.1
A.	San Francisco Plans and Policies	IV.1
B.	San Francisco Planning Code.....	IV.4
C.	Other Local Plans and Policies.....	IV.5
D.	Regional Plans and Policies	IV.7
V.	ENVIRONMENTAL SETTING AND IMPACTS.....	V.A.1
A.	Land Use	V.A.2
B.	Aesthetics	V.B.1
C.	Population and Housing	V.C.1
D.	Cultural Resources	
	a. Historic Architectural Resources	V.D.1
	b. Archaeological and Paleontological Resources.....	V.D.30
E.	Transportation and Circulation.....	V.E.1
F.	Noise.....	V.F.1
G.	Air Quality.....	V.G.1
H.	Greenhouse Gas Emissions	V.H.1
I.	Wind and Shadow	V.I.1
J.	Recreation.....	V.J.1
K.	Utilities and Services Systems	V.K.1
L.	Public Services	V.L.1
M.	Biological Resources.....	V.M.1
N.	Geology and Soils	V.N.1
O.	Hydrology and Water Quality	V.O.1
P.	Hazards and Hazardous Materials.....	V.P.1
Q.	Mineral and Energy Resources.....	V.Q.1

R. Agricultural Resources and Forest Land V.R.1

VI. OTHER CEQA ISSUES VI.1

A. Growth-Inducing Impacts..... VI.1

B. Significant Unavoidable Impacts VI.3

C. Significant Irreversible Impacts VI.16

D. Areas of Known Controversy and Issues to Be Resolved..... VI.16

VII. ALTERNATIVES TO THE PROPOSED PROJECT VII.1

VIII. AUTHORS AND PERSONS CONSULTED VIII.1

APPENDICES (Volume 2)

Appendix A: Scoping Meeting Summary Report
 Public Hearing Transcript
 Summary of Written and Oral Comments

Appendix B: Draft Parkmerced Design Standards and Guidelines

Appendix C: Wind
 C.a: Pedestrian Wind Study, Parkmerced Project EIR
 C.b: Wind Impacts and Mitigation from the Proposed Parkmerced Project
 C.c: Revised Building Heights/Footprints for the Parkmerced Project

Appendix D: Water Supply Assessment

LIST OF FIGURES

Figure III.1: Project Location III.5

Figure III.2: Existing Site Plan III.7

Figure III.3: Existing Circulation (Street Type) Plan III.9

Figure III.4: Existing Transit Plan III.11

Figure III.5: Existing Open Space Plan III.13

Figure III.6: Existing Zoning Height Limit Plan III.17

Figure III.7: Proposed Site Plan..... III.19

Figure III.8: Proposed Open Space Plan..... III.21

Figure III.9: Proposed Zoning Height Limit Plan..... III.25

Figure III.10: Proposed Representative Building Heights Plan..... III.27

Figure III.11: Proposed Circulation (Street Type) Plan..... III.31

Figure III.12: Proposed Off-Site Traffic Improvement Plan III.33

Figure III.13: Proposed On-Site Transit Improvement Plan..... III.35

Figure III.14: Proposed Bicycle Plan..... III.39

Figure III.15: Proposed Pedestrian Plan III.41

Figure III.16: Proposed On-Street Parking Plan III.43

Figure III.17: Proposed Off-Street Parking Plan III.45

Figure III.18: Proposed Hydrology Network..... III.49

Figure III.19: Proposed Phase 1 Plan..... III.55

Figure III.20: Proposed Phase 2 Plan..... III.57

Figure III.21: Proposed Phase 3 Plan..... III.59

Figure III.22: Proposed Phase 4 Plan..... III.61

Figure III.23: Proposed Phased Tree Removal Plan III.63

Figure V.B.1: Viewpoint Locations V.B.6

Figure V.B.2: Viewpoint A – View Looking Northwest along Font Boulevard..... V.B.8

Figure V.B.3: Viewpoint B – View Looking West along Higuera Avenue V.B.9

Figure V.B.4: Viewpoint C – View Looking Southwest across the Intersection of 19th
and Holloway Avenues V.B.10

Figure V.B.5: Viewpoint D – View Looking North along Junipero Serra Boulevard at
the Brotherhood Way Interchange V.B.12

Figure V.B.6: Viewpoint E – View Looking Northwest across Junipero Serra
Boulevard V.B.13

Figure V.B.7: Viewpoint F – View Looking Southeast across Lake Merced Boulevard ... V.B.14

Figure V.B.8: Viewpoint G – View Looking North along Lake Merced Boulevard V.B.15

Figure V.B.9: Viewpoint H – View Looking Northeast across Lake Merced Boulevard .. V.B.16

Figure V.B.10: Viewpoint I – View Looking South from Quintara Street at 14th Avenue.. V.B.18

Figure V.B.11: Viewpoint J – View Looking West from Brooks Park..... V.B.19

Figure V.B.12: Representative Rendering of Crespi Drive (Neighborhood Core) V.B.25

Figure V.B.13: Representative Rendering of a Typical Alley V.B.26

Figure V.B.14: Representative Rendering of a Typical Hedgerow Street V.B.27

Figure V.B.15: Representative Rendering of a Typical Paseo V.B.28

Figure V.D.1: Representative Garden Apartment Block Face V.D.10

Figure V.D.2: Representative Courtyard..... V.D.12

Figure V.D.3: Representative Tower..... V.D.13

Figure V.D.4: Administration Building..... V.D.14

Figure V.D.5: Representative Courtyard Landscaping..... V.D.15

Figure V.D.6: Representative Landscaped Drive V.D.17

Figure V.E.1: Study Intersections V.E.3

Figure V.E.2: Existing Transit Network V.E.12

Figure V.E.3: Existing Bicycle Route Network V.E.16

Figure V.E.4: Proposed Transit Improvements V.E.33

Figure V.E.5: Proposed Roadway Improvements V.E.35

Figure V.E.6: Proposed Bicycle Circulation Improvements V.E.39

Figure V.F.1: Noise Measurement Locations V.F.6

Figure V.F.2: San Francisco Land Use Compatibility Chart for Community Noise V.F.13

Figure V.I.1: Wind Tunnel Test Point Locations – West Side Existing Conditions
Configuration V.I.7

Figure V.I.2: Wind Tunnel Test Point Locations – East Side Existing Conditions
Configuration V.I.8

Figure V.I.3: Wind Tunnel Test Point Locations – West Side Proposed Representative
Project Configuration V.I.11

Figure V.I.4: Wind Tunnel Test Point Locations – East Side Proposed Representative
Project Configuration V.I.12

Figure V.I.5: Wind Tunnel Test Point Locations – West Side Cumulative Conditions
Configuration V.I.18

Figure V.I.6: Wind Tunnel Test Point Locations – East Side Cumulative Conditions
Configuration V.I.19

Figure V.I.7: Existing Parkmerced Shadows, September 21, 7:56 AM..... V.I.28

Figure V.I.8: Existing Parkmerced Shadows, September 21, 10:00 AM..... V.I.29

Figure V.I.9: Existing Parkmerced Shadows, September 21, Noon V.I.30

Figure V.I.10: Existing Parkmerced Shadows, September 21, 3:00 PM V.I.31

Figure V.I.11: Existing Parkmerced Shadows, September 21, 6:09 PM V.I.32

Figure V.I.12: Existing Parkmerced Shadows, December 21, 8:22 AM V.I.33

Figure V.I.13: Existing Parkmerced Shadows, December 21, 10:00 AM V.I.34

Figure V.I.14: Existing Parkmerced Shadows, December 21, Noon V.I.35

Figure V.I.15: Existing Parkmerced Shadows, December 21, 3:00 PM V.I.36

Figure V.I.16: Existing Parkmerced Shadows, December 21, 3:54 PM V.I.37

Figure V.I.17: Existing Parkmerced Shadows, March 21, 8:12 AM V.I.38

Figure V.I.18: Existing Parkmerced Shadows, March 21, 10:00 AM V.I.39

Figure V.I.19: Existing Parkmerced Shadows, March 21, Noon V.I.40

Figure V.I.20: Existing Parkmerced Shadows, March 21, 3:00 PM V.I.41

Figure V.I.21: Existing Parkmerced Shadows, March 21, 6:21 PM V.I.42

Figure V.I.22: Existing Parkmerced Shadows, June 21, 6:48 AM V.I.43

Figure V.I.23: Existing Parkmerced Shadows, June 21, 10:00 AM V.I.44

Figure V.I.24: Existing Parkmerced Shadows, June 21, Noon V.I.45

Figure V.I.25: Existing Parkmerced Shadows, June 21, 3:00 PM V.I.46

Figure V.I.26: Existing Parkmerced Shadows, June 21, 7:35 PM V.I.47

Figure V.I.27: Proposed Parkmerced Project Shadows, September 21, 7:56 AM V.I.62

Figure V.I.28: Proposed Parkmerced Project Shadows, September 21, 10:00 AM V.I.63

Figure V.I.29: Proposed Parkmerced Project Shadows, September 21, Noon V.I.64

Figure V.I.30: Proposed Parkmerced Project Shadows, September 21, 3:00 PM V.I.65

Figure V.I.31: Proposed Parkmerced Project Shadows, September 21, 6:09 PM V.I.66

Figure V.I.32: Proposed Parkmerced Project Shadows, December 21, 8:22 AM V.I.67

Figure V.I.33: Proposed Parkmerced Project Shadows, December 21, 10:00 AM V.I.68

Figure V.I.34: Proposed Parkmerced Project Shadows, December 21, Noon V.I.69

Figure V.I.35: Proposed Parkmerced Project Shadows, December 21, 3:00 PM V.I.70

Figure V.I.36: Proposed Parkmerced Project Shadows, December 21, 3:54 PM V.I.71

Figure V.I.37: Proposed Parkmerced Project Shadows, March 21, 8:12 AM V.I.72

Figure V.I.38: Proposed Parkmerced Project Shadows, March 21, 10:00 AM V.I.73

Figure V.I.39: Proposed Parkmerced Project Shadows, March 21, Noon V.I.74

Figure V.I.40: Proposed Parkmerced Project Shadows, March 21, 3:00 PM V.I.75

Figure V.I.41: Proposed Parkmerced Project Shadows, March 21, 6:21 PM V.I.76

Figure V.I.42: Proposed Parkmerced Project Shadows, June 21, 6:48 AM V.I.77

Figure V.I.43: Proposed Parkmerced Project Shadows, June 21, 10:00 AM V.I.78

Figure V.I.44: Proposed Parkmerced Project Shadows, June 21, Noon V.I.79

Figure V.I.45: Proposed Parkmerced Project Shadows, June 21, 3:00 PM V.I.80

Figure V.I.46: Proposed Parkmerced Project Shadows, June 21, 7:35 PM V.I.81

Figure V.L.1: Southwest San Francisco Fire and Police Stations V.L.3

Figure V.M.1: Habitats and Nest Observations V.M.3

Figure V.M.2: Habitats and Stormwater Discharge Options V.M.22

Figure V.N.1: Local Geology Map V.N.2

Figure V.N.2: Map of Major Faults and Earthquake Epicenters in the San Francisco Bay Area V.N.5

Figure VII.1: No Project Alternative VII.3

Figure VII.2: Buildout Under Current Zoning Regulations Alternative VII.7

Figure VII.3: Retention of the Historic District Central Core Alternative VII.23

Figure VII.4: Partial Historic District Alternative VII.37

Figure VII.5: Full Project Buildout with Transit Options Alternative VII.49

Figure VII.6: No Muni Realignment Alternative VII.63

Figure VII.7: Infill Development within the Historic District Alternative VII.75

Figure VII.8: West-Side Partial Historic District Alternative VII.79

LIST OF TABLES

Table III.1:	Project Summary Table	III.23
Table V.C.1:	Income Distribution of San Francisco Households	V.C.6
Table V.C.2:	Existing (2010) and Future (2030) Number of Housing Units and Total Population at Parkmerced.....	V.C.9
Table V.C.3:	Existing and Future Employment at Parkmerced by Land Use.....	V.C.10
Table V.C.4:	Project Housing Demand (2010 to 2030).....	V.C.11
Table V.E.1:	LOS Definitions for Signalized and Unsignalized Intersections	V.E.8
Table V.E.2:	LOS Definitions for Freeway Mainline Segments, Weaving Segments, and Ramp Junctions	V.E.10
Table V.E.3:	Muni Lines Serving Project Study Area.....	V.E.13
Table V.E.4:	LOS Definitions for Pedestrian Queuing Areas	V.E.18
Table V.E.5:	Study Area Bicycle Improvements.....	V.E.31
Table V.E.6:	External Person-Trip Generation by Mode	V.E.44
Table V.E.7:	External Peak Hour Trip Distribution Patterns	V.E.45
Table V.E.8:	Proposed Project Loading Demand.....	V.E.46
Table V.E.9:	Proposed Project Parking Demand.....	V.E.47
Table V.E.10:	Construction Trip Generation.....	V.E.50
Table V.E.11:	Intersection Levels of Service – Existing, Existing plus Project, and 2030 Cumulative Conditions – AM Peak Hour	V.E.55
Table V.E.12:	Intersection Levels of Service – Existing, Existing plus Project, and 2030 Cumulative Conditions – PM Peak Hour	V.E.58
Table V.E.13:	Intersection Levels of Service – Existing, Existing plus Project, and 2030 Cumulative Conditions – Weekend Midday Peak Hour	V.E.61
Table V.E.14:	Intersection Operations for Project Variant.....	V.E.71
Table V.E.15:	Freeway Mainline Section, Weaving Section, and Ramps Junction LOS – AM Peak Hour	V.E.74
Table V.E.16:	Freeway Mainline Section, Weaving Section, and Ramps Junction LOS – PM Peak Hour	V.E.76
Table V.E.17:	Muni Study Area Screenline Ridership and Capacity Utilization.....	V.E.81
Table V.E.18:	Muni Downtown Screenline Ridership and Capacity Utilization	V.E.84
Table V.E.19:	Regional Screenline Ridership and Capacity Utilization	V.E.86
Table V.E.20:	Summary of Project Loading Demand and Supply	V.E.101
Table V.E.21:	Summary of Proposed Project Parking Supply, Demand, and Code Requirements.....	V.E.104
Table V.E.22:	Intersection Operations for Project Variant.....	V.E.119
Table V.F.1:	Typical Sound Levels Measured in the Environment	V.F.2
Table V.F.2:	24-Hour Ambient Noise Level Data in the Study Area.....	V.F.7
Table V.F.3:	Short-Term Noise Levels in the Study Area	V.F.8
Table V.F.4:	Measured Muni Vibration Levels.....	V.F.9
Table V.F.5:	Measured Muni Noise Levels.....	V.F.10
Table V.F.6:	Measures of Substantial Increase for Transportation Noise Exposure	V.F.16
Table V.F.7:	Typical Noise Levels from Construction Equipment.....	V.F.18
Table V.F.8:	Modeled Weekday Project Traffic Noise Levels	V.F.22
Table V.F.9:	Modeled Weekday Cumulative Traffic Noise Levels	V.F.25
Table V.G.1:	Summary of San Francisco Air Quality Monitoring Data (2004-2008).....	V.G.2

Table V.G.2: Annual Average Ambient Concentrations of Carcinogenic TACs Measured at BAAQMD Monitoring Station, 10 Arkansas Street, San Francisco V.G.7

Table V.G.3: State and Federal Ambient Air Quality Standards V.G.14

Table V.G.4: Maximum Daily Construction Emissions of Criteria Air Pollutants..... V.G.20

Table V.G.5: Estimated Daily Emissions for the Proposed Project V.G.28

Table V.G.6: Clean Air Plan TCMs to Be Implemented by Local Governments V.G.32

Table V.K.1: SFPUC Estimated Retail Water Supplies, 2010–2030..... V.K.8

Table V.K.2: SFPUC Estimated Average Annual Retail Water Demand..... V.K.9

Table V.K.3: Existing Water Demand at Parkmerced V.K.13

Table V.K.4: Future (2030) Water Demand at Parkmerced with Efficient Fixtures..... V.K.14

Table V.K.5: Future (2030) Water Demand at Parkmerced with Highly Efficient Fixtures..... V.K.14

Table V.K.6: Comparison of Projected Water Supply and Demand for Normal, Single Dry, and Multiple Dry Years..... V.K.16

Table V.L.1: Citywide Number of Police Officers and Estimated Project Site Demand V.L.8

Table V.M.1: Wildlife Species Observed at Parkmerced, May-June 2008 and June 17, 2009..... V.M.6

Table V.M.2: Special Status Species Potentially Occurring on or in the Vicinity of Parkmerced..... V.M.15

Table V.P.1: Overview of Selected Health and Safety Laws and Regulations V.P.2

Table VII.1: Pedestrian Crowding at 19th/Holloway LRV Platform – No Muni Realignment Alternative Conditions VII.70

LIST OF ACRONYMS AND ABBREVIATIONS

$\mu\text{g}/\text{m}^3$	milligrams per cubic meter
ABAG	Association of Bay Area Governments
ACM	asbestos-containing materials
ADA	Americans with Disabilities Act
ADEIR	Administrative Draft Environmental Impact Report
ADRP	archaeological data recovery plan
ALS	Advanced Life Support
AMI	Area Median Income
AMP	archaeological monitoring program
ARB	(California) Air Resources Board
ARDTP	Archaeological Research Design and Treatment Plan
ATCM	Air Toxics Control Measures
ATP	archaeological testing plan
AWSS	auxiliary water supply system
BAAQMD	Bay Area Air Quality Management District
BART	Bay Area Rapid Transit
BCDC	(San Francisco) Bay Conservation and Development Commission
BMP	Best Management Practice
BMR	Below Market Rate
B.P.	Before Present
BUC	bird use counts
Cal/OSHA	State Occupational Safety and Health Administration
Caltrans	California Department of Transportation
CAP	Clean Air Plan
CARB	California Air Resources Board
CBC	California Building Code
CCR	California Code of Regulations
CDFG	California Department of Fish and Game
CDMG	California Division of Mines and Geology
CEC	California Energy Commission
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CFR	Code of Federal Regulations
CH ₄	Methane
CHAPIS	Community Health Air Pollution Information System
CHSC	California Health and Safety Code
CNDDDB	California Natural Diversity Database
CNEL	Community Noise Equivalent Level
CNPS	California Native Plant Society
CO	carbon monoxide
CO ₂	carbon dioxide
CO ₂ E	CO ₂ equivalent emission rate
COG	Council of Governments
CRHR	California Register of Historical Resources
CWA	Clean Water Act

dB	decibel
dBA	A weighted decibel
dbh	diameter at breast height
DBI	Department of Building Inspections
DPH	(San Francisco) Department of Public Health
DPM	diesel particulate matter
DPT	Department of Parking and Traffic
DTR	Downtown Residential
du	dwelling units
EB	eastbound
EIR	Environmental Impact Report
EMT	emergency medical technician
EPA	U.S. Environmental Protection Agency
ERO	Environmental Review Officer
ESA	Environmental Site Assessment
F	Fahrenheit
FAA	Federal Aviation Administration
FARR	Final Archaeological Resources Report
Fed/OSHA	Federal Occupational Safety and Health Administration
FEMA	Federal Emergency Management Agency
FESA	Federal Endangered Species Act
FHWA	Federal Highway Administration
FICAN	Federal Interagency Committee on Aviation Noise
FICON	Federal Interagency Committee on Noise
FIRM	Flood Insurance Rate Map
FRA	Federal Railroad Administration
FTA	Federal Transit Administration
FTE	full-time equivalent
GGBHTD	Golden Gate Bridge, Highway, and Transportation District
GGNRA	Golden Gate National Recreation Area
GHG	Greenhouse Gas
GPR	GreenPoint Rated
gsf	gross square feet
GWh	gigawatt-hours
Gwh/yr	gigawatt hours per year
HABS	Historic American Building Survey
HAER	Historic American Engineering Report
HCD	State Department of Housing and Community Development
HCM	Highway Capacity Manual
HOV/HOT	High-Occupancy Vehicle/Transit/Toll
HRE	(Parkmerced) Historic Resource Evaluation & Cultural Landscape Assessment
HRER	Historic Resources Evaluation Report
HUD	(Federal) Housing and Urban Development
HVAC	heating ventilation and air conditioning
IPCC	Intergovernmental Panel on Climate Change
ITE	Institute of Transportation Engineers
JPB	(Peninsula Corridor) Joint Powers Board
LEED	Leadership in Energy and Environmental Design
LEED-ND	Leadership in Energy and Environmental Design, Neighborhood Development

List of Acronyms and Abbreviations

LOS	Level of Service
M	moment magnitude
MBTA	Migratory Bird Treaty Act
MEI	Maximally Exposed Individual
MetLife	Metropolitan Life Insurance Company
mgd	million gallons per day
MLD	Most Likely Descendant
MMRP	Mitigation Monitoring and Reporting Plan
MMT	million gross metric tonnes
mph	miles per hour
MPO	Metropolitan Planning Organization
MRZ-4	Mineral Resource Zone 4
msl	mean sea level
MTA	Municipal Transit Authority
MTC	Metropolitan Transportation Commission
Muni	San Francisco Municipal Transportation Agency
NAAQS	National Ambient Air Standards
NAHC	Native American Heritage Commission
NB	northbound
ND	neighborhood development
NEPA	National Environmental Policy Act
NFIP	National Flood Insurance Program
ng/m ³	nanograms per cubic meter
NMFS	National Marine Fisheries Service
NO	nitrogen oxide
NO ₂	nitrogen dioxide
NO _x	nitrogen oxides
NOI	Notice of Intent
NOP	Notice of Preparation
NPDES	National Pollutant Discharge Elimination System
NPRA	National Park and Recreation Association
NPS	National Park Service
NRHP	National Register of Historic Places
NWIC	(California Archaeological Site Survey) Northwest Information Center
OMI	Oceanview Merced Ingleside neighborhood
OSP	Oceanside Water Pollution Control Plant
PCB	polychlorinated biphenyls
PDA	Priority Development Area
PEIR	Program Environmental Impact Report
PG&E	Pacific Gas & Electric Company
PM	particulate matter
PM ₁₀	particulate matter of 10 microns in diameter or less
PM _{2.5}	particulate matter of 2.5 microns in diameter or less
ppb	parts per billion
pphm	parts per hundred million
ppi	pixels per inch
ppm	parts per million
PPV	peak particle velocity
Pre-K-5	pre-kindergarten through 5 th grade

List of Acronyms and Abbreviations

PRMMP	Paleontological Resources Monitoring and Mitigation Program
PUC	Public Utilities Commission
PUD	Planned Unit Development
PV	photovoltaic
R&D	research and development
RHNA	Regional Housing Needs Assessment
ROG	reactive organic gases
RPD	(San Francisco) Recreation and Park Department
RPS	Renewable Portfolio Standard
RTP	Regional Transportation Plans
RWQCB	Regional Water Quality Control Board
RWS	Regional Water System
RWSAP	Retail Water Shortage Allocation Plan
SAAQS	State Ambient Air Quality Standards
SB	southbound, Senate Bill
SEL	Sound Exposure Level
SFCTA	San Francisco County Transportation Authority
SFFD	San Francisco Fire Department
SFMTA	San Francisco Municipal Transportation Agency
SFPD	San Francisco Police Department
SFPUC	San Francisco Public Utilities Commission
SFRDP	San Francisco Recreation and Park Department
SFSU	San Francisco State University
SFSUCMP	San Francisco State University Campus Master Plan
SFUSD	San Francisco Unified School District
SMP	Site Vegetation Plan
SO ₂	sulfur dioxide
SR	State Route
SSC	Species of Special Concern
SUD	Special Use District
SVP	Society for Vertebrate Paleontology
SVWC	Spring Valley Water Company
SWOO	Southwest Ocean Outfall
SWPPP	Storm Water Pollution Prevention Plan
SWRCB	State Water Resources Control Board
TACs	Toxic Air Contaminants
TASC	Transportation Advisory Staff Committee
TAZ	Traffic Analysis Zones
TC	Transportation Coordinator
TCMs	Transportation Control Measures
TEP	Transit Effectiveness Project
TDM	transportation demand management
TNM	(Federal Highway Administration) Traffic Noise Model
TP	Treatment Plan
TPH	total petroleum hydrocarbons
TRB	Transportation Research Board
TSP	Transit Signal Priority
USACE	U.S. Army Corps of Engineers
USDOT	U.S. Department of Transportation

List of Acronyms and Abbreviations

USEPA	U. S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
USHUD	U.S. Department of Housing and Urban Development
UST	underground storage tank
UWMP	Urban Water Management Plan
VAWT	vertical-axis wind turbines
VdB	vibration velocity levels
VMT	Vehicle Miles Traveled
VOC	volatile organic compound
WDRs	Waste Discharge Requirements
WHO	World Health Organization
WSA	Water Supply Assessment
WSAP	Water Shortage Allocation Plan
WSIP	Water System Improvement Program
WST	Westside Transport Storage Box
WTP	Water Treatment Plant

I. INTRODUCTION

A. PURPOSE OF THIS ENVIRONMENTAL IMPACT REPORT

This Environmental Impact Report (EIR) has been prepared by the San Francisco Planning Department, the Lead Agency for the Proposed Project, in conformance with the provisions of the California Environmental Quality Act (CEQA) and the *CEQA Guidelines* (California Public Resources Code Sections 21000 et seq., and California Code of Regulations Title 14, Section 1500 et seq., “*CEQA Guidelines*”), and Chapter 31 of the San Francisco Administrative Code. The lead agency is the public agency that has the principal responsibility for carrying out or approving a project. This project-level EIR assesses potentially significant impacts in the areas of land use, aesthetics, population and housing, cultural resources (historic resources and archaeological resources), transportation and circulation, noise, air quality, wind, shadow, recreation, utilities and services systems, public services, biological resources, geology and soils, hydrology and water quality, hazards, mineral and energy resources, and agricultural resources. As defined in *CEQA Guidelines* Section 15382, a “significant effect on the environment” is:

... a substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project including land, air, water, minerals, flora, fauna, ambient noise, and objects of historic or aesthetic significance. An economic or social change by itself shall not be considered a significant effect on the environment. A social or economic change related to a physical change may be considered in determining whether the physical change is significant.

As stated in the *CEQA Guidelines*,¹ an EIR is an “informational document” intended to inform public agency decision-makers and the public of the significant environmental effects of a project, identify possible ways to minimize the significant effects, and describe reasonable alternatives to the project. CEQA provides that public agencies should not approve projects until all feasible means available have been employed to substantially lessen the significant environmental effects of such projects.² City decision-makers will use the certified EIR, along with other information and public processes, to determine whether to approve, modify, or disapprove the proposed project, and to specify any applicable environmental conditions as part of project approvals.

¹ CEQA, California Environmental Quality Act, Statutes and Guidelines as amended January 1, 2005, published by the Governor’s Office of Planning and Research.

² “Feasible” means capable of being accomplished in a successful manner within a reasonable period of time taking into account economic, environmental, social, and technological factors (Public Resources Code Section 21061.1).

B. PROJECT OVERVIEW

Parkmerced is an existing residential neighborhood with 3,221 residential units on approximately 152 acres of land in the southwest portion of San Francisco adjacent to Lake Merced (Project Site).³ The Project Site is located in the Lake Merced District and is generally bounded by Vidal Drive, Font Boulevard, Pinto Avenue, and Serrano Drive to the north, 19th Avenue and Junipero Serra Boulevard to the east, Brotherhood Way to the south, and Lake Merced Boulevard to the west. The Project Site is at 3711 19th Avenue on Assessor's Blocks 7303, 7303A, 7308-7311, 7314, 7316, 7319-7326, 7330-7345, 7333 A-B, 7333E, and 7353-7373.

The existing on-site residential units are located in 11 towers and 170 two-story buildings. The Proposed Project is a long-term mixed-use development program to comprehensively replan and redesign the Parkmerced site. The Proposed Project would increase residential density, provide a neighborhood core with new commercial and retail services, modify transit facilities, and improve utilities within the development site. A new pre-kindergarten through 5th grade (Pre K-5) school and day care facility, a fitness center, and new open space uses, including athletic fields, walking and biking paths, an approximately 2-acre organic farm, and community gardens, would also be provided on the Project Site. About 1,683 of the existing apartments located in 11 tower buildings would be retained. Over a period of approximately 20 years, the remaining 1,538 existing apartments would be demolished in phases and fully replaced, and an additional 5,679 net new units would be added to the Project Site. With implementation of the Proposed Project, there would be a total of 8,900 units on the Project Site. The principal land use goals of the Project Sponsor are to reduce automobile use by concentrating housing close to employment, increasing the supply of housing, and providing better integrated residential and neighborhood-serving retail and office uses; to maximize opportunities to use pedestrian and bicycle pathways; to establish pedestrian-oriented nodes for the location of neighborhood services and amenities, open space, and community services; and to incorporate environmental factors such as sun, shade, and wind into the design and housing materials throughout the Project Site.

The Proposed Project includes construction of a series of transportation and infrastructure improvements designed to minimize the amount of automobile traffic originating from Parkmerced, and to improve traffic flow on adjacent roadways such as 19th Avenue and Brotherhood Way. These transportation improvements include rerouting the existing Muni Metro M Ocean View line from its current alignment along 19th Avenue. The new alignment, as currently envisioned, would leave 19th Avenue at Holloway Avenue and proceed through the neighborhood core in Parkmerced. The Muni M line trains would then travel alternately along

³ As described in Section V.D.a, Historic Architectural Resources, the Parkmerced complex originally encompassed 196 acres and contained 3,483 residential units. Portions of the property have been sold to third parties. This project overview describes that portion of Parkmerced owned by the Project Sponsor, which is the subject of the Proposed Project analyzed in this EIR.

one of two alignments. Some of the trains would re-enter 19th Avenue south of Felix Avenue and terminate at the existing Balboa Park station. Others would terminate at a new station with full layover and terminal facilities constructed at the intersection of Font Boulevard and Chumasero Drive in Parkmerced. This alignment would provide safer and more direct transit access for Parkmerced visitors, residents, and neighbors, without removing any existing stops.

The Proposed Project also includes a series of transit and infrastructure improvements along 19th Avenue, Junipero Serra Boulevard, Brotherhood Way, and Lake Merced Boulevard. Proposed infrastructure improvements include the installation of a combination of renewable energy sources, such as wind turbines and photovoltaic cells, to meet a portion of the Proposed Project's energy demand. In addition, stormwater runoff from buildings and streets would be captured and filtered through a series of bioswales, ponds, and other natural filtration systems. The filtered stormwater would then either percolate into the groundwater that feeds the Upper Westside groundwater basin and Lake Merced or be released directly into Lake Merced. This feature of the Proposed Project would reduce the volume of stormwater flows directed to the Oceanside Water Pollution Control Plant and reduce combined sewage overflows to the ocean. It would also potentially help increase water levels in Lake Merced.

Amendments to the San Francisco Planning Code and the *San Francisco General Plan* would be needed. The Planning Code amendments would change the Height and Bulk District Zoning Map and would add a Special Use District (SUD) applicable to the entire Project Site, which would include an overlay of density and uses within the SUD. A Development Agreement is also proposed, which would be accompanied by the *Parkmerced Design Standards and Guidelines* containing specific development guidelines. The transportation improvements would require approval of the San Francisco Municipal Transportation Agency, the California Public Utilities Commission, and Caltrans.

C. ENVIRONMENTAL REVIEW PROCESS

ENVIRONMENTAL EVALUATION APPLICATION

An Environmental Evaluation application was submitted to the Planning Department on January 8, 2008.

NOTICE OF PREPARATION

The Planning Department distributed a Notice of Preparation on May 20, 2009, announcing its intent to prepare and distribute an EIR. The public review period began on May 20, 2009 and ended on June 19, 2009. A Public Scoping Meeting was held on June 8, 2009. Twenty-seven individuals spoke at the Public Scoping Meeting. During the public review period, 26 comment letters were submitted to the Planning Department by public agencies and other interested parties.

The Public Scoping Summary Report is included as Appendix A of this Draft EIR. Commentors identified the following topics to be evaluated in the Draft EIR:

- Land Use
- Aesthetics
- Population and Housing
- Historic Resources/Preservation
- Transportation
- Air Quality
- Wind
- Recreation and Open Space
- Utilities (Water, Stormwater) and Sustainability
- Biological Resources
- Geology
- Hazards
- Hydrology and Water Quality
- Hazards
- Alternatives

Since preparation of the NOP in May 2009, several modifications have been made to the Proposed Project. Buildout of the Proposed Project has been reduced from 30 to 20 years.⁴ The Proposed Project's Muni light rail line variant, which brought the J Church light rail line into the Parkmerced Site, is no longer being considered, following further discussions with the San Francisco Municipal Transportation Agency. The number of vertical axis wind turbines proposed to be installed along the western property boundary has increased from 17 to 51.

DRAFT EIR

This Draft EIR is prepared in accordance with CEQA and the *CEQA Guidelines*. It provides an analysis of the physical environmental impacts of construction and operation of the Proposed Project. The *CEQA Guidelines* define the environmental effects of a project as changes from the environmental setting (existing conditions) that are attributable to the project.

Copies of the Draft EIR are available at the San Francisco Planning Department, 1660 Mission Street, 1st Floor Planning Information Counter, San Francisco, CA 94103. Additionally, the Draft EIR is available to view or download at the Planning Department web site at <http://www.sfplanning.org/mea> by choosing the link for General CEQA Cases and looking for Case File No. 2008.0021E. All documents referenced in this Draft EIR are available for review at the San Francisco Planning Department, 1650 Mission Street, Suite 400, San Francisco, CA

⁴ The Project Sponsor expects the phasing of the Proposed Project to occur over 20 years, but the full development could extend for a longer period. Consequently, the Development Agreement would likely cover a 30-year projected buildout.

94103 as part of Case File No. 2008.0021E. The distribution list for the Draft EIR is also available for review at the Planning Department.

This Draft EIR was published on May 12, 2010. There will be a public hearing before the Planning Commission during a 45-day public review and comment period to solicit public comment on the adequacy and accuracy of information presented in this Draft EIR. The public comment period for this EIR is May 12, 2010 to June 28, 2010. The public hearing on this Draft EIR has been scheduled at the City Planning Commission for June 17, 2010 in Room 400, City Hall, Dr. Carlton B. Goodlett Place (call 588-6422 the week of the hearing for a recorded message giving a more specific time).

In addition, readers are invited to submit written comments on the adequacy of the document, that is, whether this Draft EIR identifies and analyzes the possible environmental impacts and identifies appropriate mitigation measures. Comments are most helpful when they suggest specific alternatives and/or additional measures that would better mitigate significant environmental effects. *CEQA Guidelines* Section 15096(d) calls for responsible agencies to provide comments on project activities within the agencies' areas of expertise and to support comments with either oral or written documentation.⁵

Written comments should be submitted to:

Bill Wycko, Environmental Review Officer
Re: Parkmerced Project Draft EIR
San Francisco Planning Department
1650 Mission Street, Suite 400
San Francisco, CA 94103

Comments must be received by 5:00 PM on **June 28, 2010**.

FINAL EIR

Following the close of the public review and comment period, the Planning Department will prepare and publish a document titled "Comments and Responses," which will contain a summary of all relevant comments on this Draft EIR and the City's responses to those comments, along with copies of the letters received and a transcript of the Planning Commission public hearing on the Draft EIR. This Draft EIR, together with the Comments and Responses document, will be considered by the Planning Commission in an advertised public meeting, and then certified as a Final EIR if deemed adequate.

⁵ CEQA Section 21069 defines a responsible agency as a "public agency, other than the lead agency, which has responsibility for carrying out or approving a project."

II. SUMMARY

This Summary chapter for the Parkmerced Project Environmental Impact Report (EIR) begins with a brief description of the proposed project. It then lists the impacts and mitigation measures described in this EIR and outlines the alternatives to the Proposed Project that were considered. The chapter concludes with an overview of the areas of controversy associated with the Proposed Project and issues to be resolved.

PROJECT SYNOPSIS

Parkmerced is an existing residential neighborhood with 3,221 residential units on approximately 152 acres of land in the southwest portion of San Francisco adjacent to Lake Merced (Project Site). The Project Site is located in the Lake Merced District and is generally bounded by Vidal Drive, Font Boulevard, Pinto Avenue, and Serrano Drive to the north, 19th Avenue and Junipero Serra Boulevard to the east, Brotherhood Way to the south, and Lake Merced Boulevard to the west. The Project Site is at 3711 19th Avenue on Assessor's Blocks 7303, 7303A, 7308-7311, 7314, 7316, 7319-7326, 7330-7345, 7333 A-B, 7333E, and 7353-7373.

The existing on-site residential units are located in 11 towers and 170 two-story buildings. The Proposed Project is a long-term mixed-use development program to comprehensively replan and redesign the Parkmerced site. The Proposed Project would increase residential density, provide a neighborhood core with new commercial and retail services, modify transit facilities, and improve utilities within the development site. A new pre-kindergarten through 5th grade (Pre K-5) school and day care facility, a fitness center, and new open space uses, including athletic fields, walking and biking paths, an approximately 2-acre organic farm, and community gardens, would also be provided on the Project Site. About 1,683 of the existing apartments located in 11 tower buildings would be retained. Over a period of approximately 20 years, the remaining 1,538 existing apartments would be demolished in phases and fully replaced, and an additional 5,679 net new units would be added to the Project Site. With implementation of the Proposed Project, there would be a total of 8,900 units on the Project Site. The principal land use goals of the Project Sponsor are to reduce automobile use by concentrating housing close to employment, increasing the supply of housing, and providing better integrated residential and neighborhood-serving retail and office uses; to maximize opportunities to use pedestrian and bicycle pathways; to establish pedestrian-oriented nodes for the location of neighborhood services and amenities, open space, and community services; and to incorporate environmental factors such as sun, shade, and wind into the design and housing materials throughout the Project Site.

The Proposed Project includes construction of a series of transportation and infrastructure improvements designed to minimize the amount of automobile traffic originating from Parkmerced, and to improve traffic flow on adjacent roadways such as 19th Avenue and Brotherhood Way. These transportation improvements include rerouting the existing Muni Metro

M Ocean View line from its current alignment along 19th Avenue. The new alignment, as currently envisioned, would leave 19th Avenue at Holloway Avenue and proceed through the neighborhood core in Parkmerced. The Muni M line trains would then travel alternately along one of two alignments. Some of the trains would re-enter 19th Avenue south of Felix Avenue and terminate at the existing Balboa Park station. Others would terminate at a new station with full layover and terminal facilities constructed at the intersection of Font Boulevard and Chumasero Drive in Parkmerced. This alignment would provide safer and more direct transit access for Parkmerced visitors, residents, and neighbors, without removing any existing stops.

The Proposed Project also includes a series of transit and infrastructure improvements along 19th Avenue, Junipero Serra Boulevard, Brotherhood Way, and Lake Merced Boulevard. Proposed infrastructure improvements include the installation of a combination of renewable energy sources, such as wind turbines and photovoltaic cells, to meet a portion of the Proposed Project's energy demand. In addition, stormwater runoff from buildings and streets would be captured and filtered through a series of bioswales, ponds, and other natural filtration systems. The filtered stormwater would then either percolate into the groundwater that feeds the Upper Westside groundwater basin and Lake Merced or be released directly into Lake Merced. This feature of the Proposed Project would reduce the volume of stormwater flows directed to the Oceanside Water Pollution Control Plant and reduce combined sewage overflows to the ocean. It would also potentially help increase water levels in Lake Merced.

Amendments to the San Francisco Planning Code and the *San Francisco General Plan* would be needed. The Planning Code amendments would change the Height and Bulk District Zoning Map and would add a Special Use District (SUD) applicable to the entire Project Site. A Development Agreement is also proposed, which would be accompanied by the *Parkmerced Design Standards and Guidelines* containing specific development guidelines.

SUMMARY OF IMPACTS AND MITIGATION MEASURES

Table II-1 summarizes the impacts of the Proposed Project found to be significant or potentially significant and their corresponding mitigation measures. Table II-2 lists the improvement measures identified to address impacts found to be less than significant.

Table II-1: Summary of Significant Impacts and Mitigation Measures

Impacts	Impact Significance Without Mitigation	Mitigation Measures	Impact Significance With Mitigation
V.B. Aesthetics			
AE-1: The proposed demolition of the existing garden apartment buildings and the proposed removal of the existing landscaping would eliminate a visual/scenic resource of the built environment.	SU	No feasible mitigation measure available.	SU
V.D. Cultural Resources and Archeological Paleontological Resources			
CR-1: The proposed demolition of the existing garden apartment buildings and removal of existing landscape features on the Project Site would impair the historical significance of the Parkmerced historic district historical resource.	SU	<p>Mitigation Measure M-CR-1: Documentation and Interpretation <u>Documentation</u> The Project Sponsor shall retain a professional who meets the Secretary of the Interior's Professional Qualifications Standards for Architectural History to prepare written and photographic documentation of the Parkmerced complex within the Project Site.</p> <p>The documentation for the property shall be prepared based on the National Park Service's (NPS) Historic American Building Survey (HABS) / Historic American Engineering Record (HAER) Historical Report Guidelines. This type of documentation is based on a combination of both HABS/HAER standards (Levels II and III) and NPS's policy for photographic documentation as outlined in the National Register of Historic Places and National Historic Landmarks Survey Photo Policy Expansion.</p> <p>The written historical data for this documentation shall follow HABS / HAER Level I standards. The written data shall be accompanied by a sketch plan of the property. Efforts should also be made to locate original construction drawings or plans of the property during the period of significance. If located, these drawings should be photographed, reproduced, and included in the dataset. If construction drawings or plans cannot be located, as-built drawings shall be produced. Either HABS/HAER standard large format or digital photography shall be used. If digital photography is used, the ink and paper combinations for printing photographs must be in compliance with NR-NHL Photo Policy Expansion and have a permanency rating of approximately 115 years. Digital photographs will be taken as uncompressed, TIF file format. The size of each image will be 1600x1200 pixels at 330 ppi (pixels per inch) or larger, color format, and printed</p>	SU

Note:

S = Significant; LS = Less than Significant; SU = Significant and Unavoidable

Impacts	Impact Significance Without Mitigation	Mitigation Measures	Impact Significance With Mitigation
		<p>in black and white. The file name for each electronic image shall correspond with the index of photographs and photograph label.</p> <p>Photograph views for the dataset shall include (a) contextual views; (b) views of each side of each building and interior views, where possible; (c) oblique views of buildings; and (d) detail views of character-defining features, including features on the interiors of some buildings. All views shall be referenced on a photographic key. This photographic key shall be on a map of the property and shall show the photograph number with an arrow to indicate the direction of the view. Historic photographs shall also be collected, reproduced, and included in the dataset.</p> <p>The Project Sponsor shall transmit such documentation to the History Room of the San Francisco Public Library, and to the Northwest Information Center of the California Historical Information Resource System.</p> <p><u>Interpretation</u></p> <p>The Project Sponsor shall provide a permanent display of interpretive materials concerning the history and architectural features of the original Parkmerced complex within public spaces of the Project Site. The specific location, media, and other characteristics of such interpretive display shall be approved by the Historic Preservation Commission prior to any demolition or removal activities.</p>	
<p>CR-2: The proposed demolition of the existing garden apartment buildings and removal of existing landscape features on the Project Site would contribute to a cumulative impact on the historic significance of the Parkmerced historic district historical resource.</p>	<p>SU</p>	<p>No feasible mitigation measure available.</p>	<p>SU</p>
<p>CR-3: Project construction activities could disturb significant archaeological resources, if such resources are present within the Project Site.</p>	<p>S</p>	<p>M-CR-3a: Archaeological Testing, Monitoring, Data Recovery and Reporting for Phase I</p> <p>Based on a reasonable presumption that archaeological resources may be present within the project site, the following measures shall be undertaken to avoid any potentially significant adverse effect from the proposed project on buried or submerged historical resources. The project sponsor shall retain the services of a qualified archaeological consultant having expertise in California prehistoric and urban historical archaeology. The archaeological consultant shall undertake an archaeological testing program as specified herein. In addition, the consultant shall be available to conduct an archaeological monitoring and/or data recovery</p>	<p>LS</p>

Note:

S = Significant; LS = Less than Significant; SU = Significant and Unavoidable

Impacts	Impact Significance Without Mitigation	Mitigation Measures	Impact Significance With Mitigation
		<p>program if required pursuant to this measure. The archaeological consultant’s work shall be conducted in accordance with this measure and the requirements of the ARDTP (Archeo-Tec, Archeological Research Design and Treatment Plan, Parkmerced Project, March 2010) at the direction of the Environmental Review Officer (ERO). In instances of inconsistency between the requirements of the project ARDTP and the requirements of this mitigation measure, the requirements of this archaeological mitigation measure shall prevail. All plans and reports prepared by the consultant as specified herein shall be submitted first and directly to the ERO for review and comment, and shall be considered draft reports subject to revision until final approval by the ERO. Archaeological monitoring and/or data recovery programs required by this measure could suspend construction of the project for up to a maximum of four weeks. At the direction of the ERO, the suspension of construction can be extended beyond four weeks only if such a suspension is the only feasible means to reduce to a less-than-significant level potential effects on a significant archaeological resource as defined in CEQA Guidelines Section 15064.5 (a)(c).</p> <p><u>Archaeological Testing Program</u></p> <p>The archaeological consultant shall prepare and submit to the ERO for review and approval an archaeological testing plan (ATP). The archaeological testing program shall be conducted in accordance with the approved ATP. The ATP shall identify the property types of the expected archaeological resource(s) that potentially could be adversely affected by the proposed project, the testing method to be used, and the locations recommended for testing. The purpose of the archaeological testing program will be to determine to the extent possible the presence or absence of archaeological resources and to identify and to evaluate whether any archaeological resource encountered on the site constitutes an historical resource under CEQA.</p> <p>At the completion of the archaeological testing program, the archaeological consultant shall submit a written report of the findings to the ERO. If based on the archaeological testing program the archaeological consultant finds that significant archaeological resources may be present, the ERO in consultation with the archaeological consultant shall determine if additional measures are warranted. Additional measures that may be undertaken include additional archaeological testing, archaeological monitoring, and/or an archaeological data recovery program. If the ERO determines that a significant archaeological resource is present and that the resource could be adversely affected by the proposed project,</p>	

Note:

S = Significant; LS = Less than Significant; SU = Significant and Unavoidable

Impacts	Impact Significance Without Mitigation	Mitigation Measures	Impact Significance With Mitigation
		<p>at the discretion of the project sponsor either:</p> <p>A) The proposed project shall be re-designed so as to avoid any adverse effect on the significant archaeological resource; or</p> <p>B) A data recovery program shall be implemented, unless the ERO determines that the archaeological resource is of greater interpretive than research significance and that interpretive use of the resource is feasible.</p> <p><u>Archaeological Monitoring Program (AMP)</u></p> <p>If the ERO in consultation with the archaeological consultant determines that an archaeological monitoring program shall be implemented the archaeological monitoring program shall minimally include the following provisions:</p> <ul style="list-style-type: none"> • The archaeological consultant, project sponsor, and ERO shall meet and consult on the scope of the AMP reasonably prior to any project-related soils-disturbing activities commencing. The ERO in consultation with the archaeological consultant shall determine what project activities shall be archaeologically monitored. In most cases, any soils-disturbing activities, such as demolition, foundation removal, excavation, grading, utilities installation, foundation work, driving of piles (foundation, shoring, etc.), site remediation, etc., shall require archaeological monitoring because of the risk these activities pose to potential archaeological resources and to their depositional context; • The archaeological consultant shall advise all project contractors to be on the alert for evidence of the presence of the expected resource(s), of how to identify the evidence of the expected resource(s), and of the appropriate protocol in the event of apparent discovery of an archaeological resource; • The archaeological monitor(s) shall be present on the project site according to a schedule agreed upon by the archaeological consultant and the ERO until the ERO has, in consultation with the project archaeological consultant, determined that project construction activities could have no effects on significant archaeological deposits; • The archaeological monitor shall record and be authorized to collect soil samples and artifactual/ecofactual material as warranted for analysis; • If an intact archaeological deposit is encountered, all soils-disturbing activities in the vicinity of the deposit shall cease. The archaeological monitor shall be empowered to temporarily redirect 	

Note:

S = Significant; LS = Less than Significant; SU = Significant and Unavoidable

Impacts	Impact Significance Without Mitigation	Mitigation Measures	Impact Significance With Mitigation
		<p>demolition/excavation/pile driving/construction activities and equipment until the deposit is evaluated. If in the case of pile-driving activity (foundation, shoring, etc.), the archaeological monitor has cause to believe that the pile-driving activity may affect an archaeological resource, the pile-driving activity shall be terminated until an appropriate evaluation of the resource has been made in consultation with the ERO. The archaeological consultant shall immediately notify the ERO of the encountered archaeological deposit. The archaeological consultant shall make a reasonable effort to assess the identity, integrity, and significance of the encountered archaeological deposit, and present the findings of this assessment to the ERO.</p> <p>Whether or not significant archaeological resources are encountered, the archaeological consultant shall submit a written report of the findings of the monitoring program to the ERO.</p> <p><u>Archaeological Data Recovery Program</u></p> <p>The archaeological data recovery program shall be conducted in accord with an archaeological data recovery plan (ADRP). The archaeological consultant, project sponsor, and ERO shall meet and consult on the scope of the ADRP prior to preparation of a draft ADRP. The archaeological consultant shall submit a draft ADRP to the ERO. The ADRP shall identify how the proposed data recovery program will preserve the significant information the archaeological resource is expected to contain. That is, the ADRP will identify what scientific/historical research questions are applicable to the expected resource, what data classes the resource is expected to possess, and how the expected data classes would address the applicable research questions. Data recovery, in general, should be limited to the portions of the historical property that could be adversely affected by the proposed project. Destructive data recovery methods shall not be applied to portions of the archaeological resources if non-destructive methods are practical. The scope of the ADRP shall include the following elements:</p> <ul style="list-style-type: none"> • Field Methods and Procedures. Descriptions of proposed field strategies, procedures, and operations. • Cataloguing and Laboratory Analysis. Description of selected cataloguing system and artifact analysis procedures. • Discard and De-accession Policy. Description of and rationale for field and post-field discard and de-accession policies. 	

Note:

S = Significant; LS = Less than Significant; SU = Significant and Unavoidable

Impacts	Impact Significance Without Mitigation	Mitigation Measures	Impact Significance With Mitigation
		<ul style="list-style-type: none"> • Interpretive Program. Consideration of an on-site/off-site public interpretive program during the course of the archaeological data recovery program. • Security Measures. Recommended security measures to protect the archaeological resource from vandalism, looting, and non-intentionally damaging activities. • Final Report. Description of proposed report format and distribution of results. • Curation. Description of the procedures and recommendations for the curation of any recovered data having potential research value, identification of appropriate curation facilities, and a summary of the accession policies of the curation facilities. <p><u>Human Remains and Associated or Unassociated Funerary Objects</u> The treatment of human remains and of associated or unassociated funerary objects discovered during any soils-disturbing activity shall comply with applicable State and Federal laws. This shall include immediate notification of the Coroner of the City and County of San Francisco and in the event of the Coroner’s determination that the human remains are Native American remains, notification of the California State Native American Heritage Commission (NAHC) who shall appoint a Most Likely Descendant (MLD) (Pub. Res. Code Sec. 5097.98). The archaeological consultant, project sponsor, and MLD shall make all reasonable efforts to develop an agreement for the treatment of, with appropriate dignity, human remains and associated or unassociated funerary objects (CEQA Guidelines Sec. 15064.5(d)). The agreement should take into consideration the appropriate excavation, removal, recordation, analysis, custodianship, curation, and final disposition of the human remains and associated or unassociated funerary objects.</p> <p><u>Final Archaeological Resources Report</u> The archaeological consultant shall submit a Draft Final Archaeological Resources Report (FARR) to the ERO that evaluates the historical significance of any discovered archaeological resource and describes the archaeological and historical research methods employed in the archaeological testing/monitoring/data recovery program(s) undertaken. Information that may put at risk any archaeological resource shall be provided in a separate removable insert within the final report.</p>	

Note:

S = Significant; LS = Less than Significant; SU = Significant and Unavoidable

Impacts	Impact Significance Without Mitigation	Mitigation Measures	Impact Significance With Mitigation
	S	<p>Once approved by the ERO, copies of the FARR shall be distributed as follows: California Archaeological Site Survey Northwest Information Center (NWIC) shall receive one (1) copy and the ERO shall receive a copy of the transmittal of the FARR to the NWIC. The Major Environmental Analysis division of the Planning Department shall receive two copies (bound and unbound) of the FARR along with copies of any formal site recordation forms (CA DPR 523 series) and/or documentation for nomination to the National Register of Historic Places/California Register of Historical Resources. In instances of high public interest in or the high interpretive value of the resource, the ERO may require a different final report content, format, and distribution than that presented above.</p> <p>Mitigation Measure M-CR-3b: Archaeological Treatment Plan for Phases II-IV</p> <p>Based on a reasonable presumption that archaeological resources may be present within the Project Site, the following measures shall be undertaken to avoid any potentially significant adverse effect from Phases II-IV of the Proposed Project on buried archaeological resources. The Project Sponsor shall retain the services of a qualified archaeological consultant having expertise in California prehistoric and urban historical archaeology. The archaeological consultant shall prepare an archaeological treatment plan (TP). The archaeological consultant’s work shall be conducted in accordance with this measure at the direction of the Environmental Review Officer (ERO). All plans and reports prepared by the consultant as specified herein shall be submitted first and directly to the ERO for review and comment, and shall be considered draft reports subject to revision until final approval by the ERO.</p> <p>Archaeological Treatment Plan. The archaeological consultant shall meet and consult with the ERO on the scope of the TP prior to preparation of the TP. The TP shall be submitted to the ERO for review and approval prior to the Project ground-breaking activities for Phases II-IV. Archaeological field investigations for Phases II-IV shall be conducted in accordance with the approved TP. The TP shall identify project-specific vertical / horizontal areas of archaeological sensitivity and appropriate archaeological identification and evaluation strategies, and archaeological mitigatory protocols applicable to specific project activities / improvements (for example, excavation building foundation installation, grading, etc.) with the potential to affect archaeological properties. Mitigation strategies requiring archaeological testing plans (ATP) and archaeological monitoring plans</p>	LS

Note:

S = Significant; LS = Less than Significant; SU = Significant and Unavoidable

Impacts	Impact Significance Without Mitigation	Mitigation Measures	Impact Significance With Mitigation
		(AMP) shall conform to the requirements for preparation and implementation including preparation of archaeological investigation and data recovery results reporting of an ATP and AMP in Mitigation Measure M-CR-3a.	
CR-4: Project construction activities could disturb human remains, if such resources are present within the Project Site.	S	See Mitigation Measures M-CR-3a and M-CR-3b, above.	LS
CR-5: Project construction activities could disturb paleontological resources.	S	<p>M-CR-5: Paleontological Resources Monitoring and Mitigation Program The Project Sponsor shall retain the services of a qualified paleontological consultant having expertise in California paleontology to design and implement a Paleontological Resources Monitoring and Mitigation Program (PRMMP). The PRMMP shall include a description of when and where construction monitoring would be required; emergency discovery procedures; sampling and data recovery procedures; procedure for the preparation, identification, analysis, and curation of fossil specimens and data recovered; preconstruction coordination procedures; and procedures for reporting the results of the monitoring program.</p> <p>The PRMMP shall be consistent with the Society for Vertebrate Paleontology (SVP) Standard Guidelines for the mitigation of construction-related adverse impacts to paleontological resources and the requirements of the designated repository for any fossils collected. During construction, earth-moving activities shall be monitored by a qualified paleontological consultant having expertise in California paleontology in the areas where these activities have the potential to disturb previously undisturbed native sediment or sedimentary rocks. Monitoring need not be conducted in areas where the ground has been previously disturbed, in areas of artificial fill, in areas underlain by nonsedimentary rocks, or in areas where exposed sediment would be buried, but otherwise undisturbed.</p> <p>The consultant’s work shall be conducted in accordance with this measure and at the direction of the City’s Environmental Review officer (ERO). Plans and reports prepared by the consultant shall be submitted first and directly to the ERO for review and comment, and shall be considered draft reports subject to revision until final approval by the ERO. Paleontological monitoring and/or data recovery programs required by this measure could suspend construction of the Proposed Project for up to a maximum of four weeks. At the direction of the ERO, the suspension of construction can be extended beyond four weeks only if such a suspension is the only feasible means to reduce potential effects on a significant paleontological resource as previously defined to a less-than-significant level.</p>	LS

Note:

S = Significant; LS = Less than Significant; SU = Significant and Unavoidable

Impacts	Impact Significance Without Mitigation	Mitigation Measures	Impact Significance With Mitigation
<p>CR-6: Disturbance of archaeological and paleontological resources within Project Site could contribute to a cumulative loss in the ability of the site to yield significant historic and scientific information.</p>	<p>S</p>	<p>See Mitigation Measures M-CR-3a and M-CR-3b, and Mitigation Measure M-CR-5, above.</p>	<p>LS</p>
<p>V.E Transportation and Circulation</p>			
<p>TR-1: Construction of the Proposed Project (with or without the proposed sub-variant) or Project Variant (with or without the proposed sub-variant) would result in transportation impacts in the Proposed Project vicinity due to construction vehicle traffic and road construction associated with the realignment of the existing light rail tracks.</p>	<p>S</p>	<p>M-TR-1: Parkmerced Construction Traffic Management Program. The Project Sponsor shall develop and implement a Construction Traffic Management Program to minimize impacts of the Project and its contribution to cumulative impacts related to construction activities and construction traffic. The program shall provide necessary information to various contractors and agencies as to how to maximize the opportunities for complementing construction management measures and to minimize the possibility of conflicting impacts on the roadway system, while safely accommodating the traveling public in the area. The program shall supplement and expand, rather than modify or supersede any manual, regulations, or provisions set forth by SFMTA, DPW or other City departments and agencies. Preparation of the Construction Management Program shall be the responsibility of the Project Sponsor, and shall be reviewed and approved by SFMTA and DPW prior to initiation of construction. The program shall:</p> <ul style="list-style-type: none"> • Identify construction traffic management practices in San Francisco, as well as other jurisdictions that could provide useful guidance for a project of this size and characteristic. • Describe procedures required by different departments and/or agencies in the City for implementation of a construction management plan, such as reviewing agencies, approval process, and estimated timelines. • Identify construction traffic management strategies and other elements for the Project, and present a cohesive program of operational and demand management strategies designed to maintain acceptable traffic operations during periods of construction activities in the Project area. These could include construction strategies, demand management strategies, alternate route strategies, and public information strategies. • Coordinate with other projects in construction in the immediate vicinity, so that they can take an integrated approach to construction-related traffic impacts. 	<p>SU</p>

Note:

S = Significant; LS = Less than Significant; SU = Significant and Unavoidable

Impacts	Impact Significance Without Mitigation	Mitigation Measures	Impact Significance With Mitigation
		<ul style="list-style-type: none"> Present guidelines for selection of construction traffic management strategies. <p>Implementation of M-TR-1 would help reduce the Proposed Project’s construction-related traffic impacts. Given the magnitude of the proposed development and the duration of the construction period, some disruptions and increased delays could still occur even with implementation of M-TR-1, and it is possible that significant construction-related transportation impacts on local San Francisco and regional roadways could still occur. Construction-related transportation impacts would therefore remain significant and unavoidable.</p>	
<p>TR-2: Implementation of the Proposed Project would result in significant traffic impacts at study intersections.</p>	<p>S</p>	<p>M-TR-2A: Do not construct the proposed northbound left-turn lane from 19th Avenue onto Crespi Drive. The northbound left-turn lane from 19th Avenue to Crespi Drive would require southbound traffic on 19th Avenue to stop to allow northbound left-turning traffic. Eliminating this proposed improvement would cause Project-related traffic inbound to the Project to take alternative routes to access the site; however, the amount of additional Project-related traffic routed through other intersections would not be enough to cause additional significant impacts at those intersections. Implementing mitigation measure M-TR-2A would reduce the Proposed Project impact at this intersection to a less-than-significant level.</p> <p>M-TR-2B: Install a traffic signal at Sunset Boulevard/Lake Merced Boulevard. Installation of the signal shall be the responsibility of the SFMTA, and shall be implemented prior to completion of the Project or as otherwise specified in the Development Agreement; however, SFMTA is not financially responsible for funding this improvement or the study of its feasibility. The SFMTA shall design and implement the measure as necessary.</p> <p>With implementation of M-TR-2B, operations at this intersection would improve to acceptable LOS D or better in the PM peak hour. However, since SFMTA is currently evaluating the feasibility of this measure and has not yet finalized its evaluation, implementation M-TR-2B is uncertain, and Project-related impacts at this intersection would remain significant and unavoidable.</p> <p>M-TR-2C: Construct a dedicated northbound right-turn lane from Lake Merced Boulevard to eastbound Winston Drive. This improvement would provide a dedicated lane for the relatively large number of vehicles expected to execute the northbound right-turn movement. Implementation of the roadway improvement would require roadway widening to the east, which necessitates relocation of the</p>	<p>LS</p> <p>SU</p> <p>SU</p>

Note:

S = Significant; LS = Less than Significant; SU = Significant and Unavoidable

Impacts	Impact Significance Without Mitigation	Mitigation Measures	Impact Significance With Mitigation
		<p>sidewalk, a utility box, a signal mast, and several other elements. Implementation shall be the responsibility of SFMTA, and shall be completed prior to completion of the Project or as otherwise specified in the Development Agreement. SFMTA shall design and implement the measure as necessary; however, SFMTA is not financially responsible for funding this improvement or the study of its feasibility.</p> <p>Implementation of mitigation measure M-TR-2C would improve operations at this intersection to acceptable LOS D or better in the AM and PM peak hours. However, the feasibility of this measure is uncertain due to the adjacent unsignalized intersection, approximately 75 feet south of Winston Drive, which would conflict with the northbound right-turn lane. Further study is required to determine whether this mitigation measure is feasible. However, because the feasibility of this measure is uncertain, Project-related impacts at this intersection would remain significant and unavoidable.</p> <p>M-TR-2D: Provide a third northbound through lane and a second southbound left-turn lane. This mitigation measure would require restriping the northbound right-turn lane at the Lake Merced Boulevard/State Drive intersection as a through lane and removing the on-street parking on the north side of the intersection to recreate the dedicated right-turn lane (assuming that it is required for acceptable operations at this intersection).</p> <p>Additionally, providing a second southbound left-turn lane at this intersection would require removal of on-street parking on the south side of Font Boulevard to create a second receiving lane, as well as the removal of some spaces on the west side of Lake Merced Boulevard and shifting the through travel lanes to the west to make room for the second southbound left-turn lane.</p> <p>Implementation would require significant roadway restriping and signal optimization and coordination at multiple intersections, as well as the removal of approximately 25 parking spaces. If feasible, implementation of this measure shall be the responsibility of SFMTA, and shall be implemented prior to completion of the Project or as otherwise specified in the Development Agreement; however, SFMTA is not financially responsible for funding this improvement or the study of its feasibility. SFMTA shall design and implement the measure as necessary.</p> <p>With implementation of M-TR-2D, operations at this intersection would improve to acceptable LOS D or better conditions in the AM and PM peak hours. However, a dual left-turning movement against a pedestrian signal may be</p>	<p>SU</p>

Note:

S = Significant; LS = Less than Significant; SU = Significant and Unavoidable

Impacts	Impact Significance Without Mitigation	Mitigation Measures	Impact Significance With Mitigation
		<p>considered a safety hazard. Further, since a feasibility study would be required, implementation of M-TR-2D is uncertain, and therefore, Project-related impacts at this intersection would remain significant and unavoidable.</p> <p>M-TR-2E: Reconfigure the westbound right-turn and southbound left-turn as the primary movements of the intersection. This would convert the northbound approach of Lake Merced Boulevard into the “minor” approach to the intersection. Although the configuration may be able to fit within the existing right-of-way at the intersection, further study is needed to determine the feasibility of this measure. A conceptual intersection configuration is presented in the Project’s Transportation Study.</p> <p>If implemented, the intersection reconfiguration shall be the responsibility of SFMTA, and shall be implemented prior to completion of the Project or as otherwise specified in the Development Agreement. SFMTA shall design and implement the measure as necessary; however, SFMTA is not financially responsible for funding this improvement or the study of its feasibility. With implementation of mitigation measure M-TR-2E, operations at this intersection would improve, but would continue to operate at LOS F during both the AM and PM peak hours. However, operating conditions would be substantially better than conditions without the improvements.</p>	SU
<p>TR-3: Implementation of the Proposed Project would result in considerable traffic contributions at study intersections that operate at LOS E or LOS F under Existing Conditions.</p>	S	See Mitigation Measure M-TR-2C, above.	SU
<p>TR-5: Implementation of the Project Variant would result in the same significant traffic impacts as the Proposed Project, as identified in Impacts TR-2 and TR-3 plus significant traffic impacts at two additional study intersections compared to the Proposed Project.</p>	S	<p>M-TR-5: Configure the fourth travel lane on southbound 19th Avenue as a mixed flow lane as presented in the Project. Implementing this mitigation measure would result in acceptable intersection operations during the AM and PM peak hours; however, this configuration was intended to provide a benefit to transit and to encourage high-occupancy vehicles. A secondary impact would be the lost benefit to transit travel times.</p> <p>As described under Impact TR-27, restricting the fourth southbound lane on 19th Avenue to transit, high-occupancy vehicle, and those willing to pay a toll would improve transit travel times and lessen the Proposed Project’s impact on the 28 19th Avenue Muni line. Implementation of this mitigation measure would revert transit conditions to those described for the Proposed Project, and the secondary impact of this Mitigation Measure to transit travel times would be significant.</p>	SU

Note:

S = Significant; LS = Less than Significant; SU = Significant and Unavoidable

Impacts	Impact Significance Without Mitigation	Mitigation Measures	Impact Significance With Mitigation
		With implementation of mitigation measure M-TR-5, Project Variant-related impacts at this intersection would be less than significant. The mitigation measure, however, would have a significant secondary transit impact due to its conversion of the HOT lane. Due to the generally constrained environment, providing additional travel lanes along 19th Avenue is not feasible, and therefore M-TR-5's secondary impact to transit would remain significant.	
TR-6: Implementation of the sub-variant in conjunction with the Proposed Project would result in the same traffic impacts at study intersections as identified in Impacts TR-2, TR-3, and TR-4 for conditions with the Proposed Project.	S	See Mitigation Measure M-TR-2A – 2E.	SU
TR-7: Implementation of the sub-variant in conjunction with the Project Variant would result in the same traffic impacts at study intersections as identified in Impact-TR-5 for conditions with the Project Variant.	S	See Mitigation Measure M-TR-5.	SU
TR-8: Implementation of the Proposed Project would result in significant traffic impacts on one freeway segment.	S	No feasible mitigation measure available.	SU
TR-9: Implementation of the Proposed Project would have significant traffic impacts at two freeway segments that operate at LOS E or LOS F under Existing Conditions.	S	M-TR-9: Eliminate the weaving segment between the loop on-ramp from Brotherhood Way and the loop off-ramp to Brotherhood Way by reconfiguring the interchange. Specifically, evaluate the feasibility of closing the loop on-ramp from eastbound Brotherhood Way to northbound SR 1 and instead constructing an eastbound left-turn lane from Brotherhood Way on the east side of the structure. The direct on-ramp from westbound Brotherhood Way to northbound SR 1 should be configured with one access point to serve traffic from westbound Brotherhood Way and those making a left-turn from eastbound Brotherhood Way. The eastbound left turn-lane can and shall be constructed to approximately 150 feet in length, which would sufficiently serve the demand for that particular movement (no greater than 50 vehicles per hour under Existing plus Project conditions). Ultimately, this measure may require a design exception from Caltrans. The 95th percentile queue in both the AM and PM peak hours with the Project would be approximately 50 feet, or about two car lengths. This analysis assumes a relatively uniform stream of opposing westbound traffic. However, in practice, gaps in westbound traffic would be created by the signalized	SU

Note:

S = Significant; LS = Less than Significant; SU = Significant and Unavoidable

Impacts	Impact Significance Without Mitigation	Mitigation Measures	Impact Significance With Mitigation
		<p>Brotherhood Way/Arch Street intersection, which may allow the left-turn maneuver to operate better than reported.</p> <p>Implementation of the intersection reconfiguration shall be the responsibility of SFMTA and Caltrans, and shall be implemented prior to completion of the Project or as otherwise specified in the Development Agreement. SFMTA and Caltrans shall conduct a focused technical study of the design and implement the measure as necessary. SFMTA and Caltrans are not financially responsible for funding this improvement or the study of its feasibility.</p> <p>Implementation of mitigation measure M-TR-9 would improve the weaving section operation to acceptable LOS in the AM and PM peak hours with implementation of the Proposed Project. However, implementation of mitigation measures that would require discretionary approval actions by the SFMTA or other public agencies, such as Caltrans, is considered uncertain because public agencies subject to CEQA cannot commit to implementing any part of a proposed project, including proposed mitigation measures, until environmental review is complete. Thus, while the SFMTA has reviewed the feasibility of several mitigation measures proposed to address significant impacts, implementation of these measures cannot be assured until after certification of this EIR and approval by Caltrans. Traffic impacts at this facility under the Project conditions would remain significant and unavoidable.</p>	
<p>TR-10: Implementation of the Project Variant would have significant traffic impacts at the same freeway segments expected to experience significant traffic impacts associated with the Proposed Project, as identified in Impacts TR-8 and TR-9.</p>	<p>S</p>	<p>See Mitigation Measure M-TR-9, above.</p>	<p>SU</p>
<p>TR-11: Implementation of the sub-variant, either in conjunction with the Proposed Project or the Project Variant would have significant traffic impacts at the same freeway segments expected to experience significant traffic impacts associated with the Proposed Project, as identified in Impacts TR-8 and TR-9.</p>	<p>S</p>	<p>See Mitigation Measure M-TR-9, above.</p>	<p>SU</p>
<p>TR-12: Implementation of the Proposed Project would exceed the available transit capacity of transit routes serving the Project Study Area.</p>	<p>S</p>	<p>No feasible mitigation measure available.</p>	<p>SU</p>

Note:

S = Significant; LS = Less than Significant; SU = Significant and Unavoidable

Impacts	Impact Significance Without Mitigation	Mitigation Measures	Impact Significance With Mitigation
<p>TR-13: Implementation of the Project Variant would result in significant impacts on to the same Muni Study Area Screenlines as identified in Impact TR-12 for the Proposed Project.</p>	S	No feasible mitigation measure available.	SU
<p>TR-14: Implementation of the sub-variant, either in conjunction with the Proposed Project or the Project Variant, would result in significant impacts on the same Muni Study Area Screenlines as identified in Impact TR-12 for the Proposed Project.</p>	S	No feasible mitigation measure available.	SU
<p>TR-21: The Proposed Project would reroute the M Ocean View light rail line into the Project Site, extending its route and imparting an additional five minutes of travel time to complete each run. Without additional light rail vehicles, Muni could not operate this longer route at current headways.</p>	S	<p>M-TR-21A: Purchase an additional light rail vehicle for the M Ocean View. Purchase and insert another light-rail vehicle into the system in order to maintain headways. This will allow Muni to maintain proposed headways on the M Ocean View with a slightly longer route. The procurement of new light rail vehicles shall be completed by SFMTA, and shall be completed prior to operating the rerouted system. However, new transit vehicles required to serve the Proposed Project shall not be the financial responsibility of SFMTA.</p> <p>M-TR-21B: Install Transit Signal Priority (TSP) treatments to improve transit travel times on the M Ocean View such that M-TR-21A (an additional vehicle) is not required. A study shall be conducted to determine whether TSP treatments could improve transit travel times along the M Ocean View corridor. If feasible, implement Transit Signal Priority (TSP) measures along the M Ocean View corridor between the Project Site and the West Portal Station. To reduce the Proposed Project’s impact to the M Ocean View line, the TSP measures would need to improve the travel time by approximately 50 seconds in the AM peak period and 30 seconds in the PM peak period. Achieving these reductions would reduce the Project’s impact to travel time to less than half the headway of the current M Ocean View. SFMTA and Caltrans shall design and implement the measure prior to operating the rerouted system; however, SFMTA and Caltrans are not financially responsible for funding this improvement or the study of its feasibility.</p> <p>Implementing either Mitigation Measure M-TR-21A or M-TR-21B would allow Muni to maintain transit headways, and would reduce the Proposed Project’s impact to less-than-significant levels. However, Mitigation Measure M-TR-21B would be preferable because it would not only allow Muni to maintain transit headways, but would also improve travel times for riders. Implementation of</p>	<p>SU</p> <p>SU</p>

Note:

S = Significant; LS = Less than Significant; SU = Significant and Unavoidable

Impacts	Impact Significance Without Mitigation	Mitigation Measures	Impact Significance With Mitigation
		mitigation measures above that would require discretionary approval actions by the SFMTA or other public agencies is considered uncertain because public agencies subject to CEQA cannot commit to implementing any part of a proposed project, including proposed mitigation measures, until environmental review is complete. Thus, while the SFMTA has reviewed the feasibility of several mitigation measures proposed to address significant impacts, implementation of these measures cannot be assured until after certification of this EIR. Because M-TR-21B requires a feasibility study, and it is unknown whether M-TR-21A or M-TR-21B would be implemented, Project-related impacts on the M Ocean View in the AM and PM peak hours would be significant and unavoidable.	
<p>TR-22: Implementation of the Proposed Project would contribute traffic to existing traffic volumes at intersections along the Lake Merced Boulevard corridor, which would increase travel times and impact operations of the 18 46th Avenue bus line.</p>	S	<p>M-TR-22A: Construct intersection mitigations to reduce congestion caused by vehicular delay. To address Project impacts to the 18 46th Avenue, the Project Sponsor in cooperation with SFMTA shall implement the improvements described in mitigation measures M-TR-2C (construct a dedicated northbound right-turn lane at the Lake Merced Boulevard/Winston Drive intersection), M-TR-2D (reconfigure the northbound approach to consist of a third through lane and provide a second southbound left-turn lane at the Lake Merced Boulevard/Font Boulevard intersection), and M-TR-2E (Reconfigure the westbound right-turn and southbound left-turn as the primary movements of the Lake Merced Boulevard/Brotherhood Way intersection). This involves lane modifications at several intersections along Lake Merced Boulevard to increase vehicular capacity, thus reducing approach delay at those intersections.</p> <p>M-TR-22B: Maintain the proposed headways of the 18 46th Avenue. The Project Sponsor in cooperation with SFMTA shall conduct a study to evaluate the effectiveness and feasibility of the following improvements which could reduce Project impacts on transit operations along the Lake Merced Boulevard corridor, generally between Brotherhood Way and Winston Drive. The study shall create a monitoring program to determine the implementation extent and schedule (as identified below) to maintain the proposed headways of transit lines impacted by the Project.</p> <ul style="list-style-type: none"> A transit-only queue-jump lane should be considered on Lake Merced Boulevard at Font Boulevard. This treatment could be constructed within the existing curb-to-curb right of way for the northbound direction. 	<p>SU</p> <p>SU</p>

Note:

S = Significant; LS = Less than Significant; SU = Significant and Unavoidable

Impacts	Impact Significance Without Mitigation	Mitigation Measures	Impact Significance With Mitigation
		<ul style="list-style-type: none"> • Southbound queue-jumps are viable at State Drive and Font Boulevard with removal of on-street parking. However, these treatments may conflict with mitigation measures M-TR-2C, M-TR-2D, and M-TR-2E (collectively summarized in M-TR-22A), which have been designed to reduce the Project’s traffic impacts. <p>These improvements would collectively benefit not only the 18 46th Avenue prior to the TEP improvements, but also SamTrans Route 122, and the proposed “shopper shuttle.”</p> <p>SFMTA shall design and implement the measure as necessary; however, SFMTA is not financially responsible for funding this improvement or the study of its feasibility. The Project Sponsor shall fully fund the costs of implementing the transit priority improvements (either the improvements identified above, or alternative improvements of equal or greater effectiveness and comparable cost) as determined by the study and the monitoring program. Other options to be evaluated in the study could include comprehensive replacement of stop-controlled intersections with interconnected traffic signals equipped with transit priority elements.</p> <p>M-TR-22C: Purchase additional transit vehicles as necessary to mitigate the Project impacts to headways on the 18 46th Avenue. Should mitigation measures M-TR-22A or M-TR-22B not be feasible or effective, the Project Sponsor shall work with SFMTA to purchase additional transit vehicles and contribute to operating costs and facility improvements as necessary to mitigate the Project impacts to headways for the transit line. While this mitigation measure would allow headways to be maintained, it does not mitigate the transit travel time delay. The procurement of new transit vehicles shall be completed by SFMTA. However, new transit vehicles required to serve the Proposed Project shall not be the financial responsibility of SFMTA.</p> <p>Implementation of mitigation measures above that would require discretionary approval actions by the SFMTA or other public agencies is considered uncertain because public agencies subject to CEQA cannot commit to implementing any part of a proposed project, including proposed mitigation measures, until environmental review is complete. Thus, while the SFMTA has reviewed the feasibility of several mitigation measures proposed to address significant impacts, implementation of these measures cannot be assured until after certification of this EIR.</p>	<p>SU</p>

Note:

S = Significant; LS = Less than Significant; SU = Significant and Unavoidable

Impacts	Impact Significance Without Mitigation	Mitigation Measures	Impact Significance With Mitigation
		Implementation of M-TR-22A would improve conditions, but alone would not likely reduce transit peak hour travel times enough to reduce the Project’s impact during the AM and PM peak hours to less-than-significant levels. Therefore, with implementation of mitigation measure M-TR-22A alone, the Project’s impact to the 18 46th Avenue bus line in the AM and PM peak hour would remain significant. Further, since the implementation of mitigation measure M-TR-22B is uncertain (due to the need for further study and the conflict with mitigation measures M-TR-2C, M-TR-2D, and M-TR-2E), its feasibility is uncertain. In addition, implementation of M-TR-22C alone, without M-TR-22A or M-TR-22B, may not be sufficient to reduce impacts to less than significant levels. Therefore, Project-related impacts on this route would be significant and unavoidable.	
<p>TR-23: Implementation of the Proposed Project would contribute traffic to existing traffic volumes at intersections along the 19th Avenue corridor, which would increase travel times and affect operations of the 17 Parkmerced.</p>	S	<p>M-TR-23: Maintain the proposed headways of the 17 Parkmerced. The Project Sponsor in cooperation with SFMTA and Caltrans shall conduct a study to evaluate the effectiveness and feasibility of implementing transit-only lanes along the length of 19th Avenue between Holloway Avenue and Winston Drive. If feasible, the transit lanes shall be installed. SFMTA and Caltrans shall design and implement the measure as necessary; however, SFMTA and Caltrans are not financially responsible for funding this improvement or the study of its feasibility.</p> <p>Implementation of mitigation measure M-TR-23 would require substantial study and public outreach, and would result in secondary traffic impacts associated with the removal of a mixed-flow traffic lane. Further, implementation of mitigation measures that would require discretionary approval actions by the SFMTA or other public agencies is considered uncertain because public agencies subject to CEQA cannot commit to implementing any part of a proposed project, including proposed mitigation measures, until environmental review is complete. Thus, while the SFMTA has reviewed the feasibility of several mitigation measures proposed to address significant impacts, implementation of this measure cannot be assured until after certification of this EIR. This measure would also require approval by Caltrans, which is responsible for improvements to this section of 19th Avenue. Because of the amount of additional study required and the multiple jurisdictions that would be required to adopt it, its feasibility is uncertain. Therefore, Project-related impacts on this route would remain significant and unavoidable.</p>	SU
<p>TR-24: Implementation of the Proposed Project would</p>	S	<p>M-TR-24: Implement the Project Variant (i.e., conversion of the fourth</p>	SU

Note:

S = Significant; LS = Less than Significant; SU = Significant and Unavoidable

Impacts	Impact Significance Without Mitigation	Mitigation Measures	Impact Significance With Mitigation
<p>contribute traffic to existing traffic volumes at intersections along the 19th Avenue corridor, which would increase travel times and affect operations of the 28 19th Avenue and 28L 19th Avenue Limited.</p>		<p>southbound lane to high-occupancy vehicle, toll, and transit-only use). Converting the fourth southbound lane on 19th Avenue proposed by the Project to a “HOT” lane would improve travel times on the 28 19th Avenue. Conditions with this treatment in place are discussed under Impact TR-27. Implementation of M-TR-24 would preclude implementation of M-TR-5. Implementation or mitigation measure M-TR-24 (i.e., implement the Project Variant) would improve transit travel times on the 28 19th Avenue and 28 19th Avenue Limited. However, because implementation of the Project Variant is uncertain, this mitigation measure may not be feasible. Thus, the Project’s impacts to the 28 19th Avenue and 28 19th Avenue Limited in the PM peak hour would remain significant and unavoidable.</p>	
<p>TR-25: Implementation of the Proposed Project would contribute traffic to existing traffic volumes at intersections along the Sunset Boulevard, Lake Merced Boulevard, Winston Drive, and 19th Avenue corridors, which would increase travel times and affect operations of the 29 Sunset.</p>	<p>S</p>	<p>M-TR-25A: Implement mitigation measure M-TR-23 which addresses transit improvements (i.e. transit-only lanes) along 19th Avenue from Holloway Avenue to Winston Drive. M-TR-25B: Maintain the proposed headways of the 29 Sunset. The Project Sponsor in cooperation with SFMTA shall conduct a study to evaluate the effectiveness and feasibility of installing transit priority elements along Lake Merced Boulevard, between Winston Drive and Sunset Boulevard. This may include, but is not limited to, queue-jump lanes and transit-only lanes. SFMTA shall design and implement the measure as necessary; however, SFMTA is not financially responsible for funding this improvement or the study of its feasibility. The Project Sponsor shall fully fund the costs of implementing the transit priority improvements (either the improvements identified above, or alternative improvements of equal or greater effectiveness and comparable cost) as determined by the study and the monitoring program. M-TR-25C: Purchase additional transit vehicles as necessary to mitigate the Project impacts to headways on the 29 Sunset. Should mitigation measures M-TR-25A or M-TR-25B not be feasible or effective, the Project Sponsor shall work with SFMTA to purchase additional transit vehicles and contribute to operating costs and facility improvements as necessary to mitigate the Project impacts to headways for the transit line. The procurement of new transit vehicles shall be completed by SFMTA. However, new transit vehicles required to serve the Proposed Project shall not be the financial responsibility of SFMTA. Implementation of mitigation measures above that would require discretionary approval actions by the SFMTA or other public agencies is considered uncertain</p>	<p>SU SU SU</p>

Note:

S = Significant; LS = Less than Significant; SU = Significant and Unavoidable

Impacts	Impact Significance Without Mitigation	Mitigation Measures	Impact Significance With Mitigation
		<p>because public agencies subject to CEQA cannot commit to implementing any part of a proposed project, including proposed mitigation measures, until environmental review is complete. Thus, while the SFMTA has reviewed the feasibility of several mitigation measures proposed to address significant impacts, implementation of these measures cannot be assured until after certification of this EIR.</p> <p>Implementation of M-TR-25A alone would not likely reduce transit peak hour travel times enough to eliminate the need for an additional transit vehicle in the PM peak hour. Implementation of mitigation measure M-TR-25B or a combination of the two mitigation measures could reduce the impacts on the 29 Sunset bus line to a less-than-significant level. However, SFMTA has not determined the feasibility of these mitigation measures. In addition, implementation of M-TR-25C alone, without M-TR-25A or M-TR-25B, may not be sufficient to reduce impacts to less than significant levels. Therefore, Project-related impacts on this route would remain significant and unavoidable.</p>	
<p>TR-26: Implementation of the Proposed Project would contribute traffic to existing traffic volumes at intersections along the Lake Merced Boulevard corridor, which would increase travel times and affect operations of a SamTrans bus line along this facility.</p>	<p>S</p>	<p>M-TR-26: Maintain proposed headways on SamTrans Route 122. To address Project impacts to SamTrans Route 122, implement mitigation measures M-TR-22A (lane modifications at several intersections along Lake Merced Boulevard) and M-TR-22B (implementation of transit priority and queue-jump treatments on Lake Merced Boulevard).</p> <p>Since SamTrans Route 122 shares a route with the 18 46th Avenue, improvements designed to reduce travel time impacts to the 18 46th Avenue would also benefit SamTrans Route 122.</p> <p>Implementing mitigation measure M-TR-26 would reduce the Project impact to a less-than-significant level. However, as described in the discussion of mitigation measures M-TR-22A and M-TR-22B, feasibility of these measures is uncertain. Therefore, Project-related impacts on SamTrans Route 122 in the AM and PM peak hours would be significant and unavoidable.</p>	<p>SU</p>
<p>TR-27: Implementation of the Project Variant would contribute traffic to existing traffic volumes at intersections along key transit corridors, which would cause congestion and increase travel times and impact operations of transit lines. The Project Variant would have the same significant impacts as identified for the Proposed Project in Impacts TR-21 to TR-26.</p>	<p>S</p>	<p>See Mitigation Measures M-TR-21-M-TR-26, above.</p>	<p>SU</p>

Note:

S = Significant; LS = Less than Significant; SU = Significant and Unavoidable

Impacts	Impact Significance Without Mitigation	Mitigation Measures	Impact Significance With Mitigation
<p>TR-28: Implementation of the sub-variant, either in conjunction with the Proposed Project or the Project Variant, would contribute traffic to existing traffic volumes at intersections along key transit corridors, which would cause congestion and increase travel times and impact operations of transit lines. With implementation of the sub-variant, the Proposed Project and Project Variant would have the same significant impacts as identified for the Proposed Project in Impacts TR-21 to TR-26.</p>	S	See Mitigation Measures M-TR-21-M-TR-26, above.	SU
<p>TR-36: Implementation of the Proposed Project would contribute to significant cumulative traffic impacts at 14 study intersections.</p>	S	<p>M-TR-36A: Retime signal at Junipero Serra Boulevard/Ocean Avenue/Eucalyptus Drive to allocate more green time to the east-west movements. Under future year 2030 conditions, adjustments to the traffic signal timing at this intersection could likely improve operations to within acceptable levels, based on forecasted traffic increases. Implementing this mitigation measure would achieve acceptable operations at this intersection. However, signals along the Junipero Serra Boulevard corridor are coordinated such that they operate as a system, rather than isolated signals. Traffic progression relies on the interconnectivity between each signal. Retiming this particular intersection may require evaluation of the corridor. SFMTA would be responsible for evaluating and implementing a new signal timing plan. Implementation shall be completed prior to completion of the Project or as otherwise specified in the Development Agreement.</p> <p>Implementation of mitigation measure M-TR-36A would improve operations at this intersection to acceptable levels. However, because this mitigation measure would require further evaluation, its implementation is uncertain. Therefore, the Proposed Project’s contribution to the cumulative impact at this intersection would be significant and unavoidable.</p> <p>M-TR-36B: Retime signal at 19th Avenue/Holloway Avenue to allocate more green time to the east-west movements. Implementing this mitigation measure would achieve acceptable operations at this intersection. However, 19th Avenue is a coordinated corridor with closely spaced intersections. Traffic progression relies on the interconnectivity between each signal. Retiming this particular intersection would require evaluation of the corridor. SFMTA would be</p>	<p>SU</p> <p>SU</p>

Note:

S = Significant; LS = Less than Significant; SU = Significant and Unavoidable

Impacts	Impact Significance Without Mitigation	Mitigation Measures	Impact Significance With Mitigation
		<p>responsible for evaluating and implementing a new signal timing plan. Implementation shall be completed prior to completion of the Project or as otherwise specified in the Development Agreement.</p> <p>Implementation of mitigation measure M-TR-36B would achieve acceptable operations at this intersection. However, because this mitigation measure would require further evaluation, its implementation is uncertain. Therefore, the Proposed Project’s contribution to the cumulative impact at this intersection would remain significant and unavoidable.</p> <p>M-TR-36C: Construct a dedicated westbound right-turn lane and convert the shared westbound through/right-turn lane to a dedicated westbound through lane at the Brotherhood Way/Chumasero Drive intersection. Implementation of this mitigation measure would improve operations at this intersection to acceptable LOS D during the PM peak hour under 2030 cumulative conditions. Construction of this mitigation measure would require roadway widening into the Project Site, but no major structural reconfigurations would be required. Implementation of the intersection reconfiguration shall be the responsibility of SFMTA, and shall be implemented prior to completion of the Project or as otherwise specified in the Development Agreement. SFMTA shall design and implement the measure as necessary; however, SFMTA is not financially responsible for funding this improvement or evaluating its feasibility. With implementation of mitigation measure M-TR-36C, acceptable LOS could be achieved and the cumulative impact would be reduced to less than significant. However, SFMTA has not determined the feasibility of this mitigation. Because this mitigation measure would require further evaluation, its implementation is uncertain. Therefore, the Proposed Project’s contribution to the cumulative impact at this intersection would remain significant and unavoidable.</p> <p>M-TR-36D: Install a traffic signal at Lake Merced Boulevard/John Muir Drive. Installation of a traffic signal at the intersection of Lake Merced Boulevard/John Muir Drive would improve operations to acceptable levels. Implementation of the signal installation shall be the responsibility of SFMTA, and shall be implemented prior to completion of the Project or as otherwise specified in the Development Agreement. The SFMTA shall design and implement the measure as necessary; however, SFMTA is not financially responsible for funding this improvement or evaluating its feasibility.</p>	<p>SU</p> <p>SU</p>

Note:

S = Significant; LS = Less than Significant; SU = Significant and Unavoidable

Impacts	Impact Significance Without Mitigation	Mitigation Measures	Impact Significance With Mitigation
		<p>Implementation of mitigation measure M-TR-36D would improve intersection operations to acceptable levels. The Project Sponsor should contribute a fair-share toward funding this mitigation measure. However, because there is no funding mechanism in place to provide full funding for this measure, its feasibility is uncertain. Therefore, the Project’s contribution to cumulatively significant impacts at this intersection would remain significant and unavoidable.</p> <p>M-TR-36E: Convert the dedicated southbound through lane into a dedicated left-turn lane at John Daly Boulevard/Lake Merced Boulevard. This would result in the southbound approach consisting of a shared through-right-turn lane and triple left-turn lanes. To achieve adequate lane utilization, John Daly Boulevard would have to be configured to have three eastbound through travel lanes east of the intersection. This would require the removal of some pedestrian elements and converting the existing right-turn lane into the Westlake Shopping Center into a shared through/right-turn lane. If feasible, this measure shall be implemented prior to completion of the Project or as otherwise specified in the Development Agreement.</p> <p>Implementation of mitigation measure M-TR-36E would achieve acceptable operations at this intersection. The Project sponsor would be responsible to fund a “fair share” contribution towards the implementation of mitigation measure M-TR-36E. However, there is no mechanism identified to collect the remaining funding for implementing this mitigation measure, and its full funding is uncertain. Furthermore, the improvements identified above would be the responsibility of Daly City and could not be implemented by San Francisco. Therefore, the Proposed Project’s contribution to cumulatively significant impacts at this intersection would remain significant and unavoidable.</p> <p>M-TR-36F: Install an auxiliary lane from Brotherhood Way through the Lake Merced Boulevard/Gonzalez Drive intersection to provide three northbound through lanes. Installation of the auxiliary lane shall be the responsibility of SFMTA, and shall be implemented prior to completion of the Project or as otherwise specified in the Development Agreement; however, SFMTA is not financially responsible for funding this improvement. The SFMTA shall design and implement the measure as necessary. SFMTA is currently evaluating the feasibility of this measure and has not yet finalized its evaluation.</p> <p>With implementation of mitigation measure M-TR-36F, operations at this intersection would improve to acceptable LOS D or better conditions in the PM peak hour. However, because further study is required to determine feasibility of</p>	<p>SU</p> <p>SU</p>

Note:

S = Significant; LS = Less than Significant; SU = Significant and Unavoidable

Impacts	Impact Significance Without Mitigation	Mitigation Measures	Impact Significance With Mitigation
		this mitigation measure, its feasibility is uncertain. Therefore, the Project's contribution to cumulatively significant impacts at this intersection would remain significant and unavoidable.	
TR-38: Implementation of the Project Variant would result in significant cumulative traffic impacts at the same intersections as the Proposed Project, as identified in Impacts TR-35 and TR-36; however, cumulative traffic impacts at two intersections would be slightly more severe and/or occur more frequently compared to cumulative conditions with the Proposed Project.	S	See Mitigation Measures M-TR-5 and Mitigation Measures M-TR-36A – M-TR-36F, above.	SU
TR-39: Implementation of the sub-variant in conjunction with the Proposed Project would result in the same significant cumulative traffic impacts at study intersections as identified in Impacts TR-35 and TR-36 for cumulative conditions with the Proposed Project.	S	See Mitigation Measures M-TR-36A – M-TR-36F, above.	SU
TR-40: Implementation of the sub-variant in conjunction with the Project Variant would result in the same significant cumulative traffic impacts at study intersections as identified in Impact TR-38 for cumulative conditions with the Project Variant.	S	See Mitigation Measures M-TR-5 and Mitigation Measures M-TR-36A – M-TR-36F, above.	SU
TR-41: Implementation of the Proposed Project would contribute to significant cumulative traffic impacts at four freeway segments.	S	See Mitigation Measures M-TR-9, above.	SU
TR-42: Implementation of the Project Variant would contribute to significant cumulative traffic impacts at four freeway segments expected to experience significant cumulative traffic impacts under future conditions with the Proposed Project, as identified in Impact TR-41.	S	No feasible mitigation measures available.	SU
TR-43: Implementation of the sub-variant, either in conjunction with the Proposed Project or the Project Variant, would contribute to significant cumulative traffic impacts at four freeway segments expected to	S	No feasible mitigation measures available.	SU

Note:

S = Significant; LS = Less than Significant; SU = Significant and Unavoidable

Impacts	Impact Significance Without Mitigation	Mitigation Measures	Impact Significance With Mitigation
experience significant cumulative traffic impacts under future conditions with the Proposed Project, as identified in Impact TR-41.			
TR-44: The Proposed Project would contribute transit ridership to Study Area screenlines expected to exceed available capacity under 2030 cumulative conditions..	S	M-TR-44: Provide additional capacity on the south and north screenlines by adding additional buses to the 28 19 th Avenue and 28L 19 th Avenue Limited lines. Providing additional service on the bus line would require further feasibility and capacity studies with coordination from SFMTA. The Project sponsor would be responsible to fund a “fair share” contribution towards the implementation of this mitigation measure. Although San Francisco does have an impact fee funding mechanism in place (i.e., Transit Impact Development Fee), the fee does not currently apply to residential projects. Therefore, funding for this improvement cannot be guaranteed. Implementing Mitigation Measure M-TR-44 would reduce the cumulative impact on the south and north screenlines to less-than-significant levels. However, because full funding has not been identified for this mitigation measure, the Proposed Project’s contribution to cumulatively significant impacts on the south and north screenlines would remain significant and unavoidable.	SU
TR-45: Implementation of the Project Variant would result in significant impacts on the same Muni Study Area Screenlines as identified in Impact TR-43 for the Proposed Project.	S	No feasible mitigation measures available.	SU
TR-46: Implementation of the sub-variant, either in conjunction with the Proposed Project or the Project Variant, would result in significant impacts on the same Muni Study Area Screenlines as identified in Impact TR-43 for the Proposed Project.	S	No feasible mitigation measures available.	SU
V.F. Noise			
NO-1: Project-related construction activities would increase noise levels above existing ambient conditions.	S	M-NO-1a: Reduce Noise Levels During Construction The following practices shall be incorporated into the construction contract agreement documents to be implemented by the construction contractor: <ul style="list-style-type: none"> • Provide enclosures and mufflers for stationary equipment, shroud or shield impact tools, and install barriers around particularly noisy activities at the construction sites so that the line of sight between 	LS

Note:

S = Significant; LS = Less than Significant; SU = Significant and Unavoidable

Impacts	Impact Significance Without Mitigation	Mitigation Measures	Impact Significance With Mitigation
		<p>the construction activities and nearby sensitive receptor locations is blocked to the maximum feasible extent;</p> <ul style="list-style-type: none"> • Use construction equipment with lower noise emission ratings whenever possible, particularly for air compressors; • Provide sound-control devices on equipment no less effective than those provided by the manufacturer; • Locate stationary equipment, material stockpiles, and vehicle staging areas as far as practicable from sensitive receptor locations; • Prohibit unnecessary idling of internal combustion engines; • Require applicable construction-related vehicles and equipment to use designated truck routes to access the project sites; • Implement noise attenuation measures to the extent feasible, which may include, but are not limited to, noise barriers or noise blankets. The placement of such attenuation measures shall be reviewed and approved by the Director of Public Works prior to issuance of development permits for construction activities. • Designate a Noise Disturbance Coordinator who shall be responsible for responding to complaints about noise during construction. The telephone number of the Noise Disturbance Coordinator shall be conspicuously posted at the construction site and shall be provided to the City. Copies of the construction schedule shall also be posted at nearby noise-sensitive areas. <p>M-NO-1b: Pile Driving Noise-Reducing Techniques and Muffling Devices The Project Sponsor shall require its construction contractor to use noise-reducing pile driving techniques if nearby buildings are subject to pile driving noise and vibration. These techniques shall include pre-drilling pile holes (if feasible, based on soils; see Mitigation Measure M-NO-2, pp. V.F.20-V.F.21) to the maximum feasible depth, installing intake and exhaust mufflers on pile driving equipment, vibrating piles into place when feasible, and installing shrouds around the pile driving hammer where feasible. Construction contractors shall be required to use construction equipment with state-of-the-art noise shielding and muffling devices. In addition, at least 48 hours prior to pile driving activities, the Project Sponsor shall notify building owners</p>	<p>LS</p>

Note:

S = Significant; LS = Less than Significant; SU = Significant and Unavoidable

Impacts	Impact Significance Without Mitigation	Mitigation Measures	Impact Significance With Mitigation
		and occupants within 500 feet of the project site of the dates, hours, and expected duration of such activities.	
<p>NO-2: Construction activities could expose persons and structures to excessive ground-borne vibration or ground-borne noise levels.</p>	S	<p>M-NO-2: Pre-Construction Assessment to Minimize Vibration Levels Associated with Impact Activities</p> <p>The Project Sponsor shall hire a qualified geotechnical engineer to conduct a pre-construction assessment of existing subsurface conditions and the structural integrity of nearby buildings subject to pile driving noise and vibration prior to receiving a building permit. If recommended by the geotechnical engineer, for structures or facilities within 50 feet of pile driving activities, the Project Sponsor shall require ground-borne vibration monitoring of nearby structures. Such methods and technologies shall be based on the specific conditions at the construction site such as, but not limited to, the following:</p> <ul style="list-style-type: none"> • Pre-construction surveying of potentially affected structures; • Underpinning of foundations of potentially affected structures, as necessary; • The construction plan shall include a monitoring program to detect ground settlement or lateral movement of structures in the vicinity of impact activities. Monitoring results shall be submitted to the Department of Building Inspection. In the event of unacceptable ground movement, as determined by the Department of Building Inspection, all impact work shall cease and corrective measures shall be implemented. The impact program and ground stabilization measures shall be reevaluated and approved by the Department of Building Inspection. 	LS
<p>NO-3: Project-related traffic would increase noise levels above existing ambient conditions.</p>	S	No feasible mitigation measures available.	SU
<p>NO-4: Increases in traffic from the project in combination with other development would result in cumulative noise increases.</p>	S	No feasible mitigation measures available.	SU
<p>NO-5: Project-related light rail noise and vibration levels would increase above existing ambient</p>	S	Mitigation Measure M-NO-5, which would require discretionary approval actions by the SFMTA, is considered uncertain because public agencies subject to CEQA	SU

Note:

S = Significant; LS = Less than Significant; SU = Significant and Unavoidable

Impacts	Impact Significance Without Mitigation	Mitigation Measures	Impact Significance With Mitigation
conditions..		<p>cannot commit to implementing any part of a proposed project, including proposed mitigation measures, until environmental review is complete. Thus, while the SFMTA has reviewed the feasibility of several mitigation measures proposed to address significant impacts, implementation of these measures cannot be assured until after certification of this EIR. Without certain implementation of Mitigation Measure M-NO-5, the noise and vibration impacts would be considered significant and unavoidable, requiring a finding and Statement of Overriding Consideration at the time of certifying this EIR.</p> <p>M-NO-5: Light Rail Noise and Vibration Reduction Plan</p> <p>The proposed realignment of the Muni M Ocean View light rail and its operations shall be designed with input from a qualified acoustical consultant so that light rail operation noise levels are attenuated at and in the vicinity of the final alignment so that the San Francisco Land Use Compatibility Guidelines for Community Noise standards are not exceeded. The Light Rail Noise and Vibration Reduction Plan shall be prepared by a qualified acoustical consultant and submitted to the City for review and approval prior to construction of the proposed realignment. The plan shall identify noise attenuation measures that would ensure compliance with the City’s community noise guidelines, including, but not limited to, requiring light rail operators to reduce vehicle speeds when approaching and departing and operating within the Project Site. The following noise and vibration attenuation measures shall be included as part of the plan:</p> <ul style="list-style-type: none"> • Rail Bed Design: The light rail trackwork shall be designed to prevent the production of excessive vibration levels at the nearest sensitive structures. The design should include the installation of high-resilience direct fixation fasteners for embedded track, ballast mat for ballast and tie track, or other measures as determined by a qualified light rail vibration consultant. • Rail Grinding and Replacement: As rails wear, both noise levels from light rail by-passes and vibration levels can increase. By grinding down or replacing worn rail, noise and vibration levels will remain at the initial operating levels. Rail grinding or replacement is normally performed every 3 to 5 years. • Wheel Truing and Replacement: Wheel truing is a method of 	SU

Note:

S = Significant; LS = Less than Significant; SU = Significant and Unavoidable

Impacts	Impact Significance Without Mitigation	Mitigation Measures	Impact Significance With Mitigation
		<p>grinding down flat spots (commonly called “wheel flats”) on the light rail’s wheels. Flat spots occur primarily because of hard braking. When flat spots occur they can cause increases in both the noise and vibration levels produced by the light rail vehicles.</p> <ul style="list-style-type: none"> • Vehicle Maintenance: Vehicle maintenance includes performing scheduled and general maintenance on items such as air conditioning units, bearings, wheel skirts, and other mechanical units on the light rail vehicles. Keeping the mechanical system on the light rail vehicles in top condition will also help to control noise and vibration levels. • Operator Training: Operators will be trained to maintain light rail travel speeds at those speeds given in the operation plan and to avoid “hard braking” whenever possible. As stated, hard braking can cause wheel flats and may also damage track. Furthermore, by training operators to identify potential wheel flats and other mechanical problems with the trains, proper maintenance can be performed in a timely manner. <p>During final engineering design, vibration propagation testing shall be conducted at the final light rail alignment near Gonzalez Drive and Diaz Avenue to confirm the predicted impact and finalize the mitigation measures. Where vibration impacts are confirmed, they shall be reduced to meet the FTA criteria.</p>	
<p>NO-6: Proposed residences and other sensitive uses would be located in incompatible noise environments.</p>	<p>S</p>	<p>M-NO-6: Residential Use Plan Review by Qualified Acoustical Consultant To ensure that interior noise levels induced by the light rail station, and by automobile, bus, and light rail traffic at noise sensitive uses do not result in excessive awakenings, or exceed an interior noise level standard of 45 dBA (L_{dn}), a qualified acoustical consultant shall review plans for all new residential uses, the new Pre K-5 school, and new day care facility, and provide recommendations to provide acoustical insulation or other equivalent measures to ensure that interior noise levels would not exceed acceptable limits and a cumulative noise level of 45 dBA (L_{dn}). These studies shall be presented to the Department of Building Inspection at the time that permits for individual buildings are submitted for review.</p>	<p>LS</p>
<p>NO-7: Operation of stationary noise sources (e.g., district energy system, wind turbines, fire station and</p>	<p>S</p>	<p>M-NO-7: Stationary Operational Noise Sources. All utility and industrial stationary noise sources (e.g., district energy system,</p>	<p>SU</p>

Note:

S = Significant; LS = Less than Significant; SU = Significant and Unavoidable

Impacts	Impact Significance Without Mitigation	Mitigation Measures	Impact Significance With Mitigation
police and fire substation(s), etc.) would increase existing noise levels, potentially exceeding noise level standards.		wind turbines, etc.) shall be located away from noise sensitive receptors, be enclosed within structures with adequate setback and screening, be installed adjacent to noise reducing shields, or constructed with some other adequate noise attenuating features, to achieve compliance with the noise level limits of the San Francisco Noise Ordinance and to achieve acceptable levels at the property lines of nearby residences or other sensitive uses, as determined by the San Francisco Land Use Compatibility Guidelines for Community Noise standards. Once the stationary noise sources have been installed, the Project Sponsor shall retain a qualified acoustics specialist to monitor noise levels to ensure compliance with local noise standards. Initial noise monitoring shall occur within three months after the installation of the stationary noise source, and a report of the results shall be made available to on-site tenants. Subsequent noise monitoring shall be conducted by the Project Sponsor, within three months of on-site tenants reporting persistent intrusive noise. If project stationary noise sources exceed the applicable noise standards, a qualified acoustical consultant shall be retained by the Sponsor to install additional noise attenuation measures or acoustic insulation in order to meet the applicable noise standards.	
NO-8: Garbage collection would occur at different locations and could increase associated noise levels at elevated receivers.	S	M-NO-8: Residential Building Plan Review by Qualified Acoustical Consultant To ensure that noise produced during garbage collection is reduced to the maximum practicable extent, a qualified acoustical consultant shall review plans for all new residential buildings and associated garbage collection facilities, and provide recommendations to provide enclosures, acoustical shielding, or other equivalent measures. These studies shall be presented to the Department of Building Inspection at the time that permits for individual buildings are submitted for review.	LS
V.G Air Quality			
AQ-3: Construction of the Proposed Project could expose persons to substantial levels of toxic air contaminants, which may lead to adverse health effects.	S	M-AQ-3: Construction Exhaust Emissions. The applicant shall implement feasible combustion emission reduction strategies, during construction activities, including the following measures: <ul style="list-style-type: none"> • The project applicant shall keep all off-road equipment well-tuned and regularly serviced to minimize exhaust emissions, and shall establish a regular and frequent check-up and service/maintenance program for equipment. • Off-road diesel equipment operators shall be required to shut down their 	SU

Note:

S = Significant; LS = Less than Significant; SU = Significant and Unavoidable

Impacts	Impact Significance Without Mitigation	Mitigation Measures	Impact Significance With Mitigation
		<p>engines rather than idle for more than five minutes, unless such idling is necessary for proper operation of the equipment.</p> <ul style="list-style-type: none"> • Clear signage shall be provided for construction workers at all access points. <p>The applicant shall require construction contracts to specify implementation of the following combustion emission reduction strategies, during construction activities:</p> <ul style="list-style-type: none"> • The project should use equipment with engines compliant with USEPA Tier 3 engine standards or better for all off-road equipment, or utilize Retrofit Emission Control Devices which consist of diesel oxidation catalysts, diesel particulate filters or similar retrofit equipment control technology verified by the California Air Resources Board (CARB) (http://www.arb.ca.gov/diesel/verdev/verdev.htm), where feasible. • The project shall use equipment with engines compliant with USEPA Tier 4 engine standards or better for 50 percent of the fleet by 2015, increasing to 100 percent by 2020. • The project should use 2007 or newer model year haul trucks, where feasible. 	
AQ-4: The Proposed Project’s operations could affect regional air quality.	S	No feasible mitigation measure available.	SU
AQ-9: The Proposed Project could result in cumulative air quality impacts.	S	No feasible mitigation measures have been identified at this time.	SU
VI Wind and Shadow			
WS-1: The phased construction of the Proposed Project could result in a temporary increase in the number of hours that the 26-mph wind hazard criterion is exceeded or an increase in the area that is subjected to winds greater than 26 mph.	S	M-WS-1a: A wind impact analysis shall be required for any proposed building over 100 feet in height. Wind tunnel testing shall be required for each building unless, upon review by a qualified wind consultant, it is determined that the exposure, massing, and/or orientation of the building are such that adverse wind impacts would not occur. The analysis shall assess wind conditions for the building in conjunction with the anticipated pattern of development on surrounding blocks. All feasible means (such as relocating or reorienting certain buildings, sculpting buildings to include podiums and roof terraces, or installing landscaping) to eliminate hazardous winds, if predicted, shall be implemented. A significant wind impact would be a substantial increase in the number of hours	Potentially SU

Note:

S = Significant; LS = Less than Significant; SU = Significant and Unavoidable

Impacts	Impact Significance Without Mitigation	Mitigation Measures	Impact Significance With Mitigation
		<p>that the 26 mph wind hazard criterion is exceeded or a substantial increase in the area subjected to winds greater than 26 mph.</p> <p>M-WS-1b: Wind tunnel testing shall be required for any proposed building over 50 feet in height that is within 200 feet of any of the existing 13-story buildings on the Project Site. The analysis shall assess wind conditions for the building in conjunction with the anticipated pattern of development one surrounding blocks. All feasible means (such as relocating or reorienting certain buildings, sculpting buildings to include podiums and roof terraces, or installing landscaping) to eliminate hazardous winds, if predicted, shall be implemented. A significant wind impact would be a substantial increase in the number of hours that the 26 mph wind hazard criterion is exceeded or a substantial increase in the area subjected to winds greater than 26 mph.</p>	
<p>WS-3: The proposed Special Use District could result in increases in the number of hours that the 26-mph wind hazard criterion is exceeded or increases in the area that is subjected to winds greater than 26 mph.</p>	<p>S</p>	<p>See Mitigation Measures M-WS-1a and M-WS-1b, above.</p>	<p>Potentially SU</p>
<p>V.M. Biological Resources</p>			
<p>BI-1: Construction of an outfall for discharge of stormwater runoff into the willow basin could affect the habitat of San Francisco gumplant and other special-status plant species.</p>	<p>S</p>	<p>M-BI-1a: A pre-construction survey shall be conducted to locate and fence the boundaries of any gumplant populations with a 25-foot buffer zone. To determine if any previously unknown special-status plant or animal species would be affected, a preconstruction survey shall be conducted within the construction area in the spring (May and June) by a qualified biologist authorized by CDFG to conduct such activities.</p> <p>M-BI-1b: The configuration of the construction area shall be modified to avoid any special-status species encountered during the pre-construction survey. No construction activities shall occur within the buffer area. The Project Sponsor shall ensure that the construction area is fenced to the minimum size necessary to avoid impacts from the outfall to the willow basin.</p> <p>M-BI-1c: If it is not possible to avoid the gumplant population during construction, the Project Sponsor shall implement a restoration and mitigation plan in consultation with the San Francisco Planning Department (City) and CDFG. Impacts to the San Francisco gumplant will be mitigated by restoring the affected area and expanding the size of the population by increasing the area and</p>	<p>LS</p>

Note:

S = Significant; LS = Less than Significant; SU = Significant and Unavoidable

Impacts	Impact Significance Without Mitigation	Mitigation Measures	Impact Significance With Mitigation
		number of individual gumplant plants. The size and density of the affected gumplant population shall be measured prior to construction. This mitigation plan shall describe methods for planting, monitoring, and maintaining the affected area. Performance standards to determine success of the mitigation shall be attained that show that the cover and density of the population affected has been replaced. An annual report shall be submitted to the City and CDFG that documents maintenance and monitoring methods and results. Such monitoring and maintenance shall continue for at least 5 years beyond the implementation of the mitigation plan.	
BI-2: Construction of an outfall for stormwater runoff into Lake Merced could affect habitats of special-status animal species.	S	<p>M-BI-2a: If outfall repair or construction activities occur along the Lake Merced shoreline during the breeding season of the common yellowthroat (March-August), a qualified ornithologist authorized by CDFG to conduct such activities shall conduct a preconstruction survey of the work area to determine if any birds are nesting in or in the vicinity of the outfall. The preconstruction survey shall be conducted within 15 days prior to the start of work from March through May (since there is higher potential for birds to initiate nesting during this period), and within 30 days prior to the start of work from June through August. If active nests are found in the work area, a buffer of 50 feet shall be established between the work area and the nest(s). No work will be allowed within the buffer until the young have successfully fledged. The size of the nest buffer can be reduced as a result of consultation with the CDFG. Such a reduction shall be dependent on a relatively low frequency and intensity of disturbance and the tolerance of the nesting birds to human disturbance.</p> <p>M-BI-2b: Stormwater outfall construction activities at the Lake Merced outfall site(s) shall be monitored by a biologist to ensure that no western pond turtles are present and subjected to harm. If turtles are present, the biologist shall capture and relocate them or ensure that they are moved to an area outside of the construction zone and away from harm. Identification, capture and relocation of turtles shall be done by a qualified biologist authorized by CDFG to conduct such activities.</p> <p>M-BI-2c: The SWPPP is required and shall include design details and construction specifications for all site drainage control and other water quality control strategies. It shall also detail the implementation schedule, methods and locations of erosion and water quality control features. The California Stormwater Quality Association Construction Handbook provides guidance for selecting and</p>	LS

Note:

S = Significant; LS = Less than Significant; SU = Significant and Unavoidable

Impacts	Impact Significance Without Mitigation	Mitigation Measures	Impact Significance With Mitigation
		implementing Best Management Practices (BMPs) that would eliminate or reduce the discharge of pollutants from construction sites to waters of the state. Three levels of BMPs are considered for each potential pollutant: source control, management control, and treatment control. BMPS which could be implemented as part of the SWPPP include: hydroseeding, straw mulch, temporary stream bank stabilization, silt fences, sediment traps, temporary stream crossings, stockpile management, and spill prevention and control.	
<p>BI-3: Construction of a new stormwater outfall, or restoration of an existing one, would affect freshwater marsh and other riparian habitat along the shore of Lake Merced and in the willow basin.</p>	S	<p>M-BI-3a: Vegetation removal activities in wetland and riparian habitats in the willow basin and along the shoreline of Lake Merced shall be restricted to as small an area as possible. Construction areas shall be no longer than 40 feet and shall be shorter where possible. In addition, construction shall avoid large willow and wax myrtle trees.</p> <p>M-BI-3b: The vegetation of any affected riparian or wetland area shall be restored to the same or to a more biologically valuable condition. This shall entail planting of vegetation, if it is not expected to return on its own, and removal of non-native species. A mitigation plan that describes site preparation, planting, performance standards, maintenance (including weed control), and monitoring methods shall be developed for impacts to marsh and riparian vegetation. The performance standards shall include a mitigation ratio of 1:1, standards for cover, plant composition of the restored area, and erosion, at the end of 5 years. Remedial activities shall be outlined in the plan to address any of the restoration areas that are not attaining performance standards at the end of 5 years. The mitigation area shall be monitored and maintained for at least 5 years. Monitoring and maintenance activities shall be summarized in an annual report to be prepared for each of the 5 years the area is monitored. This mitigation plan shall be reviewed and approved by the City prior to the approval of the final map for the project.</p>	LS
<p>BI-4: Removing trees and shrubs could remove migratory bird habitat and impede the use of nesting (nursery) sites.</p>	S	<p>M-BI-4: Vegetation removal activities for the Proposed Project and stormwater treatment option areas and building demolitions shall be conducted during the non-breeding season (i.e., September through February) to avoid impact to nesting birds or preconstruction surveys shall be conducted for work scheduled during the breeding season (March through August). Preconstruction surveys shall be conducted by a qualified ornithologist, authorized by CDFG to conduct such activities, to determine if any birds are nesting in or in the vicinity of vegetation or buildings to be removed. The preconstruction survey shall be conducted within</p>	LS

Note:

S = Significant; LS = Less than Significant; SU = Significant and Unavoidable

Impacts	Impact Significance Without Mitigation	Mitigation Measures	Impact Significance With Mitigation
		<p>15 days prior to the start of work from March through May (since there is higher potential for birds to initiate nesting during this period), and within 30 days prior to the start of work from June through August. If active songbird nests are found in the work area, a buffer of 50 feet between the nest and work area shall be established. If active raptor nests are found in the work area, a buffer of 200 feet shall be established between the nest and the work area. No work will be allowed with the buffer(s) until the young have successfully fledged. In some instances, the size of the nest buffer can be reduced and its size shall therefore be determined by the biologist in consultation with the CDFG, and shall be based to a large extent on the nesting species, its sensitivity to disturbance, and the type and frequency of disturbance.</p>	
<p>BI-5: The Proposed Project could have an adverse effect on wetlands as defined by Section 404 of the Clean Water Act.</p>	<p>S</p>	<p>See Mitigation Measures M-BI-2c, M-BI-3a, M-BI-3b, above.</p>	<p>LS</p>
<p>BI-7: Maintenance of the proposed stormwater treatment system (bioswales, constructed stream, wetlands, and ponds) could affect special-status animal species.</p>	<p>S</p>	<p>M-BI-7a: If maintenance of the stormwater treatment system occurs during the nesting season (March-August), a qualified ornithologist, authorized by CDFG to conduct such activities, shall conduct a survey of the work area to determine if any birds are nesting in the work area or in the vicinity. The survey shall be conducted within 15 days prior to the start of maintenance work from March through May (since there is higher potential for birds to initiate nesting during this period), and within 30 days prior to the start of work from June through August. If active songbird nests are found in the work area, a buffer of 50 feet between the nest and the work area shall be established. If active raptor nests are found in the work area, a buffer of 200 feet shall be established between the nest and the work area. No work will be allowed within the buffer until the young have successfully fledged. In some instances, the size of the buffer can be reduced and its size shall therefore be determined by the biologist in consultation with the CDFG, and shall be based to a large extent on the nesting species, its sensitivity to disturbance, and the type and frequency of disturbance.</p> <p>M-BI-7b: The on-site stormwater features shall be monitored by a qualified biologist, authorized by CDFG to conduct such activities, during maintenance activities to ensure that no western pond turtles or other special-status amphibians or reptiles are present and subject to harm. If turtles or other special-status reptiles and amphibians are present, the biologist shall capture and relocate them, or ensure that they are moved to an area outside of the construction zone and away</p>	<p>LS</p>

Note:

S = Significant; LS = Less than Significant; SU = Significant and Unavoidable

Impacts	Impact Significance Without Mitigation	Mitigation Measures	Impact Significance With Mitigation
<p>BI-8: Operation of the 51 proposed wind turbines on the western periphery of the Project Site could have a substantial adverse effect on special-status species, interfere substantially with bird or bat movement and migration corridors, and interfere substantially with raptor nest sites.</p>	<p>S</p>	<p>from harm.</p> <p>M-BI-8a: To obtain baseline information on existing bird use of the proposed wind turbine alignment along Lake Merced Boulevard, the Project Sponsor shall retain a qualified wildlife biologist, authorized by CDFG to conduct such activities, to conduct bi-weekly bird use counts (BUCs) of the area for two years using methods described in Anderson and CEC/CDFG. Three point count stations spaced approximately 500 feet apart in the existing median between Lake Merced Boulevard and Vidal Drive would likely be sufficient to detect all birds using and/or flying through the area, although the final study design shall be subject to review and approval by the CDFG. Methods other than BUCs may be used if improved methods for documenting bird use at proposed wind turbine sites are developed in the interim period between the certification of this EIR and the initiation of the wind turbine program.</p> <p>Obtaining baseline information on existing bat use of the wind turbine alignment is complicated by the fact that bats are much more difficult to detect than birds and available monitoring methods (i.e., acoustic monitoring of echolocation calls) may not be feasible in a dense urban environment. As such, the Project Sponsor shall retain a qualified bat expert to conduct a one-day habitat assessment of the proposed wind turbine alignment. Based on the results of the assessment, the bat expert shall provide recommendations on the appropriate level of monitoring required to establish baseline patterns of seasonal bat activity along the proposed wind turbine alignment. If the bat expert believes that focused bat surveys are not necessary or that the proposed wind turbines do not pose a significant risk to local bat populations, he/she shall explain his/her opinions following standard scientific report format.</p> <p>Similarly, the Project Sponsor shall retain a biologist experienced with nocturnal bird survey methods (e.g., radar, acoustic monitoring, visual surveys using night vision equipment) to conduct an assessment of the proposed wind turbine alignment and assess the feasibility of conducting nocturnal surveys for migrating birds. Given substantial uncertainty and variation over the optimal protocols for detecting nocturnal migrating birds and the viability of such protocols to predict collision risk, it is important to identify species of primary concern and develop site-specific questions that any nocturnal studies should address prior to implementing a nocturnal monitoring program. The biologist retained to conduct the nocturnal bird survey feasibility assessment shall provide such information in</p>	<p>SU</p>

Note:

S = Significant; LS = Less than Significant; SU = Significant and Unavoidable

Impacts	Impact Significance Without Mitigation	Mitigation Measures	Impact Significance With Mitigation
		<p>their report.</p> <p>Data gathered during the pre-permitting surveys shall be used to develop baseline estimates of bird and bat fatality rates (expressed as fatalities/megawatt/year) from the proposed wind turbines. Given the lack of scientific studies on wind turbine-wildlife interactions in urban areas and vertical-axis wind turbine (VAWT) impacts on wildlife, it will be difficult if not impossible to apply known fatality rates from other studies to the project site (although such information may become available by the time the wind turbine program is implemented). As such, baseline fatality estimates shall be developed with input from scientists experienced with statistical analysis of wind turbine-wildlife interactions.</p> <p>M-BI-8b: The Project Sponsor shall implement a scientifically defensible operations monitoring program to estimate bird and bat fatality rates from the new wind turbines. Operations monitoring typically consists of counts of bird and bat carcasses in the vicinity of turbines and ongoing bird use data collection (i.e., continued BUCs) using the most current methods prescribed by the California Energy Commission and CDFG. Given the lack of published information on impacts to birds and bats from urban wind turbines and the site’s proximity to a major wildlife habitat feature (i.e., Lake Merced), and the Pacific flyway a minimum of two years of post-construction monitoring shall be conducted. The operations monitoring program shall be developed with input from the CDFG, USFWS, and scientists experienced in the analysis of wind turbine-wildlife interactions.</p> <p>M-BI-8c: If results of operations monitoring indicate that bird and/or bat fatality rates exceed those predicted during the pre-permitting phase, the City shall require implementation of some or all of the following management strategies or compensation measures:</p> <ol style="list-style-type: none"> 1. Seasonal shutdown (e.g., spring or fall migratory period, depending on results of surveys) of a particular turbine or turbines that may be found to be contributing a disproportionate amount to bird and/or bat fatalities. 2. Contribution of funds towards the management, restoration, enhancement, and/or protection of the local habitats used by species affected by wind turbines (e.g., lands managed by San Francisco Recreation and Park Natural Areas Program or the National Park Service Golden Gate National Recreation Area). 3. Contribution of funds towards research programs aimed at wind turbine- 	<p>SU</p> <p>SU</p>

Note:

S = Significant; LS = Less than Significant; SU = Significant and Unavoidable

Impacts	Impact Significance Without Mitigation	Mitigation Measures	Impact Significance With Mitigation
		<p>wildlife interactions, nocturnal bird study methods, and/or collision risk.</p> <p>M-BI-8d: The following measures shall be incorporated into wind turbine design to minimize the likelihood of bird strikes:</p> <ol style="list-style-type: none"> 1. FAA-mandated obstruction lighting at the turbine tops shall consist of red or white strobe-type lights rather than steady-burning lights, as several studies have demonstrated reduced mortality of night-migrating birds at facilities using strobe-type lights. 2. No guy wires shall be used to support the wind turbines, as they are a known hazard to birds. 3. To prevent bird collisions with overhead power lines, turbines shall be powered via underground electrical connections. 4. Bare soil or manicured grass around turbine bases may provide habitat for small mammals, resulting in increased prey availability for raptors and putting them at increased risk of collision. To discourage small mammals from burrowing under or near turbine bases, gravel or artificial turf shall be placed at least 5 feet around each turbine foundation. <p>Additional design elements proven to minimize bird and/or bat strikes shall be implemented as information on such measures becomes available in the scientific literature and/or agency guidance documents.</p> <p>M-BI-8e: As mentioned above, the proposed wind turbines may result in mortality of bank swallows, which is state-listed as threatened under the California Endangered Species Act (CESA) or other species of concern. Given the current uncertainty over the extent and magnitude of potential take of bank swallows or other species of concern, the Project Sponsor shall apply to the CDFG for an incidental take permit pursuant to Section 2081 of CESA and implement all CDFG conditions of that permit, which may include the some or all of the mitigation measures described above. The permit application will comply with the applicable requirements of Section 738.2 of CESA, as it may be amended.</p>	<p>SU</p> <p>SU</p>
<p>BI-9: Construction of new building towers could adversely impact bird or bat movement and migration.</p>	<p>S</p>	<p>M-BI-9: The Project Sponsor shall ensure that the new residential towers should follow bird-safe design practices as much as possible to minimize the potential for increased bird-window collisions. Building facades should create “visual noise” via cladding or other design features that make it easier for birds to identify buildings as such and not mistake windows for open sky or trees. Windows should not be comprised of clear or reflective glass, which is coated with a</p>	<p>LS</p>

Note:

S = Significant; LS = Less than Significant; SU = Significant and Unavoidable

Impacts	Impact Significance Without Mitigation	Mitigation Measures	Impact Significance With Mitigation
		reflective film to control solar heat gain. Instead, windows should incorporate different glass types such as UV-A or fritted glass. Windows should also incorporate UV-absorbing and UV-reflecting stripe and grid patterns in locations with the highest potential for bird-window collisions (e.g., lower levels near trees).	
BI-10: Changes in duration and depth of inundation in the willow basin from stormwater runoff could impact riparian vegetation.	S	M-BI-10: A hydrological study shall be conducted on the willow basin to determine whether the additional input of storm runoff will affect the duration and depth of ponding. If the level of water will rise to within 3 feet of the base of any wax myrtle and remain at that level for more than 4 days, then the outlet of the willow basin shall be modified to prevent such rise of water level and duration. If the water level already exhibits these characteristics, then no change shall be made to ensure that the existing depth and duration of ponding in the willow basin remains as is.	LS
V.N. Geology and Soils			
GE-1: The Proposed Project could result in substantial soil erosion or loss of topsoil during construction.	S	See Mitigation Measure HY-1, below.	LS
V.O. Hydrology and Water Quality			
HY-1: The Proposed Project could violate a water quality standard or a waste discharge requirement, or otherwise substantially degrade water quality.	S	M-HY-1: A pollution prevention plan shall be developed for all construction activities on the Project Site. The applicant shall apply for coverage under the NPDES General Construction Activity Permit from the State Water Quality Control Board by filing a Notice of Intent (NOI), and, as part of the permit and monitoring process, prepare and implement a Stormwater Pollution Prevention Plan (SWPPP). The SWPPP shall include design details and construction specifications for all site drainage control and other water quality control strategies, including Best Management Practices (BMPs) and other measures for stormwater pollution reduction. These include, but are not limited to, the following: <ul style="list-style-type: none"> • Soil stabilization controls, such as hydroseeding and/or placement of straw mulch; • Watering for dust control; • Perimeter silt fences; • Sediment traps/basins; • Minimizing the length of open trenches and stockpile volumes; 	LS

Note:

S = Significant; LS = Less than Significant; SU = Significant and Unavoidable

Impacts	Impact Significance Without Mitigation	Mitigation Measures	Impact Significance With Mitigation
		<ul style="list-style-type: none"> • Slip prevention and control, such as minimizing grading during the rainy season; and • Controlled entry and egress from the excavation area to minimize off-site tracking of sediment, and vehicle and equipment wash-down facilities. 	
HY-4: The Proposed Project could alter the existing drainage patterns on the Project Site, resulting in substantial erosion or siltation or localized flooding.	S	See Mitigation Measure M-HY-1, above.	LS
V.P. Hazards and Hazardous Materials			
HZ-2: The Proposed Project could create a hazard to the public or the environment through the accidental release of hazardous materials into the environment.	S	<p>M-HZ-2A: Hazardous Materials - Testing for and Handling of Contaminated Soil</p> <p>The Proposed Project would be carried out in four major Phases over a 20-year construction period. Within the geographic boundaries to be redeveloped within each Phase, the Project Sponsor shall, if appropriate, identify large, planned areas of redevelopment. For the purpose of this mitigation measure, each such area is referred to as a "Sub-Phase." The steps below shall be taken for each Sub-Phase. If the Project Sponsor does not identify such areas within a Phase, then each step shall be taken for the geographic boundaries of the entire Phase at once.</p> <p><u>Step 1: Soil Testing</u></p> <p>Soil testing would be done incrementally over the 20-year construction period, including pre-testing of each Sub-Phase, prior to excavation and/or soil disturbance. Prior to obtaining building permits for a particular Sub-Phase, the Project Sponsor shall hire a consultant to collect soil samples (borings) from selected locations in the work area in which soil would be disturbed and/or excavated. (This initial soil sampling and reporting shall be done prior to excavation, but additional soil testing from on-site soil stockpiles may also be required, if there are indications [e.g., odors, visible staining] of contamination in the excavated soil.)</p> <p>The soil samples shall be tested for these Compounds of Concern: total lead, petroleum hydrocarbons, volatile organic compounds (VOCs), and four heavy metals: chromium, nickel, copper, and zinc. The consultant shall analyze the soil borings as discrete, not composite samples. The consultant shall prepare a report on the soil testing for the Compounds of Concern that includes the laboratory results of the soil testing and a map that shows the locations from which the</p>	LS

Note:

S = Significant; LS = Less than Significant; SU = Significant and Unavoidable

Impacts	Impact Significance Without Mitigation	Mitigation Measures	Impact Significance With Mitigation
		<p>consultant collected the soil samples.</p> <p>The Project Sponsor shall submit the report on the soil testing for the Compounds of Concern for the Sub-Phase and a fee of \$501 in the form of a check payable to the San Francisco Department of Public Health (DPH), to the Hazardous Waste Program, Department of Public Health, 1390 Market Street, Suite 210, San Francisco, California 94102. The fee of \$501 shall cover three hours of soil testing report review and administrative handling. If additional review is necessary, DPH shall bill the Project Sponsor for each additional hour of review over the first three hours, at a rate of \$167 per hour. These fees shall be charged pursuant to Section 31.47(c) of the San Francisco Administrative Code. DPH shall review the soil testing program to determine whether soils on the Project Site are contaminated with any of the Compounds of Concern at or above potentially hazardous levels.</p> <p><u>Step 2: Preparation of Site Mitigation Plans</u></p> <p>Incrementally over the 20-year construction period, for each Sub-Phase, prior to beginning demolition, excavation, and construction work for that area, the Project Sponsor shall prepare a Site Mitigation Plan (SMP). The SMP for the Sub-Phase shall include a discussion of the level of contamination of soils by Compounds of Concern, if any, based on the soils testing in Step 1. The SMP shall set forth mitigation measures for managing contaminated soils on the site, if any, including but not limited to: 1) the alternatives for managing contaminated soils on the site (e.g., encapsulation, partial or complete removal, treatment, recycling for reuse, or a combination); 2) the preferred alternative for managing contaminated soils on the site and a brief justification; and 3) the specific practices to be used to handle, haul, and dispose of contaminated soils on the site. The SMP for each Sub-Phase shall be submitted to the Department of Public Health (DPH) for review and approval. A copy of the SMP shall be submitted to the Planning Department to become part of the case file. Additionally, the DPH may require confirmatory samples for the project site.</p> <p><u>Step 3: Handling, Hauling, and Disposal Contaminated Soils</u></p> <p>(a) Specific work practices: The construction contractor shall be alert for the presence of contaminated soils during excavation and other construction activities on the site (detected through soil odor, color, and texture and results of on-site soil testing), and shall be prepared to handle, profile (i.e., characterize), and dispose of such soils appropriately (i.e., as dictated by local, State, and federal regulations, including OSHA work practices) when such soils are encountered on the site.</p> <p>(b) Dust suppression: Soils exposed during excavation for site preparation and</p>	

Note:

S = Significant; LS = Less than Significant; SU = Significant and Unavoidable

Impacts	Impact Significance Without Mitigation	Mitigation Measures	Impact Significance With Mitigation
		<p>project construction activities shall be kept moist throughout the time they are exposed, both during and after work hours.</p> <p>(c) Surface water runoff control: Where soils are stockpiled, visqueen shall be used to create an impermeable liner, both beneath and on top of the soils, with a berm to contain any potential surface water runoff from the soil stockpiles during inclement weather.</p> <p>(d) Soils replacement: If necessary, clean fill or other suitable material(s) shall be used to bring portions of the Project Site, where lead-contaminated soils have been excavated and removed, up to construction grade.</p> <p>(e) Hauling and disposal: If soils are contaminated such that they must be hauled off-site for treatment and/or disposal, contaminated soils shall be hauled off the Project Site by waste hauling trucks appropriately certified with the State of California and adequately covered to prevent dispersion of the soils during transit, and shall be disposed of at the permitted hazardous waste disposal facility registered with the State of California.</p> <p><u>Step 4: Preparation of Closure/Certification Report for Each Sub-Phase</u> After excavation and foundation construction activities are completed for a particular Sub-Phase, the Project Sponsor shall prepare and submit a closure/certification report to DPH for review and approval for that area. The closure/certification report shall include the mitigation measures (if any were necessary) in the SMP for handling and removing contaminated soils, if any, from the Project Site, and if applicable, whether the construction contractor modified any of these mitigation measures, and how and why the construction contractor modified those mitigation measures.</p> <p>M-HZ-2B: Hazards (Decontamination of Vehicles) If, for any Sub-Phase, the San Francisco Department of Public Health (DPH) determines that the soils in that area are contaminated with contaminants at or above potentially hazardous levels, all trucks and excavation and soil handling equipment working in that area shall be decontaminated following use and prior to removal from the site. Gross contamination shall be first removed through brushing, wiping, or dry brooming. The vehicle or equipment shall then be washed clean (including tires). Prior to removal from the work site, all vehicles and equipment shall be inspected to ensure that contamination has been removed.</p>	<p>LS</p>

Note:

S = Significant; LS = Less than Significant; SU = Significant and Unavoidable

Table S.2: Summary of Improvement Measures

IMPROVEMENT MEASURES	TOPIC
<p>Improvement Measure I-TR-7: Provide a southbound right turn deceleration lane at the new access from 19th Avenue at Cambon Drive to avoid interference with HOT lane operations. As an improvement measure, to avoid conflict with the through traffic, a right-turn deceleration lane should be constructed on the west side of the fourth southbound lane, allowing vehicular access from 19th Avenue to Cambon Drive, minimizing disruption to flow in the HOT lane. This would require the removal of on-street parking in the vicinity of the ingress. Although not needed to avoid a significant impact, implementation of Improvement Measure I-TR-7 would ensure that the HOT lane remains an attractive alternative for high-occupancy vehicles and those willing to pay a toll.</p>	Traffic
<p>Improvement Measure I-TR-29: Install colored bike lanes to direct cyclists through the Brotherhood Way/Junipero Serra Boulevard interchange and raise auto awareness of bicycles. This improvement measure may not achieve the same level of comfort for a cyclist that exists under current conditions, but it would improve conditions with implementation of the auxiliary lanes. Implementation of this improvement measure would require approval by Caltrans, which operates the facility. Therefore, because implementation of this improvement measure would require approval by another agency, the feasibility of implementing this improvement measure is uncertain. Implementation of Improvement Measure I-TR-29 would improve conditions for bicyclists at the Brotherhood Way/Junipero Serra Boulevard interchange. Regardless, the impact is considered <i>less than significant</i>, and no mitigation is required.</p>	Bicycle
<p>Improvement Measure I-WS-A: Building massing can affect wind flow. Podiums or terraced roofs create horizontal “shelves” that can deflect downward wind flow away from streets and sidewalks. These types of design features should be considered for the proposed buildings at the intersection of Chumasero Drive and Brotherhood Way and the intersection of Junipero Serra Boulevard and Brotherhood Way. Like podiums and terraced roofs, canopies can deflect downward wind flow from streets and sidewalks.</p>	Wind
<p>Improvement Measure I-WS-B: Landscaping can be effective at reducing wind speeds. Porous materials (latticework, screens, vegetation, etc.) offer more effective wind shelter than solid surfaces. Landscaping should be installed in appropriate locations throughout the Project Site to reduce wind speeds. Wind-sheltering elements should be located west of the area being protected and should be of sufficient height.</p>	Wind
<p>Improvement Measure I-GE.3a: The Project Sponsor has agreed to follow the conclusions and recommendations of the 2008 Geologic, Geotechnical and Seismic Findings report to use a soldier-pile-and-lagging shoring system to shore up soils during excavation for building foundations and basements.</p>	Soils
<p>Improvement Measure I-GE.3b: The Project Sponsor has agreed to follow the conclusions and recommendations of the 2008 Geologic, Geotechnical and Seismic Findings report to test the soils for corrosivity and take appropriate measures to protect new construction in contact with the soil from corrosion.</p>	Soils

Note:

S = Significant; LS = Less than Significant; SU = Significant and Unavoidable

SUMMARY OF PROJECT ALTERNATIVES

Five alternatives are evaluated in this EIR: A. No Project Alternative; B. Buildout Under Current Zoning Regulations Alternative; C. Retention of the Historic District Central Core Alternative; D. Partial Historic District Alternative; E. Full Buildout with Transit Options Alternative; and F. No Muni Realignment Alternative. Table II.3 shows a comparison of the potential environmental impacts that may result from the alternatives to those of the Proposed Project.

A. NO PROJECT ALTERNATIVE

Under the No Project Alternative, the site would remain in its existing condition. Assuming that the existing physical conditions in the Project Area were to continue for the foreseeable future, conditions described in detail for each environmental topic in the Initial Study and in Chapter V, Environmental Setting and Impacts, would remain and none of the impacts associated with the proposed project would occur.

B. BUILDOUT UNDER CURRENT ZONING REGULATIONS ALTERNATIVE

Under the Buildout Under Current Zoning Regulations Alternative, all buildings on the 152-acre site would be completely demolished and rebuilt as a new residential neighborhood, consistent with allowable density and height and bulk standards under the existing RM-4, RM-1, and RH-1(D) Zoning Districts, and 130-D and 40-X height and bulk districts. Under this alternative, the existing 3,221 residential units would be demolished and 10,500 new residential units would be constructed (7,279 net new units). As with the Proposed Project, the Buildout Under Current Zoning Regulations Alternative includes construction of (or provides financing for construction of) a series of traffic and transportation improvements designed to minimize the amount of automobile traffic originating from Parkmerced, and to improve traffic flow on adjacent roadways such as 19th Avenue and Brotherhood Way.

Similar to the Proposed Project, development of the Buildout Under Current Zoning Regulations Alternative would not result in significant impacts on land use, population, archaeological and paleontological resources, shadow, recreation, utilities and services systems, public services, geology and soils, hydrology and water quality, hazards and hazardous materials, minerals and energy resources, or agricultural resources. This alternative would result in aesthetics, historic architectural resources, and wind impacts similar to those under the Proposed Project. There would be greater project-level and cumulative traffic effects, and noise and air quality impacts compared to the Proposed Project, because there would be more vehicle traffic under this alternative.

Table II.3: Comparison of Project and Alternative Impacts

Environmental Topic	Proposed Project	No Project Alternative	Buildout Under Current Zoning Regulations Alternative	Retention of the Historic District Central Core Alternative	Partial Historic District Alternative	Full Buildout with Transit Options Alternative	No Muni Realignment Alternative
Land Use	Less than significant	No impact	Less than significant	Less than significant	Less than significant	Less than significant	Less than significant
Aesthetics	Significant and unavoidable	No impact	Significant and unavoidable	Less than significant	Significant and unavoidable	Significant and unavoidable	Significant and unavoidable
Population and Housing	Less than significant	No impact	Less than significant	Less than significant	Less than significant	Less than significant	Less than significant
Cultural Resources							
<i>Historic Architectural Resources</i>	Significant and unavoidable	No impact	Significant and unavoidable	No impact	Significant and unavoidable	Significant and unavoidable	Significant and unavoidable
<i>Archaeological and Paleontological Resources</i>	Less than significant	No impact	Less than significant	Less than significant	Less than significant	Less than significant	Less than significant
Transportation and Circulation	Significant and unavoidable	No impact	Significant and unavoidable	Significant and unavoidable	Significant and unavoidable	Significant and unavoidable	Significant and unavoidable
Noise	Significant and unavoidable	No impact	Significant and unavoidable	Significant and unavoidable	Significant and unavoidable	Significant and unavoidable	Significant and unavoidable
Air Quality	Significant and unavoidable	No impact	Significant and unavoidable	Significant and unavoidable	Significant and unavoidable	Significant and unavoidable	Significant and unavoidable
Greenhouse Gas Emissions	Less than significant	No impact	Less than significant	Less than significant	Less than significant	Less than significant	Less than significant
Wind and Shadow							
<i>Wind</i>	Potentially significant and unavoidable	No impact	Potentially significant and unavoidable	Potentially significant and unavoidable	Potentially significant and unavoidable	Potentially significant and unavoidable	Potentially significant and unavoidable
<i>Shadow</i>	Less than significant	No impact	Less than significant	Less than significant	Less than significant	Less than significant	Less than significant
Recreation	Less than significant	No impact	Less than significant	Less than significant	Less than significant	Less than significant	Less than significant

Table II.3: Comparison of Project and Alternative Impacts (Continued)

Environmental Topic	Proposed Project	No Project Alternative	Buildout Under Current Zoning Regulations Alternative	Retention of the Historic District Central Core Alternative	Partial Historic District Alternative	Full Buildout with Transit Options Alternative	No Muni Realignment Alternative
Utilities and Services Systems	Less than significant	No impact	Less than significant	Less than significant	Less than significant	Less than significant	Less than significant
Public Services	Less than significant	No impact	Less than significant	Less than significant	Less than significant	Less than significant	Less than significant
Biological Resources	Significant and unavoidable	No impact	Less than significant	Less than significant	Significant and unavoidable	Significant and unavoidable	Significant and unavoidable
Geology and Soils	Less than significant	No impact	Less than significant	Less than significant	Less than significant	Less than significant	Less than significant
Hydrology and Water Quality	Less than significant	No impact	Less than significant	Less than significant	Less than significant	Less than significant	Less than significant
Hazards and Hazardous Materials	Less than significant	No impact	Less than significant	Less than significant	Less than significant	Less than significant	Less than significant
Mineral and Energy Resources	Less than significant	Less than significant	Less than significant	Less than significant	Less than significant	Less than significant	Less than significant
Agricultural Resources	No impact	No impact	No impact	No impact	No impact	No impact	No impact

C. Retention of the Historic District Central Core Alternative

Under the Retention of the Historic District Central Core Alternative, 2,567 existing units located around the inner core of the site and in the 11 existing tower buildings would remain, and approximately 3,000 new units would be constructed primarily around the western and southern portions of the site, for a total of 5,567 units on the site. About 84,900 gsf of new retail, 55,900 gsf of new office space, and a new 64,000-gsf community center would be constructed in the eastern and southern areas of the site. Under the Historic District Central Core Alternative traffic and infrastructure improvements planned for the Proposed Project would be constructed.

Similar to the proposed project, development of the Retention of the Historic District Central Core Alternative would not result in significant land use, population, archaeological and paleontological resources, shadow, recreation, utilities and services systems, public services, geology and soils, hydrology and water quality, hazards and hazardous materials, minerals and energy resources, or agricultural impacts. Retention of the historic district under this alternative would retain essential features and characteristics of the Parkmerced historical resource, and therefore there would be no project-level or cumulative historic architectural resources impacts under this alternative. This alternative would result in similar aesthetics and wind impacts. There would be less project-level and cumulative traffic, noise and air quality impacts compared to the Proposed Project, because there would be fewer vehicle trips under this alternative.

D. Partial Historic District Alternative

Under the Partial Historic District Alternative, development would be similar to the Proposed Project, with the exception of a portion in the northwest corner of the Project Site, containing 1,827 residential unit garden apartments and 6 tower buildings that would remain unchanged. Under this alternative, the remainder of the buildings on the site would be demolished and redesigned to accommodate 6,709 net new units (a total of 8,538 units on site), a new neighborhood core containing 224,300 gsf of new neighborhood-serving retail and 80,000 gsf of new office space, 37,800-gsf leasing office, a new 64,000-gsf community center, and a new 25,000-gsf school and day care facility. Under the Partial Historic District Alternative, traffic and transit improvements would be similar to those planned under the Proposed Project.

Similar to the proposed project, development of the Partial Historic District Alternative would not result in significant land use, population, archaeological and paleontological resources, shadow, recreation, utilities and services systems, public services, geology and soils, hydrology and water quality, hazards and hazardous materials, minerals and energy resources, or agricultural impacts. This alternative would result in similar aesthetics, historic architectural, and wind impacts. The project-level and cumulative traffic effects, noise and air quality impacts would be similar to the Proposed Project, because there would be only slightly fewer vehicle trips under this alternative.

E. Full Buildout with Transit Options Alternative

Under the Full Project Buildout with Transit Options Alternative, the 152-acre site would be replanned and redesigned identically to the Proposed Project with the exception of the configuration of the Muni light rail line. Under this alternative, the M Ocean View line would leave 19th Avenue at Holloway Avenue, turn south at Crespi Drive, continue south through the neighborhood core, as with the Proposed Project, but unlike the Proposed Project, it would not re-enter 19th Avenue south of Felix Avenue. Instead, the M Ocean View line would terminate at a new layover station constructed at the intersection of Font Boulevard and Chumasero Drive. Under the Full Project Buildout with Transit Options Alternative, the J Church line would be extended from its current terminus at Balboa Park, continue west along the existing M Ocean View alignment and terminate at a newly constructed Muni stop on 19th Avenue just south of Holloway Avenue.

Similar to the proposed project, development of the Full Project Buildout with Transit Options Alternative would result in less-than-significant land use, population, archaeological and paleontological resources, shadow, recreation, utilities and services systems, public services, geology and soils, hydrology and water quality, hazards and hazardous materials, minerals and energy resources, or agricultural impacts. Impacts identified under the topics of aesthetics, historic architectural, air quality, and wind impacts would be identical. The project-level and cumulative noise impacts would be generally similar to the Proposed Project, except for the locations of certain noise and vibration impacts. The project-level and cumulative traffic impacts would be generally similar to the Proposed Project, although there would be fewer impacts on transit travel times.

F. No Muni Realignment Alternative

Under the No Muni Realignment Alternative, the 152-acre site would be replanned and redesigned as with the Proposed Project, except that the Muni light rail line would not be routed through the Project Site, and no new Muni stops would be constructed. Under this alternative, the M Ocean View line would continue to bypass the Project Site, and would remain on its existing alignment to its terminus at the Balboa Park Station.

Similar to the proposed project, development of the No Muni Realignment Alternative would result in less-than-significant land use, population, archaeological and paleontological resources, shadow, recreation, utilities and services systems, public services, geology and soils, hydrology and water quality, hazards and hazardous materials, minerals and energy resources, or agricultural impacts. Impacts identified under the topics of aesthetics, historic architectural, air quality, and wind impacts would be identical. The project-level traffic impacts would be reduced under this alternative, however there would be more significant cumulative impacts compared to the Proposed Project. Project-level and cumulative noise impacts would be generally similar to the Proposed

Project, except for a reduction in noise and vibration impacts since the realignment of Muni would not occur under this alternative.

ENVIRONMENTALLY SUPERIOR ALTERNATIVE

An EIR is required to identify the environmentally superior alternative that has the fewest significant environmental impacts from among the alternatives evaluated. Besides the No Project Alternative, Alternative C, Retention of the Historic District Central Core Alternative, would be the environmentally superior alternative due to its reduced historic and cultural impacts.

AREAS OF CONTROVERSY AND ISSUES TO BE RESOLVED

A Notice of Preparation (NOP) was distributed on May 20, 2009, announcing its intent to prepare and distribute an EIR. The public review period began on May 20, 2009 and ended on June 19, 2009. A Public Scoping Meeting was held on June 8, 2009. Twenty-seven individuals spoke at the Public Scoping Meeting. During the public review period, 26 comment letters were submitted to the Planning Department by public agencies and other interested parties. (The Public Scoping Summary Report is included as Appendix A of this EIR.)

Environmental issues of concern raised in the comments include:

- Impacts on Land Use;
- Impacts on Aesthetics;
- Impacts on Population and Housing;
- Impacts on Historic Resources/Preservation;
- Impacts on Transportation;
- Impacts on Air Quality;
- Impacts on Wind;
- Impacts on Recreation and Open Space;
- Impacts on Utilities (Water, Stormwater) and Sustainability;
- Impacts on Biological Resources;
- Impacts on Geology;
- Impacts on Hazards;
- Impacts on Hydrology and Water Quality;
- Impacts on Hazards; and
- The need for Alternatives to be analyzed.

III. PROJECT DESCRIPTION

A. PROJECT OVERVIEW

Parkmerced is an existing residential neighborhood with 3,221 residential units on approximately 152 acres of land in the southwest portion of San Francisco adjacent to Lake Merced (Project Site). The existing on-site residential units are located in 11 towers and 170 two-story buildings. The proposed Parkmerced Project is a long-term mixed-use development program to comprehensively replan and redesign the Parkmerced site. The Proposed Project would increase residential density, provide a neighborhood core with new commercial and retail services, modify transit facilities, and improve utilities within the development site. A new Pre K-5 school and day care facility, a fitness center, and new open space uses, including athletic playing fields, walking and biking paths, an approximately 2-acre organic farm, and community gardens, would also be provided on the Project Site. About 1,683 of the existing apartments located in 11 tower buildings would be retained. Over a period of approximately 20 years¹, the remaining 1,538 existing apartments would be demolished in phases and fully replaced, and an additional 5,679 net new units would be added to the Project Site. With implementation of the Proposed Project, there would be a total of 8,900 units on the Project Site. The principal land use goals of the Proposed Project are to reduce automobile use by concentrating housing close to employment, increasing the supply of housing, and providing better integrated residential and neighborhood-serving retail and office uses; to maximize opportunities to use pedestrian and bicycle pathways; to establish pedestrian-oriented nodes for the location of neighborhood services and amenities, open space, and community services; and to incorporate environmental factors such as sun, shade, and wind into the design and housing materials throughout the Project Site.

The Proposed Project includes construction of (or provides financing for construction of) a series of transportation and infrastructure improvements designed to minimize the amount of automobile traffic originating from Parkmerced, and which are intended to improve traffic flow on adjacent roadways such as 19th Avenue and Brotherhood Way. These transportation improvements include rerouting the existing Muni Metro M Ocean View line from its current alignment along 19th Avenue. The new alignment, as currently envisioned, would leave 19th Avenue at Holloway Avenue and proceed through the neighborhood core in Parkmerced. The Muni M line trains would then travel alternately along one of two alignments: trains would either re-enter 19th Avenue south of Felix Avenue, and eventually terminate at the existing Balboa Park station, or they would terminate at a new station, with full layover and terminal facilities,

¹ The Project Sponsor expects the phasing of the Proposed Project to occur over 20 years, but the full development could extend for a longer period. Consequently, the Development Agreement would likely cover a 30-year projected buildout.

constructed on the Project Site at the intersection of Font Boulevard and Chumasero Drive. This alignment would provide safer and more direct transit access for Parkmerced visitors, residents, and neighbors, without removing any existing stops.

The Proposed Project also includes a series of transit and infrastructure improvements along 19th Avenue, Junipero Serra Boulevard, Brotherhood Way, and Lake Merced Boulevard. Proposed infrastructure improvements include the installation of a combination of renewable energy sources, such as wind turbines and photovoltaic cells, to meet a portion of the Proposed Project's energy demand. In addition, stormwater runoff from buildings and streets would be captured and filtered through a series of bioswales, ponds, and other natural filtration systems. The filtered stormwater would then either percolate into the groundwater that feeds the Upper Westside groundwater basin and Lake Merced or be released directly into Lake Merced. This feature of the Proposed Project would reduce the amount of stormwater flows directed to the Oceanside Water Pollution Control Plant and reduce combined sewage overflows to the ocean. It would also potentially help increase water levels in Lake Merced.

Amendments to the San Francisco Planning Code and the *San Francisco General Plan (General Plan)* would be needed. The Planning Code amendments would change the Height and Bulk District Zoning Map and would add a Special Use District (SUD) applicable to the entire Project Site, which would include an overlay of density and uses within the SUD. A Development Agreement is also proposed, which would be accompanied by the proposed *Parkmerced Design Standards and Guidelines*² with specific development guidelines. The transportation improvements would require approval of the San Francisco Municipal Transit Authority, the California Public Utilities Commission, and Caltrans.

Since preparation of the NOP in May 2009, modifications have been made to the Proposed Project. Buildout of the Proposed Project has been reduced from 30 to 20 years. The Proposed Project's Muni light rail line variant, which brought the J-Church light rail line into the Parkmerced Site, is no longer being considered, following further discussions with the San Francisco Municipal Transportation Agency (SFMTA). The number of vertical axis wind turbines proposed to be installed along the western property boundary has increased from 17 to 51.

² SOM, *Parkmerced Design Standards and Guidelines*, Draft May 10, 2010. This document is included in Appendix B of the EIR.

B. PROJECT SPONSOR'S OBJECTIVES

The Project Sponsor's objectives for the proposed Parkmerced Project are as follows:

Land Use

- Adopt a land use program for Parkmerced that provides an innovative model of environmentally sustainable design practices, to, among other things maximize walking, bicycling and use of public transportation, and minimize the impacts and use of private automobiles by implementing a land use program with increased residential density and a commercial neighborhood core located within comfortable walking distance of transit service and residences.
- Increase the supply of housing near a new neighborhood core containing new neighborhood-serving retail, office, transit,
- Reconfigure the existing open space at Parkmerced to provide larger and more usable open spaces such as a major new park, athletic playing fields, organic farm, walking and bicycling paths, and community gardens.
- Reconnect Parkmerced to the Lake Merced watershed by restoring the pre-development hydrology.

Housing

- Provide high-density, mixed-income housing, including below-market rate units, with a variety of housing types consistent with transit-oriented development to attract a diversity of household types, especially families.
- Protect and enhance the diversity of Parkmerced by protecting existing residents from displacement through a phasing plan designed to ensure that all existing residents will be able to remain at Parkmerced while having to relocate once only and into a new apartment, if necessary, and that this new apartment would be rented at the same rent-controlled rate as the resident's existing apartment prior to demolition (and also subject to the existing protections against rent increases of the San Francisco Rent Control Ordinance).
- Make possible the construction of affordable below market rate units.
- Provide housing in an urban infill location to help alleviate the effects of suburban sprawl and protect the green belt.

Transportation

- Create a circulation and transportation system designed to reduce the amount of future automobile traffic originating from Parkmerced and to improve traffic flow on adjacent roadways such as 19th Avenue and Brotherhood Way, and that emphasizes transit-oriented development, and promotes the use of public transportation and car-sharing, through an innovative and comprehensive demand management program.

Infrastructure and Sustainability

- Construct major infrastructure improvements intended to demonstrate leadership in sustainable engineering and to reduce the neighborhood's per capita use of the City's electrical, natural gas, water, and wastewater infrastructure while demonstrating pioneering leadership in sustainable design and through providing new benchmarks for

sustainable development practices in accordance with the Project's Sustainability Plan, such as orienting street grids and open spaces to optimize solar exposure and to reduce winds; installing efficient light and HVAC systems; installing low-flow plumbing; and planting drought-tolerant species to minimize irrigation demands

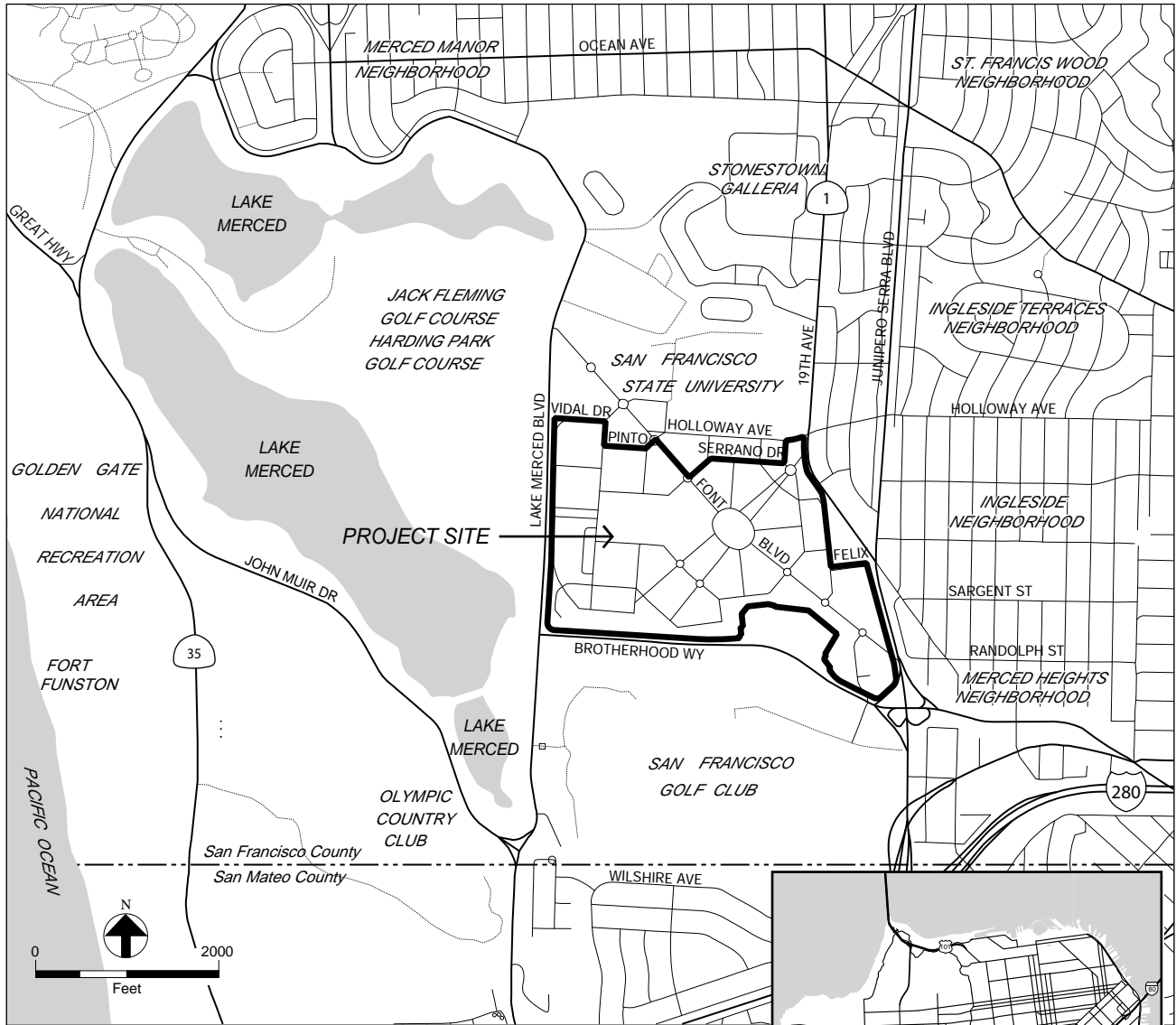
Project Feasibility

- Create a development that is financially feasible, that allows for the delivery of the proposed level of infrastructure, public benefits, protections for existing tenants, and affordable housing, and that can fund the Project's capital costs and on-going operation and maintenance costs relating to the redevelopment and long-term operation of the Property.
- Create a level of development sufficient to support the costs of relocating and protecting existing tenants and sufficient to support the costs of the infrastructure improvements.

C. PROJECT LOCATION AND EXISTING CONDITIONS

The approximately 152-acre Project Site is located in the Lake Merced District in the southwest corner of San Francisco and is generally bounded by Vidal Drive, Font Boulevard, Pinto Avenue, and Serrano Drive to the north, 19th Avenue and Junipero Serra Boulevard to the east, Brotherhood Way to the south, and Lake Merced Boulevard to the west (see Figure III.1: Project Location). The Project Site is at 3711 19th Avenue on Assessor's Blocks 7303, 7303A, 7308-7311, 7314, 7316, 7319-7326, 7330-7345, 7333 A-B, 7333E, & 7353-7373. The project vicinity includes Stonestown Galleria and San Francisco State University (SFSU) to the north; the Lakeside and Ingleside Terrace neighborhoods to the east; the Brotherhood Way religious and scholastic institutions, San Francisco Golf Club, and the border between San Francisco County and San Mateo County to the south; and Lake Merced and the Fleming and Harding Park Golf Courses to the west.

The original Parkmerced residential complex was constructed between 1941 and 1951 (see Figure III.2: Existing Site Plan). The original property contained 47 residential blocks, totaling 192 acres, including associated service buildings and open spaces. Over many decades, various blocks of the original development complex have been subdivided and sold to third parties. The Project Site now encompasses about 78 percent of the original Parkmerced property. The predominant organization of the Parkmerced development is defined by an axial street grid culminating at a central oval Commons area surrounding Juan Bautista Circle, and a series of "pie-shaped" residential blocks. The residential units on each of these blocks surround a central courtyard that is open to the sky. The development is also articulated by landscaped boulevards and secondary streets that weave around buildings, and larger open space areas adjacent to clusters of residential tower buildings (see Figure III.3: Existing Circulation (Street Type) Plan). Five existing Muni bus lines run through or adjacent to the site (see Figure III.4: Existing Transit Plan).



SOURCE: Turnstone Consulting

— PROJECT BOUNDARY

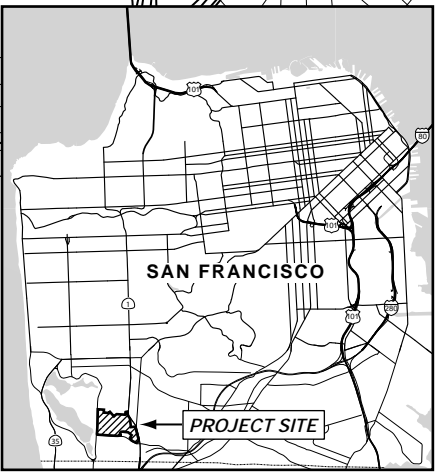


FIGURE III.1: PROJECT LOCATION

The Project Site contains 3,221 existing rental apartments in 170 two-story residential buildings (called townhouses) and 11 residential tower buildings that are 13 stories tall, as well as associated parking, building services, a leasing/operations office, and a private pre-school/day care facility. Townhouses vary in size, ranging from 9 to 100 units per block, and are constructed primarily of stucco-clad wood (a few of the units are constructed of concrete). All tower buildings are cruciform in plan and are located in a series of clusters oriented to face each other around exterior open spaces. A single-story administration building is located at the northeast corner of the Project Site and serves as a visual gateway marking the entrance into Parkmerced. There are also about 75 acres (3,269,300 square feet) of existing open space throughout the Project Site in a network of lawns, including a Meadow lawn area located west of Juan Bautista Circle, courtyard areas, private open space, and playgrounds (see Figure III.5: Existing Open Space Plan, p. III.13). Existing vegetation on the Project Site consists of non-native and cultivated species, including mature trees, geometrically-shaped lawns, and a variety of shrubs and ornamental plantings. Monterey pine is the most common tree species and occurs as large, isolated street trees within the oval Commons area and along the southern boundary of the Project Site, north of Brotherhood Way. In the overall landscape design, trees, shrubs and ornamental plantings are located along landscaped drives, exterior block façades, shared open spaces, courtyards, and service areas. The Project Site contains over 1,500 trees: 298 significant trees,³ 189 street trees,⁴ and over 1,000 interior trees⁵. There are no designated landmark trees on the Project Site.

Parking for the residential apartments in the towers is currently provided in three above-grade centralized parking garages (due to existing grade changes, portions of these parking garages are constructed underground), which accommodate a total of 1,540 parking stalls. Parking for the townhouses is provided in attached carports, which provide a total of 1,507 parking spaces. An additional 151 parking spaces used for maintenance and office parking are provided in a surface parking lot. In addition to the 3,198 total private off-street parking spaces, there are 1,591 existing public on-street parking spaces.

³ As defined in the San Francisco Article 16: Urban Forestry Ordinance, Section 810A, a significant tree is a tree: (1) on property under the jurisdiction of the Department of Public Works or (2) on privately owned-property with any portion of its trunk within 10 feet of the public right-of-way, and (3) that satisfies at least one of the following criteria: (a) a diameter at breast height (DBH) in excess of twelve (12) inches, (b) a height in excess of twenty (20) feet, or (c) a canopy in excess of fifteen (15) feet.

⁴ HortScience, *Tree Survey Parkmerced*, San Francisco, CA, July 2007. As defined in the San Francisco Article 16: Urban Forestry Ordinance, Section 102V, a "street tree" is a tree located in the vehicular travel-way portion of any public street, avenue, boulevard, lane, road, parkway, freeway, or other public way.

⁵ HortScience, *Interior Tree Survey Villas Parkmerced*, San Francisco, CA, August 2008.



HARDING PARK GOLF COURSE

SAN FRANCISCO STATE UNIVERSITY

PARTIALLY BELOW GRADE PARKING GARAGE

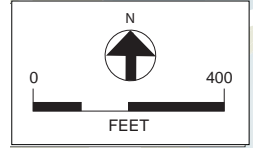
LAKE MERCED

SAN FRANCISCO GOLF CLUB

MERCED HEIGHTS PLAYGROUND

BROOKS PARK

BROTHERHOOD CHESTER MINI-PARK



SOURCE: SOM, Turnstone Consulting

- - - - - PROJECT BOUNDARY
- ON GRADE PARKING
- GARAGE PARKING
- LEASING OFFICE
- PRESCHOOL
- MAINTENANCE
- RESIDENTIAL

PARKMERCED PROJECT

FIGURE III.2: EXISTING SITE PLAN III.7



SOURCE: SOM, Turnstone Consulting

PARKMERCED PROJECT

- - - PROJECT BOUNDARY
- STREET TYPE 1 (SECONDARY STREETS)
- STREET TYPE 2 (LANDSCAPED BOULEVARD A)
- STREET TYPE 3 (LANDSCAPED BOULEVARD B)

FIGURE III.3: EXISTING CIRCULATION (STREET TYPE) PLAN III.9



SOURCE: SOM, Turnstone Consulting

PARKMERCED PROJECT

- PROJECT BOUNDARY
- MUNI M OCEAN VIEW LIGHT RAIL LINE CONFIGURATION
- MUNI STATION
- MUNI 88 BART SHUTTLE
- MUNI 46TH AVENUE
- MUNI 17 PARKMERCED
- MUNI 28 19TH AVENUE
- MUNI 29 SUNSET
- SFSU SHUTTLE
- SAMTRANS ROUTE 122

TO/ FROM DALY CITY BART

FIGURE III.4: EXISTING TRANSIT PLAN III.11



SOURCE: SOM, Turnstone Consulting

PARKMERCED PROJECT

--- PROJECT BOUNDARY PUBLICLY ACCESSIBLE OPEN SPACE PLAYGROUNDS

TOTAL EXISTING OPEN SPACE: 3,269,300 SF

FIGURE III.5: EXISTING OPEN SPACE PLAN III.13

Existing Zoning and Height and Bulk Districts

The Project Site is located in the RM-4 (Residential, Mixed Districts, High Density), RM-1 (Residential, Mixed Districts, Low Density), and RH-1(D) (Residential, House Districts, One-Family Detached Dwellings) zoning districts in the San Francisco Planning Code Zoning Map (see Figure III.6: Existing Zoning Height Limit Plan). According to Section 105 of the San Francisco Planning Code, the Project Site is within the 130-D and 40-X height and bulk districts, with the high-rise towers in the 130-D districts and the remainder of the site in the 40-X districts.

D. PROJECT CHARACTERISTICS

PROPOSED LAND USE

Proposed Residential and Existing Tenant Relocation

Approximately half of the existing apartments would be retained as part of the Proposed Project. The remaining half would be demolished and replaced with new apartments, and about 5,679 net new units would be added under the proposal (see Table III.1, p. III.23, and Figure III.7: Proposed Site Plan). In total, upon completion of the Proposed Project, there would be 8,900 units on the Parkmerced Site (1,683 existing-to-be-retained units + 1,538 newly constructed replacement units + 5,679 newly constructed units = 8,900 units).

Development of the Proposed Project would not displace existing Parkmerced residents. Residents of existing apartments that are proposed to be replaced would be provided with the opportunity to move to a new apartment before their unit is demolished. Construction and demolition would be phased to ensure that the residents of these units would be required to move into a new apartment only once. These new apartments would be rented at the same rent-controlled rate as the residents' existing apartments prior to demolition and would be covered by the same restrictions on rent increases as contained in the San Francisco Rent Control Ordinance. Existing residents would not be required to move off site at any point during any phase of the Proposed Project.

The new units not intended for existing residents would be a mix of rental and for-sale units. A portion of the new units would be provided at below market rate rents or sale prices, in accordance with the applicable Affordable Inclusionary Housing Ordinance, or as set forth in a Development Agreement and the accompanying SUD rezoning for the Proposed Project. With the exception of the rent-controlled apartments discussed above and these below market rate units, the remaining units would be rented or sold at market rates.

Proposed Neighborhood-Serving Retail, Office, and Institutional Uses

About 310,000 gross square feet (gsf) of retail and office space would be provided at Parkmerced. This retail and office space would accommodate neighborhood and service-oriented uses (such as a grocery store, restaurants, and banking). This retail and office space would be constructed in a centralized neighborhood core along Crespi Drive between Gonzalez Drive and Juan Bautista Circle and bounded by Font Boulevard and Fuente Drive. Smaller neighborhood-serving retail uses would also be constructed throughout the Project Site, near residential units, so that residents could purchase convenience items close to home.

A new 25,000-gsf Pre K-5 school and day care facility would be provided southwest of the Commons area (Juan Bautista Circle) along Bucareli Drive at Gonzalez Drive, and an approximately 64,000-gsf fitness/recreation center with community facilities is proposed to be located in the southernmost portion of the Project Site, just south of Gonzalez Drive. These new uses would provide residents with child-care and exercise facilities within Parkmerced.

Proposed Open Space and Recreation

The Project Site currently has about 75 acres (3,269,300 square feet) of open space. The Proposed Project would reduce the total amount of existing open space by about 7 acres (305,100 square feet), to about 68 acres (2,964,200 square feet). The Proposed Project would provide open space in a network of publicly accessible neighborhood parks, public plazas, and greenways (see Figure III.8: Proposed Open Space Plan). A series of playgrounds and parks would be provided throughout the development area, adjacent to residential uses. New athletic playing fields for sports including but not limited to lacrosse, soccer, baseball, and softball, community gardens, an organic farm, an off-leash dog area⁶, and walking and biking paths would be added to serve the residents, neighboring community, and adjacent schools. These facilities would be maintained by the Project Sponsor and would not place any additional burden on the San Francisco Recreation and Park Department.

An additional component of the Proposed Project's 68 acres of open space would be provided through a combination of private or semi-private open space areas. Similar to the configuration of existing interior open space courtyards between the townhouse apartments, new courtyards would also be incorporated into the Proposed Project adjacent to new and existing residential buildings. Private open space would also be incorporated into the design of new buildings in the form of landscaped roof decks and balconies.

⁶ An off-leash dog area is likely to be constructed on the Project Site. The exact location of the run has yet to be determined, but it would be in an area that would not conflict with any sensitive natural habitat and/or nesting areas.

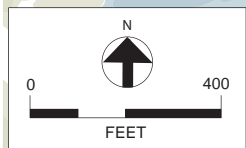
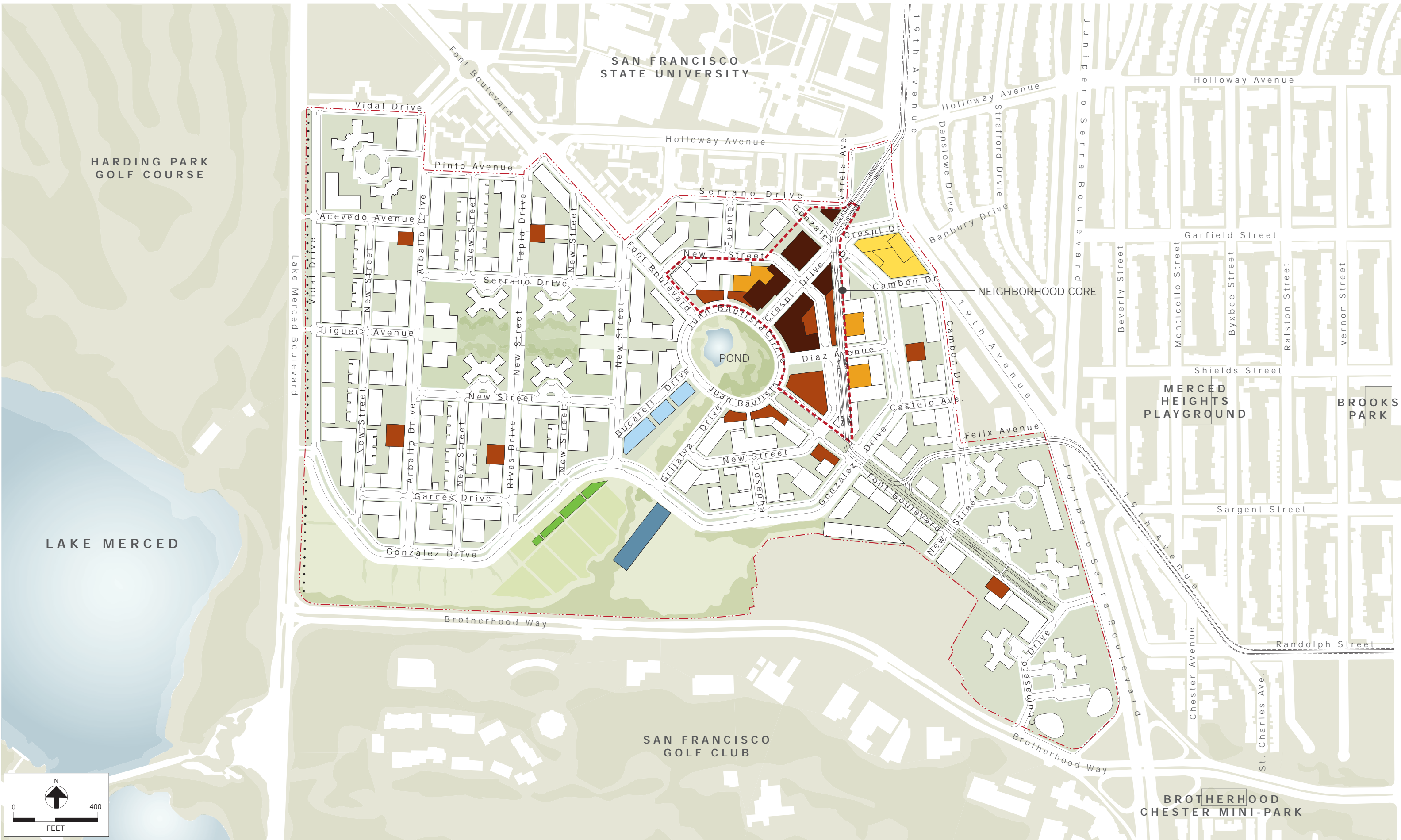


SOURCE: SOM, Turnstone Consulting

PARKMERCED PROJECT

- PROJECT BOUNDARY
- 130-D HEIGHT & BULK OVERLAY
BASE HEIGHT MAX 130'
- 40-X HEIGHT & BULK OVERLAY
BASE HEIGHT MAX 40'
- RM-1 (RESIDENTIAL, MIXED DISTRICTS, LOW DENSITY)
- RM-4 (RESIDENTIAL, MIXED DISTRICTS, HIGH DENSITY)
- RH-1(D) (RESIDENTIAL, MIXED DISTRICTS, ONE-FAMILY DETACHED DWELLINGS)

FIGURE III.6: EXISTING ZONING AND ZONING HEIGHT LIMIT PLAN III.17



SOURCE: SOM, Turnstone Consulting

PARKMERCED PROJECT

- PROJECT BOUNDARY
- GROUND FLOOR RETAIL
- GROUND FLOOR RETAIL / OFFICE ABOVE
- OFF-STREET ON GRADE PARKING (SEE FIGURE III.17 FOR OFF-STREET BELOW GRADE PARKING)
- LEASING OFFICE/ RESIDENTIAL ABOVE
- PRE-K-5 SCHOOL/ DAY CARE FACILITY/ RESIDENTIAL ABOVE
- FITNESS CENTER
- RESIDENTIAL
- FARM SERVICE BUILDING
- ... WIND TURBINES

FIGURE III.7: PROPOSED SITE PLAN III.19



SOURCE: SOM, Turnstone Consulting

PARKMERCED PROJECT

- PROJECT BOUNDARY
- PUBLICLY ACCESSIBLE OPEN SPACE
- NEIGHBORHOOD PARKS
- COURTYARDS
- ORGANIC FARM
- PLAYGROUNDS
- PUBLIC PLAZA

TOTAL PROPOSED OPEN SPACE: 2,964,200 SF

FIGURE III.8: PROPOSED PUBLICLY ACCESSIBLE OPEN SPACE PLAN III.21

Table III.1: Project Summary Table

Uses	Existing Gross Square Footage	Existing Uses to Be Retained/Replaced (gsf)		New Construction/ Additions (gsf)	Proposed Project Totals (gsf)
		Retained	Replaced		
Residential	3,474,937	Retained	1,943,157	8,025,063	11,500,000
		Replaced	1,531,780		
Retail	--		--	230,000	230,000
Office	10,775	Replaced	10,775	69,225	80,000
Industrial	--		--	--	N/A
Structured Parking	959,400	Retained	332,700	1,940,600	2,900,000
		Replaced	626,700		
Other:					N/A
Educational	3,949	Replaced	3,949	21,051	25,000
Maintenance	28,343	Replaced	28,343	71,657	100,000
Other (common, fitness)	--	--	--	64,000	64,000
Total gsf	4,477,404	--	4,477,404	10,421,596	14,899,000
Dwelling Units	3,221 du	Retained	1,683	5,679	8,900 du
		Replaced	1,538	1,538	
Parking Spaces - Off Street	3,198	Retained	1,109	6,252	9,450
		Replaced	2,089		
Parking Spaces - On Street	1,591	Retained/ Replaced	1,591	90	1,681
Open Space	3,269,300		2,964,200	0	2,964,200

Source: Stellar Management; SOM; Turnstone Consulting

Most of the trees on the Project Site, excluding those along the southern slope adjacent to Brotherhood Way, would need to be removed or relocated due to the proposed construction and grading activities. Any tree removal activity would be phased, corresponding to one of the four construction phasing periods described on pp. III.54-II.65. Prior to removal, trees would be assessed for their condition and suitability for possible relocation. In addition, a tree replacement plan is included as part of the Proposed Project, as part of a future landscape design plan. Proposed tree species would likely be native species and/or species closely adapted to the climate conditions of the Project Site.

The Proposed SUD would reduce the total number of residential units that could be built compared to the number permitted under existing zoning. Specifically, the Special Use District would permit the Project Site to contain a total of 8,900 housing units. The existing zoning principally permits construction of 10,302 housing units on the Project Site, and a Planned Unit

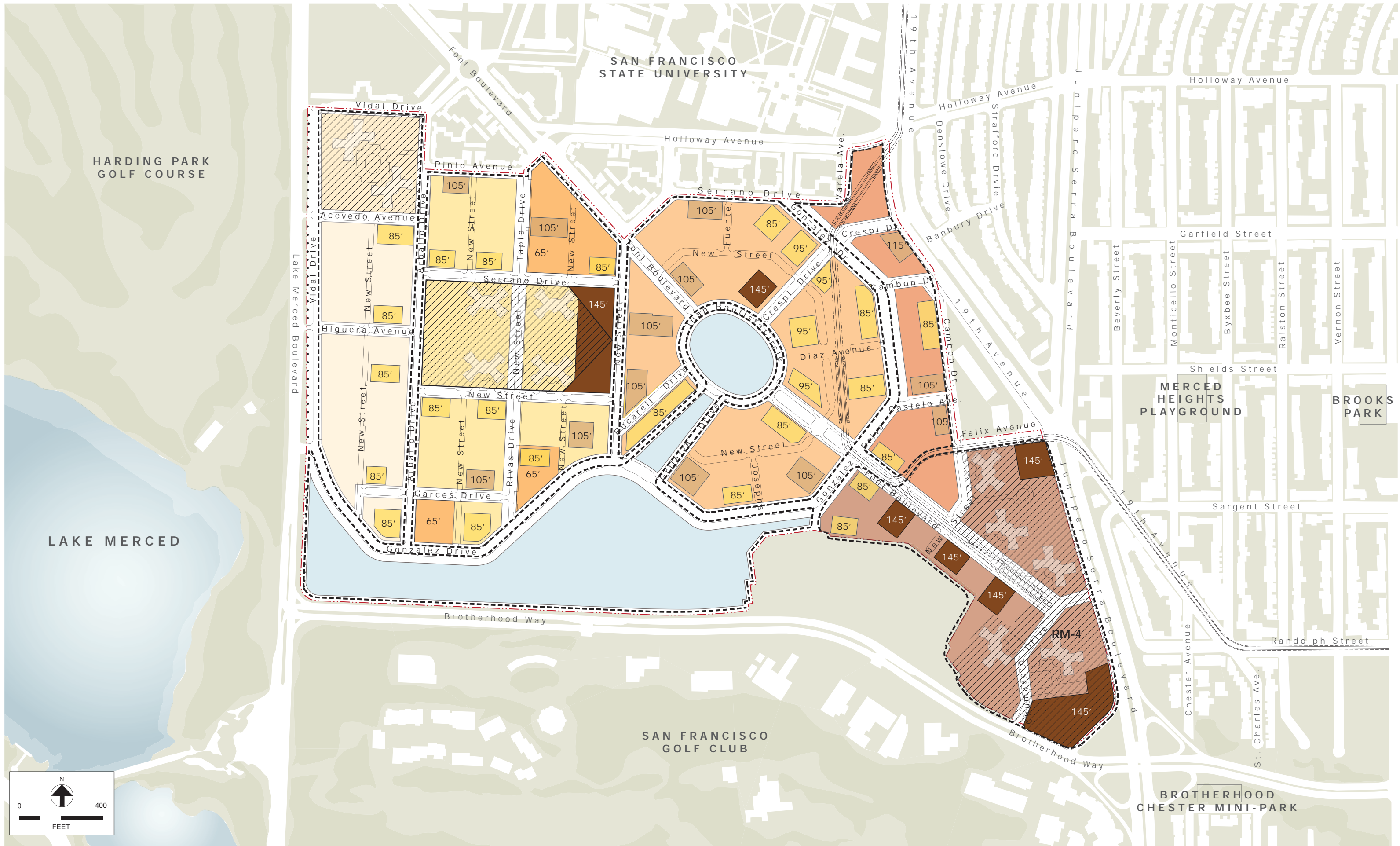
Development (PUD) for the Project Site could allow up to a maximum of approximately 11,750 residential units. The Proposed SUD would also provide the non-residential uses described above, whether they are permitted or conditional, and their expected size.

The Proposed Project also includes an amendment to the Planning Code Height and Bulk Maps that would provide an overlay for the entire site. This overlay would be adopted as part of the Proposed Special Use District. It would allow for more three- and six-story buildings to be constructed on the Project Site than would be possible under current Height and Bulk requirements. It would also allow for a limited number of new mid-rise buildings and towers.

The overlay would designate specific locations for new buildings taller than six stories. Rather than designate the exact location of all proposed buildings less than six stories in height, the proposed overlay would impose a base height limit within certain districts, and then permit a certain percentage of the land area within that district to be improved with buildings that exceed the base height limit. For example, as shown in the Crespi Drive District on Figure III.9: Proposed Zoning Height Limit Plan, the maximum base height allowed would be 45 feet. Above 45 feet in height, the overlay permits a certain portion of the building to rise to a height of 85 feet (the exact percentage of building permitted to rise above 45 feet is detailed in the proposed *Parkmerced Design Standards and Guidelines*).

Because the overlay does not specify the exact location of all of the proposed buildings less than six stories in height, the configuration of those buildings on Figure III.10: Proposed Representative Building Heights Plan, is intended to be only representative of the Proposed Project. Accordingly, the analysis of certain topics in Chapter V, Environmental Setting and Impacts, of this EIR (i.e., Section V. B, Aesthetics, and Section V.I, Wind and Shadow) separately identifies and discusses the potential impacts of both the proposed representative building heights and the building heights and configuration allowable under the Special Use District overlay. As discussed above, Figure III.10 identifies specific locations for buildings over six stories in height.

As shown on Figure III.10, two one- to two-story (15- to 30-foot-tall) buildings would be constructed in the southern portion of the Project Site when the controls in the proposed *Parkmerced Design Standards and Guidelines* are applied hypothetically. A total of about fifteen 35-foot-tall low-rise/rowhouse buildings would be constructed in the western portion of the Project Site in the area north of Gonzalez Drive at Rivas Avenue and south of Pinto Avenue along either side of Arballo Drive. A total of approximately 60 three- to six-story (45- to 65-foot-tall) low-rise buildings would be constructed throughout the Project Site. Some of them would be in the new neighborhood core between Cambon Drive and Juan Bautista Circle. The low-rise buildings proposed within the neighborhood core would be multi-level buildings; one- to two-story atriums would be integrated into their designs. In addition, about 40 eight- to ten-story mid-rise buildings (85 to 105 feet tall) are planned at selected locations throughout the Project Site.



HARDING PARK GOLF COURSE

SAN FRANCISCO STATE UNIVERSITY

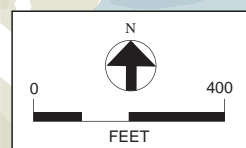
LAKE MERCED

SAN FRANCISCO GOLF CLUB

MERCED HEIGHTS PLAYGROUND

BROOKS PARK

BROTHERHOOD CHESTER MINI-PARK



SOURCE: SOM, Turnstone Consulting

PARKMERCED PROJECT

-
- PROJECT BOUNDARY
- LAKE DISTRICT
BASE HEIGHT MAX 45'
- HEDGEROW DISTRICT
BASE HEIGHT MAX 45'
- CRESPI DRIVE DISTRICT
BASE HEIGHT MAX 65'
- 19TH AVENUE TRANSIT DISTRICT
BASE HEIGHT MAX 65'
- 19TH AVENUE GATEWAY DISTRICT
BASE HEIGHT MAX 65'
- MAXIMUM HEIGHT WITHIN DISTRICT
- EXISTING 130-D HEIGHT & BULK OVERLAY
BASE HEIGHT MAX 130' TO REMAIN
- EXISTING 40-X HEIGHT & BULK OVERLAY
BASE HEIGHT MAX 45' TO REMAIN
- EXISTING RM-1, RM-4 AND RM-1(D)
ZONING DISTRICTS TO REMAIN

FIGURE III.9: PROPOSED ZONING HEIGHT LIMIT PLAN III.25



SOURCE: SOM, Turnstone Consulting

PARKMERCED PROJECT

FIGURE III.10: PROPOSED REPRESENTATIVE BUILDING HEIGHTS PLAN

All 11 existing 13-story tower buildings (130 feet tall) would be retained as part of the Proposed Project, and 11 new 11- to 14-story towers (115 to 145 feet tall) would be constructed in the west-central portion of the Project Site, near the existing tower buildings, and in the southeastern portion of the Project Site at locations nearest public transit.

Proposed Parkmerced Design Standards and Guidelines

The proposed *Parkmerced Design Standards and Guidelines* are included as part of the Proposed Project. They are intended to reflect the City's long-term vision for the visual character and quality of the Project Site. The proposed *Parkmerced Design Standards and Guidelines* establish requirements for buildings, streets, open spaces, and landscaping to encourage high-quality design and materials, an inviting pedestrian orientation, and visual variety and interest, while maintaining a cohesive neighborhood identity for the Project Site. They are intended to enhance the visual quality of the neighborhood, and inform the design and review of specific development projects within the Project Site. The proposed design standards in the *Parkmerced Design Standards and Guidelines* establish specific quantitative requirements for the distribution of building heights on a block-by-block basis to protect viewsheds, reduce shadows on open spaces, maintain adequate space between tall buildings, and maintain an appropriate scale in relation to the width of public rights-of-way. The design standards also establish requirements for creating a continuous streetwall and for reducing the visual impact of off-street parking.

PROPOSED TRAFFIC AND CIRCULATION PLAN

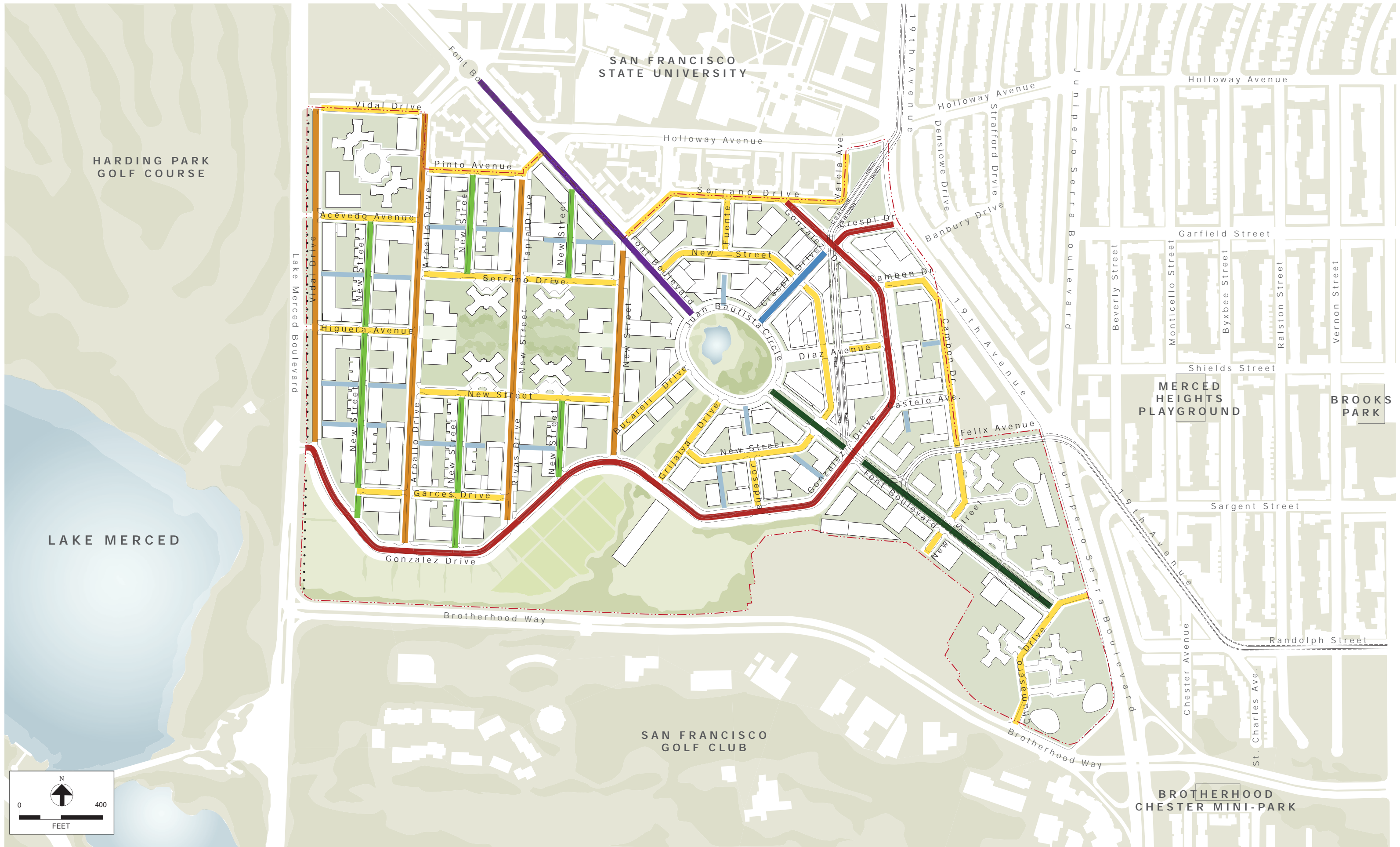
The existing street network on and around the Project Site would be modified under the Proposed Project (see Figure III.11: Proposed Circulation (Street Type) Plan). Though the existing main axial streets and some additional core streets would be retained under the Proposed Project, several new interior streets would also be added. These new interior streets are intended to create new view corridors and increase sunlight access. Additional access points would be provided around the edges of the site to better integrate the Parkmerced neighborhood with its surroundings and to reduce congestion on surrounding thoroughfares. New sidewalks, bike lanes, and streetscape plantings would also be incorporated into the roadway right-of-ways.

Proposed Transit and Street Improvements Plan

The Proposed Project also includes changes to the surrounding streets and transit alignments to reduce Parkmerced residents' walking distance to transit stations, and which are intended to improve vehicular access and circulation around Parkmerced (see Figure III.12: Proposed Off-Site Traffic Improvement Plan, and Figure III.13: Proposed On-Site Transit Improvement Plan). These changes include rerouting the Muni Metro M Ocean View line through the site, providing new vehicular access points along 19th Avenue and Lake Merced Boulevard, and upgrading most intersections surrounding the property.

As shown in Figure III.4, p. III.11, the current Muni light rail line runs in the center median of 19th Avenue adjacent to Parkmerced and has nearby stops at the north side of the 19th Avenue and Holloway Avenue intersection (the SFSU station) and at the south side of the 19th Avenue and Junipero Serra Boulevard intersection (an in-street stop without station facilities). With the Proposed Project, the M Ocean View line would be rerouted into Parkmerced (see Figure III.13). It would enter from the north at the intersection of 19th Avenue and Holloway Avenue, continue southwest towards the intersection of Crespi and Gonzalez Drives, continue along the eastern edge of the neighborhood core towards the intersection of Font Boulevard and Gonzalez Drive. At that point, about half of the M Ocean View streetcars would turn east on Felix Avenue and exit Parkmerced to the south at the intersection of 19th Avenue and Junipero Serra Boulevard and continue to Balboa Park. The other half would terminate at a new station at the intersection of Font Boulevard and Chumasero Drive. Three new stations would be created within Parkmerced. The first, which would replace the existing SFSU station in the 19th Avenue median, would be located in a landscaped plaza in the Project Site near the intersection of 19th and Holloway Avenues. This change is intended to address the overcrowding issues at the current station and to improve the connection to SFSU by having pedestrians cross Holloway Avenue, rather than 19th Avenue under current conditions. This crossing would have longer pedestrian green times and, potentially, wider crosswalks, giving SFSU students easier and safer access to the station. The second station would be located along the eastern edge of the neighborhood core of Parkmerced, near Juan Bautista Circle and south of Diaz Avenue, approximately a quarter of a mile south of the relocated SFSU station. This new stop would provide riders with direct access to the neighborhood-serving retail and commercial services planned for the neighborhood core. The third station would be located at the intersection of Font Boulevard and Chumasero Drive, approximately a quarter of a mile southeast from the proposed neighborhood core station. This station would be a terminus for the M Ocean View line, and would provide full layover and terminal facilities. All Parkmerced residents would be within about a 10-minute walk to one of these three stations.

The Project Sponsor also proposes to construct new transit and infrastructure improvements in City streets adjacent to the Project Site (see Figure III.12). Planned roadway realignments in the vicinity of the Project Site that are intended to improve vehicular traffic flows include construction of a fourth southbound travel lane on 19th Avenue, conversion of a shared lane on 19th Avenue at Junipero Serra into a third northbound left-turn lane, and construction of a second dedicated northbound through lane on Junipero Serra at 19th Avenue. Rerouting the M Ocean View Muni rail tracks would provide space in the median of 19th Avenue for a new signalized left turn into the site in the vicinity of Crespi Drive (accessed from northbound 19th Avenue). Another signalized left turn would be constructed at Chumasero Drive (accessed from northbound Junipero Serra Boulevard). The new left turns are intended to improve vehicular access to Parkmerced for traffic from I-280 and other roadways to the south. In addition, traffic improvements along Brotherhood Way and at Chumasero Drive are anticipated.

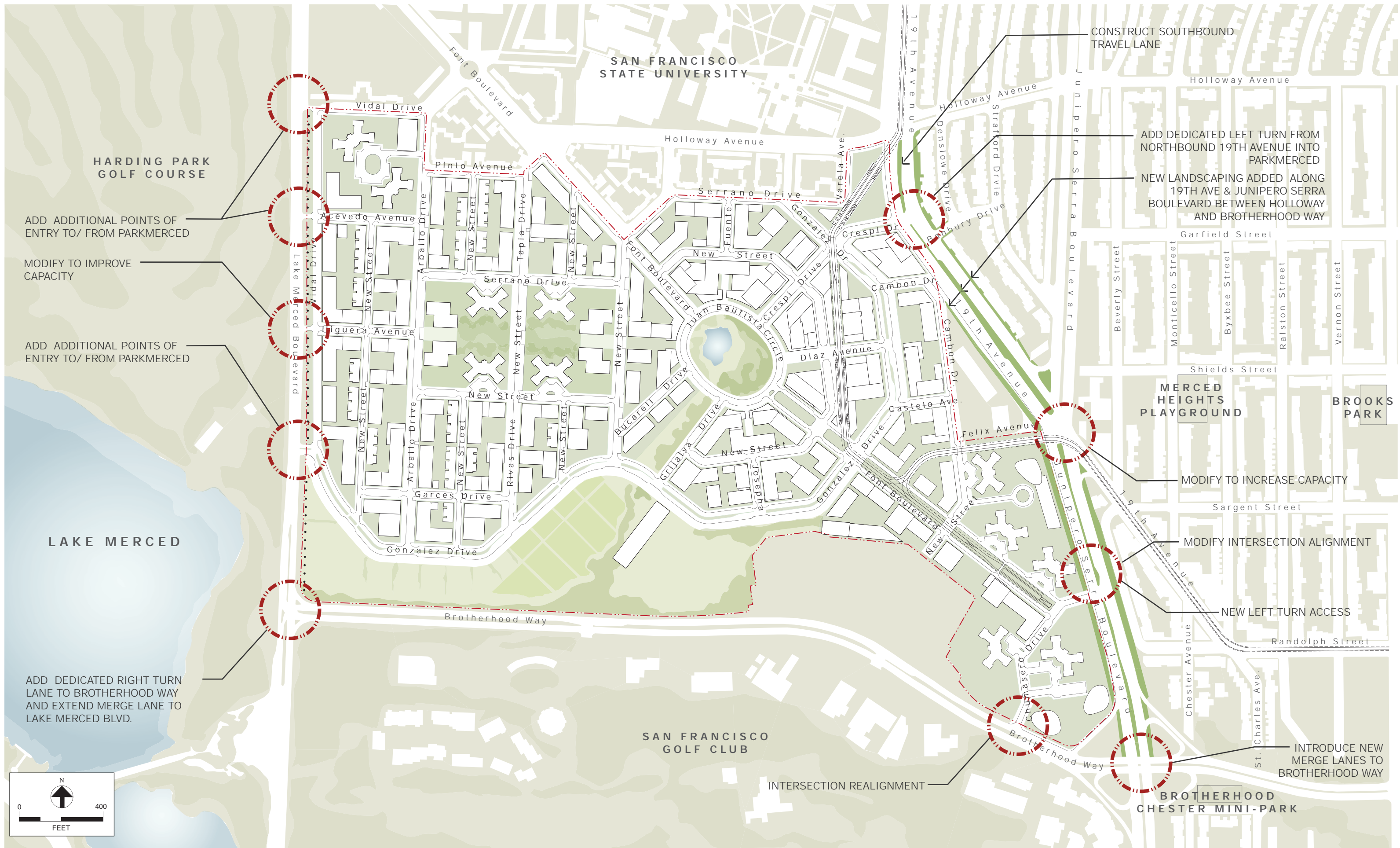


SOURCE: SOM, Turnstone Consulting

PARKMERCED PROJECT

-
-
-
-
-
-
-
-
-

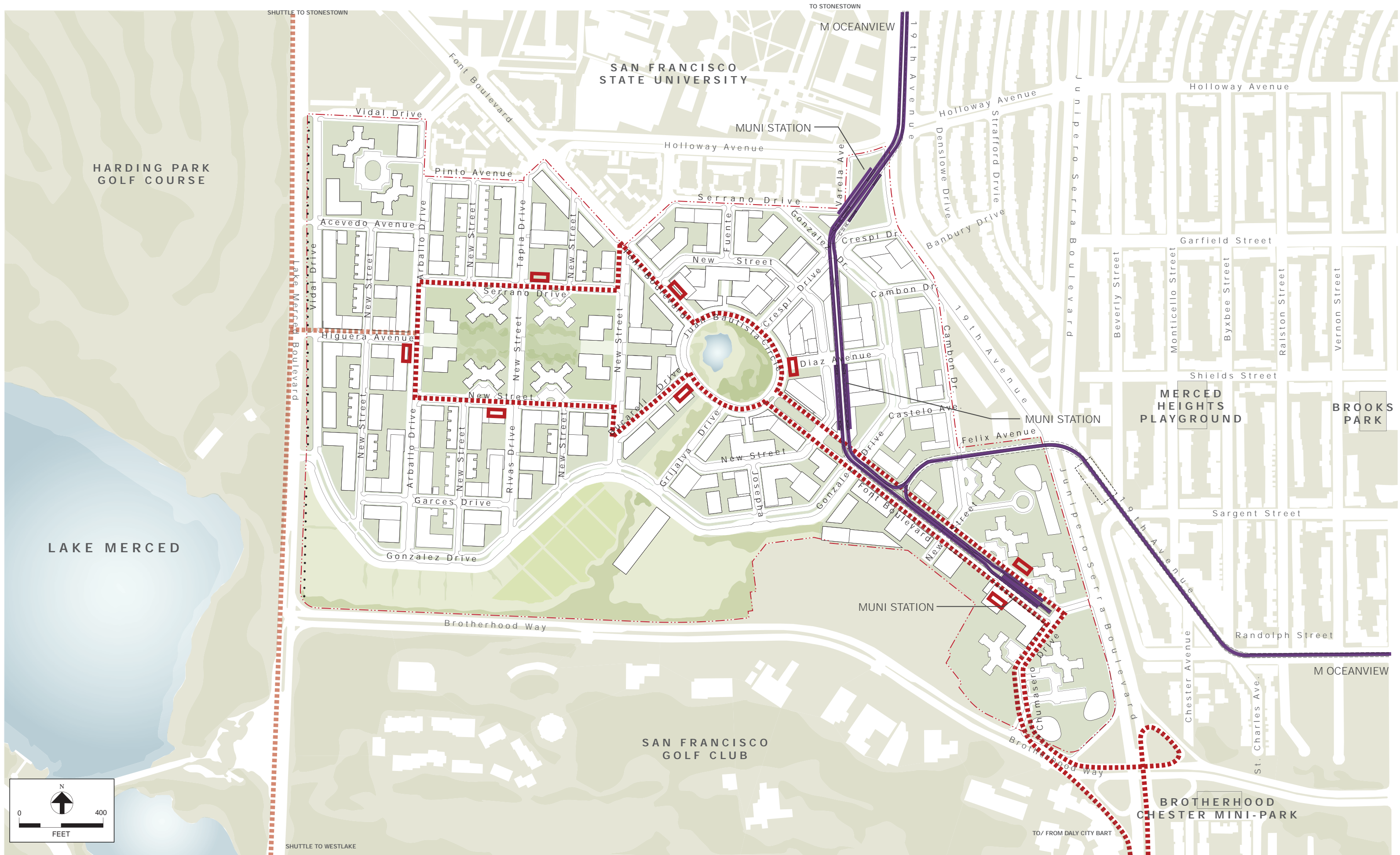
FIGURE III.11: PROPOSED CIRCULATION (STREET TYPE) PLAN
III.31



SOURCE: SOM, Turnstone Consulting

PARKMERCED PROJECT

FIGURE III.12: PROPOSED OFF-SITE TRAFFIC IMPROVEMENTS PLAN III.33



SOURCE: SOM, Turnstone Consulting

PARKMERCED PROJECT

- PROJECT BOUNDARY
- PARKMERCED SHUTTLE ROUTE
- PARKMERCED SHUTTLE ROUTE OFF-PEAK
- PARKMERCED SHUTTLE STOP
- MUNI M OCEAN VIEW LIGHT RAIL LINE CONFIGURATION
- MUNI STATION

FIGURE III.13: PROPOSED ON-SITE TRANSIT IMPROVEMENT PLAN III.35

The Chumasero Drive/Brotherhood Way intersection would be reconfigured. Traffic improvements along Brotherhood Way would include traffic calming features, modifications to the Brotherhood Way intersections with Lake Merced Boulevard and Chumasero Drive, and new merge lanes to Brotherhood Way which are intended to improve the access to Junipero Serra Boulevard. Additional access points, along Lake Merced Boulevard at Vidal, Acevedo, and Gonzalez Drives are proposed to better distribute vehicles entering and exiting the Project Site.

Transportation Variant and Sub-variant

The Project Sponsor, in consultation with SFMTA, has developed a roadway design realignment Project Variant for the Proposed Project that would include construction of a fourth southbound through lane on 19th Avenue dedicated for High-Occupancy Vehicle/Transit/Toll (HOV/HOT) vehicle use only, rather than mixed-flow traffic use. Only transit vehicles, carpools, and vehicles paying a toll would have access to the lane. There would be no change to the land use configuration and no change to other transportation aspects under this Variant.

Further, for both the Proposed Project and the Project Variant, a sub-variant was evaluated. Under the sub-variant, a right-turn ingress would be constructed along 19th Avenue between Crespi Drive and Junipero Serra Boulevard at Cambon Drive. This new access location would provide ingress for southbound vehicles only and would not provide access out onto 19th Avenue. The right turn would be designed for slow speed with an approximately 90 degree turn. A crosswalk would be provided across Cambon Drive to connect to the sidewalk along the west side of 19th Avenue.

The roadway realignment Project Variant and sub-variant are analyzed in Section V.E, Transportation and Circulation, of Chapter V, Environmental Setting and Impacts.

Transportation Demand Management Program

Another key component of the proposed transportation plan is the implementation of an extensive transportation demand management (TDM) program. The goal of this program is to reduce the overall number of per capita car trips and the percentage of single-occupant trips. Program elements would include a low-emissions vehicle shuttle to the Daly City BART station, a shopper shuttle to the nearby Stonestown Galleria and the Westlake Shopping Center in Daly City, parking management programs, carpool/vanpool services, a full-time transportation coordinator, a real-time transportation website, bicycle paths, pedestrian pathways, and a free bicycle rental program for residents.⁷ Work-at-home facilities, such as computer and telecommunication centers,

⁷ The proposed bicycle rental program would be a no-cost (or nominal charge) bicycle lending program provided to Parkmerced residents. The program would include a central bicycle repair and sales facility, as well as bicycle storage locations throughout the Parkmerced site.

intended to reduce the number of commuter trips, would also be included in the proposed residential development and be designated as a permitted use by the Proposed SUD.

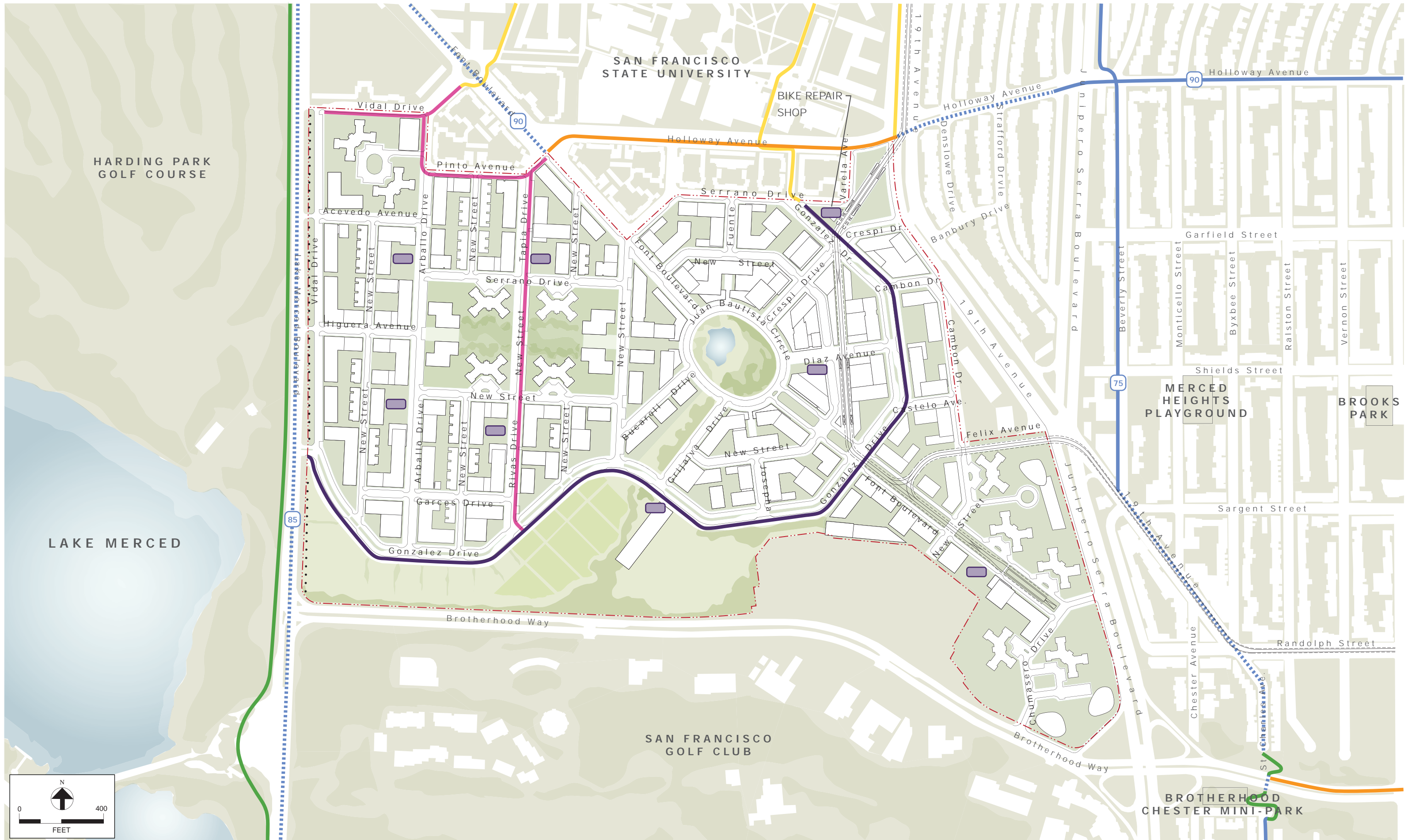
Proposed Bicycle and Pedestrian Plan

The Proposed Project includes a biking and pedestrian plan intended to encourage the use of bicycling and walking as primary travel modes (see Figure III.14: Proposed Bicycle Plan, and Figure III.15: Proposed Pedestrian Plan). Pedestrian and bicycle movement would be facilitated by a comprehensive way-finding program at Parkmerced that would help residents and visitors navigate their way through the internal network of pedestrian and bicycle routes. The way-finding program would include signage throughout Parkmerced to provide pedestrian and bicycle routes and provide direction to key locations, such as bicycle parking spaces or storage. Secure bicycle parking would be provided within each commercial parking facility, residential garage, or residential building. In addition, on-street bicycle parking racks would be provided at major destinations, and automated bicycle stations at seven locations throughout Parkmerced would have rental bikes and secure bike parking. In addition, commercial buildings over 20,000 gsf in area would be designed to include showers. The Parkmerced website would provide “real time” data on bicycle availability.

Proposed Parking Plan

On-street and off-street parking would be provided throughout the proposed development. Overall, about 1,680 on-street spaces and 9,450 off-street spaces (an increase of about 90 on-street and 6,252 off-street parking spaces) would be provided in the Proposed Project. Off-street residential parking would be provided at an approximately 1:1 ratio overall (one space for each residential unit), with a lower ratio of residential parking spaces to residential units in buildings located in and around the commercial and transit districts to encourage the use of transit (see Figure III.16: Proposed On-Street Parking Plan, and Figure III.17: Proposed Off-Street Parking Plan). The residential parking would also be “unbundled” from the residences, meaning that parking spaces would be sold or leased separately from the units.⁸ This residential parking supply would be distributed throughout the site, with fewer spaces in the eastern half of the site, near the units that have the most convenient access to transit, and more spaces in the western half of the site. Off-street parking would be accommodated in one- and two-level basements constructed throughout the site below the residential, retail, office, and fitness uses. Off-street commercial parking would be provided within the neighborhood core to support the proposed new retail, restaurant, office, and business services spaces. The off-street facilities would be designed to promote shared parking uses (e.g., all commercial spaces could be used by commercial patrons,

⁸ A resident in a building near the transit neighborhood core could choose to purchase or lease a space located elsewhere in Parkmerced.



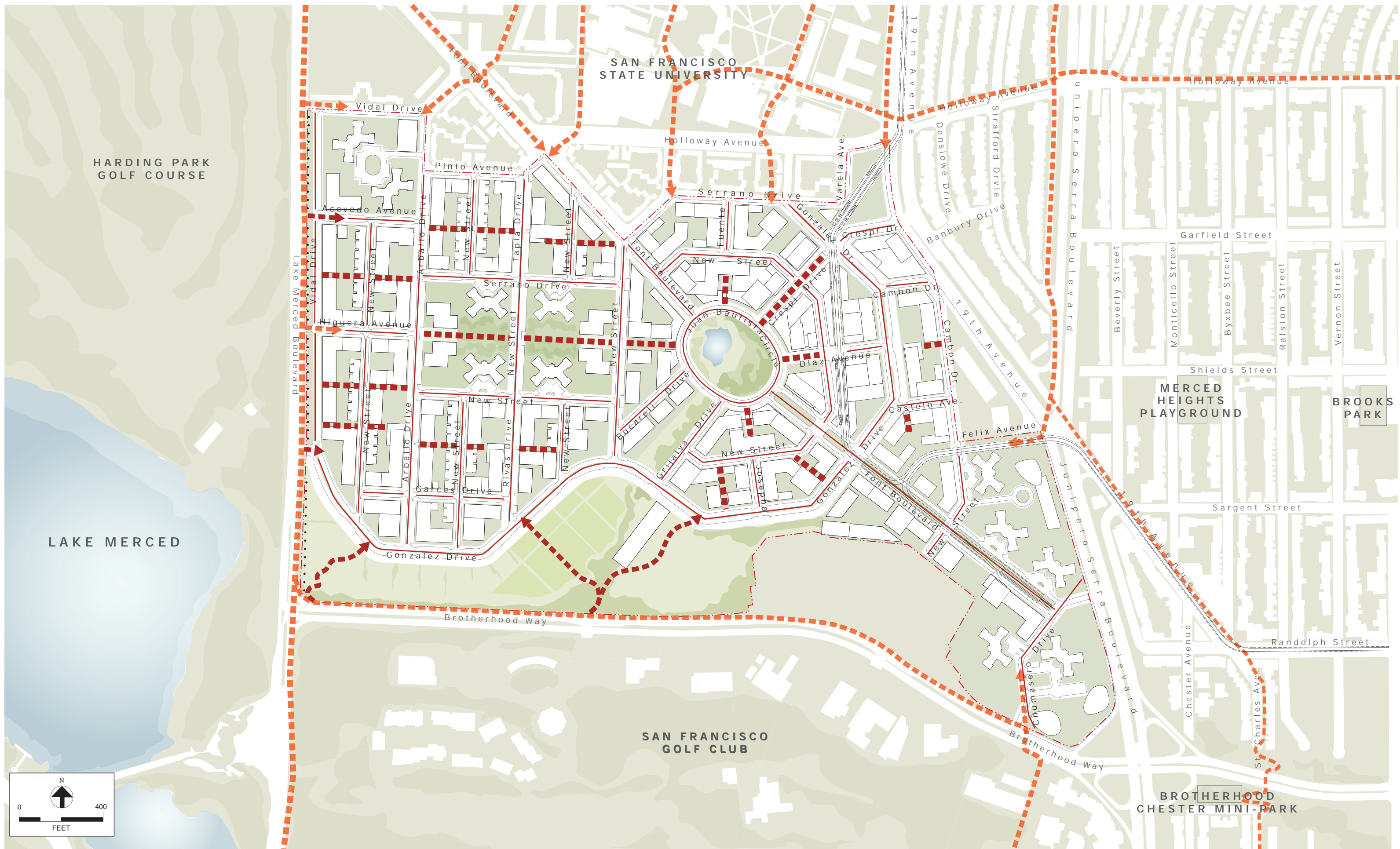
SOURCE: SOM, Turnstone Consulting

PARKMERCED PROJECT

- - - PROJECT BOUNDARY
- PROPOSED BIKE PATH DEDICATED OFF-STREET, PAVED
- EXISTING SF CITY BIKE PATH DEDICATED OFF-STREET, PAVED
- PROPOSED BIKE LANE DEDICATED LANE ON ROADWAY
- EXISTING SF CITY BIKE LANE DEDICATED LANE ON ROADWAY
- EXISTING SF CITY WIDE CURB LANE BIKE ROUTE WIDER ROADWAY
- PROPOSED BIKE LIBRARY
- - - EXISTING SF CITY BIKE ROUTE BIKE AND CARS SHARE
- PROPOSED SFSU BIKE ROUTE BIKE AND CARS SHARE ROADWAY
- 85 EXISTING SF CITY BIKE ROUTE NUMBER

IN GENERAL, THE STREETS WITHIN PARKMERCED WOULD BE RESIDENTIAL TYPE STREETS IN WHICH BICYCLES WOULD SHARE THE ROADWAY WITH AUTOMOBILES. EACH ROADWAY WOULD NOT SPECIFICALLY BE DESIGNED AS A BICYCLE ROUTE.

FIGURE III.14: PROPOSED BICYCLE PLAN III.39



SOURCE: SOM, Turnstone Consulting

PARKMERCED PROJECT

- PROJECT BOUNDARY
- PROPOSED DEDICATED NEIGHBORHOOD PEDESTRIAN ACCESS
- PROPOSED SIDEWALK PEDESTRIAN ACCESS
- - - EXISTING NEIGHBORHOOD PEDESTRIAN ROUTE

FIGURE III.15: PROPOSED PEDESTRIAN PLAN III.41



HARDING PARK GOLF COURSE

SAN FRANCISCO STATE UNIVERSITY

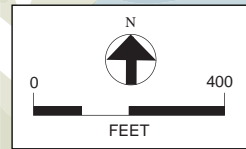
LAKE MERCED

SAN FRANCISCO GOLF CLUB

MERCED HEIGHTS PLAYGROUND

BROOKS PARK

BROTHERHOOD CHESTER MINI-PARK



SOURCE: SOM, Turnstone Consulting

--- PROJECT BOUNDARY

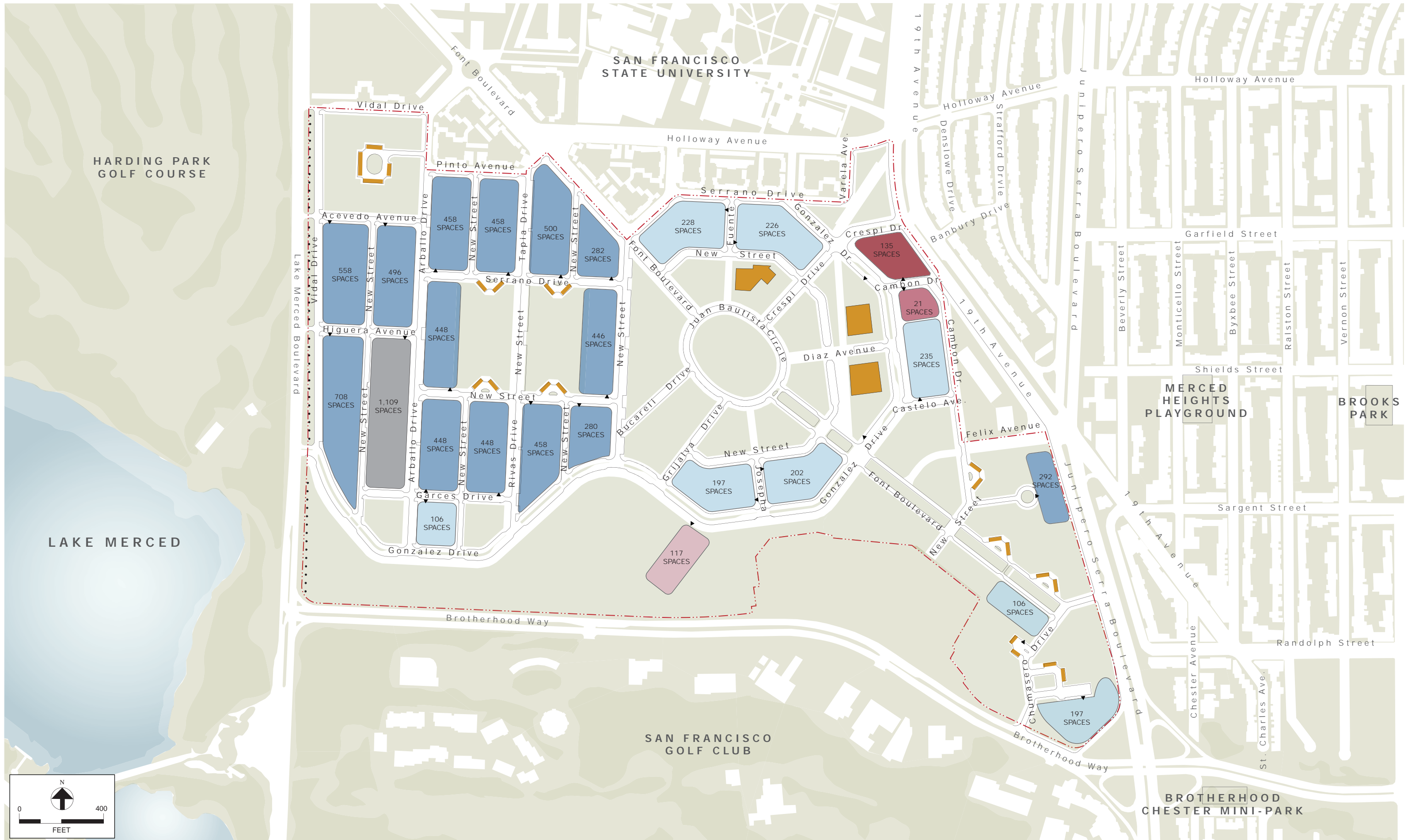
— PARALLEL PARKING
1,164 SPACES

— HEAD IN PARKING
517 SPACES

TOTAL PROPOSED PARKING SPACES : 1,681 SPACES

PARKMERCED PROJECT

FIGURE III.16: PROPOSED ON-STREET PARKING PLAN III.43



SOURCE: SOM, Turnstone Consulting

PARKMERCED PROJECT

- PROJECT BOUNDARY
- EXISTING PARKING
4-STORIES BELOW GRADE
- PROPOSED RESIDENTIAL/ COMMERCIAL PARKING
ON GRADE
- PROPOSED RESIDENTIAL PARKING
STORAGE 2-STORIES BELOW GRADE
- PROPOSED RESIDENTIAL PARKING
1-STORY BELOW GRADE
- PROPOSED FITNESS CTR. PARKING
1-STORY BELOW GRADE
- PROPOSED COMMERCIAL PARKING
1-STORY BELOW GRADE
- PROPOSED LEASING / COMMERCIAL PARKING
1-STORY BELOW GRADE

TOTAL PROPOSED: 8,341 SPACES
 TOTAL EXISTING PARKING SPACES: 1,109 SPACES
 TOTAL PROJECT SPACES: 9,450 SPACES

FIGURE III.17: PROPOSED OFF-STREET PARKING PLAN
 III.45

so that parking spaces would not be designated for certain uses or businesses). All commercial spaces would be paid spaces, typically through parking meters, with rates that discourage long-term use. In total, about 550 off-street commercial parking spaces would be provided.

On-street parking would be provided throughout the neighborhood. It is proposed that all new on-street parking spaces would be metered or operate under a residential permit parking district to limit use by visitors from outside Parkmerced, such as students from San Francisco State University.

The Project Sponsor also proposes a parking management program intended to reduce parking demand and improve parking operations. Anticipated parking management elements would include: free or discounted parking available for rideshare/vanpool vehicles, market-rate pricing for residential and commercial parking, provision of hubs for carshare vehicles, and use of high-tech “smart” meters for on-street parking spaces to improve enforcement.

In addition, the Project Sponsor proposes to work with the surrounding neighborhoods and the SFMTA to update and enhance the current residential permit parking districts in Parkmerced to improve parking availability for residents and guests (measures could include reducing the non-permit parking time limits, providing short-term visitor parking passes, and/or designating full-time visitor parking spaces).

PROPOSED INFRASTRUCTURE AND UTILITIES

Water

To reduce the use of potable water (i.e., drinking water) on a per-unit basis, the Proposed Project would provide high-efficiency fixtures and appliances in new buildings, and retrofit fixtures in existing buildings.

In December 2008, the Project Sponsor made a formal request to the San Francisco Public Utilities Commission, asking that non-potable water be made available for irrigation of green spaces and for toilet flushing in all new residences. If a municipal supply of recycled water is not available, or if the request is not approved, facilities to meet the Proposed Project’s demand for recycled water may be constructed on site. These facilities could range from an on-site wastewater treatment system to groundwater wells, tanks to hold captured rainwater, and a system to recycle graywater⁹. Currently, local water supply piping is primarily ductile iron pipe that ranges from 8 to 12 inches in diameter. The majority of the existing water supply piping would be replaced as part of the Proposed Project. The new on-site distribution system would likely consist of 6- to 16-inch diameter pipes that would be installed under new streets, as part of the

⁹ Graywater is wastewater generated by domestic activities such as dish washing, laundry and bathing.

proposed water infrastructure facilities (including groundwater wells, rainwater holding tanks, and a graywater recycling system) anticipated to be implemented on the Project Site.

Stormwater

Currently, all stormwater runoff at Parkmerced is diverted into local combined sewer/stormwater pipes that flow by gravity to the Oceanside Water Pollution Control Plant. Most of these flows receive secondary treatment, but during large storms, primary treatment, or the equivalent, may be provided.¹⁰ During extreme rainfall,¹¹ overflow into the Pacific Ocean may occur.

The Proposed Project would provide an on-site stormwater system to capture and filter stormwater runoff from buildings, streets, and other non-permeable surfaces rather than diverting it to the municipal wastewater system (see Figure III.18: Proposed Hydrology Network). This system would capture and filter runoff through a series of on-site bioswales,¹² streams, ponds, and other natural filtration systems intended to retain, detain, and infiltrate conveyed runoff. Included is a 1.4-million-gallon stormwater collection pond to be constructed in the central oval Commons area (Juan Bautista Circle). Water would flow into the collection pond through constructed treatment and filtration mechanisms (streams, bioswales, biogutters). The collection pond would hold water year-round and native aquatic vegetation would be encouraged.¹³ Stormwater overflow from the collection pond and other flows from the western and northern portions of the Project Site would flow through a riparian corridor¹⁴ consisting of streams, bioswales, biogutters, and smaller ponds into a terminal wetland pond proposed in the southwest corner of the Project Site. Most of this stormwater runoff would infiltrate directly into the Upper Westside groundwater basin that feeds Lake Merced; however, it is anticipated that approximately 25 percent of the average annual runoff would flow off site from the terminal wetland pond into Lake Merced, after being treated by either an on-site wetland or an underground filtration facility. There are three options for discharge into Lake Merced: piped from the terminal wetland pond into an existing 30-inch conduit below Lake Merced Boulevard; piped from the terminal wetland pond into a new conduit below Brotherhood Way, where it would flow into a willow basin located

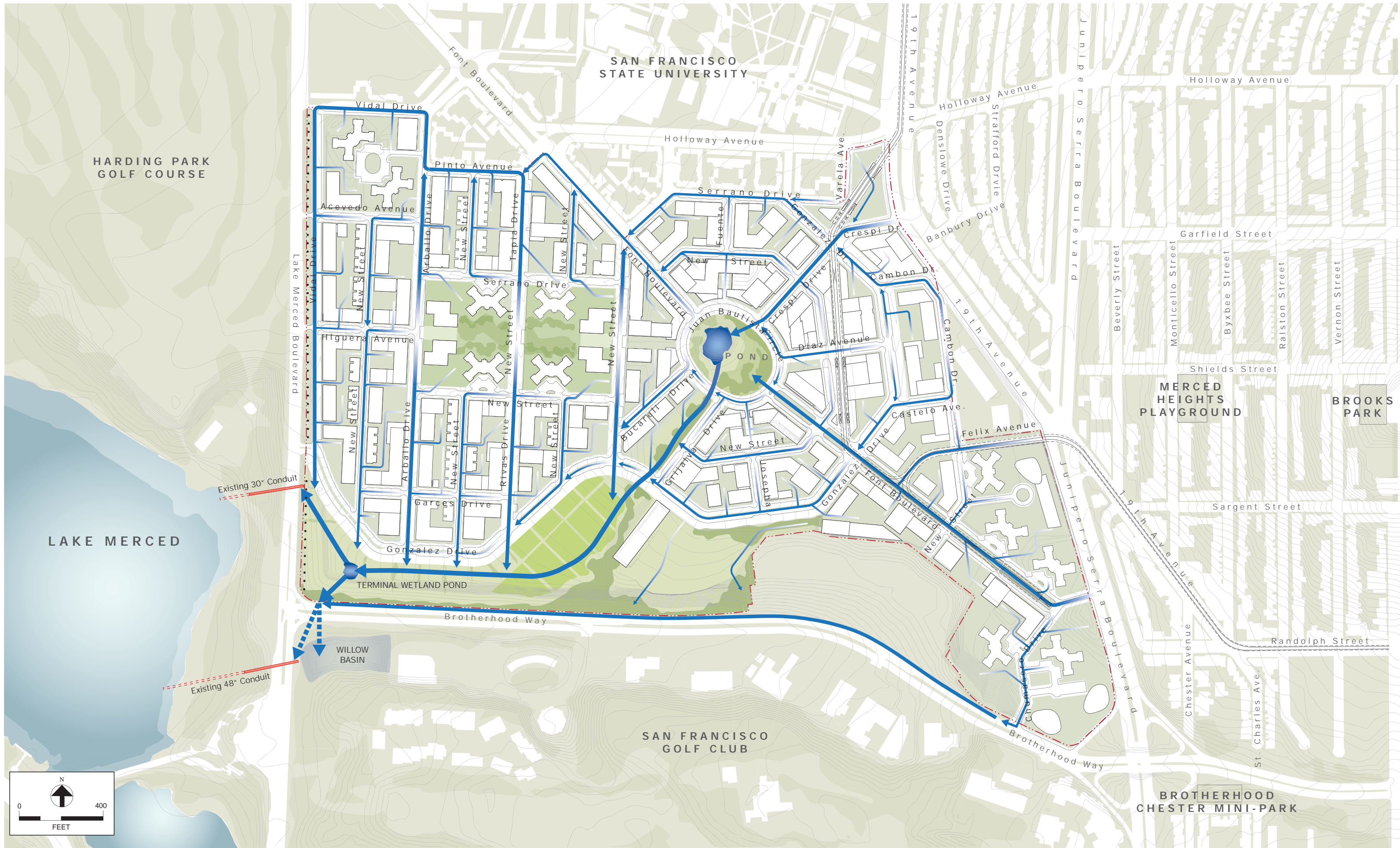
¹⁰ For primary stormwater treatment, physical operations such as screening and sedimentation are used to remove the floating settleable solids found in wastewater. Secondary treatment commonly is carried out using activated-sludge processes or filters.

¹¹ Extreme rainfall causes overflow to happen at the Oceanside Water Pollution Control Plant on average six to eight times per year.

¹² A bioswale is a stormwater retention element with landscaping designed to trap silt and pollution deposits found in surface runoff water.

¹³ It is anticipated that the collection pond would hold water year round, though it would likely need to be supplemented with water from a combination of captured stormwater and groundwater supplies during the summer and early fall months.

¹⁴ A riparian corridor is the zone between land and a stream, characterized by water-loving plants.



SOURCE: SOM, Turnstone Consulting

PARKMERCED PROJECT

--- PROJECT BOUNDARY ■ RAINWATER BIO CHANNELS

FIGURE III.18: PROPOSED HYDROLOGY NETWORK
III.49

south of the Project Site at the intersection of Brotherhood Way and Lake Merced Boulevard, and discharge into an existing 48-inch conduit below Lake Merced Boulevard; or piped from the terminal wetland pond into a new conduit below Brotherhood Way, where it would connect to the existing 48-inch conduit below Lake Merced Boulevard.

Stormwater Variant

Described on pp. III.66-III.67, regulatory agencies, including the U.S. Army Corps of Engineers, San Francisco Public Utilities Commission, and likely the Regional Water Quality Control Board, would have to approve the construction of an on-site stormwater filtration system that discharges filtered water into Lake Merced. It may be ultimately determined that discharging into Lake Merced would not be permitted. Therefore, the stormwater management system includes two Stormwater Variants that are analyzed in Section V.M, Biological Resources, and Section V.O, Hydrology and Water Quality, in this EIR. The first Variant would temporarily retain stormwater groundwater basin. The other Variant would have stormwater overflow discharged directly into the existing combined sewer/stormwater pipes that flow by gravity to the Oceanside Water Pollution Control Plant.

Wastewater

Most of the existing wastewater collection and transport system would be retained. Because the stormwater runoff would no longer be carried by the existing pipes, some of the pipes may need to be relined to reduce capacity and maintain sufficient velocity. Other pipes may also need to be relined due to structural or other defects. Additional sewers may be installed to serve new buildings. The Proposed Project would include water-efficient plumbing and appliances; these and the separate collection system proposed for stormwater would reduce the flow volume in San Francisco's combined sewer system. No new or enlarged wastewater collection facilities are proposed.

Electricity and Natural Gas

Energy-efficient appliances, energy-efficiency lighting, and "smart meters" (energy monitoring devices installed in the home to enable residents to monitor and manage their electricity consumption and utility bills) are proposed for the retained buildings. Heat and hot water would be provided by a centralized generation plant (a "district" energy system) serving all of Parkmerced, rather than by single generation units located in each building. This district energy system would likely also produce electricity on site in a "cogeneration" system. Cogeneration is a process that uses natural gas to drive a turbine to generate electricity, and then uses "waste heat" created as a by-product of that process to heat water for domestic heating and hot water supply. District energy systems provide either one or a limited set of location(s) for all major equipment for ease of maintenance and operations.

An intent of the Proposed Project is to include a distributed district energy system, consisting of several boiler rooms located around the site that are aligned to the capacity requirements of the development as it occurs. A district energy piping system would provide a looped connection between the boiler rooms and the buildings served. This district piping loop could be developed in step with the development phases of the Proposed Project. While boiler rooms are referred to here, alternative forms of heating energy could be located in these boiler rooms. The distributed district energy approach would lead to smaller district water pipe heating as compared to a central approach. The scheme under consideration would have approximately four decentralized plants, with boiler rooms that would range in size between 800 to 1,000 gsf. The locations of the boiler rooms are still under consideration. The Proposed Project also includes a combination of renewable energy sources, such as wind turbines, and photovoltaic cells, to meet a portion of the Proposed Project's electricity demand. The photovoltaic cells would be installed on up to 50 percent of the roof areas of new buildings, and 51 "Windside" vertical axis wind turbines (VAWT) would be installed along the western perimeter of the site, parallel to Lake Merced Boulevard.¹⁵ The proposed wind turbines would be mounted on poles that would be approximately 100 feet high and spaced roughly 40 feet apart (measured center to center from each pole). The wind turbines would be mounted at the top of each pole, and would measure 9 feet wide by 15 feet in height.

All proposed commercial building space would have cooling equipment with "variable refrigerant volume" air source heat pumps that are estimated to be three to four times more efficient than conventional gas-fired heating systems. These pumps would move heat from cold areas to warm areas, so that simultaneous cooling and heating demands could be satisfied with the same energy. The Proposed Project would also include energy conservation measures to recover heat in the exhaust steam from the central ventilation systems in all new buildings and use it to preheat air being supplied.

PROPOSED GRADING PLAN

The Proposed Project would involve substantial excavation, specifically for construction of the below-grade parking garages. A total of about 1,159,000 cubic yards of cut and 664,350 cubic yards of fill would be necessary over the approximately 20-year development period. The Grading Plan provides as much on-site reuse as possible, and most of the earthwork would be stockpiled and reused as fill throughout the Project Site. However, a total of about 494,650 cubic yards of off-haul would be generated during the approximately 20-year development period. The Grading Plan identifies local sources to use the clean fill removed from the site.

¹⁵ The proposed VAWTs are scheduled to be installed during Phase 3 (between years 2021-2025). It is possible that in 10 to 15 years, technology will change, and there may be a different type of wind turbine considered for the site.

PROPOSED SUSTAINABILITY PLAN

The proposed Sustainability Plan documents the guiding principles of the Proposed Project and presents the sponsor's long-term vision for the Parkmerced site. The plan identifies the framework, strategies, and mechanisms to implement the environmental sustainability goals of the development. The Sustainability Plan focuses on seven key areas:

- Site Design and Land Use;
- Transportation;
- Landscape and Native Biodiversity;
- Water and Wastewater;
- Energy Use;
- Materials; and
- Solid Waste.

The Sustainability Plan would provide the foundation for the Proposed Project's land use plan. The principal land use goals of the Proposed Project are to reduce per capita automobile use by better integrating residential and neighborhood-serving retail and office uses; to maximize opportunities to use pedestrian and bicycle pathways; to establish pedestrian-oriented nodes for the location of neighborhood services and amenities, open space, and community services; and to incorporate environmental factors such as sun, shade, and wind into the design and housing materials throughout the Project Site. In addition, the Sustainability Plan would provide the framework to:

- Preserve, create, and restore ecological diversity through the use of native plant species and the inclusion of habitat areas for local native plants and animals. To reduce the biomass imported to and from the site, fruits and vegetables would be grown in the community gardens and organic farm for the residents and businesses of Parkmerced.
- Incorporate water conservation practices, as well as wastewater and stormwater treatment strategies that would collect water in on-site retention basins and stormwater runoff infiltration, reconnecting the site to the Lake Merced watershed.
- Incorporate high-efficiency conservation measures that reduce the per capita water demand and specify the use of non-potable water supplies to meet a portion of non-potable demand. The Sustainability Plan would encourage all plantings to be drought-tolerant species in order to reduce the irrigation demand.
- Incorporate renewable energy sources to help meet a portion of the Proposed Project's energy demand.
- Incorporate green building technologies, with the goal of obtaining U.S. Green Building Council's Leadership in Energy and Environmental Design (LEED) gold certification for neighborhood development (ND) or an equivalent standard. The building materials chosen for the Proposed Project's construction would minimize the use of toxic materials and have high recycled content and renewable, reusable resources. Construction

techniques would be intended to reduce carbon emissions and minimize the waste of materials.

Many of the implementing features of the Sustainability Plan are discussed earlier in this chapter: renewable energy sources, such as wind turbines and photovoltaic cells (pp. III.52-III.53); cogeneration (pp. III.51-III.52); transit and transportation infrastructure improvements to better serve the Project Area (pp. III.29-III.37); on-site neighborhood-serving retail and a TDM program to further encourage transit ridership and reduce automobile dependence (pp. III.37-III.38, respectively); water conservation practices (pp. III.47-III.48); and wastewater and stormwater treatment strategies (pp. III.48-III.51).

E. PROJECT PHASING AND CONSTRUCTION

Proposed Project construction is anticipated to begin around 2010. The construction duration would be phased over an approximately 20-year period, with the completion of development expected to occur in 2030. The proposed development is expected to involve four major phases, estimated to begin around 2010 and conclude by 2030, as shown in Figure III.19: Proposed Phase 1 Plan, Figure III.20: Proposed Phase 2 Plan, Figure III.21: Proposed Phase 3 Plan, and Figure III.22: Proposed Phase 4 Plan. Tree removal is also anticipated to occur in phases. Tree removal phases are shown in Figure III.23: Proposed Phased Tree Removal Plan.

Proposed Phasing Plans are estimates and are described generally below. To ensure existing residents would not be required to move off site at any point during the Proposed Project's construction period, construction of new residential units would be phased so that the new units would be available before existing apartments are demolished. This would allow existing residents to relocate into these units. Transportation, infrastructure, and landscaping improvements would occur in tandem as the respective areas are developed, in general accordance with the phasing schedule, as follows:¹⁶

- **Phase 1 (2010-2015):** Phase 1 would begin with construction of 356 new residential units located in low- to mid-rise buildings and towers in western portion of the Project Site. Construction of these new residential buildings could be accomplished without demolition of any existing residences, and would allow for existing residents to relocate to new units prior to the demolition of their existing unit. After these new residences have been constructed, and existing residents have been relocated to new units during the initial Phase 1 period (rented at the same rent-controlled rate as the resident's existing apartment prior to demolition and also subject to the protections against rent increases of the San Francisco Rent Control Ordinance), demolition of 327 existing residential units and construction of 1,855 additional new residential units would occur. (A total of

¹⁶ The Project Sponsor expects the phasing of the Proposed Project to occur over 20 years. However, full development would extend past 20 years, depending on market conditions. The Development Agreement would therefore likely have a term that covers a 30-year period.



SOURCE: SOM, Turnstone Consulting

--- PROJECT BOUNDARY

■ PHASE 1 CONSTRUCTION AND LANDSCAPING

PARKMERCED PROJECT

FIGURE III.19: PROPOSED PHASE I PLAN
III.55



SOURCE: SOM, Turnstone Consulting

--- PROJECT BOUNDARY

■ PHASE 2 CONSTRUCTION AND LANDSCAPING

PARKMERCED PROJECT

FIGURE III.20: PROPOSED PHASE 2 PLAN
III.57



SOURCE: SOM, Turnstone Consulting

PARKMERCED PROJECT

- PROJECT BOUNDARY
- PHASE 3 CONSTRUCTION AND LANDSCAPING
- WIND TURBINES

FIGURE III.21: PROPOSED PHASE 3 PLAN III.59



HARDING PARK GOLF COURSE

SAN FRANCISCO STATE UNIVERSITY

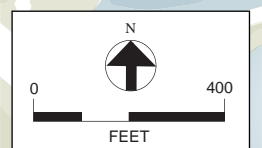
LAKE MERCED

SAN FRANCISCO GOLF CLUB

MERCED HEIGHTS PLAYGROUND

BROOKS PARK

BROTHERHOOD CHESTER MINI-PARK



SOURCE: SOM, Turnstone Consulting

--- PROJECT BOUNDARY
 ■ PHASE 4 CONSTRUCTION AND LANDSCAPING

PARKMERCED PROJECT

FIGURE III.22: PROPOSED PHASE 4 PLAN III.61



SOURCE: SOM, Turnstone Consulting

PARKMERCED PROJECT

- ▬ PHASE 1
- ▬ PHASE 2
- ▬ PHASE 3
- ▬ PHASE 4
- 🌳 -EXISTING TREES TO REMAIN
- -EXISTING TREES TO RELOCATE
- EXISTING TREES TO REMOVE

FIGURE III.23: PROPOSED PHASED TREE REMOVAL PLAN

2,211 new residential units would be constructed during Phase 1.) These new residential units would be constructed in low- to mid-rise buildings and a tower in the north-central area of the Project Site, as well as in towers and low-rise buildings in the southeasternmost corner of the Project Site. Phase 1 would also include construction of 45,000 gsf of retail and 26,834 gsf of office space, primarily adjacent to the proposed tower in the north-central portion of the Project Site. Grading during Phase 1 would require about 401,750 cubic yards of cut and about 129,600 cubic yards of fill. During this phase, the TDM program would be established (such as the shuttle to Daly City BART and the parking management programs), and new access points to Lake Merced Boulevard would be constructed.

- **Phase 2 (2016-2020):** Phase 2 would focus on construction activities primarily in the east and northeast portions of the Project Site. Much of the planned retail and office space would be constructed during this phase. Phase 2 would involve the demolition of 486 existing units, construction of 1,570 new residential units, and construction of new retail (144,000 gsf) and office space (53,166 gsf). The central collection pond and proposed on-site stormwater system (bioswales, streams, wetland ponds) would also be constructed. Phase 2 also includes the 25,000-gsf Pre K-5 school and day care facility, and the organic farm in the west-central and southern portions of the site. Grading during Phase 2 would require about 119,450 cubic yards of cut and about 201,300 cubic yards of fill. It is anticipated that the Muni M Ocean View light rail line would be realigned into the site, the new light rail stations would be constructed, and additional transit-supportive TDM measures would be implemented. These modifications to the Muni light rail line could occur at a later phase, however. Additionally, the existing vehicular access at Chumasero Drive would be reconfigured.
- **Phase 3 (2021-2025):** Phase 3 would focus on construction activities primarily in the west-central and southern portions of the Project Site. During Phase 3, 503 existing residential units would be demolished and 1,962 new residential units would be constructed. This phase would also include construction of the 64,000-gsf fitness center and adjacent athletic playing fields in the southern portion of the Project Site, just north of Brotherhood Way, as well as 41,000 gsf of retail space. In addition, the 51 “Windside” vertical axis wind turbines would be installed along the western perimeter of the site during this phase. Grading during Phase 3 would require about 230,150 cubic yards of cut and about 349,100 cubic yards of fill. This phase would also include the establishment of the new left-turn access into the Project Site from 19th Avenue at Crespi Drive and at Font Boulevard, and the full implementation of the TDM measures.
- **Phase 4 (2026-2030):** The final phase, Phase 4, would focus on construction activities primarily in the western half of the Project Site, except for new tower construction in the southeast corner of the site. Phase 4 would demolish 222 existing residential units and would construct 1,474 new residential units. A new outdoor recreational area, including picnic and walking paths, would be provided in the southwesternmost corner of the site. Grading during Phase 4 would require about 430,500 cubic yards of cut and about 58,600 cubic yards of fill.

F. INTENDED USES OF THE EIR

This document is a project-level EIR. The Planning Department will distribute the Draft EIR to state agencies through the State Clearinghouse, to local agencies, and to interested members of the public. Following publication of the Draft EIR, there will be a minimum 45-day public comment period and a public hearing before the Planning Commission to solicit public comment on the adequacy and accuracy of the Draft EIR. At the close of the comment period, the Planning Department will prepare responses to written and oral comments and will publish these in a Draft Comments and Responses document. The Planning Department will then revise the EIR as appropriate and present it to the Planning Commission for certification as to its accuracy, objectivity, and completeness. No approvals or permits may be issued before the City certifies the EIR as final.

Project Approvals

Following certification of the Final EIR, approvals would be required. These approvals include, but are not limited to, the following:

Approvals required prior to the construction of the first phase of the project:

- Determination as to whether the proposal is consistent with the Local Coastal Program and approval of a Coastal Zone Permit under Section 330 *et seq.* of the Planning Code (Zoning Administrator);
- Review and approval of an ordinance adopting a Development Agreement (under Chapter 56 of the Administrative Code) (Planning Commission review and Board of Supervisors approval);
- Approval of amendments to the Planning Code Height and Bulk Maps and the *General Plan* Urban Design Element height map to allocate a lesser number of units than permitted under existing zoning, and in additional three- to six-story buildings, to allow for a limited number of new mid-rise and tower buildings (Board of Supervisors);
- Approvals to vacate existing streets and accept dedication of new streets under Section 787 of the Public Works Code (Board of Supervisors);
- Approval of a subdivision map (Department of Public Works);
- Review and approval of an ordinance adopting a new Parkmerced SUD including a new overlay of uses within the district applicable to the site or the creation of a new chapter of the Planning Code entitles the Parkmerced District, setting forth heights, bulk, density and uses (under Section 302 of the Planning Code) (Planning Commission review and Board of Supervisors approval).
- Approval of amendments to the Planning Code Height and Bulk Maps and the *General Plan* Urban Design Element height map to allocate a lesser number of units than permitted under existing zoning in additional three- to six-story buildings along with a limited number of new mid-rise and tower buildings (Board of Supervisors);

Approvals required prior to the construction of the individual infrastructure components listed below, which are anticipated to occur in the second, third, and fourth phases of the project:

- Approval of the proposed realignment of the Muni M Ocean View rail line through Parkmerced (Executive Director and Board of Directors of the Municipal Transit Authority [MTA] (which includes both the Department of Parking and Traffic [DPT] and Muni), and California PUC);
- Approval of the proposed improvements to 19th Avenue (installation of new left-turn lanes and landscaping in the median areas currently occupied by the Muni rail tracks) (California Department of Transportation [Caltrans] District 4);
- Review of the proposed improvements to Brotherhood Way and other City streets and approval of those improvements (MTA review; and Department of Public Works, Planning Department, and Board of Supervisors approval);
- Coordination of all roadway and transit changes through the SFMTA and the Transportation Advisory Staff Committee (TASC);
- Issuance of an incidental take permit, if necessary, pursuant to Section 2081 of the California Endangered Species Act for operation of 51 wind turbines (California Department of Fish and Game);
- Issuance of a Section 404 Permit pursuant to the Clean Water Act for construction of an on-site stormwater filtration system and discharge of the filtered water to Lake Merced (U. S. Army Corps of Engineers). Other approvals may be required from the San Francisco Public Utilities Commission and/or the Regional Water Quality Control Board for the release of filtered stormwater into Lake Merced;
- Approvals to vacate existing streets and accept dedication of new streets under Section 787 of the Public Works Code (Board of Supervisors).

IV. PLANS AND POLICIES

For informational purposes, this section provides a summary of the relevant plans and policies of the City and County of San Francisco (City), and the regional, state, and federal agencies that have policy and regulatory control over the Project Site, and assesses the Proposed Project's potential for conflicts with these plans and policies.

A. SAN FRANCISCO PLANS AND POLICIES

PRIORITY POLICIES

In November 1986, the voters of San Francisco approved Proposition M, the Accountable Planning Initiative, which added Section 101.1 to the City Planning Code to establish eight Priority Policies. These policies are: (1) preservation and enhancement of neighborhood-serving retail uses and future opportunities for resident employment in and ownership of such businesses; (2) conservation and protection of existing housing and neighborhood character to preserve the cultural and economic diversity of neighborhoods; (3) preservation and enhancement of affordable housing; (4) discouragement of commuter automobiles that impede MUNI transit service or that overburden streets or neighborhood parking; (5) protection of industrial and service land uses from commercial office development and enhancement of resident employment and business ownership; (6) maximization of earthquake preparedness; (7) landmark and historic building preservation; and (8) protection of parks and open space and their access to sunlight and vistas.

For purposes of this EIR, the Proposed Project was reviewed against the Priority Policies and no inconsistencies were identified.¹ Specifically, the Proposed Project would conserve an existing 1,683 apartments located in 11 tower buildings at Parkmerced, and seeks to preserve the cultural and economic diversity of Parkmerced by protecting existing residents from displacement, by constructing new, permanently affordable Below Market Rate (BMR) units, and by phasing the construction of new buildings over 20 years.² The Proposed Project would provide existing residents the opportunity to move to a new apartment prior to demolition of their existing unit. That new unit would be rented at the same rent-controlled rate as the resident's existing unit prior to demolition (and also subject to the protections against rent increases as described in the San

¹ The Parkmerced Site (nor any of its constituent spaces or structures) is not currently included in any federal, state, or local register of Historical Resources, including Article 10 of the San Francisco Planning Code.

² The Project Sponsor expects the phasing of the Proposed Project to occur over 20 years, but the full development could extend for a longer period. Consequently, the Development Agreement would likely cover a 30-year projected buildout.

Francisco Rent Control Ordinance). In addition, the Project Site's existing buildings were constructed prior to the enactment of the City's Inclusionary Affordable Housing Ordinance and, as such, Parkmerced currently does not include any BMR for-sale or rental units. The Proposed Project would comply with the City's Inclusionary Affordable Housing Ordinance (or a variation of those requirements as required by the proposed Development Agreement) and thus would produce a substantial number of new BMR units. Rent-controlled units would be rented to households of any income level. (BMR units differ from rent-controlled units in that only those households that meet specific income limitations are permitted to rent or purchase BMR units.)

The Project Site currently does not contain any buildings designated as landmarks, nor are there any individually identified as significant historic buildings. The Historic Resources Evaluation Report (HRER) prepared by the Planning Department identifies Parkmerced as a potential historic district. Demolition of all two-story garden apartment buildings and removal of the interior landscaping on the Project Site would alter the existing architectural character of the site, impairing the characteristics of the historic resource that justify its inclusion in the California Register of Historical Resources. All of the 13-story towers would be retained, and the major axial layout would remain intact. However, the integrity of design, setting, materials, workmanship, feeling, and association would not remain with implementation of the Proposed Project. The architecture of the existing buildings at Parkmerced is not identified by the HRER as historically significant.

The case report and approval motions for the Proposed Project presented to the Planning Commission for consideration in acting on the Proposed Project will contain the Planning Department's comprehensive project analysis and findings regarding consistency of the Proposed Project with the Priority Policies.

SAN FRANCISCO GENERAL PLAN

The *San Francisco General Plan*³ (*General Plan*) is the embodiment of the City's vision for the future of San Francisco. It is comprised of a series of ten elements, each of which deals with a particular topic that applies Citywide: Air Quality, Arts, Commerce and Industry, Community Facilities, Community Safety, Environmental Protection, Housing, Recreation and Open Space, Transportation, and Urban Design Elements. Development in the City is subject to the *General Plan*. The *General Plan* provides general policies and objectives to guide land-use decisions and contains some policies that relate to physical environmental issues. The Planning Department, the Zoning Administrator, the Planning Commission, the Board of Supervisors, and other City decision-makers will evaluate the Proposed Project in accordance with provisions of the *General Plan*, and will consider potential conflicts as part of the decision-making process. This

³ San Francisco Planning Department, *San Francisco General Plan*, http://www.sfgov.org/site/planning_index.asp?id=41423, accessed November 22, 2009.

consideration of *General Plan* objectives and policies is carried out independent of the environmental review process, as part of the decision to approve, modify, or disapprove a proposed project. Potential conflicts with provisions of the *General Plan* that would cause physical environmental impacts have been evaluated as part of the impacts analysis carried out for relevant, specific topics in the project EIR. Any potential conflicts with *General Plan* objectives and policies not identified in the EIR could be considered in the project evaluation process and would not alter the physical environmental effects of the Proposed Project. The Proposed Project will be reviewed by the Planning Commission in the context of all applicable objectives and policies of the *San Francisco General Plan*.

The Proposed Project is inconsistent with the *General Plan* Urban Design Element Height Map (Map 4). Amendments to the Urban Design Element Height Map would be necessary to implement the proposed project, as discussed below.

Urban Design Element Height Map (Map 4)

Existing

The *General Plan* Urban Design Element Height Map (Map 4) identifies two separate maximum building height areas on the Project Site. Maximum building heights of 89 to 160 feet are identified for the northwestern and southeast corners of the Project Site. A 40-foot maximum building height is identified for the remaining portions of the site.

Proposed

The Proposed Project includes an amendment to the *General Plan* Urban Design Element Height Map (Map 4) to adopt a proposed Special Use District (SUD) that would apply to the Project Site. The proposed SUD includes an amendment to both the Planning Code Height and Bulk Maps (see discussion on pp. IV.4- IV.5) and the *General Plan* Urban Design Element Height Map, to provide an overlay for the entire site. This overlay would be adopted as part of the proposed SUD. It would allow for more three- and six-story buildings to be constructed on the Project Site than would be possible under current Urban Design Element Height Map requirements. It would also allow for a limited number of new mid-rise buildings and towers. The overlay would designate specific locations for new buildings taller than six stories. Rather than designate the exact location of all proposed buildings less than six stories in height, the proposed overlay would impose a base height limit within certain districts, and then permit a certain percentage of the land area within that district to be improved with buildings that exceed the base height limit. It would also specify allowed uses in the SUD overlay area.

With adoption of the proposed SUD, the Proposed Project would be consistent with the *General Plan* Urban Design Element Height Map. Physical impacts related to development under the

proposed SUD are addressed in relevant sections of Chapter V, Environmental Setting and Impacts, of this EIR.

B. SAN FRANCISCO PLANNING CODE

The San Francisco *Planning Code* (Planning Code), which incorporates by reference the City's Zoning Maps, implements the *General Plan* and governs permitted uses, densities, and configuration of buildings within the City. 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 included as part of the project.

The Proposed Project is inconsistent with existing Planning Code height and bulk controls and, as noted above on p. IV.3, the *General Plan* Urban Design Element Height Map. Amendments to the Planning Code, Zoning Map, and the existing height and bulk districts and an overlay of land uses as set forth in the SUD would be necessary to implement the Proposed Project, as discussed below.

HEIGHT AND BULK DISTRICTS

Existing

The Project Site is located in the RM-4 (Residential, Mixed Districts, High Density), RM-1 (Residential, Mixed Districts, Low Density), and RH-1D (Residential, House Districts, One-Family Detached Dwellings) zoning districts in the San Francisco Planning Code Zoning Map. According to Section 105 of the Planning Code, the Project Site is within the 130-D and 40-X height and bulk districts, with the high-rise towers in the 130-D districts and the remainder of the site in the 40-X districts.

Proposed

As discussed above, under proposed changes to the *General Plan* Urban Design Element Height Map, the Proposed Project also includes an amendment to the Planning Code to adopt a proposed SUD that would apply to the Project Site. The proposed SUD includes an amendment to both the Planning Code Height and Bulk Maps and, as noted above on p. IV.3, the *General Plan* Urban Design Element Height Map, to provide an overlay for the entire site. This overlay would be adopted as part of the proposed SUD and would allow for more three- and six-story buildings, as well as a limited number of new buildings taller than six stories (up to 145 feet tall) to be constructed on the Project Site than would be possible under current Height and Bulk requirements. The overlay would designate specific locations for new buildings taller than six stories. Rather than designate the exact location of all proposed buildings less than six stories in

height, the proposed overlay would impose a base height limit within certain districts, and then permit a certain percentage of the land area within that district to be improved with buildings that exceed the base height limit.

With adoption of the proposed SUD, consistency issues in the Planning Code would be resolved. Physical impacts related to development under the proposed SUD are addressed in relevant sections of Chapter V, Environmental Setting and Impacts, of this EIR.

C. OTHER LOCAL PLANS AND POLICIES

Other local plans and policies reviewed for consistency with the Proposed Project were the *San Francisco Sustainability Plan*, the *Climate Action Plan*, the San Francisco Transit First Policy, the Transit Effectiveness Project,⁴ the *San Francisco Bicycle Plan*, and the *San Francisco Better Streets Plan*⁵. The *Climate Action Plan* is discussed in Section V.H, Greenhouse Gases. The San Francisco Transit First Policy and Transit Effectiveness Program are addressed in Section V.E, Transportation and Circulation. The Proposed Project was evaluated in the context of the *Climate Action Plan* and the City's Transit First Policy and Transit Effectiveness Program, and no inconsistencies were identified. The *San Francisco Sustainability Plan* is discussed below.

SAN FRANCISCO SUSTAINABILITY PLAN

In 1993, the San Francisco Board of Supervisors established the Commission on San Francisco's Environment, charged with, among other things, drafting and implementing a plan for San Francisco's long-term environmental sustainability. The goal of the *San Francisco Sustainability Plan* is to enable the City and its people to meet their present needs without sacrificing the ability of future generations to meet their own needs.

The *San Francisco Sustainability Plan* is divided into 15 topic areas, 10 that address specific environmental issues (air quality; biodiversity; energy, climate change and ozone depletion; food and agriculture; hazardous materials; human health; parks, open spaces, and streetscapes; solid waste; transportation; and water and wastewater), and 5 that are broader in scope and cover many issues (economy and economic development, environmental justice, municipal expenditures, public information and education, and risk management).

⁴ Recommendations of the Transit Effectiveness Project were endorsed for the purposes of environmental review by the SFMTA Board on October 21, 2008. Some recommendations of the TEP have also been approved and implemented as part of the ongoing fiscal emergency declared by the SFMTA. Environmental assessment is ongoing.

⁵ The *San Francisco Better Streets Plan*, June 2008, is a draft document. The City of San Francisco is currently holding public discussions and informational hearings on the Plan.

Although the *San Francisco Sustainability Plan* became official City policy in July 1997, the Board of Supervisors has not committed the City to perform all of the actions addressed in the plan. The *San Francisco Sustainability Plan* serves as a blueprint, with many of its individual proposals requiring further development and public comment.

The Proposed Project was reviewed against the goals and issues addressed in the *San Francisco Sustainability Plan* and no inconsistencies were found.

SAN FRANCISCO GREEN BUILDING ORDINANCE

The San Francisco Building Code was amended in 2008 to add Chapter 13C, Green Building Requirements. The new requirements mandate that newly constructed private residential and commercial buildings include energy- and water-efficiency features during construction and operation. The stated purpose of the chapter is “to promote the health, safety and welfare of San Francisco residents, workers, and visitors by minimizing the use and waste of energy, water and other resources in the construction and operation of the City and County of San Francisco’s building stock and by providing a healthy indoor environment.” The California Building Standards Commission recently adopted a green building code as part of the California Building Code (Title 24 of the California Code of Regulations, part 6); these provisions of the state code will become effective on January 1, 2011. Local jurisdictions are allowed to adopt or continue to use their own green building ordinances as long as they are as or more stringent than those adopted by the State.

The San Francisco Green Building Requirements establish either Leadership in Energy and Environmental Design (LEED) certification levels or GreenPoint Rated⁶ (GPR) systems points for types of residential and commercial buildings; the requirements are summarized here. High-rise commercial buildings must achieve a LEED Silver rating beginning with building permit applications submitted after January 1, 2009; high-rise residential buildings must achieve LEED Silver after January 1, 2010.⁷ Mid-sized office and retail buildings⁸ have been required to meet LEED standards for building energy systems and water-efficient landscaping since January 1, 2009, and will be required to show a reduction in the use of potable water by 30 percent as of January 1, 2011. By January 1, 2012, applicants for mid-sized commercial buildings will be required to show the use of renewable on-site energy or to purchase green energy credits.

⁶ GreenPoint Rated is a program of Build it Green established for evaluating residential building performance in the areas of resource conservation, indoor air quality, water conservation, energy efficiency and livable communities (infill development, density, diversity). From “GreenPoint Rated” at <http://www.builditgreen.org/greenpoint-rated/> accessed on February 2, 2010.

⁷ High-rise buildings are defined in the California and San Francisco Building Codes as buildings with an occupied floor above 75 feet.

⁸ Mid-sized office and retail buildings are defined as those between 5,000 and 25,000 gross square feet that are not high-rise buildings.

Applicants for building permits for mid-sized residential buildings⁹ must be GreenPoint rated and demonstrate that a minimum of 75 GreenPoints will be achieved as of January 1, 2011; and for small residential buildings with four or fewer units, this standard applies after January 1, 2012.

The Proposed Project would include strategies intended to achieve Gold certification for neighborhood development (ND) or equivalent standard under the forthcoming Neighborhood Development program of the U.S. Green Building Council's Leadership in Energy and Environmental Design (LEED-ND) rating system. The building materials chosen for the Proposed Project's construction would minimize the use of toxic materials and have high recycled content and renewable, reusable resources. Construction techniques would be intended to reduce carbon emissions and minimize the waste of materials. Buildings constructed as part of the Proposed Project would be required to meet the standards in the City's Green Building Ordinance and no potential conflicts would occur.

D. REGIONAL PLANS AND POLICIES

The four principal regional planning agencies and their policy plans that guide planning for the Proposed Project and the nine-county Bay Area are (1) the Bay Area Air Quality Management District's *Clean Air Plan* and *Bay Area 2005 Ozone Strategy*; (2) the Metropolitan Transportation Commission's *Transportation 2035 Plan for the San Francisco Bay Area*, (3) the San Francisco Regional Water Quality Control Board's (RWQCB) *San Francisco Basin Plan*; and (4) the California Coastal Act.

The Proposed Project was reviewed against the Bay Area Air Quality Management District's *Clean Air Plan* and *Bay Area 2005 Ozone Strategy* and there were no potential conflicts. Physical impacts of the Proposed Project related to air quality and compliance with these plans are addressed in Section V.G, Air Quality.

The Proposed Project was reviewed in the context of the Metropolitan Transportation Commission's *Transportation 2035 Plan for the San Francisco Bay Area* and no inconsistencies were found. The physical impacts of the Proposed Project's relating to transportation are discussed in Section V.E, Transportation and Circulation.

The stormwater discharge, wastewater management, drainage plan, and water quality control systems incorporated into the Proposed Project were reviewed in the context of the *San Francisco Basin Plan* and no potential conflicts were identified. The physical impacts of implementing these systems and permitting requirements of the RWQCB are discussed in Sections V.M, Biological Resources, and V.O, Hydrology and Water Quality.

⁹ Mid-sized residential buildings are defined in Chapter 13C of the San Francisco Building Code as those with five or more units that do not fit the Building Code definition of a high-rise.

V. ENVIRONMENTAL SETTING AND IMPACTS

This chapter is organized by environmental topic and addresses potential environmental impacts on the following topics: Land Use; Aesthetics; Population and Housing; Cultural Resources; Transportation and Circulation; Noise; Air Quality; Wind and Shadow; Recreation; Utilities and Services Systems; Public Services; Biological Resources; Geology and Soils; Hydrology and Water Quality; Hazards; Mineral and Energy Resources; and Agricultural Resources. In each of these environmental sections, existing conditions in the Project Site vicinity are described first, under the heading “Setting.” These existing conditions serve as the baseline for analysis of potential environmental impacts of the Proposed Project, under the heading “Impacts,” including project-specific and program-level impacts that would result from implementation of the Proposed Project, including the proposed Special Use District, which consists of Planning Code and Zoning Map amendments.

Cumulative impacts from the Proposed Project and the proposed Special Use District are analyzed for each environmental topic when appropriate. Except where noted, the following reasonably foreseeable development proposals under consideration in the Project Site vicinity are included in the cumulative impacts analyses: 800 Brotherhood Way; 77-111 Cambon Drive; 700 Font Boulevard; 445 Wawona Street (the Arden Wood site); the *2007-2020 San Francisco State University Campus Master Plan (SFSUCMP)*; Stonestown Galleria; and 1150 Ocean Avenue, which is within the *Balboa Park Station Area Plan*. While only three of these development proposals have current entitlements (800 Brotherhood Way, SFSUCMP, and 1150 Ocean Avenue), it is reasonable to assume that the four other development sites will likely file development applications by 2030. Therefore, these “pipeline” projects are considered reasonably foreseeable cumulative development projects for the purposes of this EIR.

Mitigation measures are identified to avoid, eliminate, or reduce significant adverse impacts of the Proposed Project. For some less-than-significant project impacts, improvement measures are identified that would further reduce the effects of those less than significant. The Project Sponsor has agreed to implement all the mitigation measures and improvement measures identified in this EIR. Although not required by the California Environmental Quality Act (CEQA), the City decisionmakers, including the Planning Commission, may consider imposing such additional improvement measures as conditions of approval on the Proposed Project, where appropriate.

A. LAND USE

This section examines the effects of the Proposed Project and the proposed Special Use District related to Land Use. The Setting discussion describes the existing land uses in the Project Site vicinity. Nearby land uses in the vicinity are described first, followed by land uses adjacent to the Project Site. The Impacts discussion identifies significance criteria for land use impacts and discusses the changes in land use that would occur if the Proposed Project and the proposed Special Use District are implemented. Finally, cumulative effects of the Proposed Project and other reasonably foreseeable development projects are discussed. Land use is discussed at a detailed, project-specific level for the Proposed Project and at a more general program level for the proposed Special Use District.

SETTING

EXISTING NEARBY AND ADJACENT USES

The Project Site is approximately 1 mile east of the Pacific Ocean and approximately 0.5 mile north of the border between San Francisco County and San Mateo County. The vicinity of the Project Site is characterized by a mix of residential, commercial, and institutional uses, public and private open space and recreation facilities, and major transportation corridors (see Figure III.1: Proposed Project Location, in Chapter III, Project Description, p. III.5).

Existing Nearby Uses

Nearby land uses in the Project Site vicinity include San Francisco State University (SFSU), religious institutions along Brotherhood Way, the San Francisco Golf Club, the Olympic Country Club, Fort Funston, the San Francisco Zoo, Stern Grove, Lowell High School, the Stonestown Galleria, and low-density residential development on either side of 19th Avenue.

On the south side of Brotherhood Way, there are several institutional and religious facilities, including St. Thomas More Catholic Church, St. Thomas More School, the Alma Via assisted living community, Brandeis Hillel Day School, Congregation Beth Israel-Judea, the Jewish Community Center of San Francisco Brotherhood Way Preschool, the Calvary Armenian Congregational Church, the Lake Merced Church of Christ, Brotherhood Masonic Temple, the KZV Armenian School, San Francisco Lodge No. 120 of the Free and Accepted Masons, and Holy Trinity Greek Orthodox Church. The private 18-hole San Francisco Golf Club, located

adjacent to and south of these institutional and religious facilities, straddles the border between San Francisco County and San Mateo County.¹

The private Olympic Country Club is south of Lake Merced and Fort Funston and also straddles the border between San Francisco County and San Mateo County. The Olympic Country Club consists of three separate courses: the 9-hole Cliffs Course, the 18-hole Lake Course, and the 18-hole Ocean Course.²

Fort Funston, which is part of the Golden Gate National Recreation Area, is a 1-mile stretch of coastal headlands and sand dunes west of Lake Merced. It is north of the Olympic Country Club and south of the San Francisco Zoo. Fort Funston includes hiking trails, a pre-World War II gun emplacement called Battery Davis, and a launch and landing site for hang gliders.³

The San Francisco Zoo, which is northwest of Lake Merced, is a 100-acre facility bounded by Sloat Boulevard on the north, the Great Highway on the west and the south, and State Route 35/Skyline Boulevard on the east. It is managed by the non-profit San Francisco Zoological Society in partnership with the City and County of San Francisco and attracts approximately 925,000 visitors a year.⁴

Stern Grove is an approximately 33-acre park at the northeast corner of 19th Avenue and Sloat Boulevard that includes meadows, walkways, and an outdoor amphitheater. Since 1938, the Stern Grove Festival has presented admission-free dance, music, and theater performances during the summer.⁵ Stern Grove abuts Larsen Park to the north and Pine Lake Park to the west. Parkside Square is adjacent to and north of Pine Lake Park. Together, these four parks form a contiguous area of parkland on the north side of Sloat Boulevard that stretches from 19th Avenue to 34th Avenue.

Lowell High School, located on the south side of Eucalyptus Drive at Forest View Drive, is northeast of Lake Merced. The campus includes two- and three-story buildings and various athletic playing fields and facilities. Lowell High School abuts Lakeshore Elementary School to

¹ List of San Francisco golf courses from *Golf Magazine* website, <http://search.golf.com/golf-courses/us/CA/San-Francisco.html>, accessed September 15, 2009 (hereinafter referred to as “*Golf Magazine* list”).

² *Golf Magazine* list.

³ Golden Gate National Parks Conservancy website, <http://www.parksconservancy.org/visit/park-sites/fort-funston.html>, accessed September 15, 2009.

⁴ San Francisco Zoo website, <http://www.sfzoo.org/openrosters/ViewOrgPageLink.asp?LinkKey=14092&orgkey=1903>, accessed September 15, 2009.

⁵ Stern Grove Festival website, <http://www.sterngrove.org/index.html>, accessed September 15, 2009.

the west and Rolph Nicol Playground to the east. St. Stephen Catholic Parish and St. Stephen School are east of Rolph Nicol Playground.

The Stonestown Galleria, which is south of St. Stephen School, is on the west side of 19th Avenue between Eucalyptus Drive and Buckingham Way. This regional shopping center includes approximately 130 stores, various restaurants and a Trader Joe's grocery store, a two-screen movie theater, and parking for approximately 3,700 vehicles.⁶

In the Project Site vicinity, there are a number of residential districts on either side of 19th Avenue. The Lakeshore District is generally the area bounded by Junipero Serra Boulevard on the east, the San Francisco county line on the south, the Pacific Ocean on the west, and Wawona Street on the north. The Lakeshore District includes the Parkmerced, Stonestown, and Merced Manor neighborhoods, as well as Lake Merced, SFSU, the San Francisco Zoo, the Stonestown Galleria, Pine Lake Park, and Stern Grove. The Parkmerced neighborhood includes the Project Site, and the Stonestown neighborhood includes the Stonestown Galleria shopping center, low-rise and mid-rise office and retail buildings north of the shopping center, and high-rise residential buildings west and south of the shopping center. Merced Manor, which is the area bounded by 19th Avenue on the east, Eucalyptus Drive on the south, State Route 35/Skyline Boulevard on the west, and Sloat Boulevard on the north, is characterized by detached single-family homes that consist of one or two stories above a garage. Merced Manor includes Lakeshore Plaza, a neighborhood-serving shopping center on the south side of Sloat Boulevard between Clearfield Drive and Everglade Drive.

The Parkside District, approximately 1 mile north of the Project Site, is generally the area bounded by 14th Avenue on the east, Wawona Street on the south, the Pacific Ocean on the west, and Rivera Street on the north. The Parkside District is characterized by detached single-family homes that consist of one or two stories above a garage. Neighborhood-serving retail uses are concentrated along Taraval Street from 14th Avenue to 36th Avenue. Other land uses in the Parkside District include Lincoln High School, McCoppin Square, South Sunset Playground, Larsen Park, and Parkside Square.

The West of Twin Peaks District, approximately 1 mile northeast of the Project Site, is generally the area bounded by Junipero Serra Boulevard and 14th Avenue on the west, Ortega Street, Laguna Honda Boulevard, and Woodside Avenue on the north, O'Shaughnessy Boulevard, Melrose Avenue, and Phelan Avenue on the east, and Ocean Avenue on the south. This district includes the Balboa Terrace, Forest Hill, Miraloma Park, St. Francis Wood, Sunnyside, West

⁶ General Growth Properties website, <http://www.ggp.com/Properties/MallDirectory.aspx?smuid=725>, accessed September 15, 2009.

Portal, and Westwood Park neighborhoods. All of these neighborhoods are characterized by detached single-family homes. Neighborhood-serving retail uses are concentrated along West Portal Avenue between the West Portal Muni station and 15th Avenue and along Ocean Avenue between Phelan Avenue and Lakewood Avenue. Other land uses in the West of Twin Peaks District include Aptos Playground, the Balboa Reservoir, Mt. Davidson Park, Miraloma Playground, and Sunnyside Playground.

There are several major transportation corridors in the Project Site vicinity. State Route 35/Skyline Boulevard is a two-lane highway that runs north-south along the west side of Lake Merced and connects San Francisco with the communities on the San Francisco Peninsula. State Route 1/19th Avenue is a six-lane roadway that runs north-south on the east side of the Project Site. Several Muni light rail or bus routes, including the 17 Parkmerced, 28 19th Avenue, 28L 19th Avenue Limited, and M Ocean View lines, use portions of State Route 1/19th Avenue near the Project Site. Interstate 280 runs north-south along the San Francisco Peninsula. After crossing the San Francisco County line approximately 0.5 mile south of the Project Site, Interstate 280 heads northeast toward its terminus near China Basin. The Daly City Bay Area Rapid Transit (BART) station is approximately 0.5 mile southeast of the Project Site.

Existing Adjacent Uses

Land uses adjacent to the Project Site include Lake Merced Park to the west, SFSU and the former School of the Arts to the north, residential development to the east, and undeveloped open space to the south.

Lake Merced Park, which is adjacent to and west of the Project Site, is a 614-acre park surrounding Lake Merced that offers active and passive recreation opportunities. There are trails for cycling, running, and walking, as well as three fishing piers, two picnic areas, and a boathouse. Lake Merced Park is also a popular destination for bird watching.⁷ The nine-hole Jack Fleming Golf Course and the 18-hole Harding Park Golf Course occupy the eastern portion of the park.⁸ Other uses along the western shore of the lake include the San Francisco Police Pistol Range and the Pacific Rod and Gun Club. The 721-unit Lakewood Apartments complex is west of the Pacific Rod and Gun Club.⁹

⁷ Lake Merced brochure, available on the San Francisco Recreation and Park Department website, http://www.parks.sfgov.org/wcm_recpark/Volunteer/Brochures/LakeMerced.pdf, accessed September 15, 2009.

⁸ San Francisco Public Utilities Commission website, http://sfwater.org/msc_main.cfm/MC_ID/20/MSC_ID/179, accessed September 15, 2009.

⁹ Lakewood Apartments website, <http://www.lakewoodatlakemerced.com>, accessed September 15, 2009.

SFSU is adjacent to and north of the Project Site. Founded in 1899, the school is part of the California State University system and offers undergraduate and graduate degrees in over 200 areas of specialization. The campus covers 144 acres and includes classroom and administration buildings, athletic facilities, open space, and on-site housing for over 2,300 students.¹⁰ In late 2007, the California State University Board of Trustees approved the *2007-2020 San Francisco State University Campus Master Plan* (SFSUCMP), which is a long-range plan for guiding the growth and development of the campus through 2020. The 2007-2020 SFSUCMP is discussed in more detail under “Proposed Development in the Project Site Vicinity,” p. V.A.7.

Near the southwest corner of SFSU, there is a roughly triangular 2.5-acre property on the north side of Font Boulevard that is owned by the San Francisco Unified School District. The single-story, 51,000-square-foot building on the site was previously occupied by the School of the Arts and is currently vacant.

The Ocean View District, which is adjacent to and east of the Project Site, is generally the area bounded by Junipero Serra Boulevard on the west, Ocean Avenue on the north, and Interstate 280 on the east and the south. The Ocean View District includes the Ingleside, Ingleside Terrace, Merced Heights, and Ocean View neighborhoods, all of which are characterized primarily by detached single-family homes. Multi-story, multi-unit residential buildings and neighborhood-serving retail uses are concentrated along Ocean Avenue between Phelan Avenue and Lakewood Avenue. The Ocean View District includes a number of parks and recreation facilities: Brooks Park, Brotherhood/Chester Mini-Park, Brotherhood/Head Mini-Park, Junipero Serra Playground, Lakeview/Ashton Mini-Park, Merced Heights Playground, Minnie and Lovie Ward Recreation Center, and Randolph/Bright Mini-Park. The main campus of the City College of San Francisco is east of the Ocean View District.

Brotherhood Way, which is a four-lane, east-west roadway with a landscaped median, borders the Project Site on the south. The land on the north side of Brotherhood Way slopes up to the south edge of the Project Site, with the difference in elevation ranging between 20 feet and 30 feet. Just west of Chumasero Drive, there is a level open space on the north side of Brotherhood Way that is under the jurisdiction of the San Francisco Department of Public Works. This open space (“Peace Park”) is landscaped with grass and several clusters of trees, and it features a 20-foot-high statue by sculptor Benjamin Bufano. To the north of this open space, there is a vacant development site (800 Brotherhood Way) that abuts the south edge of the Project Site.

¹⁰ San Francisco State University: Facts 2008/2009 Brochure, available on the San Francisco State University website, http://www.sfsu.edu/~puboff/sfsufact/archive/0809/files/SFSU_Facts_0809.pdf, accessed September 15, 2009.

PROPOSED DEVELOPMENT IN THE PROJECT SITE VICINITY

Several development proposals are under consideration in the Project Site vicinity. The major development proposals include future projects located at 800 Brotherhood Way; 77-111 Cambon Drive; 700 Font Boulevard; 445 Wawona Street (the Arden Wood site); the 2007-2020 SFSUCMP; Stonestown Galleria; and 1150 Ocean Avenue, which is within the *Balboa Park Station Area Plan*.¹¹ While only three of these development proposals have current entitlements (800 Brotherhood Way, SFSUCMP, and 1150 Ocean Avenue), it is reasonable to assume that the four other development sites will likely file development applications by 2030. Therefore, these “pipeline” projects are considered reasonably foreseeable cumulative development projects for the purposes of this EIR.

The 7.7-acre site at 800 Brotherhood Way is between the south edge of the Project Site and the open space on the north side of Brotherhood Way that is maintained by the Department of Public Works. The parcel is currently landlocked, but a new access road from the southeast corner of the parcel to Brotherhood Way would be installed as part of that project. The proposed project at 800 Brotherhood Way comprises the subdivision of the lot and the construction of 60 single-family homes and 61 two-unit buildings.¹² This project was entitled on May 19, 2005, but construction has not yet begun.¹³

The 2.8-acre triangular site at 77-111 Cambon Drive is adjacent to and east of the Parkmerced Project Site, on the west side of 19th Avenue. The proposed project at 77-111 Cambon Drive involves the demolition of two existing one-story commercial buildings and the construction of a mixed-use project ranging in height from two to four stories and containing approximately 200 dwelling units, 15,000 square feet of retail space, a fitness center and a club room, and

¹¹ Potential development sites near the Project Site vicinity within the southwest quadrant of San Francisco have been identified in Board of Supervisors Resolutions No. 457-08 and 458-08. Cumulative impacts as a result of development on these sites are further analyzed in the *19th Avenue Corridor Study*, February 12, 2010.

¹² San Francisco Planning Department, *800 Brotherhood Way Final Mitigated Negative Declaration*, May 19, 2005.

¹³ Minutes from the May 19, 2005 meeting of the San Francisco Planning Commission, available on the San Francisco Planning Department website, http://www.sfgov.org/site/planning_page.asp?id=32658, accessed October 15, 2009.

underground parking for 248 vehicles and 61 bicycles.¹⁴ An Initial Study and Notice of Preparation of an Environmental Impact Report have been prepared for this project.

The 2.5-acre site at 700 Font Boulevard, which is the former home of the School of the Arts, has been discussed as a potential site for a development project that could provide as many as 340 dwelling units. This is the assumed program for the site for purposes of the cumulative analysis in this EIR, although no formal applications have been filed.

The 12.2-acre site at 445 Wawona Street is partially developed with the 119,000-square-foot Arden Wood residential care facility. One potential development scenario proposed subdividing the site into two parcels of 4.6 acres and 7.6 acres. The Arden Wood residential care facility would remain on the 4.6-acre parcel while the 7.6-acre parcel would be developed with up to 142 dwelling units. No formal applications have been filed.

From 1989 through 2007, enrollment at SFSU was capped at 20,000 full-time equivalent students (FTE).¹⁵ In late 2007, the California State University Board of Trustees approved a proposal to increase enrollment to 25,000 FTE by 2020. The projected increase in enrollment and related increases in faculty and staff required the *1989 Campus Master Plan* to be updated. The 2007-2020 SFSUCMP proposes physical changes and improvements to the campus to address the increased enrollment. Some existing buildings and facilities would be upgraded and expanded, while others would be demolished and replaced. Some new buildings and facilities would be constructed. In total, these proposed physical improvements would result in the net addition of approximately 972,400 square feet and approximately 660 dwelling units to the campus. There would be approximately 30 new buildings ranging in height from 50 to 100 feet.¹⁶ On November 14, 2007, the California State University Board of Trustees certified the Final EIR and

¹⁴ San Francisco Planning Department, *77-111 Cambon Drive Initial Study and Notice of Preparation of an Environmental Impact Report*, October 13, 2007. The application for this mixed-use development was withdrawn from the San Francisco Planning Department in 2009. However, it is probable that an application for development on the site will likely be filed within the 20-year construction period anticipated for the Parkmerced Project. Though it is not known what type of development may be proposed for the site in the future, it is reasonable to conclude that it would contain a similar mix of commercial and residential uses proposed under the 77-111 Cambon Drive project. Therefore, for the purpose of cumulative analysis in this Parkmerced Project EIR, the 77-111 Cambon Drive mixed-use development is the assumed program for the site.

¹⁵ One FTE is defined as one student taking 15 course units, which represents a full course load, during a semester.

¹⁶ *San Francisco State University 2007-2020 Campus Master Plan*, Chapter 7. San Francisco State University Campus Master Plan, website, <http://www.sfsu.edu/~build/construct.htm>, accessed April 22, 2010.

approved the 2007-2020 SFSUCMP. Implementation of the 2007-2020 SFSUCMP is currently under way. The renovation and expansion of the existing library began in March 2009.¹⁷

The western portion of the Stonestown Galleria site has been discussed as a potential location for a new eight-screen movie theater and approximately 180,000 square feet of office and retail space, but no formal applications have been filed.

The *Balboa Park Station Area Plan*, adopted by the San Francisco Board of Supervisors on April 7, 2009,¹⁸ is a long-range plan that covers a 210-acre area around the Balboa Park BART station in south central San Francisco.¹⁹ Its purpose is to provide a regulatory framework to make improvements to the public realm (open space, streets and sidewalks, transit infrastructure), modify existing zoning controls to enhance the existing neighborhoods, and set objectives for future development in the area. The development project at 1150 Ocean Avenue, which is within the *Balboa Park Station Area Plan* boundary, consists of approximately 175 dwelling units, 35,000 square feet of ground-floor retail uses, 4,300 square feet of open space, and 281 parking spaces (175 residential spaces and 106 nonresidential spaces).²⁰ This project was entitled on May 21, 2009, but construction has not yet begun.²¹

IMPACTS

SIGNIFICANCE CRITERIA

The Planning Department's Initial Study Checklist Form provides a framework of topics to be considered in evaluating a project's impacts under CEQA. Implementation of a project could have a potentially significant impact related to land use if the project were to:

- A.a Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to, the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect;

¹⁷ *San Francisco State University 2007-2020 Campus Master Plan*.

¹⁸ Minutes from the April 7, 2009 meeting of the San Francisco Board of Supervisors, available on the San Francisco Board of Supervisors website, http://www.sfgov.org/site/bdsupvrs_page.asp?id=104612, accessed September 15, 2009.

¹⁹ San Francisco Planning Department, *Balboa Park Station Area Plan*, April 2009.

²⁰ San Francisco Planning Department, *Balboa Park Station Area Plan Final Environmental Impact Report*, December 4, 2008.

²¹ Minutes from the May 21, 2009 meeting of the San Francisco Planning Commission, available on the San Francisco Planning Department website, http://www.sfgov.org/site/planning_page.asp?id=105826, accessed October 15, 2009.

- A.b Physically divide an established community; or
- A.c Have a substantial impact upon the existing character of the vicinity.

IMPACT EVALUATION

As discussed in Chapter IV, Plans and Policies, certain aspects of the Proposed Project, such as the proposed height and bulk controls, would conflict with the existing zoning controls and height and bulk controls of the San Francisco Planning Code and the existing Height Map of the *San Francisco General Plan* that are applicable to the Project Site. A conflict between a Proposed Project and a *General Plan* policy or Planning Code does not, in itself, indicate a significant effect on the environment within the context of CEQA. The staff report for the Planning Commission will contain the Planning Department's full analysis of the project's consistency with *General Plan* policies and zoning, and will discuss any exceptions requested or modifications required. Thus, the impact analysis does not evaluate planning inconsistencies. Physical environmental impacts that could result from such conflicts are analyzed in the individual sections of this EIR.

The second and third significance criteria are discussed below.

Impact LU-1: Construction of the Proposed Project would not physically divide an established community or have a substantial adverse impact on the character of the vicinity. (*Less than Significant*) (Criteria A.b, A.c)

The Proposed Project, which would result in a net increase of approximately 5,679 dwelling units, would change the physical layout of the Project Site. Many of the existing residential buildings would be demolished and replaced. New neighborhood-serving retail and office uses, open space and recreation uses, and public transit infrastructure would be provided. In addition, 51 wind turbines would be installed to generate electricity for the Project Site.

Although the Proposed Project would result in substantial physical changes to the Project Site, it would not physically disrupt or divide an established community. During the demolition and construction phases of the project, there would be temporary physical disruptions of the existing residential community. However, development of the Proposed Project would not displace existing Parkmerced residents. Residents of existing apartments that are proposed to be replaced would be provided with the opportunity to move to a new apartment before their unit is demolished. Construction and demolition would be phased to ensure that the residents of these units would be required to move into a new apartment only once. These new apartments would be rented at the same rent-controlled rates as the residents' existing apartments prior to demolition and would be covered by the same restrictions on rent increases as contained in the San Francisco Rent Control Ordinance. Existing residents would not be required to move off site at any point during any phase of the Proposed Project.

The Project Site is physically separated from other residential communities to the north (by SFSU and the Stonestown Galleria Shopping Center), the east (by State Route 1/19th Avenue), and the south (by Brotherhood Way and the San Francisco Golf Club). The Proposed Project would not further isolate the existing residential community on the Project Site from adjacent uses or other residential communities. Proposed changes and improvements to the street network and public transit infrastructure on and adjacent to the Project Site would improve bicycle, pedestrian, and transit connections between the Project Site and adjacent uses.

Commercial (retail and office), recreational, and residential uses would be constructed as part of the Proposed Project. Rather than dividing an established community, these project elements would provide for the expansion of the existing residential community and character that currently exists on the site. Existing land use character in the vicinity of the Project Site contains a mix of residential, neighborhood and regional commercial, institutional, and recreational uses. The proposed land uses would be similar to and compatible with the existing character of the neighboring vicinity.

Wind turbines, which would be about 100 feet tall, are planned along the western property perimeter parallel to Lake Merced Boulevard, and would be structures accessory to the principal use(s) on the Project Site. The proposed location for these wind turbines would not physically divide the Project Site, since all existing and proposed buildings, roadways and infrastructure would be east of the turbines. The Harding Park Golf Course, which is zoned for Public Use, is the closest adjacent land use to the west of the turbines on the opposite side of Lake Merced Boulevard; there are no adjacent residential, commercial, or institutional neighboring land uses to the west. For these reasons, the installation and operation of the wind turbines would be compatible with adjacent land uses. Other physical environmental effects of the wind turbines are analyzed in the appropriate sections of this EIR (visual impacts in Section V.B, Aesthetics; noise impacts in Section V. F, Noise; energy use in Section V.K, Utilities and Services Systems; bird strikes in Section V.M, Biological Resources).

Since the Proposed Project would not physically disrupt or divide an established community, and would not adversely affect the existing character of the vicinity, the Proposed Project would have a less-than-significant impact on land use. No mitigation is required.

Impact LU-2: Approval of the proposed Special Use District would not physically divide an established community or have a substantial adverse impact on the character of the vicinity. (*Less than Significant*) (Criteria A.b and A.c)

Under current zoning controls and height and bulk limits, the Project Site could accommodate up to 10,300 residential units as a principally permitted use and up to a maximum of approximately 11,750 residential units with a PUD. Under these controls, up to 42 residential tower buildings and 60, 30- to 40-foot-tall low-rise buildings could be constructed within the 130-D and 40-X

Height and Bulk Districts. (A full analysis of the Project's proposed Special Use District in comparison to allowable maximum buildout under current zoning controls and height and bulk limits is discussed in Chapter VII, Alternatives.) The proposed Special Use District would include new zoning controls and new height and bulk limits, which would result in physical changes to the land use character of the Project Site, such as having more areas zoned for taller buildings, that would increase the intensities of the land uses on the Project Site. As discussed in Chapter IV, Plans and Policies, the proposed Special Use District would not be consistent with existing zoning and height and bulk controls, and a number of legislative amendments would be required to implement the proposed Special Use District. A conflict with an existing control is not in and of itself a physical environmental effect of the proposed Special Use District. Physical environmental effects of the proposed Special Use District are analyzed in the appropriate sections of this EIR (visual impacts in Section V.B, Aesthetics, and wind and shadow in Section VI, Wind and Shadow).

Rather than dividing an established community, the program-level land use changes would allow for the expansion of the residential community currently on the Project Site. The proposed Special Use District would provide a means for the Project Sponsor to increase the residential density of the Project Site and to enhance the public realm by improving existing open space and providing new open space and recreation facilities; by providing new bicycle and pedestrian paths, to improve bicycle and pedestrian flows on and off site; and by proposing a network of transit improvements, including new connections between the Project Site and adjacent uses.

The existing land use character of the Project Site vicinity is a mix of different types of land uses. There are institutional, recreational, and religious uses to the south; recreational uses to the west; commercial, institutional, recreational, and residential uses to the north; and commercial, recreational, and residential uses to the east. The commercial, recreational, and residential uses that would be allowed under the proposed Special Use District would be compatible with the existing character of adjacent neighborhoods, and there would be no land use conflicts with existing development in the Project Site vicinity.

The proposed Special Use District would increase some of the current height limits and allow taller buildings to be constructed on the Project Site. This would change views of the Project Site. While new buildings would not be substantially taller than the existing high-rise buildings, there would be more mid-rise and high-rise buildings on the Project Site if the Project were fully built out pursuant to the proposed Special Use District. The resulting visual impact is discussed in Section V.B, Aesthetics. As discussed in that section on, pp. V.B.21-V.B.24, the proposed Special Use District and/or Development Agreement would include design guidelines that would establish design standards for buildings, streets, open spaces, and landscaping to encourage high-quality design and materials, an inviting pedestrian-oriented streetscape, and visual variety and interest. The design guidelines would inform the design and review of specific development

projects within the Project Site. Although taller buildings could be constructed on the Project Site, the residential and commercial uses contained in those buildings would be compatible with the existing uses on and adjacent to the Project Site.

Since the proposed Special Use District would not physically disrupt or divide an established community and would not adversely affect the existing character of the vicinity, the proposed Special Use District would have a less-than-significant impact on land use. No mitigation is required.

Impact LU-3: The Proposed Project, when combined with other cumulative projects, would not create incompatible cumulative land use impacts on established communities. (*Less than Significant*)

As discussed in “Proposed Development in the Project Site Vicinity,” p. V.A.7, several other development projects in the vicinity of the Project Site have been formally proposed or approved, are under consideration by developers, or are reasonably foreseeable, including 800 Brotherhood Way, 77-111 Cambon Drive, 700 Font Boulevard, 445 Wawona Street (the Arden Wood site), the 2007-2020 SFSUCMP, Stonestown Galleria, and 1150 Ocean Avenue. These other development projects (“cumulative projects”) would introduce residential, recreational, institutional, and commercial uses to the southwest quadrant of San Francisco, land uses that already exist in this area. Implementation of the Proposed Project and cumulative projects would result in an increase of about 7,375 net new housing units (16,850 net new residents), and about 12,600,000 square feet of non-residential land uses (including commercial, office, institutional, and recreational uses) over the next 20 years (to 2030). The Proposed Project and the other cumulative projects would therefore intensify land uses in the southwest quadrant of San Francisco, but they would not introduce new land uses. For these reasons, the Proposed Project would not combine with the other cumulative projects to create incompatible cumulative land use impacts on established communities. Therefore, this impact would be less than significant. No mitigation measures are required.

Some of the primary effects of cumulative development would be an increase in population, an increase in demand for jobs and housing, and an increase in vehicle and pedestrian activity. The effects of cumulative development on population, jobs, and housing and on transportation and circulation are analyzed in Section V.C, Population and Housing, pp. V.C.14-V.C.18, and in Section V.E, Transportation and Circulation, pp. V.E.105-V.E.127, respectively.

B. AESTHETICS

The Setting discussion in this section describes the existing visual setting of the Parkmerced Project Site and surrounding areas, identifies visual resources that would be potentially affected by the Proposed Project, and presents and describes photographic views showing existing conditions of the Project Site and its vicinity. The Impacts discussion identifies the considerations applied when evaluating the significance of impacts on visual quality, and describes and evaluates impacts on visual and scenic resources and visual quality with reference to visual simulations prepared for the Proposed Project.

SETTING

EXISTING PARKMERCED VISUAL CHARACTER

Built between 1941 and 1951, Parkmerced was originally designed to include 192 acres of garden apartments with landscaped drives and open space. Over many decades, about 40 acres of the original development complex have been subdivided and sold to third parties, including six blocks at the north end of the complex (now owned by San Francisco State University [SFSU]), the shopping center at 33-111 Cambon Drive, and 7.7 acres of undeveloped land along Brotherhood Way. The Project Site now encompasses about 78 percent of the original Parkmerced property.

The Project Site is slightly sloped, sloping gradually down from east to west from about 200 feet above mean sea level near its southeast corner to 80 feet above mean sea level near its southwest corner (over a horizontal distance of about 3,600 feet). From north to south, the site is relatively flat, except at its southern edge where the site drops off steeply toward Brotherhood Way. This slope, which runs along the southern edge of the Project Site to Brotherhood Way, is the most notable topographical feature of the property.

The architect Leonard Schultze designed Parkmerced along with two other large rental housing complexes (Parkfairfax in Alexandria, Virginia, and Park La Brea in Los Angeles, California) for the Metropolitan Life Insurance Company (MetLife) in the 1940's and 1950's. Schultze designed the three complexes by adapting a similar site plan and design elements. However, notwithstanding the striking similarity between the Park La Brea development in Los Angeles and Parkmerced, the existing Parkmerced residential complex is nonetheless unique in San Francisco and is a visually distinctive, cohesive, and intact residential enclave. Section V.D.a, Cultural Resources (Historic Architectural Resources), concludes that the Parkmerced complex is eligible for inclusion in the California Register of Historical Resources based on its distinctive site planning and its landscape design (see pp. V.D.18-V.D.26).

The visual character of the Project Site is defined by its circulation plan, buildings, and landscaping, as described below.

Circulation Plan

The unusual circulation plan of Parkmerced contributes to its unique visual character. The streets of Parkmerced are laid out in a hierarchical radial pattern centered on an elliptical central plaza (the Common) ringed by a central circular hub street (Juan Bautista Circle). (See Figure III.2: Existing Site Plan, in Chapter III, Project Description, p. III.7.) Broad landscaped drives (Font Boulevard, Crespi Drive, Bucareli Drive, and Grijalva Drive) radiate from (or converge at) the Commons. The broad landscaped drives intersect, via roundabouts, with a network of secondary streets that provide access to residential blocks and shared open spaces. From the secondary streets, automobiles are led into carports, garages, and areas of designated street parking. Pedestrian circulation through the site is provided by a system of concrete and asphalt sidewalks. Pedestrian circulation is organized in much the same way as vehicular circulation, progressing through a hierarchy of public and semi-public spaces to individual apartment courtyards, terraces, and units.

The Parkmerced circulation plan was intended to provide safety and quiet for residents by discouraging through-traffic from neighboring areas. The street plan of Parkmerced does not align with the more regular grid of older residential neighborhoods east of 19th Avenue, and access points to the complex are relatively limited, creating an inward-focused residential enclave within San Francisco.

Buildings

Parkmerced possesses two main residential building types: garden apartments (or townhouses), and residential towers. The two-story (up to 40-foot-tall) garden apartments are attached, concrete or stucco-clad, rectangular volumes lining the perimeter of the residential blocks. Substantial jogs in the block façade articulate separate smaller-scaled volumes to provide visual interest in a play of volumes and light and shadows. This effect is accentuated on each block by a palette of alternating colors. The garden apartment buildings are all simple rectilinear volumes embellished with Colonial Revival-inspired architectural elements, including hipped and gabled roof lines, dormers and cupolas, porticos, columns, decorative railings, and pedimented door surrounds to mark the entrances to the buildings. The overall effect of the garden apartment blocks is to provide some variety in what are otherwise similar, repetitive, cohesive buildings. Most garden apartment blocks include a laundry courtyard, interior courtyards, and one or two attached carports in the interior of the block.

The eleven 13-story (130-foot-tall) residential towers are cruciform in plan. They are located in three different clusters on the Project Site: in the northwest corner; north and south of the

Meadow area (the open space west of the Common area); and in the southeast corner. The towers are identical in design, each having associated entrance plantings and landscaped open spaces between the buildings, which serve to connect the towers and to soften the transition between the towers and the surrounding landscape. The towers are prominent features of the Project Site, visible from various relatively distant vantage points, particularly to the west and north.

The Administration Building serves as a prominent visual gateway marking the entrance to the Parkmerced complex. It is located at the northeast corner of the Parkmerced complex at the intersection at 19th Avenue and Crespi Drive. The central portion of the building is marked by a hipped roof, topped by a cupola and by a semi-circular entry bay. Two low wings flank the central portion.

Landscaping

The Project Site is part of a former coastal dune and estuary ecosystem. There is no remaining natural vegetation associated with these habitats on the Project Site. The vegetation associated with the Parkmerced complex consists of a relatively limited palette of cultivated California native and non-native species. The vegetation includes mature specimen trees, geometrically-shaped lawns, and a variety of shrubs and ornamental plantings. The overall landscape design includes the careful siting of specimen trees, shrubs, and ornamental plantings within broad areas of lawn, along landscaped drives, around exterior block façades, in shared open spaces, and in courtyards.

Trees are a component of the views along landscaped circulation routes and provide visual markers for progression through the site. The traffic circles and landscape medians along these drives are landscaped with grass and planters with ornamental species. Interior trees are planted within the Meadow, the Commons, garden courtyards, service courtyards, and around the towers. Common tree species within Parkmerced include Victorian box (*Pittosporum undulatum*), Monterey pine (*Pinus radiata*), bushy yate (*Eucalyptus lehmannii*), olive (*Olea europaea*), Brisbane box (*Lophostemon confertus*), Monterey cypress (*Cupressus macrocarpa*), tawhiwhi (*Pittosporum tenuifolium*), myoporum (*Myoporum laetum*), Japanese privet (*Ligustrum japonicum*) and ficus (*Ficus*).¹

EXISTING VISUAL CHARACTER OF SURROUNDING AREAS

The visual character of surrounding development varies to the north, east, south, and west of the Project Site. The site is generally bounded by the 144-acre SFSU campus to its north; the Lakeside Terrace residential neighborhood to its east; religious and scholastic institutions along

¹ Hortscience, *Tree Survey Parkmerced San Francisco, CA*, July 2007.

Brotherhood Way to its south; and Lake Merced open space and Harding Park Golf Course to its west. The existing Parkmerced complex does not share a common visual character with any of these surrounding areas. The streets of Parkmerced do not align with streets of surrounding areas, limiting visual continuity and visual reciprocity with surrounding areas (i.e., views from within the Project Site to adjacent areas and views from adjacent areas into the Project Site).

To the North: San Francisco State University Campus

The 144-acre SFSU campus is a complex of more than 50 buildings built between 1939 and the present.² Most buildings are two to six stories tall, but the campus also includes a few taller buildings (up to 17 stories). Much of the campus is built in a Mid-Century Modern architectural style popular in the 1950's. The visual character of the campus is "generally consistent and somewhat reserved, with the exception of the idiosyncratic student center."³ The campus includes a variety of landscaped open spaces, from open lawns and playfields to dense forests and courtyards that contribute to a park-like setting. The landscaping is dominated by mature stands of Monterey cypress, Monterey pine, and eucalyptus. SFSU now owns the southernmost portion of the Stonestown complex to its north. SFSU has also acquired the northernmost blocks of the original Parkmerced development (north of Serrano Drive and Pinto Avenue) and uses the original garden apartment buildings for student housing. Although these blocks are not part of the current Parkmerced complex or the Project Site, they continue to relate visually, architecturally, and spatially more to the Parkmerced complex rather than to the SFSU campus.

To the East: Lakeside Terrace Neighborhood

The Project Site is bounded by the 19th Avenue and Junipero Serra Boulevard to the east, a major six-lane corridor (State Route 1). This busy roadway connects Interstate 280 and Highway 101. East of 19th Avenue/Junipero Serra Boulevard is the Ingleside Terrace neighborhood, which rises gradually in elevation toward the east. The neighborhood is comprised of one- and two-story, attached or closely spaced detached residences. In contrast to the Project Site, the street plan is a conventional rectilinear grid. The residences across 19th Avenue from the Project Site face east toward Denslow Drive, away from 19th Avenue, presenting their backyard fence lines to 19th Avenue. The residences east of Junipero Serra Boulevard face Randolph Street, a separate residential street that runs alongside Junipero Serra Boulevard.

² *San Francisco State University Campus Master Plan Draft Final EIR*, August 2007, certified in September 2007, p. 4.1-3.

³ *San Francisco State University Campus Master Plan Draft Final EIR*, p. 4.1-3.

To the South: Brotherhood Way Development Areas

At the southern end of the Parkmerced complex, the topography drops off steeply down to Brotherhood Way, a four-lane, east-west roadway with a landscaped median. The difference in elevation ranges between 20 and 60 feet. Brotherhood Way follows what was once a natural drainage to Lake Merced. The south-facing slopes of the Project Site are vegetated with mature conifers, grasses, and scrub. Due to the lower elevation of Brotherhood Way and the existing cover of vegetation, views into the Project Site are generally limited from Brotherhood Way. West of Chumasero Drive is Peace Park, a level open space, on the north side of Brotherhood Way that is under the jurisdiction of the San Francisco Department of Public Works. This open space is landscaped with grass and several clusters of trees, and it features a 20-foot-high statue by sculptor Benjamin Bufano. Along the south side of Brotherhood Way is a grouping of religious and scholastic institutions (churches, schools, and an assisted living community) in a variety of architectural styles and configurations. They are separated from Brotherhood Way, and from one another, by landscaped grounds and surface parking lots.

To the West: Lake Merced and Harding Park Golf Course

Lake Merced and the Harding Park Golf Course are west of the Project Site across Lake Merced Boulevard. Lake Merced is a City-owned public open space. Views of the lake and beyond from Lake Merced Boulevard are limited by mature vegetation between the lake and Lake Merced Boulevard. Likewise, despite the proximity of the lake, street-level views of the lake from Parkmerced are also limited by existing buildings and by vegetation at the southwest corner of the Project Site. Harding Park Golf Course is a recreational facility owned by the San Francisco Public Utilities Commission. The views to the golf course from Parkmerced, and from the golf course to Parkmerced are screened by a row of mature Monterey cypress that line the perimeter of the golf course along the west side of Lake Merced Boulevard. Views are further screened by successive rows of trees that separate the fairways in the interior of the golf course.

VIEWS

Photographic views from eight locations have been selected by the Planning Department as representative existing visual conditions of the Project Site as viewed from publicly accessible vantage points within and around the Project Site. (See Figure V.B.1: Viewpoint Locations.) In the subsequent figures, each existing view (denoted as “Existing”) is presented at the top of the page to show the existing visual setting of the Project Site. Below this image is a representative simulation of the massing scheme of proposed new construction superimposed on the same view (denoted as “Proposed”), discussed later in this section under Impacts.



SOURCE: Square One Productions, SOM, Turnstone Consulting

PARKMERCED PROJECT

--- PROJECT BOUNDARY

FIGURE V.B.1: VIEWPOINT LOCATIONS

Views from Within the Project Site

Parkmerced was carefully designed with attention to interior views along its streets and across its open spaces. The designed views were purposefully framed by the vegetation and buildings to direct views and create connections between the various elements within the property and surrounding landscape within the complex.

Views from within the property include views down the landscaped boulevards toward public open spaces. Figure V.B.2: Viewpoint A – View Looking Northwest Along Font Boulevard (Existing), shows the view along Font Boulevard toward the central Commons area. This symmetrical view is framed by two-story garden apartment buildings lining both sides of the street. The massing and applied architectural detail on these buildings contributes to a visual setting that is varied yet cohesive. In the foreground is a circular hub of a traffic roundabout that is planted with lawn. A median strip planted with lawn directs the eye to the Commons, at the terminus of this view. The symmetrical and axial arrangement of buildings, streets, and landscaping contributes to a clear sense of linear perspective with horizontal lines converging at the Commons in the distance.

Figure V.B.3: Viewpoint B – View Looking West Along Higuera Avenue (Existing), shows a similar formal clarity in a view along Higuera Avenue toward the Meadow. Symmetrical views are guided by rows of garden apartments lining both sides of the street, and by the landscape median strip in the foreground, directing the view toward the 13-story towers flanking and framing views of the Meadow open space.

Views from Outside the Perimeter of the Project Site

As noted above, the Parkmerced residential complex is inwardly focused. Close range views into the site from adjacent streets are limited by topography (particularly from the south), the placement of buildings, and by a cover of mature vegetation. When viewed from streets outside of the complex, Parkmerced does not present as visually cohesive and ordered an ensemble as when viewed from streets within the complex. The complex bears little visual relationship to surrounding development and vice versa.

Figure V.B.4: Viewpoint C – View Looking Southwest across the Intersection of 19th and Holloway Avenues (Existing), shows the low-scale, two-story buildings that occupy the northeast corner of the Parkmerced site, softened by lawns and landscaping. This entrance to the Parkmerced complex is marked by a prominent monument sign and by the recognizable hipped roof, cupola and spire of the Parkmerced Administration Building. In this diagonal view across the intersection of two wide streets, a large paved area is seen in the foreground. Two-story, single-family, detached residences line the east side of 19th Avenue (left in this view) facing away from 19th Avenue, and are separated from 19th Avenue by fencing, back yards, and landscaping.



Existing



Proposed Representative Massing
SOURCE: Square One Productions, Turnstone Consulting
PARKMERCED PROJECT

FIGURE V.B.2: VIEWPOINT A - VIEW LOOKING NORTHWEST ALONG FONT BOULEVARD



Existing



Proposed Representative Massing (With Maximum Building Massing Under Proposed Zoning)

SOURCE: Square One Productions, Turnstone Consulting

PARKMERCED PROJECT

FIGURE V.B.3: VIEWPOINT B - VIEW LOOKING WEST ALONG HIGUERA AVENUE



Existing



Proposed Representative Massing (With Conceptual MUJNI Platform and Canopy)

SOURCE: Square One Productions, Turnstone Consulting
 PARKMERCED PROJECT

FIGURE V.B.4: VIEWPOINT C - VIEW LOOKING SOUTHWEST ACROSS THE INTERSECTION OF 19TH AND HOLLOWAY AVENUES

Figure V.B.5: Viewpoint D – View Looking North Along Junipero Serra Boulevard at the Brotherhood Way Interchange (Existing), shows the approach to the southeast corner of the Parkmerced complex along Junipero Serra Boulevard. In this view only the three identical 13-story towers at the southeasternmost corner of the Parkmerced complex are prominent. The bases and lower floors of the towers are screened by a cover of mature trees. The towers are painted in a contrasting complementary color scheme to add variety and emphasize vertical articulation. In this view, the three-story AlmaVia assisted living community is at the far left, and residences of Ingleside Terrace, screened by a cover of mature vegetation, are at the far right.

Figure V.B.6: Viewpoint E – View Looking Northwest Across Junipero Serra Boulevard (Existing), shows the 13-story high-rise towers flanking Font Boulevard at the southeast edge of the Project Site. The distant view between the two residential towers across an adjacent undeveloped area to the south of the Project Site (off site) is filtered through mature trees at the perimeter of the site.

Figure V.B.7: Viewpoint F – View Looking Southeast Across Lake Merced Boulevard (Existing), shows a 13-story tower at the northwest corner of the Project Site (at the far left in this view). Low-scale two-story garden apartments occupy the middle ground viewed across expanses of lawn. In the distance rise the 13-story towers within the Meadow. This view is softened by mature vegetation. At the far right in this view are mature Monterey cypress lining the west side of Lake Merced Boulevard screening the perimeter of the Harding Park Golf Course.

Figure V.B.8: Viewpoint G – View Looking North Along Lake Merced Boulevard (Existing), shows the western edge of the Project Site. A landscaped strip separates the parallel Vidal Drive (to the right) and Lake Merced Boulevard (to the left). Mature trees are spaced along this edge of the Project Site. The west side of Lake Merced Boulevard (to the far left) is lined with mature Monterey cypress screening views of the Harding Park Golf Course beyond.

Figure V.B.9: Viewpoint H – View Looking Northeast Across Lake Merced Boulevard (Existing), shows the southwest corner of the Project Site viewed from the south end of a crescent-shaped area of lawn along the west side of Lake Merced Boulevard at the western terminus of Brotherhood Way (to the left in this view). The southwest corner of the Project Site (to the right in this view) is screened with a cover of mature vegetation, which limits views into, and out of, the interior of Project Site.



Existing



Proposed Representative Massing

SOURCE: Square One Productions, Turnstone Consulting
 PARKMERCED PROJECT

FIGURE V.B.5: VIEWPOINT D - VIEW LOOKING NORTH ALONG JUNIPERO SERRA BOULEVARD AT THE BROTHERHOOD WAY INTERCHANGE



Existing



Proposed Representative Massing

SOURCE: Square One Productions, Turnstone Consulting
PARKMERCED PROJECT

**FIGURE V.B.6: VIEWPOINT E - VIEW LOOKING NORTHWEST ACROSS
JUNIPERO SERRA BOULEVARD**



Existing



Proposed Representative Massing (With Maximum Building Massing Under Proposed Zoning)

SOURCE: Square One Productions, Turnstone Consulting
 PARKMERCED PROJECT

**FIGURE V.B.7: VIEWPOINT F - VIEW LOOKING SOUTHEAST ACROSS
 LAKE MERCED BOULEVARD**



Existing



Proposed Representative Massing

SOURCE: Square One Productions, Turnstone Consulting
PARKMERCED PROJECT

**FIGURE V.B.8: VIEWPOINT G - VIEW LOOKING NORTH ALONG
LAKE MERCED BOULEVARD**



Existing



Proposed Representative Massing

SOURCE: Square One Productions, Turnstone Consulting
PARKMERCED PROJECT

FIGURE V.B.9: VIEWPOINT H - VIEW LOOKING NORTHEAST
ACROSS LAKE MERCED BOULEVARD

Distant Scenic Views over the Project Site Toward the Pacific Ocean

Expansive scenic views that include the Project Site and the Pacific Ocean beyond are available from some streets and parks within the west-facing hills and foothills of the San Francisco Peninsula Coastal Range that run generally north to south, east of the Project Site. Expansive scenic views available from public areas are considered significant scenic vistas for the purposes of this section. The views presented and described below are representative of such views.

Figure V.B.10: Viewpoint I – View Looking South from Quintara Street at 14th Avenue (Existing), shows a distant view of Parkmerced (about 2 miles away) over the rooftops of the Inner Parkside neighborhood in the foreground. Rising beyond a band of vegetation (Stern Grove) is the SFSU campus. Beyond that are the 13-story towers of Parkmerced. The Olympic Country Club Golf Course is visible on the coastal bluffs beyond Parkmerced, with the Pacific Ocean and horizon beyond.

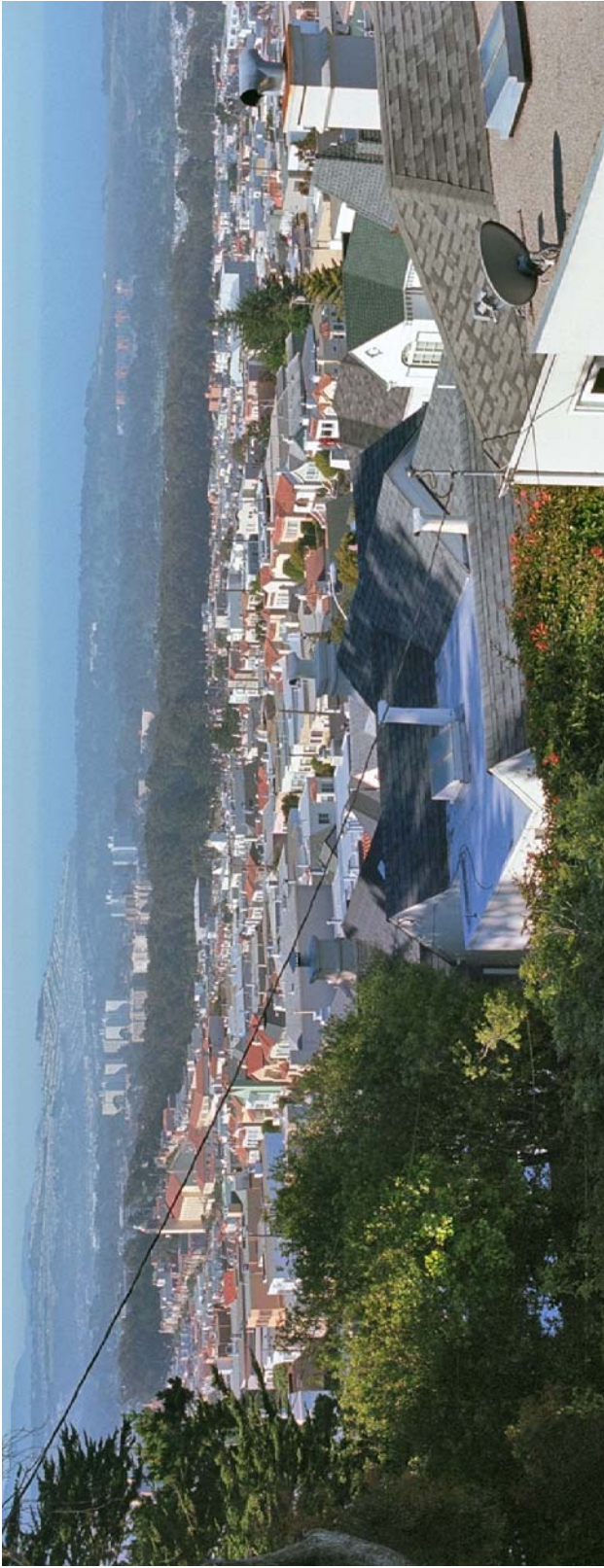
Figure V.B.11: Viewpoint J – View Looking West from Brooks Park (Existing), shows a distant view of the Parkmerced complex (about 0.3 mile away) from Brooks Park in the Merced Heights neighborhood to the east of the Project Site. In the foreground are two-story, attached, single-family residences lining the north/south streets near the foot of the slope. Over these rooftops, the 13-story towers at the southeastern corner of Project Site and the low-scale garden apartments that form the core of Parkmerced are visible. Beyond these buildings, towers in the Meadow (about 0.7 mile away) and, still farther, the towers at the northwest corner of Parkmerced (about 0.9 mile away) are visible. At the far right in this view is the SFSU campus. Lake Merced is visible beyond Parkmerced although it is not a prominent feature in this view. Beyond Lake Merced is the Olympic Country Club Golf Course. The Pacific Ocean (about 1 mile away) and the horizon are visible in the distance.

IMPACTS

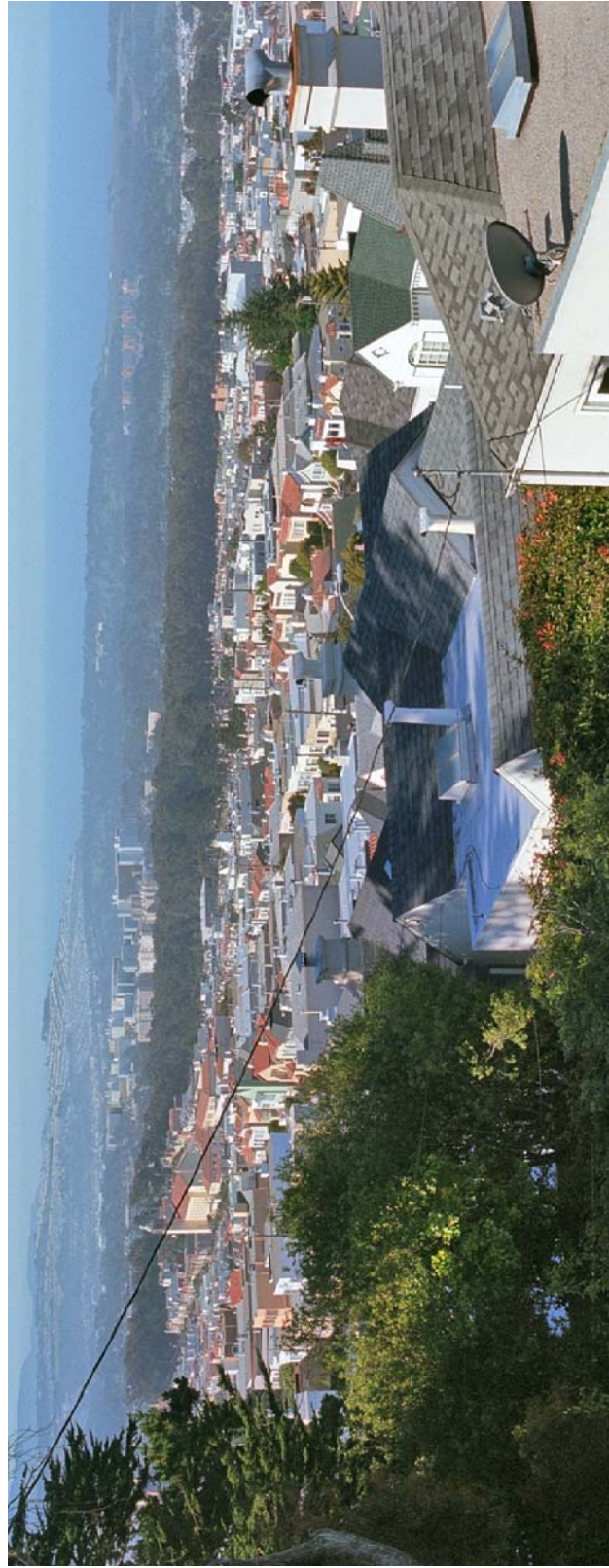
SIGNIFICANCE CRITERIA

The City and County of San Francisco has not formally adopted significance standards for impacts related to visual quality. The Planning Department's Initial Study Checklist form provides a framework of topics to be considered in evaluating a project's impacts under CEQA. Implementation of a project could have potentially significant impacts related to aesthetics if it were to:

- B.a Have a substantial adverse effect on a scenic vista;
- B.b Substantially damage scenic resources, including but not limited to trees, rock outcroppings, and other features of the built or natural environment that contribute to a scenic public setting;



Existing



Proposed Representative Massing

SOURCE: Square One Productions, Turnstone Consulting
PARKMERCED PROJECT

**FIGURE V.B.10: VIEWPOINT 1 - VIEW LOOKING SOUTH
FROM QUINTARA STREET AT 14TH AVENUE**



Existing



Proposed Representative Massing

SOURCE: Square One Productions, Turnstone Consulting
PARKMERCED PROJECT

FIGURE V.B.11: VIEWPOINT J - VIEW LOOKING WEST FROM BROOKS PARK

- B.c Substantially degrade the existing visual character or quality of the site and its surroundings; or
- B.d Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area or which would substantially impact other people or properties.

Design and aesthetics are, by definition, subjective and open to interpretation by decisionmakers and members of the public. A proposed project would be considered to have a significant adverse effect on visual quality under CEQA only if it would cause a substantial and demonstrable negative change.

METHODOLOGY

An independent consultant has photographed the Project Site from a range of publicly accessible vantage points. From these, the Planning Department has selected eight representative views. These views are presented and described in “Views,” p. V.B.5 (denoted on the figures as “Existing”). The existing view represents the existing baseline visual condition of the Project Site viewed from within the site, outside of the perimeter of the site, and from elevated public vantage points to the east and northeast of the Project Site. Below this image of existing conditions, a representative massing simulation of the Proposed Project is superimposed on the same view (denoted as “Proposed”). This allows the reader to compare existing photographic views with massing-level visualizations of the Proposed Project.

It should be noted that the representative massing simulations are simple diagrams illustrating the overall height and volume of proposed new construction, but they do not represent any specific design of new buildings. It should also be noted that the Proposed Special Use District (see Figure III.9: Proposed Zoning Height Limit Plan, in Chapter III, Project Description, p. III.25) could potentially accommodate, in certain locations, buildings that are taller, bulkier or less bulky, or in slightly different locations than the buildings and locations currently proposed under the Proposed Project and modeled in the massing simulations.

IMPACT EVALUATION

Impact AE-1: The proposed demolition of the existing garden apartment buildings and the proposed removal of the existing landscaping would eliminate a visual/scenic resource of the built environment. (*Significant and Unavoidable*) (Criterion B.b)

As discussed above on pp. V.B.1-V.B.3, the existing Parkmerced residential complex is a visually distinctive, cohesive, and intact residential enclave that is unique in San Francisco. Consistent with Section V.D.a, Cultural Resources (Historic Architectural Resources), of this EIR, which concludes that the Parkmerced complex is eligible for inclusion in the California Register of Historical Resources as an historic district, the Parkmerced complex including its associated

landscaped setting, is also considered a visual/scenic resource of the built environment for the purposes of this section.

To implement the Proposed Project, all of the two-story garden apartment buildings within the Project Site (170 buildings) would be demolished, along with existing landscaping and mature trees throughout most of the Project Site, thereby eliminating a visual/scenic resource of the built environment. (See Figure V.B.2 (Proposed) and Figure V.B.3 (Proposed).) As shown in Figure III.23: Proposed Phased Tree Removal Plan, in Chapter III, Project Description, p. III.63, due to extensive reconstruction and regrading on the Project Site, about 82 percent of trees would be removed from the Project Site or relocated throughout the planned 20-year phased construction period. Existing trees on the Project Site were planted to accentuate the formal design of Parkmerced, provide visual relief from hard urban surfaces, provide visual interest and color, and screen and soften views. The majority of the existing mature trees along the southern perimeter of the Project Site would be retained, except those at the corner of Brotherhood Way and Lake Merced Boulevard.⁴

Demolition of the existing Parkmerced visual resource would cause a substantial adverse impact on a visual/scenic resource of the built environment and would be considered a significant impact under CEQA. This impact is considered unavoidable because no feasible mitigation is available that would preserve most of the existing visual character of the Project Site yet allow the Proposed Project to be substantially implemented. Demolition of most of this visual/scenic resource is necessary to implement the Proposed Project and realize its objectives, which include provision of high-density housing and implementation of environmentally sustainable design practices. The Proposed Project could not be implemented without demolition of most of the existing visual/scenic resource. No mitigation measures are available that would reduce this impact to a less-than-significant level.

Impact AE-2: The Proposed Project would transform the visual character of the Project Site. (*Less than Significant*) (Criterion B.c)

Implementation of the proposed construction program would completely transform the visual character of the Project Site. (The impact of demolition of the existing Parkmerced visual/scenic resource is discussed above as a separate impact under Impact AE-1.) Although the existing radial street plan concept and overall street pattern would be largely retained, which would maintain the major view corridors within the site, and all 11 of the existing 13-story apartment towers would also be retained, the redesigned and reconstructed complex would be considerably denser and more urban in visual character, increasing from 3,221 residential units to a total of about 8,900 units. (See Figure V.B.4 (Proposed), Figure V.B.5 (Proposed), V.B.6 (Proposed), Figure V.B.7 (Proposed), V.B.8 (Proposed), and V.B.9 (Proposed).) A greater number of

⁴ SOM, *Parkmerced Design Standards and Guidelines*, May 10, 2010.

buildings within the Parkmerced complex would rise above the height of proposed landscape cover. Built area as a percentage of the total Project Site area would increase from 24 percent under existing conditions to 27 percent after full implementation of the proposed construction program.⁵

The demolished 2-story garden apartment buildings would be replaced by a mix of 35-foot-tall rowhouse buildings (3 stories), 45- to 65-foot-tall low-rise buildings (4-6 stories), and 85- to 105-foot-tall mid-rise buildings (8-10 stories). (See Figure III.10: Proposed Representative Building Heights Plan, in Chapter III, Project Description, p. III.27.) New 115- to 145-foot tall (11- to 14-story) towers would be constructed in the southwest corner of the Project Site and within the Meadow, in proximity to existing 13-story towers that would be retained. In addition, the Muni M Ocean View line would be rerouted into Parkmerced, entering from the north at the intersection of 19th Avenue and Holloway Avenue, proceeding through the neighborhood core, and then traveling along one of two alignments: either re-entering 19th Avenue south of Felix Avenue or terminating at the intersection of Font Boulevard and Chumasero Drive. The proposed rerouting would include the creation of two new stations and the relocation of one station within Parkmerced.

As noted above, the Proposed Special Use District (see Figure III.9: Proposed Zoning Height Limit Plan, p. III.25) could potentially accommodate, in certain locations, buildings that are slightly taller or shorter, bulkier or less bulky, or in slightly different locations than the buildings and locations currently modeled in the representative massing simulations. If new construction were to maximize the buildable envelope under the proposed zoning, visual impacts of such a scheme would be substantially similar in character to, but greater in magnitude than, those described in this section. Figure V.B.3 shows a representative massing simulation of the proposed 11-story (115 feet) and 14-story (145 feet) buildings at the west and east ends of the Meadow respectively, as viewed looking east along Higuera Street. As represented by “wireframe” lines above these proposed buildings, the proposed zoning could accommodate taller (135-foot-tall) and bulkier buildings at the west end of the meadow and bulkier buildings at the east end of the Meadow. Figure V.B.7 shows a representative massing simulation of the proposed four-story, 45-foot tall building as viewed from Lakemerced Boulevard. The proposed zoning could accommodate a considerably taller (130-foot-tall) and bulkier building.

The variety of building types and building scales, combined with the long 20-year timeframe for implementation, would be expected to result in a greater degree of visual variety within the Parkmerced complex at full buildout of the Proposed Project than currently exists throughout the Project Site. The overall visual character of Parkmerced was largely established in the first phase

⁵ Existing site coverage totals 23.6 percent (rounds to 24 percent) (35.91 acres/152 acres = 23.6 percent) and proposed site coverage is 27.3 percent (rounds to 27 percent) (41.57 acres/152 acres).

of construction between 1941-1945 under a unitary design scheme, resulting in a high degree of visual unity within the Project Site.

Changes in visual character, even substantial and transformative changes such as those that would result from construction of the Proposed Project, do not in themselves constitute a significant adverse impact on visual character under CEQA, unless they would substantially degrade the existing visual character or quality of the site and its surroundings. Neither the proposed new construction program nor maximization of height and bulk under the proposed zoning and height limits would cause a significant adverse change in the visual character and quality of adjacent areas. Within the existing diverse visual setting of the project vicinity, the Proposed Project would not introduce a new visual element that is inconsistent with an established cohesive visual pattern of development. As discussed above under Setting, pp. V.B.1-V.B.3, the existing Project Site is not characterized by a high degree of visual continuity or visual reciprocity with neighboring areas to the north, east, south and west. With implementation of the proposed construction program, this condition would continue. As shown in the four phasing plans (Figures III.19, III.20, III.21, and III.22, pp. III.55-III.62) proposed landscaping would be phased over time, and would allow newly planted perimeter landscaping, and interior plantings, to mature. This would increasingly screen and soften views of the Project Site from surrounding areas over time.

In addition, as part of the Proposed Project, the Project Sponsor has developed the proposed *Parkmerced Design Standards and Guidelines*.⁶ The proposed *Design Standards and Guidelines* establish requirements for buildings, streets, open spaces, and landscaping to encourage high-quality design and materials, an inviting pedestrian-orientation, and visual variety and interest while maintaining a cohesive neighborhood identity for the Project Site. The proposed design standards in the *Design Standards and Guidelines* establish specific quantitative requirements for the distribution of building heights on a block-by-block basis to protect viewsheds, to minimize shadows on open spaces, to maintain adequate space between tall buildings, and to maintain an appropriate scale in relation to the width of public rights of way. The Design Standards also establish requirements for creating a continuous streetwall and for minimizing the visual impact of off-street parking.

The proposed design guidelines articulate a vision for the design character of Parkmerced. Presented below are representative streetscape renderings, reproduced from the proposed *Design Standards and Guidelines*. These figures illustrate the urban design intent for four street types under the design guidelines. See Figure V.B.12: Representative Rendering of Crespi Drive (Neighborhood Core); Figure V.B.13: Representative Rendering of a Typical Alley;

⁶ SOM, *Parkmerced Design Standards and Guidelines*, May 10, 2010.

Figure V.B.14: Representative Rendering of a Typical Hedgerow Street; and Figure V.B.15: Representative Rendering of a Typical Paseo.

The design guidelines call for the use of a consistent design vocabulary to provide the Parkmerced neighborhood with a modern design aesthetic, and provide for visual variety and interest while promoting a cohesive visual identity for the neighborhood. The design guidelines call for use of high-quality durable materials and modulation and articulation in buildings to provide human scale, depth, and visual variety and interest. Guidelines for commercial street frontages are intended to promote an active and inviting pedestrian-oriented commercial environment at the ground floor. Guidelines for residential buildings call for prominent residential lobbies and require ground-level residential units to have direct access from a street, courtyard, or open space. Guidelines for open space are intended to promote active open spaces that are visually appealing and inviting. Guidelines for signage are intended to promote signs that add visual interest, enhancing the streetscape, while limiting their size and location, and restricting billboards, flashing, freestanding and moving signs. Guidelines for parking are intended to minimize the visual presence of off-street, structured parking.

The proposed *Parkmerced Design Standards and Guidelines* are intended to enhance the visual quality of the neighborhood. They would inform the design and review of specific development projects within the Project Site. The *Parkmerced Design Standards and Guidelines* are intended to reflect the City's long-term vision for the visual character and quality of the Project Site. New construction within the Project Site would be subject to design review by Planning Department staff for conformity with the *Parkmerced Design Standards and Guidelines* as these are proposed in the future. Implementation of approved design guidelines would ensure that the Proposed Project would not cause a significant adverse impact on the visual character and quality of the Project Site and its surroundings. Therefore, no mitigation measures are required.

Impact AE-3: The Proposed Project would affect scenic vistas from publicly accessible areas. (*Less than Significant*) (Criterion B.a)

As discussed above under Setting, pp. V.B.5-V.B.17, expansive scenic views that include the Project Site and the Pacific Ocean beyond are available from some streets and parks within the west-facing hills and foothills of the San Francisco Peninsula Coastal Range that run generally north to south, east of the Project Site. Expansive scenic views available from public areas are considered significant scenic vistas for the purposes of this section.



SOURCE: SOM, Proposed Parkmerced Design Standards and Guidelines

PARKMERCED PROJECT

FIGURE V.B.12: REPRESENTATIVE RENDERING OF CRESPI DRIVE (NEIGHBORHOOD CORE)



SOURCE: SOM, Proposed Parkmerced Design Standards and Guidelines

PARKMERCED PROJECT

FIGURE V.B.13: REPRESENTATIVE RENDERING OF A TYPICAL ALLEY



SOURCE: SOM, Proposed Parkmerced Design Standards and Guidelines

PARKMERCED PROJECT

FIGURE V.B.14: REPRESENTATIVE RENDERING OF A TYPICAL HEDGEROW STREET



SOURCE: SOM, Proposed Parkmerced Design Standards and Guidelines

PARKMERCED PROJECT

FIGURE V.B.15: REPRESENTATIVE RENDERING OF A TYPICAL PASEO

Buildout of the Proposed Project would substantially increase the scale and density of development on the Project Site. (See Figures V.B.10 (Proposed) and V.B.11 (Proposed).) In these views, the three existing clusters of 13-story towers (at the southeast corner, in the Meadow, and at the northwest corner) would continue to be prominent. However, the intervening areas, now uniformly covered by two-story garden apartment buildings, would be seen as a dense and varied cluster of volumes comprised of tower, mid-rise, low-rise, and rowhouse forms. The visual character of the Project Site would become denser and more urban. From public streets and parks to the east and north of the Project Site, expansive distant views over the rooftops of intervening houses toward the Parkmerced complex and to the coastal dunes and Pacific Ocean beyond would continue to be available with implementation of the Proposed Project.

Construction of the Proposed Project could interrupt or alter some existing private views to the extent that such views are now available over the rooftops of the existing two-story garden apartment buildings that would be demolished and replaced with taller buildings (particularly views from lower floors within the Parkmerced towers that would remain, and from some of the residences to the east of the Project Site). The alteration or interruption of private residential views for some nearby residents would be an unavoidable consequence of the Proposed Project and may be an undesirable change for some individuals. A project would only be considered to have a significant impact on scenic vistas if it were to substantially degrade or obstruct public scenic vistas observed from public areas. Therefore, the changes to private views resulting from the Proposed Project would not be considered a potentially significant impact as defined by CEQA.

Buildout of the Proposed Project would increase the scale and prominence of buildings on the Project Site and transform the visual character of the Parkmerced complex when viewed from publicly accessible spaces in elevated areas to the east and north of the Parkmerced complex. However, the Proposed Project would not substantially obstruct or detract from an expansive scenic view from a public vantage point. For this reason, the impact of buildout of the Proposed Project would not be considered a significant adverse impact on scenic vistas, and no mitigation measures are required.

**Impact AE-4: The proposed wind turbines would be a prominent new visual feature at the western perimeter of the Project Site. (*Less than Significant*)
(Criteria B.a, B.b, B.c)**

As part of the Proposed Project, 51 100-foot-tall wind turbines would line the western perimeter of the Project Site along Lake Merced Boulevard. (See Figure V.B.7 (Proposed), Figure V.B.8 (Proposed), and Figure V.B.9 (Proposed).) Each wind turbine would consist of blades measuring about 9 feet wide by 15 feet tall mounted on the tops of 3-foot-wide turbine poles. The wind turbines would be spaced approximately 40 feet apart (center to center).

The proposed wind turbines lining the western perimeter of the Project Site along Lake Merced Boulevard would be a new and unfamiliar visual feature in the vicinity of the Project Site. When viewed straight on (i.e., where the line of sight is perpendicular to the line of wind turbines) their placement at 40 feet apart would ensure a high degree of visual permeability through this feature. However, when the line of wind turbines is viewed obliquely (i.e., where the line of sight is at an acute angle to the line of wind turbines) the turbines would appear more closely spaced. If viewed at an extremely acute angle, the wind turbines could together take on an almost solid, wall-like appearance.

The wind turbines would generally not be prominent when viewed from most streets and open spaces within the Project Site given the dense pattern of proposed development within Parkmerced which is characterized by 35- to 45-foot streetwall podium heights lining its streets, punctuated by mid-rise and high-rise towers rising above. The proposed wind turbines lining the east side of Lake Merced Boulevard would be most prominent when looking south or north along Lake Merced Boulevard. (See Figure V.B.7 (Proposed), Figure V.B.8 (Proposed), and Figure V.B.9 (Proposed).) These views are not considered visual or scenic resources. As noted above, views into Harding Park Golf Course and beyond, and from the golf course toward the Project Site are screened by a row of Monterey cypress that lines the west side of Lake Merced Boulevard. Further screening is provided by successive rows of trees that separate the fairways in the interior of the golf course. Views of Lake Merced from Lake Merced Boulevard are likewise screened by a cover of mature vegetation between the lake and Lake Merced Boulevard. For these reasons, the proposed wind turbines would not have a significant adverse impact on scenic resources, visual quality, and scenic vistas. Therefore, no mitigation measures are required.

Impact AE-5: The Proposed Project would increase the lighting requirements within the Project Site and the potential for glare. (*Less than Significant*) (Criterion B.d)

Current sources of light within the Parkmerced complex include residential lighting within the existing residential towers and garden apartment buildings and exterior security lighting of building entrances, streets, paths, parking lots. Primary sources of lighting in the vicinity of the Project Site include the lighting of surrounding roadways, and security lighting of the parking lots and grounds of adjacent institutional and commercial uses.

Implementation of the Proposed Project, which would result in a net increase the residential density of the Project Site from 3,221 units to 8,900 units at buildout, would increase the nighttime lighting requirements within the Parkmerced complex. It would also remove much of the mature vegetation that now filters light from within the complex, and would increase the height of construction above the height of the tree cover in areas now occupied by two-story buildings.

Nighttime light levels within the Parkmerced complex at buildout would be consistent with those of an urban residential community. As required by the proposed *Parkmerced Design Standards and Guidelines*, outdoor lighting would be directed downward to minimize the spillage of light onto neighboring properties. Over time, newly planted landscaping would mature to increasingly filter light sources within the Parkmerced complex. New buildings would include transparent or lightly tinted glass rather than reflective glass, in conformance with Planning Commission Resolution 9212, to minimize daytime reflection of sunlight onto surrounding properties.

Given the existing urban character of the Parkmerced complex and adjacent development, new sources of light and glare on the Project Site would not constitute a substantial source of light in the vicinity of the Project Site. Light levels from the Proposed Project would not exceed levels commonly accepted by residents in an urban setting. Implementation of the Proposed Project would not cause a significant impact related to light and glare.

Impact AE-6: The Proposed Project could contribute to cumulative impacts on visual quality and scenic vistas. (*Less than Significant*)

Several development proposals are under consideration and are directly adjacent to the Project Site. The approved project at 800 Brotherhood Way calls for the construction of 60 single-family homes and 61 two-unit buildings on the 7.7-acre site between the south edge of the Project Site and the open space on the north side of Brotherhood Way. The *2007-2020 San Francisco State University Campus Master Plan* proposes physical changes and improvements to the campus, including construction of new buildings that would add approximately 972,400 square feet and 660 net new dwelling units to the campus. Anticipated building would range in height up to 100 feet tall. The proposed project at 77-111 Cambon Drive involves the demolition of two existing one-story commercial buildings and the construction of a mixed-use project ranging in height from two to four stories on the triangular site adjacent to the east boundary of the Project Site.

If additional demolition of buildings within the original Parkmerced complex buildings were to be proposed in the future by other owners of property within the Parkmerced complex, these potential cumulative projects would contribute to and compound a significant cumulative effect on the Parkmerced visual/scenic resource that is caused primarily by the Proposed Project. This cumulative impact is considered significant and unavoidable for the reasons discussed above under Impact AE-1.

As noted above under Impact AE-2, the Project Site does not have a high degree of visual continuity or visual reciprocity with neighboring areas. To the extent that these and any other future projects would be viewed within the context of the Proposed Project, implementation of the proposed *Parkmerced Design Standards and Guidelines* as part of the Proposed Project would reduce the Proposed Project's potential contribution to cumulative impacts on visual quality to a less-than-significant level.

As described under Impact AE-3 above, the Proposed Project would not contribute to a cumulative obstruction or degradation of expansive scenic views over the Project Site, when considered with anticipated development in the vicinity of the Project Site. Mid-rise and high-rise towers, if constructed on the SFSU campus under its *Campus Master Plan*, would be viewed within the context of a distant dense cluster of proposed mid-rise and high-rise towers on the Project Site. Thus, the Proposed Project would not contribute to a significant cumulative impact on scenic views.

C. POPULATION AND HOUSING

This section examines the effects of the Proposed Project related to population, housing, and employment. The Setting discussion describes existing regional and Citywide population-, housing-, and employment-related conditions and trends. The Impacts discussion addresses anticipated changes to the population, employment, and housing characteristics of the project vicinity and greater San Francisco with implementation of the Proposed Project. This section evaluates the potential for both project-level and cumulative environmental impacts.

Construction of the Proposed Project would be phased over an approximately 20-year period, with the completion of development expected to occur by 2030. Therefore, the time frame used in this analysis is 2010 to 2030.

The information in this section is based on the description of the Proposed Project, 2000 U.S. Census data, *American Community Survey 2006–2008* data, Association of Bay Area Governments (ABAG) *Projections 2009* data,¹ ABAG's *San Francisco Bay Area Housing Needs Plan 2007–2014*, and the City's 2009 *Draft Housing Element Part 1: Data and Needs Analysis*. Estimates of existing housing units and characteristics are based on 2000 U.S. Census data and *Projections 2009* data.

SETTING

CITY AND REGIONAL POPULATION AND HOUSING TRENDS

Population

In 2000, the population of the City and County of San Francisco was recorded by the U.S. Census as 776,733, ranking San Francisco as the second most populous city, behind San Jose, in the nine-county Bay Area, and the fourth most populous county, behind Santa Clara, Alameda, and Contra Costa.² San Francisco is the most urbanized county, with the highest population and residential densities of the nine Bay Area counties. At that time, San Francisco comprised approximately 11.45 percent of the Bay Area's total population (6,783,762 persons).

At the end of the 10-year period between 2000 and 2010, the population of the Bay Area is expected to have grown by approximately 7.6 percent (total population of 7,341,700 persons), an

¹ ABAG is the regional agency responsible for preparing forecasts of population, housing, and employment growth in the nine Bay Area counties and their cities. ABAG's 2009 edition (*Projections 2009*) of its biennial forecast of population, housing, jobs, and income for the nine-county San Francisco Bay Region was released in August 2009.

² U.S. Census 2000 Data; ABAG website, <http://www.bayareacensus.ca.gov/historical/largecity.htm> and <http://www.bayareacensus.ca.gov/historical/copop18602000.htm>. Accessed April 21, 2010.

increase of approximately 557,900 persons.³ During that same period, the population of San Francisco is expected to grow by approximately 4.1 percent (total population of 810,000 persons), an increase of approximately 33,250 persons.⁴ For the 20-year period between 2010 and 2030, ABAG projects an overall Bay Area population growth increase of nearly 16 percent (an increase of about 1.4 million people), for a projected total population of about 8.7 million. Over 70 percent of that growth would be accommodated in Alameda, Contra Costa, and Santa Clara Counties.⁵ ABAG projects that the population of San Francisco will increase by about 13 percent (approximately 124,800 additional people) during that same time period, for a projected total population of 934,800.⁶ In 2030, the population of San Francisco is expected to be approximately 10.7 percent of the Bay Area's total population.⁷ The final phase of the Proposed Project would be completed and occupied in 2030.

Housing

The U.S. Census 2000 data show that the average household size for the San Francisco Bay Area is 2.69 persons per unit.⁸ *ABAG Projections 2009* shows that the average household size for the nine-county Bay Area will increase slightly to 2.7 in 2010 and is expected to remain at that level through 2035.⁹ The U.S. Census for 2000 shows that the average household size in the City and County of San Francisco is 2.3 persons per unit.¹⁰ *ABAG Projections 2009* estimates that there will be 2.28 persons per household in the City in 2010 and in 2030. ABAG projects that the total number of households in San Francisco (which roughly equates to the number of housing units) will be approximately 346,680 in 2010. The number of households is expected to grow approximately 13.5 percent (to 400,700) by 2030, an increase of 54,020 households.¹¹ Residential densities within San Francisco vary by neighborhood, from an average of 25 dwelling units per acre in the Richmond and Sunset Districts to 40 dwelling units per acre in the Mission District, and 86 dwelling units per acre in the Chinatown and North Beach Districts. The residential densities within the existing Parkmerced neighborhood vary, with an average residential density of about 28 dwelling units per acre.

³ *Projections 2009*, p. 26.

⁴ *Projections 2009*, p. 92.

⁵ *Projections 2009*, p. 15.

⁶ *Projections 2009*, p. 85.

⁷ *Projections 2009* forecasts population, housing, and employment growth trends to 2035.

⁸ U.S. Census 2000 Data; ABAG website, <http://www.bayareacensus.ca.gov/bayarea.htm>. Accessed April 21, 2010.

⁹ *Projections 2009*, p. 26.

¹⁰ U.S. Census 2000 Data; ABAG website, <http://www.bayareacensus.ca.gov/counties/SanFranciscoCounty.htm>. Accessed April 21, 2010.

¹¹ *Projections 2009*, p. 92.

Employment

According to *Projections 2009*, the total number of jobs in the City in 2010 is estimated to be approximately 568,730. The City is projected to have a total of approximately 748,100 jobs by 2030, an increase of 179,370 jobs.¹² From 2010 through 2030, the total number of jobs in the nine-county Bay Area is expected to increase by almost 1,262,890 jobs. In this context, the City's share of regional employment is expected to decrease slightly, from 16.4 to 15.8 percent.¹³

The City is expected to have approximately 411,900 employed residents in 2010.¹⁴ About 76 percent (313,040) of these employed residents would be employed in the City itself, while about 24 percent (98,860) of the employed residents would commute to jobs outside of the City.¹⁵ The total number of the City's employed residents is projected to increase to approximately 520,700 by 2030. Assuming the same percentages, about 76 percent (or 395,730) of employed residents would live and work in the City in 2030.

Jobs and Housing Balance in San Francisco

The *San Francisco General Plan Housing Element* summarizes population, housing, and employment challenges facing the City in the future. Notable jobs-housing challenges facing the City include a lag in the number of new housing units compared to population and employment growth during the past 10 years; the mismatch between income from available jobs and the cost of housing in the City, resulting in a large number of commuters, increased commute time, and adverse effects on traffic and air quality; and a lag in the construction of affordable housing compared to demand.

2010 Estimated Jobs-to-Household Ratio

According to ABAG *Projections 2009*, in 2010 the total number of jobs in the City is estimated to be about 568,730 and the total number of households or occupied housing units is estimated to be about 346,680. Based on these numbers, the City is expected to have a jobs-to-household ratio of 1.64 in 2010. There are expected to be approximately 411,900 employed residents in the City in 2010, averaging about 1.19 wage earners per household.

¹² *Projections 2009*, p. 93.

¹³ *Projections 2009*, p. 29.

¹⁴ *Projections 2009*, p. 29.

¹⁵ According to the U.S. Census Bureau's *American Community Survey 2006–2008*, about 75.8 percent of the City's employed residents work in the City itself. Available online at: http://factfinder.census.gov/servlet/DTGeoSearchByListServlet?ds_name=ACS_2008_3YR_G00_&_lang=en&_ts=275934755081, accessed April 21, 2010. A copy of the ACS 2006–2008 tables is available for public review at the San Francisco Planning Department, 1650 Mission Street, Suite 400, as part of Case File No. 2008.0021E.

2010–2030 Estimated Jobs-to-Household Ratio

As noted previously, between 2010 and 2030, the City's population is projected to grow from 810,000 to about 934,800 persons, and the City's households are projected to grow from 346,680 to about 400,700. During this same time period, the number of jobs in the City is projected to increase from 568,730 to about 748,100.¹⁶ As a result, the jobs-to-household ratio in the City is projected to be 1.86 by 2030, an increase from the 2010 year jobs-to-household ratio of 1.64. Because the City is projected to experience a 24 percent increase in employment and only a 13 percent increase in population, the City's jobs-to-household ratio is projected to become less balanced over the long term. However, a higher number of wage earners per household is anticipated in the City by 2030, with 520,700 employed residents representing about 1.3 wage earners per household, which is about 8 percent higher than the 1.19 wage earners per household anticipated in 2010.

2010–2030 Estimated Jobs-to-Employed-Persons Ratio

To account for retired persons and other residents who are not employed, another useful relationship to consider is the ratio of jobs to the total number of employed persons. According to the 2000 U.S. Census, out of a total Citywide population of approximately 776,730, about 437,530 persons were in the labor force (employed either in the City or elsewhere), and the remainder were not employed. In 2000, the ratio of jobs (642,500) to employed residents (437,530) was 1.46. In 2010, the ratio of jobs (568,730) to employed residents (411,900) is anticipated to be 1.38. By 2030, the ratio of jobs (748,100) to employed residents (520,700) is expected to be about 1.44. Thus, the number of jobs provided in the City is projected to continue to outpace the number of employed City residents over the next 20 years.

Project Site Population, Housing, and Employment Characteristics

Parkmerced is an existing residential neighborhood with 3,221 on-site residential units located in 11 towers and 170 two-story buildings. In addition to building and grounds maintenance services, the Parkmerced neighborhood includes a leasing/administration office and a pre-school/day care facility. In 2000, there were approximately 7,260 residents on the Project Site.¹⁷ Using ABAG's 2010 projection for persons per household (2.28), the current Parkmerced population is estimated to be approximately 7,340 persons (3,221 units multiplied by 2.28). Existing employment at Parkmerced is limited to leasing and operations (40 employees), pre-school facility (5 full-time employees), and building and open space maintenance (190 employees), for a total of approximately 235 on-site employees. Some residents may employ

¹⁶ *Projections 2009*, p. 93.

¹⁷ Based on 2000 Census data for Census Tract 332.02 (the tract in which Parkmerced is located).

occasional household help; the amount of this employment is unknown and is not included in these numbers.

REGULATORY FRAMEWORK

Regional

Bay Area Regional Housing Needs Determination

In order to respond to statewide population and household growth, and to ensure the availability of decent affordable housing for all income groups, in 1981 the state enacted Government Code Section 65584, which requires each Council of Government (COG) to periodically distribute state-identified housing needs to all jurisdictions within its region. ABAG serves as the COG for the Bay Area. The Department of Housing and Community Development is responsible for determining the overall regional housing need and for initiating the process by which each COG then distributes its share of regional need to all jurisdictions within its region. Government Code Section 65584 requires development of a new Regional Housing Needs Assessment (RHNA) every five years. In June 2008, ABAG released its *San Francisco Bay Area Housing Needs Plan*, which identifies the San Francisco Bay Area's housing needs determination for the 2007–2014 planning period.

Government Code Section 65584 also requires that a city's share of regional housing needs include housing needs of persons at all income levels. The different income levels to be studied within the parameters of state-mandated local Housing Elements, which must be prepared by every city and county in California, are "Very Low Income," "Low Income," "Moderate Income," and "Above Moderate Income." Based on a Federal Housing and Urban Development formula, San Francisco's Area Median Income in 2008 was estimated to be approximately \$75,450 for a two-person household and approximately \$84,850 for a three-person household. Table V.C.1 presents the City's distribution of income levels based on this formula.

The ABAG Policy Board established housing needs for all jurisdictions within its boundaries for the 2007–2014 planning period by using a "fair share" approach, based on household and job growth of the region as well as regional income level percentages. Each jurisdiction is required by state law to incorporate its housing need numbers into an updated version of its general plan housing element. According to ABAG's *San Francisco Bay Area Housing Needs Plan 2007–2014*, the Bay Area's overall housing need would be for a total of about 214,500 new residential

Table V.C.1: Income Distribution of San Francisco Households

Income Group	Income Level	Income Range^a	Percentage of SF Households
Very Low	≤ 50% of AMI	\$22,650–\$42,450	27.1%
Low	50%–80% of AMI	\$37,750–\$67,900	14.4%
Moderate	80%–120% of AMI	\$60,350–\$84,850	15.7%
Above Moderate	>120% of AMI	>\$90,550	42.8%

Notes:

AMI – Area Median Income

^a San Francisco Planning Department, *San Francisco General Plan, DRAFT Housing Element, Part I: Data and Needs Analysis*, April 2009, Table I-40: Household Income Standards by Household Size, 2008, and Table I-41: Income Distribution, San Francisco, 2007, p. 42. The income range shown above is the average income range for two- to three-person households in the City.

Sources: U.S. Department of Housing and Urban Development, San Francisco Planning Department, and Turnstone Consulting

dwelling units,¹⁸ or an average yearly need of 4,456 units. In terms of affordability, the distribution of those housing units is as follows:¹⁹

Very Low Income (≤50% of median income)	6,589 units
Low Income (50%–80% of median income)	5,535 units
Moderate Income (80%–120% of median income)	6,754 units
Above Moderate Income (>120% of median income)	<u>12,315 units</u>
Total	31,193 units

From 1989 to 1998, 10,696 net new housing units²⁰ were added Citywide, ranging from a low of about 288 units (1993) to a high of about 2,345 units (1989). The Citywide annual average during that period was about 1,069 net new units. From 1999 to 2008, 20,851 net new housing units were added Citywide, ranging from a low of about 1,619 units (2001) to a high of about 3,019 units (2008). The Citywide annual average during that period was about 2,085 net new units, slightly less than a doubling in production over the previous 10-year period.²¹ At the end of the second quarter of 2009 (June 30, 2009) approximately 2,850 building permits had been approved, issued, or reinstated.²² To meet current regional housing need projections, the City would need to increase housing unit production by an average of 4,456 units per year. Thus, the City is currently not on track to meet its share of the regional housing needs allocation forecasted for the 2007–2014 planning period.

¹⁸ Housing Needs Plan, p. 46.

¹⁹ Housing Needs Plan, p. 46.

²⁰ Net new units are equal to new units constructed minus units demolished plus or minus units gained or lost from alterations.

²¹ San Francisco Planning Department, *San Francisco Housing Inventory 2008*, April 2009, p. 6.

²² San Francisco Planning Department, *San Francisco Pipeline Report 2009 Quarter 2*, July 2009, p. 3.

Local

Residential Inclusionary Affordable Housing Program

In 2006, the City adopted amendments to the Residential Inclusionary Affordable Housing Program contained in Planning Code Section 315. The amended Planning Code Section 315 requires that a project involving five or more new dwelling units must (a) provide on-site Below Market Rate units equal to 15 percent of the total number of units, (b) provide off-site Below Market Rate units equal to 20 percent of the total number of units, or (c) pay an in-lieu fee equivalent to 20 percent of the total number of units.

IMPACTS

SIGNIFICANCE CRITERIA

The Planning Department's Initial Study Checklist Form provides a framework of issues to be considered in evaluating a project's impacts under CEQA. Implementation of a project could have a potentially significant impact related to population and housing if the project were to:

- C.a Induce substantial growth in an area either directly (for example, by proposing new homes and businesses) or indirectly (for instance, through extension of roads or other infrastructure);
- C.b Displace substantial numbers of existing housing units or create demand for additional housing, necessitating the construction of replacement housing; or
- C.c Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere.

METHODOLOGY

CEQA Guidelines Section 15064(e) notes that an economic or social change by itself would not be considered a significant effect on the environment. Population growth is considered in the context of local and regional plans and population, housing, and employment projections. Generally, a project that induces population growth is not viewed as having a significant impact on the environment unless this growth is unplanned and results in significant physical impacts on the environment. Thus, the growth and changes in employment and population that would occur with implementation of the Proposed Project would not be adverse physical impacts in themselves. However, the physical changes needed to accommodate the project-related growth may have physical impacts on the environment. Project-related growth and the increase in population in the existing Parkmerced neighborhood primarily result in physical changes in transportation, noise, air emissions, increased demand for public services, increased demand for utility capacity, and increased demand for recreational facilities. These physical impacts are evaluated under other environmental topics in this chapter such as Section V.E, Transportation

and Circulation; Section V.F, Noise; Section V.G, Air Quality; Section V.H, Greenhouse Gases; Section V.J, Recreation; Section V.K, Utilities and Services Systems; Section V.L, Public Services; and Section V.Q, Mineral and Energy Resources.

IMPACT EVALUATION

The Parkmerced Project is a long-term mixed-use development program to comprehensively replan and redesign the 152-acre Parkmerced site. About 1,683 of the existing units would be retained, and the remaining 1,538 existing units would be demolished and fully replaced in phases over a period of approximately 20 years. An additional 5,679 net new units would be constructed on the Project Site. With project implementation, there would be a total of 8,900 units at full buildout. Although there are high-density locations within the Parkmerced neighborhood,²³ the development program would increase the average residential density from about 28 housing units per acre to about 77 housing units per acre.²⁴ The Parkmerced Project would also include 230,000 gross square feet (gsf) of retail uses, 80,000 gsf of office uses (69,225 net new), a 25,000-gsf Pre-K-5 school and day care facility (21,051 net new), 100,000 gsf of building and grounds maintenance-related uses (71,657 net new), a 64,000-gsf fitness facility, and 68 acres of open space (a 7-acre reduction) through a network of neighborhood parks and playgrounds, public plazas, courtyards, greenways, athletic fields, walking and biking paths, an organic farm, and community gardens.²⁵

The analysis compares the population, housing, and employment characteristics that would result from implementation of the Parkmerced Project to existing conditions, defined as those for 2010. The 2010 data are used because they are the most current data consistently available for the Project Site across all population, employment, and housing indices. Table V.C.2 shows the number of housing units and the population at Parkmerced for 2010 and 2030.

Impact PH-1: The Proposed Project would induce substantial direct temporary population growth during project construction. (*Less than Significant*) (Criterion C.a)

The analysis considers whether the Proposed Project would contribute to substantial²⁶ residential population growth. Direct population growth at the Parkmerced neighborhood would include the residents and employees who would occupy the newly developed housing units and businesses at the Project Site, as well as temporary construction employment. Indirect growth is often defined

²³ San Francisco Planning Department, *Draft Housing Element 2009 Part 1: Data and Needs Analysis*, April 2009, pp. 62 and 64.

²⁴ Calculated based on site acreage less roads and rights-of-way: Existing = 3,221 housing units divided by 116 acres, and Proposed = 8,900 housing units divided by 116 acres.

²⁵ The 68 acres of open space would be maintained by the Project Sponsor.

²⁶ Substantial growth is defined as increases in population that are unplanned, without consideration of or planning for infrastructure, services, and housing needed to support proposed residents, employees, and visitors.

Table V.C.2: Existing (2010) and Future (2030) Number of Housing Units and Total Population at Parkmerced

Housing Units	Year 2010	Year 2030
Existing Units	3,221	-
Retained Units	-	1,683
Replaced Units	-	1,538
Net New Units	-	5,679
Total Housing Units	3,221	8,900
Total Population	7,340	20,290

Note: Total population is calculated using ABAG’s projected 2.28 persons per household from *Projections 2009*, and it is assumed that all units are fully occupied.

Sources: ABAG *Projections 2009*, Turnstone Consulting

as development that occurs as infrastructure is expanded to previously unserved or underserved areas. These types of development patterns typically occur in suburban areas adjacent to or near undeveloped lands. The analysis also considers whether substantial numbers of residents or housing units would be displaced.

There would be direct, but temporary, construction job growth at the Project Site as a result of the Parkmerced Project. The Proposed Project would be phased over a 20-year construction period. During Phase 1, about 1,580 construction employees are anticipated. During Phase 2, about 958 construction employees are anticipated. During Phase 3, about 1,270 construction employees are anticipated. Lastly, during Phase 4, about 642 construction employees are anticipated.

It is anticipated that construction employees not already living in the southwestern quadrant of the City would commute from elsewhere in the City or the Bay Area rather than relocate from more distant cities or towns. Thus, construction of the Parkmerced Project would not generate a substantial, unplanned population increase. Impacts associated with construction employment would be less than significant and no mitigation measures are required.

Impact PH-2: The Proposed Project would not induce substantial employment growth in an area either directly or indirectly. (*Less than Significant*) (Criterion C.a)

The increase in the residential population of the Parkmerced neighborhood would generate new demand for local goods and services. New retail uses (approximately 230,000 gsf) on the Project Site are intended to meet the daily goods and services needs of the Parkmerced residents. Buildout of the Parkmerced Project would also involve the addition of 69,225 gsf of net new leasing/administration office uses (80,000 gsf total), 21,051 gsf of net new educational facilities (25,000 gsf total), 71,657 gsf of net new building and grounds maintenance-related uses (100,000 gsf total), 64,000 gsf of new gymnasium uses, and a 7-acre reduction in the total amount of open space (68 acres total).

Table V.C.3 shows the existing (2010) and future (2030) employment characteristics of the Parkmerced Project. There are currently 235 employees on the Project Site. The Proposed Project would result in changes in business activity in the Parkmerced neighborhood core and at locations throughout the Project Site, resulting in an increase in on-site employment. Employment growth at Parkmerced would be considered substantial if it resulted in housing demand that would exceed planned regional housing development.

Table V.C.3: Existing and Future Employment at Parkmerced by Land Use

Land Uses	Existing Employment ^a	Development	Future Total Employment	Net New Employment
		Program (gsf)		
Residential	40 ^b	11,500,000	180 ^a	140
Retail	-	230,000	660 ^c	660
Office	-	80,000	290 ^c	290
Educational	5	25,000	40 ^a	35
Maintenance (including open space)	190	100,000	560 ^a	370
Fitness Facility	-	64,000	85 ^d	85
Miscellaneous (Transit)	-	-	15 ^e	15
Total	235	-	1,830	1,595

Notes:

gsf – gross square feet

^a Employment information provided by Project Sponsor on November 11, 2009.

^b Existing residential unit employment includes leasing and administration.

^c San Francisco’s *Transport Impact Analysis Guidelines* uses an employment factor of 350 gsf/employee for retail and 276 gsf/employee for office.

^d Assumes 750 gsf/employee for fitness facility.

^e Assumes 15 employees for carshare/bike pods and shuttle service.

Source: City of San Francisco *Transportation Impact Analysis Guidelines*, 2002, and Seth Mallen, Executive Vice President, Construction & Sustainability, Stellar Management, West Coast Operations

Employment generated by the Proposed Project is expected to total about 1,830 employees, with a net new employment total of about 1,595 jobs on the Project Site. Table V.C.4 presents the number of housing units that would be needed in San Francisco and other Bay Area communities to provide housing for the net new project-generated employees. Based on assumptions about commute patterns and household size, employment under the Proposed Project would generate a demand for up to 1,225 new dwelling units in the San Francisco Bay Area. This analysis conservatively assumes that all employees do not already live in the San Francisco Bay Area.^{27,28}

²⁷ According to the U.S. Census Bureau’s *American Community Survey 2006-2008*, about 75.8 percent of the City’s employed residents work in the City itself. Available online at: http://factfinder.census.gov/servlet/DTGeoSearchByListServlet?ds_name=ACS_2008_3YR_G00_&_lang=en&_ts=275934755081. Accessed November 10, 2009. A copy of the ACS 2006–2008 tables is available for public review at the San Francisco Planning Department, 1650 Mission Street, Suite 400, as part of Case File No. 2008.0021E.

Table V.C.4: Project Housing Demand (2010 to 2030)

Net New Employment^a	2030 Demand, San Francisco^b	2030 Demand, Other Communities^c	Total Demand	Net New Housing Units
1,595 employees	930 units	295 units	1,225 units	5,679 units

Notes:

^a It is assumed that all leasable space is fully occupied.

^b Net new project employment divided by 1.3 wage earners per household (Year 2030) and multiplied by 76 percent.

^c Net new project employment divided by 1.3 wage earners per household (Year 2030) and multiplied by 24 percent.

Source: Turnstone Consulting

The Project-related demand for housing resulting from the increase in on-site employment would represent about 1.3 percent of the City’s demand for housing and about 0.05 percent of the demand for housing in other communities in the period between 2010 and 2030.²⁹ The 5,679 net new housing units that would be developed at Parkmerced would exceed the demand for new units in the City generated by employment at Parkmerced (930), as well as the total demand for new units in the Bay Area (295) for a total housing demand of 1,225 units. Given that a broad range of housing options of varying sizes, types, and levels of affordability would be developed at Parkmerced and that such housing would be in close proximity to the jobs provided by the Proposed Project, it is likely that future employees at Parkmerced may seek housing in the Parkmerced neighborhood prior to searching for housing in the surrounding neighborhoods. However, if future employees did seek housing elsewhere in the area, the effects would not be substantial.

While the population increase associated with employment at Parkmerced could be entirely accommodated at the Project Site, it is likely that employees of the Parkmerced Project would elect to live elsewhere in the City or within surrounding Bay Area communities. A percentage of the persons employed at Parkmerced would be expected to commute to other communities outside of the City. Based on existing commuting patterns, demand for about 295 units would be generated in surrounding Bay Area communities by the Parkmerced Project. This housing demand would be dispersed throughout the nine-county Bay Area, which would result in negligible potential increases in housing demand within the Bay Area.

Employment at Parkmerced would not create a substantial demand for housing in the neighborhood, San Francisco, or the region in excess of the housing provided as part of the Proposed Project or housing otherwise available in the Bay Area. The amount of housing

²⁸ This method divides the estimated Project-related employment (approximately 1,595 net new employees) by the projected number of workers per household in San Francisco in 2030 (1.3). This result, approximate housing demand of Project-related employees (1,225), is multiplied by 76 percent, the proportion of jobs in San Francisco held by people who live in the City. The estimated housing demand is 930 units.

²⁹ Percentages are calculated as a proportion of the anticipated growth in City and Bay Area households between 2010 and 2030 (54,020 new City households and 504,600 new Bay Area households). Households are equivalent to housing units.

provided by the Parkmerced Project would exceed demand generated by project-generated employees.

The need for infrastructure, public services, and housing associated with direct population growth proposed at Parkmerced has been anticipated in the proposed *Design Standards and Guidelines* and has been part of ongoing local and regional planning activities. Infrastructure and services would be expanded to serve Parkmerced, without significant excess capacity that might encourage additional local growth beyond that already planned for in this Priority Development Area (PDA).³⁰

The Parkmerced Project would provide all on-site infrastructure for connections to City mains and would include on-site treatment of stormwater runoff, potentially reducing demand on the wastewater conveyance and treatment system. The Proposed Project would not expand infrastructure, i.e. build roads or expand the Muni system to geographic areas that were previously inaccessible or not well served. Thus, there would not be significant excess capacity associated with these improvements, or with the rerouting of the Muni light rail through the Project Site, that might encourage additional local growth. As a result, impacts associated with direct and indirect population growth are considered less than significant and no mitigation measures are required.

Impact PH-3: The Proposed Project would not displace substantial numbers of people and/or existing housing units or create demand for additional housing, necessitating the construction of replacement housing. (*Less than Significant*) (Criteria C.b, C.c)

This analysis addresses both temporary (construction-related) displacement and permanent displacement. The Project Sponsor has agreed to retain 1,683 existing units and to provide the existing residents of the 1,538 units that would be demolished with newly constructed on-site replacement units. The replacement apartments would be rented at the same rent-controlled rate as the residents' existing apartments prior to demolition and would be covered by the same restrictions on rent increases as contained in the San Francisco Rent Control Ordinance. (The Rent Control Ordinance would not apply to these apartments, but they would be protected by the same rules.) The proposed construction program has been phased so that existing Parkmerced residents, if they decide to remain, would be able to move to a new apartment before their unit is demolished, so they would not be required to move off site during any phase of the Proposed Project. Thus, the Parkmerced Project would not result in the displacement of existing residents that would necessitate the construction of new housing elsewhere, beyond the number of units already provided as part of the Proposed Project. The existing units to be demolished would be

³⁰ A Priority Development Area is a locally identified, infill development opportunity area within an existing community.

replaced with 5,679 new units, resulting in an increase in the total number of residential units rather than a decrease. There would be no displacement impacts, and no mitigation measures are required.

Impact PH-4: The Proposed Project would not induce substantial population growth in an area either directly or indirectly. (*Less than Significant*) (Criterion C.a)

The Parkmerced Project would concentrate population growth on the Project Site. As shown in Table V.C.2, full occupancy of the 5,679 additional residential units on the Project Site would increase the existing on-site residential population from about 7,340 people to about 20,290 people in 2030.³¹ The net increase of about 12,950 residents would approximately triple the Project Site's population and would be substantial from a neighborhood perspective. ABAG's *Projections 2009* estimates that the City will gain about 124,800 persons between 2010 and 2030 and that 80 percent of the City's future population growth will occur in its Priority Development Areas.³² Population growth due to implementation of the Proposed Project would be about 10.4 percent of Citywide population growth (124,800 persons) expected by 2030.

The Proposed Project would approximately triple the neighborhood's residential units per acre (from 28 dwelling units per acre to 77 dwelling units per acre). It would establish design guidelines to enhance the residential neighborhood character of the area while accommodating the substantial growth in on-site population. If the Proposed Project is implemented, at buildout the Parkmerced neighborhood would have a total population of about 20,290 residents. The increase in the on-site residential population would conform with the designation as a Priority Development Area, as the Project Site is in an area that has been identified as one of 10 urban areas in the City with the potential to accommodate substantial population growth.³³

The Proposed Project would increase the City's housing stock and would therefore contribute to the City's ability to meet the broader need for housing options of varying sizes, types, and levels of affordability. The Parkmerced Project would be subject to the affordability requirements of the City's existing Inclusionary Affordable Housing Program for the 5,679 net new units proposed on the Project Site, as set forth in the proposed Development Agreement. The Project Sponsor has agreed to provide a minimum of 852 units of below market rate housing on the

³¹ *Projections 2009* uses 2.28 persons per household for 2010 and 2030 forecasts. Existing population was calculated by multiplying the number of existing housing units at Parkmerced by this number (3,221 multiplied by 2.28 = 7,344). Projected population for 2030 was calculated by multiplying the total number of housing units at Parkmerced in 2030 by this number (8,900 multiplied by 2.28 = 20,292).

³² *Projections 2009*, p. 17 and p. 94. There are 10 Priority Development Areas in the City. The Project Site is in one of them, the "19th Avenue Corridor – County Line to Eucalyptus Drive." As stated in *Projections 2009*, p. 19, Priority Development Areas are locally identified, infill development opportunities near transit, and are areas of at least 100 acres where there is local commitment to develop more housing, along with amenities and services to meet day-to-day needs of residents in a pedestrian-friendly environment.

³³ *Projections 2009*, pp. 17 and 94.

Project Site.³⁴ These below market rate units would be affordable to households earning up to 120 percent of the Area Median Income. The proposed number of market rate (4,827) and below market rate (852) units would be expected to support the City's efforts to meet its regional housing needs allocation (31,193 units) and the total Bay Area housing need of 214,500 units projected by ABAG through 2014.³⁵ The proposed units would also add to the projected number of housing units at above moderate income and moderate income levels.

In light of the above, the Parkmerced Project would be expected to increase the average residential density on the Project Site and concentrate growth in one of the City's Priority Development Areas: the 19th Avenue Corridor – County Line to Eucalyptus Drive. The 12,950-person increase in Parkmerced's residential population would substantially change the existing areawide population, but not beyond that which has been expected and incorporated into local and regional planning efforts. Portions of the Project Site are underdeveloped and have the potential to absorb substantially more residential population growth. The resulting residential densities on the Project Site would not exceed levels that are permitted, common, and accepted in urban areas such as San Francisco. The number of residential units would increase from one housing unit for every 1,570 square feet of land area to one for every 565 square feet of land area, similar to many residential and residential-mixed zoning districts in the City.

The Parkmerced Project would provide all on-site infrastructure for connections to City mains and would include on-site treatment of stormwater runoff. There would not be significant excess capacity associated with these improvements, or with the rerouting of the Muni light rail through the Project Site, that might encourage additional local growth. The on-site infrastructure needed to support the level of growth anticipated for the Proposed Project was based on projections that included the residential component of the Proposed Project. Therefore, the Proposed Project would increase residential population in an established urban area with a high level of local and regional transit access and would not expand or build new infrastructure that would lead to indirect population growth. Thus, impacts associated with direct population growth would be less than significant and no mitigation measures are required. As stated earlier, the physical impacts of the population increase on the Project Site are addressed in other sections of this chapter.

Impact PH-5: The Proposed Project would not induce substantial cumulative population growth in the area either directly or indirectly. (*Less than Significant*)

The Parkmerced Project's potential contribution to cumulative population, housing, and employment impacts is evaluated in the context of existing, proposed, and reasonably foreseeable

³⁴ The Project Sponsor proposes to retain 1,693 existing units, replace 1,539 units, and add 5,679 new units to the Project Site, for a total of 8,900 housing units. Of the 5,679 net new housing units, a minimum of 15 percent of them (852 units) would have to be below market rate units, if those units were constructed on site.

³⁵ Housing Needs Plan, p. 43.

future development expected in the City and County of San Francisco. The geographic context for this analysis of cumulative impacts to population and housing is the City. The past and present development in the City, described in the Setting section on pp. V.C.1-V.C.5, represents the baseline conditions for the evaluation of cumulative impacts. Reasonably foreseeable future development forecasts are based on projections of future growth and take into account projects going through the entitlement process. The geographic context for an analysis of cumulative impacts to employment includes the entire Bay Area (as represented by the ABAG Planning Area³⁶), since a percentage of the City population commutes to jobs outside the city limits, and substantial numbers of residents of other cities in the Bay Area commute to jobs within the City. The existing employment conditions, representing past and present trends in this geographic area, are presented in Setting, pp. V.C.1-V.C.5.

ABAG's recently developed projections for Citywide growth took into account projects currently in various stages of the entitlement process, including the Parkmerced Project, the Treasure Island/Yerba Buena Island Redevelopment Plan, and Candlestick Point-Hunters Point projects. Development projections estimate an increase in San Francisco of 68,320 households, 124,800 persons, and 179,370 jobs from 2010 to 2030.³⁷ Cumulatively, buildout of the Parkmerced Project along with other anticipated residential and mixed-use developments in nearby areas along the 19th Avenue Corridor (i.e., the mixed-use projects at 77–111 Cambon Drive and at 1150 Ocean Avenue [in the Balboa Park Station Area Plan]; residential developments at 800 Brotherhood Way, at 445 Wawona Street [Ardenwood], and at 700 Font Boulevard; and the *San Francisco State University Master Plan*) is estimated to increase the City's population by about 16,850 persons by 2030.³⁸ The projected growth from these projects is expected to be about 13.2 percent of the anticipated Citywide population growth in 2030. Subtracting the population increase associated with the Parkmerced Project, as this number has been included in the overall population projections, cumulative projects would account for up to 3,900 persons and would fall within ABAG's population projections for the City. It is possible that cumulative projects could result in localized changes in zoning or land uses that could result in substantial direct or indirect population growth that would exceed City population projections. However, such an impact is not likely, for several reasons. First, the development projects considered in this cumulative analysis extend beyond those formally proposed and under review by the City and encompass most sites in the southwest quadrant of the City with the potential to accommodate substantial additional development. Second, the City is largely built out and there are few opportunities for unplanned changes in zoning or land use that would cause substantial growth. Third, the City

³⁶ The ABAG Planning Area encompasses Sonoma, Napa, Solano, Marin, Contra Costa, San Francisco, Alameda, San Mateo, and Santa Clara Counties.

³⁷ *Projections 2009*, p. 92.

³⁸ The population data and projections are based on information provided by the San Francisco Planning Department as part of the *19th Avenue Corridor Study*, February 10, 2010.

actively engages in long-range planning efforts throughout the City that consider infrastructure, public services, and housing needs, and population growth would occur in the context of these planning activities. Consequently, there is no anticipated significant cumulative impact associated with population and housing growth. No mitigation is required.

The Proposed Project would directly increase the on-site population in an established urban area with high levels of local and inter-regional transit services and facilities and would include other neighborhood amenities and services that could accommodate this increase. This direct population growth is considered planned growth. Indirect growth (or unplanned growth) would include residential and employment growth in surrounding neighborhoods resulting from an expansion of local infrastructure and public services. The Proposed Project would improve the on-site infrastructure but would not build or expand infrastructure or public services that could encourage additional local growth beyond that already planned. Areas surrounding the Parkmerced neighborhood are built out, with most potential development plans seeking to increase the intensity of land uses on undeveloped or underdeveloped infill sites. This potential growth would only be considered substantial if it were not anticipated in local planning efforts. Because this population growth has been accounted for in ABAG's population projections for the City, it would not be considered substantial. Therefore, the Parkmerced Project would not make a cumulatively considerable contribution to any potential cumulative impact related to increases in population, and its cumulative impact would be less than significant. No mitigation is required.

As identified in ABAG's *San Francisco Bay Area Housing Needs Plan 2007-2014*, the regional housing needs allocation for the nine-county Bay Area is 214,500 dwelling units, with San Francisco's share at 31,193 units. The Parkmerced Project would provide approximately 5,679 net new dwelling units, or over 18 percent of the City's regional housing needs allocation and 2.7 percent of the total regional housing need. As noted on pp. V.C.5-V.C.6, over the course of the past several decades, the construction of housing in the region has failed to keep pace with population growth in the Bay Area. Although population growth has slowed and is predicted to continue at a relatively moderate rate through 2030, the region is still attempting to make up for housing shortages from previous growth periods. The demand for 1,225 housing units that would be generated by employment in the Proposed Project would be less than the total number of units provided by the Proposed Project. Thus, the Proposed Project would provide a benefit to the region by constructing more housing than the demand it would generate, helping to achieve a better jobs-housing balance in the Bay Area. As a result, the Parkmerced Project's contribution to the significant cumulative housing shortage in the Bay Area would not be cumulatively considerable because it would provide more housing than is required by project-related demand, and the Parkmerced Project's cumulative impact would be less than significant. No mitigation is required.

The demand for housing units outside of the City, conservatively assuming that 24 percent of those employed at the Project Site would commute from outside of San Francisco, would be dispersed throughout the nine-county Bay Area.³⁹ The Parkmerced Project would not create a substantial demand for housing in the surrounding neighborhoods, San Francisco, or the region in excess of the total number of housing units provided as part of the Proposed Project. Therefore, the population growth associated with increased project-related employment would not result in housing demand that would exceed planned regional housing development, and would not be substantial. Because the employment increase associated with the Proposed Project would not be individually substantial or contribute to an exceedance of the City's employment projections, the Parkmerced Project would not result in a cumulatively considerable contribution to a potentially significant cumulative impact related to employment. Cumulative impacts related to physical environmental topics (like transportation, noise, and air quality) are discussed in other sections of this chapter.

The Bay Area is a major employment center with about 3.5 million jobs expected in 2010. About 16 percent of this employment would be in San Francisco (approximately 568,730 jobs). Development of cumulative projects in the Bay Area would be expected to result in indirect population growth through provision of increased employment opportunities. Employment growth would be considered substantial if it resulted in housing demand that would exceed planned regional housing development. It is possible that development of the cumulative projects along the 19th Avenue Corridor could result in substantial employment growth that would result in a regional housing shortage, and, as a result, this is a potentially significant cumulative impact.

Development at the Project Site would provide about 1,595 net new permanent jobs by 2030 (in addition to temporary Project construction-related jobs). Regional projections indicate that by 2030 the San Francisco Bay Area will have about 4,738,730 jobs (up from 3,475,840 in 2010). Citywide projections indicate that by 2030 San Francisco will have about 748,100 jobs (up from 568,730 in 2010).⁴⁰ San Francisco has traditionally experienced, and will continue to experience, employment opportunities that are not met by an equal supply of housing within the City, or even the Bay Area. The Proposed Project's contribution of about 1,595 permanent jobs would represent about 0.9 percent of the anticipated increase in regional employment through 2030. The project-related employment would result in a related increase in housing demand for 1,225 units, as shown in Table V.C.4, which would be less than the total number of units provided by the Parkmerced Project.

³⁹ According to the U.S. Census Bureau's *American Community Survey 2006-2008*, about 75.8 percent of the City's employed residents work in the City itself. Available online at: http://factfinder.census.gov/servlet/DTGeoSearchByListServlet?ds_name=ACS_2008_3YR_G00_&_lang=en&_ts=275934755081. Accessed April 21, 2010. A copy of the ACS 2006-2008 tables is available for public review at the San Francisco Planning Department, 1650 Mission Street, Suite 400, as part of Case File No. 2008.0021E.

⁴⁰ *Projections 2009*, p. 92.

Therefore, the population growth associated with increased project-related employment would not result in housing demand that would exceed planned regional housing development, and would not be substantial. Because the employment increase associated with the Proposed Project would not be individually substantial or contribute to an exceedance of ABAG's employment projections for the City, the Proposed Project would not result in a cumulatively considerable contribution to a potentially significant cumulative impact related to employment. No mitigation is required.

D.a. CULTURAL RESOURCES (Historic Architectural Resources)

The assessment of project impacts on “historical resources,” as defined by *CEQA Guidelines* Section 15064.5, is a two-step analysis: first, an analysis of whether the Project Site contains a “historical resource(s)” as defined under CEQA; and second, if the site is found to contain historical resources, an analysis of whether the project could cause a substantial adverse change to the resource. A project that may cause a substantial adverse change in the significance of an historical resource is a project that may have significant effect on the environment (CEQA Section 21084.1).

Thus, this section has two component subsections. The Setting discussion examines the potential for the presence of historical resources within the Parkmerced Project Site. The Impacts discussion evaluates the impacts of the Proposed Project on the historical resources identified in the Setting subsection.

SETTING

Parkmerced is a rental housing complex consisting of two-story garden apartments and mid-rise apartment towers, built between 1941 and 1951. The original Parkmerced property boundary contained 196 acres. Neither the complex, nor any of its constituent spaces or structures, is currently included in any federal, state, or local register of historical resources (i.e., the National Register of Historic Places, California Register of Historical Resources, Article 10 of the San Francisco Planning Code, Article 11 of the San Francisco Planning Code).

CEQA Guidelines Section 15064.5(a) defines a “historical resource” as:

- (1) A resource listed in, or determined to be eligible by the State Historical Resources Commission, for listing in the California Register of Historical Resources.
- (2) A resource included in a local register of historical resources, as defined in ... the Public Resources Code ... or identified as significant in an historical resource survey meeting the requirements ... of the Public Resources Code, shall be presumed to be historically or culturally significant.
- (3) Any ... building, structure, ... site ... which a lead agency determines to be historically significant or significant in the ... annals of California ... provided the lead agency's determination is supported by substantial evidence in light of the whole record. Generally, a resource shall be considered by the lead agency to be “historically significant” if the resource meets the criteria for listing on the California Register of Historical Resources.

Thus, under *CEQA Guidelines* Section 15064.5(a)(3), even if a resource is not included on any local, state, or federal register, or identified in a qualifying historical resources survey, a lead agency may still determine that any resource is an historical resource for the purposes of CEQA.

A lead agency shall consider a resource to be historically significant if it finds that the resource meets the criteria for listing in the California Register of Historical Resources (CRHR).

In order to assess the potential for the presence of historical resources within the Parkmerced Project Site, a *Historic Resource Evaluation & Cultural Landscape Assessment* (the “HRE”) was prepared by Page & Turnbull, Inc., an independent historic architectural resources consultant.¹ The HRE has been reviewed by the Planning Department, which concurs with its findings.

The HRE provides a historic context for the Parkmerced development and describes the physical features of the Parkmerced complex as the basis of its evaluation of the property for CRHR eligibility. The HRE is the first comprehensive survey and historic resource evaluation of Parkmerced. The HRE is summarized below as the basis for the EIR Setting discussion.

BACKGROUND HISTORIC CONTEXT²

The Parkmerced rental complex was constructed between 1941 and 1951 by MetLife as part of a government-supported effort that encouraged insurance companies to invest in middle-income housing in the 1940s and 1950s. It was San Francisco’s first all-rental housing community. Designed by Leonard Schultze & Associates, Parkmerced was a response to the increasing demand for affordable middle-income housing during and after World War II. Thomas Church (and other landscape architects from his office) served as the landscape architect for the garden courtyards and public open spaces.

Architects

Leonard Schultze

MetLife retained well-known New York architect Leonard Schultze (1877-1951) to design the buildings and site plan at Parkmerced. Born in Chicago, Schultze attended City College in New York, and was formally trained at the Architectural School of the Metropolitan Museum of Art. In 1903, he took a position as the Chief of Design for the Grand Central Terminal and its associated structures with the architectural firm of Warren and Wetmore. While with that firm, he supervised the construction of the Biltmore Hotel and Commodore Hotel in New York City. In 1921, he established the firm Schultze & Weaver with partner Spencer Fullerton Weaver in New York City. Schultze & Weaver were the pre-eminent designers of grand hotels and luxurious

¹ Page & Turnbull Inc., *Parkmerced Historic Resource Evaluation & Cultural Landscape Assessment*, November 13, 2009.

² The Parkmerced complex was constructed between 1941 and 1951. To the extent that subsurface remains of earlier historic and prehistoric eras may be present within the Project Site, the historic context for such resources is presented in Section V.D.b, Cultural Resources (Archaeological Resources and Paleontological Resources), in this EIR.

country clubs throughout the 1920s and early 1930s, including a succession of Biltmore hotels, such as the Breakers Hotel in Palm Beach, Florida (1926), and the Waldorf-Astoria in New York City (1931). In the 1930's, the firm expanded to other building types, including offices and banks.

The firm became Leonard Schultze & Associates upon Weaver's death in 1939. Schultze's work in the last decade of his life was focused on large-scale housing developments, a dramatic departure from his earlier career. For his designs at Parkfairfax (in Alexandria Virginia), Park La Brea (in Los Angeles), and Parkmerced, Schultze adapted a similar basic plan to meet specific site constraints. The circulation, block patterns, architecture, and landscape design of Park La Brea and Parkmerced are nearly indistinguishable, as described below. At Parkmerced, Schultze created a unified complex of buildings and open spaces that first addressed San Francisco's wartime housing needs and later addressed the post-wartime needs for higher density. His designs consisted of repeatable building types, built in blocks and differentiated by architectural details including porches, rooflines, and door surrounds. Schultze's initial site plan evolved to increase density through the construction of high-rise towers. Schultze's tower designs were simple and utilitarian, and resemble MetLife's other residential projects completed during this period, as described later in this section.

The clustering of units enabled an economical design with centrally located utilities. Commercial space was situated at the edge of the development, closest to 19th Avenue, which, as described below, was consistent with the Garden City and Ideal City design theories of separating residential and commercial uses as much as possible. Schultze concentrated much of his attention on the designs of the interior spaces at Parkmerced, ensuring that each unit had high-quality features (of the time) such as parquet floors, picture windows, and modern appliances. Schultze's designs were a major part of Parkmerced's identity as a unified housing complex. Schultze died in 1951, making Parkmerced and Park La Brea his last completed projects and the last residential housing complexes completed by MetLife.

Thomas Church

Thomas Dolliver Church (1902-1978) was a landscape architect recognized for his celebrated residential gardens and the development of the "California style." He practiced landscape architecture in and around San Francisco for almost 50 years, from 1932 until his retirement in 1977. Church is known as the founding father of the modern movement in landscape design, and was educated in landscape design at the University of California, Berkeley and at the Graduate School of Design at Harvard University. His early work included a series of collaborative projects with architect William Wurster, for which Church created private gardens that worked in tandem with Wurster's designs.

Church's career began during the Depression when he learned to create formally restrained gardens (using native California species to the extent possible) that required little maintenance, as thought of at the time.³ Church adapted his garden designs to the existing topography for many of his projects, which minimized construction costs and allowed him to use vegetation that suited the unique climate considerations of their sites. Church made his reputation as the inventor of the California garden through his regular use of native California species and the creation of functional spaces that served both the aesthetic and recreational needs of his clients. He promoted the idea of indoor-outdoor living, creating outdoor "rooms" in the landscape for relaxation and recreation.

The rental housing project for MetLife was a significant commission for Church's office, coming at a time when many landscape architects were having difficulties finding private commissions. Church adapted the landscape plan for the whole of Parkmerced to the unique microclimate of the location. He was well known for his hands-on approach to garden design, and his hand is still evident at Parkmerced. He would adapt his planting plan and patterns to the realistic landscape potential of the site after each building was completed, improvising many of his designs on site to create spaces that directly responded to the unique characteristics of the existing topography of each block. Church used a limited selection of forms and species, and combined them in varying patterns throughout the numerous blocks and open spaces. This allowed for individuality among the repetitive blocks of buildings.

Construction of Parkmerced

Parkmerced was built by Starrett Brothers & Eken, the New York City firm that constructed the Empire State Building and several other MetLife housing projects, including Parkchester and Peter Cooper Village in New York City.

First Phase (1941-1945)

Construction of the first phase of clustered garden apartments at Parkmerced began in 1941. The initial phase of construction included the layout of open spaces and the pie-shaped block grid, as well as the construction of six blocks, at the southwest corner of the site, of unfinished concrete. Original plans called for all buildings to be constructed of reinforced concrete, and initially the garden apartments were constructed as originally specified, but wartime restrictions on building materials made reinforced concrete unavailable for private enterprise. Although construction was allowed to continue through the war years to provide wartime housing for military personnel, the original number of apartments was reduced from about 2,500 to 1,700 because of shortages of materials. The remaining garden apartments planned for the first phase of construction were

³ Note that many of the selected plantings by Church do, in fact, require extensive maintenance according to current landscape maintenance standards.

completed in 1945 and constructed of wood frame and stucco. Thus, the quality of materials was less durable than was originally planned. The Meadow, the Commons, and drives were landscaped and the playgrounds were completed by 1945.

Thomas Church appears to have joined the project in 1941 and was consulted to address the unique climate and topography of the Lake Merced District through the landscaping of the garden courts. Church's associates claim that the site plan was largely designed by architects from the East, who did not clearly understand the unique climate of the West Coast. His influence was seen in the landscape elements found within the garden apartment courts, which relate to his other smaller-scale residential work.

Contemporary newspaper articles and trade journals applauded the site planning of the complex for its unity that combined infrastructure, housing, and recreation areas, and credited it as an innovative advancement in housing design.

Second Phase (1948-1951)

In the late-1940s, as a response to the continued demand for housing after World War II, MetLife developed the remaining parcels at Parkmerced to provide greater residential density and site amenities. This second phase of development included the addition of four blocks of garden apartments, completed between 1948 and 1949, as well as the construction of the Cambon Drive shopping center (specified in the original site plan), an Administration Building (also specified in the original site plan), three underground garages, a Maintenance Building, and 11 mid-rise towers, which were all completed by 1951. All of the buildings constructed between 1948 and 1951 were made of poured-in-place molded concrete with horizontal scoring. The massing, height, and materials of these buildings serve as a clear visual marker of this last phase of construction. The second phase of construction added 1,769 units, doubling the existing number of rentable units to a total of 3,483.

Thomas Church joined Leonard Schultze again on the second phase of design. Church designed the landscaping around the 11 towers and re-designed the Meadow and associated green spaces to accommodate the larger-scale buildings on the Project Site. The towers were positioned in the center of open blocks on the periphery of the original Parkmerced property, and were also sited in the Meadow, filling in much of the open space southwest of the Commons.

Planning History Context

Parkmerced's inward-facing layout and the character of the property's park-like setting, shared grounds, and clustered housing were informed by the ideas of planning pioneers from the 1890s, 1920s, and 1930s. These planning concepts include the Garden City movement from the 1890s, New Deal Housing Initiatives, and Le Corbusier's Ideal City from the 1920s.

The Garden City

The theoretical foundations of Parkmerced are set in Ebenezer Howard's Garden City theory of 1898, which promoted the planning of self-contained communities of clustered houses located amidst ample open space for collective agricultural use. Howard's planning concept marks the beginning of a lineage of modern planning history which continues to influence housing design and community planning in Europe and the United States.

Sunnyside Gardens in Queens, New York (1924-1928), an experimental, low-cost housing complex designed by Stein and Wright, was influential in advancing the Garden City Movement. Stein and Wright lined the peripheries of the city blocks with apartment buildings, reserving the blocks' interiors for common space, light, and fresh air. In their design for the first modern, planned suburb in Radburn, New Jersey (1928), Stein and Wright clustered houses back-to-back, abandoning the traditional street grid system. They limited private outdoor space in favor of large shared parks around the houses. The plan also revised the role of the automobile, as the houses were grouped on cul-de-sacs only accessible from perimeter roads, and sidewalks, not roads, were installed through the common open spaces among the houses. This reduced the number of roads required for the community and separated vehicular and pedestrian traffic with the intention of creating safety and convenience for residents.

Projects such as Radburn featured shared amenities such as parks, pools, and schools. Clustered housing was intended to allow for more shared space and to orient community life to gardens, parks, and recreation areas. Commercial or retail uses were separated from residential areas and were concentrated in suburban shopping malls to promote the seclusion and park-like setting of the suburban residential neighborhood.

New Deal Housing Initiatives

The Garden City concept was furthered during the Great Depression by the Federal Housing Administration, which established standards for neighborhood planning that were based on the Radburn, New Jersey concept. One of the first such Federal Housing Administration garden apartment complexes was Colonial Village in Arlington, Virginia (1935). Colonial Village was a development of attached small-scale apartments arranged around shared interior gardens. These "garden apartment villages" featured varied and irregular massing of units within a superblock, separation of auto and pedestrian traffic, and landscaped walkways, gardens, and recessed entry courts. Staggered roof lines and unifying cornices, fascia, and dentil friezes, and the repetition of architectural embellishments – doorways, transoms, moldings, window surrounds, roof designs – unified each complex's overall design. This "garden apartment village" concept influenced the site planning of Parkmerced in the early 1940s.

Larger-scale “Greenbelt Towns” and “New Towns” offered high-quality planning, a community-oriented lifestyle, and low-cost suburban housing to urban dwellers. Examples of greenbelt towns include Greenbelt, Maryland (1937), Greenhills, Ohio (1938), and Greendale, Wisconsin (1938). These new towns provided recreation areas and facilities for residents to share, and were intended to provide clean, green, and orderly living, which was a departure from the then-perceived mess and turmoil of American cities during this period.

Le Corbusier’s Ideal City

The second phase of building at Parkmerced, particularly the addition of mid-rise towers, appears to have been inspired by Le Corbusier’s 1920s theory of the “Ideal City,” where free-standing towers were set in blocks of open space. Le Corbusier’s “superblock” approach combined two concepts: 1) machine-made, orderly, standardized, and technically-perfected architecture, and 2) natural environment with sunlight, views, air, and greenery. The “superblock of the future” or “towers-in-the-park” model was thought to achieve an ideal balance of density and access to open space, and was used as a model for other large-scale MetLife housing projects, such as Parkchester in the Bronx (1939-42), Stuyvesant Town in Manhattan (1943-49), and Park La Brea in Los Angeles (1941-50). The novel tower developments were meant to act as an affordable haven within American cities, especially for returning war veterans and their families.

Le Corbusier's Ideal City theory shared some major principles with the Garden City model. Most importantly, the Ideal City was characterized by a strict separation of uses. Like the Garden City, the Ideal City was premised on the idea that the automobile was the predominant mode of transportation.

World War II and the Post-War Housing Boom Historic Context

Between 1940 and 1950, the urban population of California expanded by 47 percent in response to the demands brought on by World War II. During the war, the Bay Area became a center for shipbuilding and military activity, and soldiers were stationed in San Francisco and surrounding communities to protect the Pacific Coast from a feared Japanese invasion. In this period, over 30 shipyards were built in the Bay Area to support the war effort, and over one million soldiers passed through the Bay Area during the war. After World War II, many of these soldiers, attracted by the mild California climate, returned with their families. The increase in population in the San Francisco Bay Area, combined with changing wartime social circumstances and opportunities for jobs, led to a significant increase in the demand for middle-income housing.

Metropolitan Life Insurance Company Historic Context

In the mid-20th century, MetLife became one of the most successful housing developers in the history of the United States through its investments in private rental housing complexes. MetLife’s housing projects were intended to be successful and long-lasting investments with a

positive social purpose. MetLife was one of the earliest builders of residential housing complexes that expressed new housing standards that evolved during the 1930s and 1940s to include higher quality apartments for the growing middle class. Early housing complexes were stark and utilitarian, with little landscaping. MetLife wanted their housing projects to be of high-quality materials and design, with open spaces to provide ample room for play and recreation.

MetLife's first residential housing complex was Sunnyside Gardens, built between 1924 and 1928 in Queens, New York. The project was a success financially and socially, with full occupancy upon opening. MetLife's next project, Parkchester, was built on one of the largest undeveloped properties within New York City and was the first of the "park" complexes. Parkchester, constructed between 1938 and 1942, was comprised of 51 towers and featured a shopping center, a theatre, five garages, a post office, a library, banks, and office space. Parkchester was the largest housing community in the world developed by a private enterprise.

In the early 1940s, MetLife planned three more "Park" complexes to meet the demands for middle-income housing: Parkfairfax, in Alexandria, Virginia near Washington, DC (1941-1943); Park La Brea in Los Angeles (1941-1950); and Parkmerced (1941-1951). While MetLife was completing these projects, the company commissioned three other residential housing complexes on the East Coast: Stuyvesant Town (1943-1949), Riverton (1944-1947), and Peter Cooper Village (1945-1949), all located in New York City. Parkmerced was the last of the eight MetLife residential housing complexes completed during the period between 1922 and 1951. The designs of the high-rise towers added to the site during Parkmerced's second phase of construction (1948-1951) are very similar to the three New York complexes.

Due to the relatively young age of World War II historic residential suburbs as a historic resource type, only two of MetLife's residential communities have been previously evaluated and listed in the National Register of Historic Places. Sunnyside Gardens was listed on the National Register in 1984 as nationally significant under Criterion C (Architecture/Design) for its association with Clarence Stein and Henry Wright (the architects of Radburn, New Jersey, which is also listed in the National Register) in the areas of community planning and development and architecture. The Parkfairfax Historic District, built by MetLife during the same period as Parkmerced, was listed on the National Register in 1999 as locally significant under Criterion A (Events) for its association with MetLife in the areas of community planning and development and politics/government, and under Criterion C for its association with architect Leonard Schultze (Parkmerced's architect), landscape architect Clarke & Rapuano, and builder Starrett Brothers & Eken (Parkmerced's builder) in the areas of architecture and community planning and development.

PHYSICAL DESCRIPTION OF THE PROJECT SITE

Parkmerced was originally designed to include 196 acres of garden apartments with landscaped drives and open space. Several blocks along the northern perimeter of the property, which were originally part of the Parkmerced complex, are now owned and managed by other entities than the Project Sponsor, including the San Francisco State University Foundation, the commercial shopping center at 33-111 Cambon Drive, and the approximately 8 acres of undeveloped land along Brotherhood Way. Today, the Project Site includes 152 acres with 3,211 housing units and associated service buildings, as well as private and shared open space.

Site Planning and Circulation

The overall site plan of Parkmerced is organized by a series of landscaped drives that radiate from a central open space within Juan Bautista Circle called “the Commons.” (See Figure III.2: Existing Site Plan, in Chapter III, Project Description, p. III.7.) Access to the site is from four points at 19th Avenue, Higuera Avenue, Junipero Serra Boulevard, and the west end of Font Avenue. From the Commons, the blocks begin to vary in form based on their location, topography, and relationships to open space within the complex. Each block is planned with a series of courtyards and service spaces, with carefully integrated landscaping intended for privacy and safe play areas for children.

The broad landscaped drives intersect with a network of secondary streets that provide access to residential blocks and shared open spaces. From the secondary streets, automobiles are led into carports, garages, and areas of designated street parking. Pedestrian circulation through the site is provided by a system of concrete and asphalt sidewalks and is organized in much the same way as vehicular circulation, progressing through a hierarchy of public and semi-public spaces to individual apartment courtyards, terraces, and units.

The Parkmerced circulation plan was intended to provide safety and quiet for residents by discouraging through-traffic from neighboring areas. The street plan of Parkmerced does not align with the more regular grid of residential neighborhoods west of 19th Avenue, and access points to the complex are relatively limited, creating an inward-focused residential enclave within San Francisco.

Buildings

Parkmerced possesses two main residential building types: garden apartments, and mid-rise towers. The two-story garden apartments are simple, attached, concrete or stucco-clad, rectangular volumes lining the perimeter of the residential blocks. (See Figure V.D.1: Representative Garden Apartment Block Face.) The garden apartments vary in size and range



SOURCE: Page & Turnbull, Turnstone Consulting

PARKMERCED PROJECT

FIGURE V.D.1: REPRESENTATIVE GARDEN APARTMENT BLOCK FACE

from 9 to 100 units per block. Each block has shared laundry facilities and courtyards for recreation and socializing. (See Figure V.D.2: Representative Courtyard.)

Substantial jogs in the block façade articulate separate smaller-scaled volumes to provide visual interest in a play of volumes and light and shadows. This effect is accentuated on each block by a recent paint scheme consisting of an alternating palette of contrasting colors. These otherwise simple rectilinear volumes are embellished with the application of Colonial-Revival-inspired architectural elements including hipped and gabled roof lines, dormers, and cupolas, and porticos, columns, decorative railings, and pedimented door surrounds to mark the entrances to the buildings. The overall effect of the garden apartment blocks is both varied yet cohesive. The combination and repetition of small-scale features at Parkmerced aid the property's character by giving detail and definition to the building facades and open spaces.

The Parkmerced towers are located in a series of four clusters oriented to face each other around exterior open spaces including the Meadow, as well as landscaped seating areas and playgrounds between the towers. The 11 mid-rise, 13-story apartment towers are cruciform in plan and similar in design. (See Figure V.D.3: Representative Tower.) Each tower has associated entrance plantings and landscaped open spaces between the buildings, which serve to connect the towers and to soften the transition between the towers and the surrounding landscape.

The Administration Building serves as a prominent visual gateway marking the entrance to the Parkmerced complex. (See Figure V.D.4: Administration Building.) It is located at the northeast corner of the Parkmerced complex at the intersection at 19th Avenue and Crespi Drive. The central portion of the building is marked by a hipped roof, topped by a cupola, and by a semi-circular entry bay. Two low wings flank the central portion.

Landscaping

The Parkmerced Project Site is part of a former coastal dune and estuary ecosystem. There is no remaining natural vegetation associated with these habitats. The vegetation associated with the original Parkmerced complex consists of a relatively limited palette of non-native, cultivated species. The vegetation includes mature specimen trees, geometrically-shaped lawns, and a variety of shrubs and ornamental plantings. As described above, Thomas Church chose species that could resist the wind and fog conditions of the Lake Merced District. The overall landscape design includes the careful siting of specimen trees, shrubs, and ornamental plantings along landscaped drives, around exterior block facades, within lawns and shared open spaces, and courtyards. The original design of the courtyards included the basic layout of lawn, paving, hedges and specimen trees. (See Figure V.D.5: Representative Courtyard Landscaping.) Church purposefully left the planting beds around individual terraces open so that residents could cultivate their own gardens in these areas.



SOURCE: Page & Turnbull, Turnstone Consulting

PARKMERCED PROJECT

FIGURE V.D.2: REPRESENTATIVE COURTYARD



SOURCE: Page & Turnbull, Turnstone Consulting

PARKMERCED PROJECT

FIGURE V.D.3: REPRESENTATIVE TOWER



SOURCE: Page & Turnbull, Turnstone Consulting

PARKMERGED PROJECT

FIGURE V.D.4: ADMINISTRATION BUILDING



SOURCE: Page & Turnbull, Turnstone Consulting

PARKMERCED PROJECT

FIGURE V.D.5: REPRESENTATIVE COURTYARD LANDSCAPING

The boulevards, drives, and streets are landscaped with broad areas of lawn and specimen trees, located at even intervals along the drives. (See Figure V.D.6: Representative Landscaped Drive.) These trees are a component of the views along these landscaped circulation routes and provide visual markers for progression through the site. The traffic circles and landscape medians along these drives are landscaped with grass and planters with ornamental species.

Character-Defining Features

The HRE identifies the distinctive qualities and characteristics of the Parkmerced Complex that contribute significantly to the character of the Parkmerced Complex. They are presented in the list below.

Spatial Organization

- Overall site plan, includes street grid, placement of buildings in blocks, the Meadow, and Parkmerced “the Commons.”
- Garden apartment blocks and courtyards (interior, entry, and laundry)
- Tower arrangement and courtyards

Cluster Arrangement

- Garden apartment blocks
- Tower clusters

Circulation:

- Landscaped drives
 - Font Boulevard
 - Crespi Drive
 - Bucareli Drive
 - Grijalva Drive
- Juan Bautista Circle
- Traffic circles
- Aggregate and concrete paths (in courtyards and between buildings)

Topography

- Individual garden apartment courtyard grading



SOURCE: Page & Turnbull, Turnstone Consulting

PARKMERCED PROJECT

FIGURE V.D.6: REPRESENTATIVE LANDSCAPED DRIVE

Buildings and Structures

- Garden apartments
- Towers
- Maintenance building
- Administration building
- Carports
- Laundry buildings
- Storage buildings

Vegetation

- Location and rhythm of street trees and plantings along drives and secondary streets, garden courtyard apartments, and towers
- Placement of specimen trees, lawns, and vegetation in courtyards of garden apartments and towers (actual species of vegetation has been altered in certain cases; this character-defining features should be evaluated on case-by-case basis)
- Parkmerced Commons plantings
- Ornamental median plantings in traffic circles and along landscaped drives, where remaining

Landscape Features

- Terrace divider walls in courtyards
- Planters (concrete, wood and brick)
- Low concrete and/or brick site walls
- Courtyard stairs (brick and concrete)

Views and Vistas

- Vistas down landscaped drives (see circulation above)
- Vistas to and from garden apartment courtyard breezeways
- Views to and from the Commons
- Views from the ground-floor-level of mid-rise towers to garden apartments and landscape

ELIGIBILITY FOR THE CALIFORNIA REGISTER OF HISTORICAL RESOURCES

Eligibility criteria for inclusion in the California Register of Historical Resources (CRHR) are closely based on, and consistent with, the eligibility criteria for inclusion in the National Register of Historic Places (NRHP). CRHR criteria have been modified for state use in order to include a range of historical resources which better reflect the history of California. For a resource to be considered eligible for inclusion in the CRHR, the resource must meet at least one of the four CRHR eligibility criteria (discussed below), *and* it must retain sufficient integrity (discussed below). A resource that is less than 50 years old may be considered for listing in the California

Register if it can be demonstrated that sufficient time has passed to understand its historical importance (CCR, Section 4852(d)(2)).

For the purposes of CEQA, a resource that meets; at least one of the eligibility criteria for inclusion in the CRHR shall be considered an historical resource. A resource is eligible for listing in the CRHR if it:

- (1) Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage (Events);
- (2) Is associated with the lives of persons important in our past (Persons);
- (3) Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values (Design/Construction); or
- (4) Has yielded, or may be likely to yield, information important in prehistory or history (Information Potential).

National Park Service technical guidance for identification and evaluation of historic resources under the National Register are relevant and useful in informing the identification and evaluation of historic resources under the California Register.

Criterion 1 (Events)

Parkmerced is significant under Criterion 1 (Events) in the areas of community planning and development, and social history for its association with MetLife's nationwide effort to provide housing during and after World War II, as well as the role of Parkmerced in the development and growth of middle-income housing in San Francisco.

Parkmerced reflects an important historic trend in the development of middle-income housing in San Francisco, and is representative of one of the earliest wartime planned residential communities within San Francisco and the Bay Area. As wartime restrictions and housing demands further increased, MetLife responded to the regional need for higher density housing with the construction of second phase of Parkmerced, which included high-rise towers and additional garden court apartments. Parkmerced is significant within this context as a local representative of the nationwide housing boom that occurred during World War II. Of the 28 housing projects constructed in the Bay Area during this period, Parkmerced appears to be one of the largest middle-class housing developments, with over 2,500 units initially planned.

Parkmerced also embodies a regional example of the World War II era housing boom. The first phase of construction at Parkmerced was begun in response to the national wartime demand for housing in the United States, and included higher quality materials and new principles for shared communal living, as promoted by MetLife. The second phase of construction at Parkmerced

represents the increased need for higher density housing options after the war. Within this one site, the scale of the project vastly increased from one phase to another, as housing demand became the ever-present goal of both the public and private sectors during this time period.

Parkmerced is also significant for its association with MetLife. MetLife constructed eight residential communities in major metropolitan cities between 1922 and 1951 and for each project, strove to create a unified and inward-facing community within a park-like setting, including shared grounds and clustered housing.

Criterion 2 (Persons)

Parkmerced does not appear eligible for inclusion in the CRHR under Criterion 2 (Persons). Research has not uncovered substantial evidence that any historically prominent individuals have been closely associated with Parkmerced. The property's association with the architect and landscape architect is addressed under Criterion 3 (Design/Construction), below.

Criterion 3 (Design/Construction)

Parkmerced is significant under Criterion 3 (Design/Construction) as an example of a World War II era planned residential community in San Francisco. Parkmerced displays the distinctive characteristics of the World War II era planned residential community building type with its garden court apartments, integrated landscape features, high-rise apartment towers, and recreational amenities. Parkmerced is also significant under this criterion as the stylistic and practical application of Leonard Schultze and Thomas Church's design principles in response to the increasing need for affordable middle-income housing for military families during and after World War II.

As applied to the important patterns of physical development, Parkmerced reinforced MetLife's ideal for shared communal living with its inward-facing garden courtyards, shared open space, and shared recreational amenities. At the time, very few other communities in San Francisco were able to take advantage of a large area of undeveloped land, and literally plan a new community and neighborhood within the City.

Parkmerced is significant for its association with Thomas Church, who designed the landscaping of the garden courtyards and open space throughout the community. Church was well known as a mid-century modernist landscape architect, and often worked on smaller-scale residential projects. Church's expertise was crucial for orienting the Parkmerced complex to the unique climatic conditions of San Francisco and the specific microclimate of the Lake Merced District. At Parkmerced, Church contributed his mid-century sensibility to the shared courtyards and open spaces throughout Parkmerced.

The significance of Parkmerced under Criterion 3 is not premised on the design of its buildings. Buildings at Parkmerced are fairly modest examples of World War II era housing and use an architectural vocabulary of Colonial Revival-inspired features, which by themselves or viewed individually, do not possess sufficient merit to express the mid-century aesthetic ideals. The value of the buildings at Parkmerced is in their overall site planning, massing, relation to landscape features, and variation, rather than their individual building features. As a whole, the buildings contribute to the overall character of the resource, but do not possess high artistic value.

Criterion 4 (Information Potential)

Criterion 4 is commonly understood to apply primarily to archaeological resources. Such resources may lack sufficient historical documentation, physical integrity, or physical accessibility (they may be buried or submerged) to describe their character and evaluate their significance. The significance of archaeological resources is premised on their potential to yield important historical or scientific information. Archaeological research and investigative methods are necessary to realize the information potential of such resources. The potential for the presence of subsurface archaeological resources within the Parkmerced Project Site that predate the Parkmerced development is addressed in Section V.D.b, Cultural Resources (Archaeological Resources and Paleontological Resources), in this EIR. As described in Section V.D.b, the architectural resources of the Parkmerced complex are from a relatively recent historic era that is well documented in the historic record. These resources are therefore unlikely to yield important scientific or historical information under CRHR Criterion 4 that is not already documented in the historic record.

Integrity

National Park Service guidance on determining eligibility under the National Register of Historic Places informs the determination of eligibility for inclusion in the CRHR. According to the *National Register Bulletin: How to Apply the National Register Criteria for Evaluation*, integrity is defined as “the authenticity of an historical resource’s physical identity evidenced by the survival of characteristics that existed during the resource’s period of significance.” The seven characteristics of integrity are defined as follows:

Location is the place where the historic property was constructed.

Design is the combination of elements that create the form, plans, space, structure and style of the property.

Setting addresses the physical environment of the historic property inclusive of the landscape and spatial relationships of the buildings.

Materials refer to the physical elements that were combined or deposited during a particular period of time and in a particular pattern of configuration to form the historic property.

Workmanship is the physical evidence of the crafts of a particular culture or people during any given period in history.

Feeling is the property's expression of the aesthetic or historic sense of a particular period of time.

Association is the direct link between an important historic event or person and a historic property.

The integrity discussion for Parkmerced is based on the definitions of the aspects of integrity outlined in *The Guide to Cultural Landscape Reports* and the *Historic Residential Suburbs in the United States: 1830-1960, National Register Multiple Property Documentation Form*.

Location

Location is the place where significant activities that shaped the neighborhood took place. This quality requires that to a large extent the boundaries that historically defined the suburb remain intact and correspond to those of the historic district being nominated. It also requires that the location of streets and the size and shape of the house lots have remained constant.

The original 196-acre Parkmerced complex included the area bounded by 19th Avenue and Junipero Serra Boulevard to the northeast; Brotherhood Way (Stanley Boulevard) to the south; Lake Merced Boulevard to the southwest; and Font Boulevard, Tapia Drive, and Holloway Avenue to the north. Over time, the property boundaries have changed somewhat, as many blocks along the northern, eastern, and southern edges of the original Parkmerced complex have been sold. These blocks include the northern six blocks and recreation area owned by San Francisco State University, the eastern 2.75-acre commercial shopping center site along Cambon Drive owned by Yousef Realty, and the roughly 8-acre site along Brotherhood Way south of the Project Site owned by Olympic View Realty LLC. To date, these blocks have yet to be significantly redeveloped by the new owners, and the location of streets and the size and shape of the lots have remained constant despite these changes in ownership. This change in ownership does not affect the overall characterization and integrity of Parkmerced, or the identification of the potential historic district boundaries, since the integrity of location to a large extent is still present on the Project Site. The overall site plan of Parkmerced as a whole remains in its original appearance and location as realized between 1941 and 1951 by MetLife. Therefore, the property retains integrity of location.

Design

Design is the combination of elements comprising the form, plan, and spatial organization of a historic neighborhood. This includes the arrangement of streets, division of blocks into house lots, arrangement of yards, and construction of houses and other buildings. Design may have resulted from conscious planning decisions set forth in the historic plat, project specifications,

building contracts or deed restrictions, or it may be the result of the personal tastes and individual efforts of homeowners to shape their domestic environment.

The arrangement of garden apartment units and towers in clusters around associated open spaces is a major organizing component of the Parkmerced site plan and retains integrity to the period of construction. The built resources at Parkmerced largely remain as originally designed by Leonard Schultze & Associates between 1941 and 1951. The property was owned by MetLife until 1970, and few site-wide changes occurred during this period. The most evident change under MetLife's ownership occurred in August 1964, when MetLife replaced all of the original steel-sash windows at Parkmerced with aluminum-sash replacements. Again, in the 1990s, these aluminum-sash replacement windows were replaced with aluminum-sash, double-pane windows. Although the window replacement occurred throughout the entire site, the change was mostly cosmetic and did not drastically alter the rhythm of the building façades or the integrity of the original architectural design.

Another prominent change that took place during the period between 1970 and present day was the construction of a Montessori School at the eastern edge of the Meadow in 2004. This building was inserted into the existing green space at the end of the Meadow and congests this area of the original site plan, which was historically an open axis that provided views and circulation through the property. The addition of the Montessori School to the Meadow has obstructed one of the property's most important view sheds: the area between the Meadow and the Commons. This change is irreversible and alters the original landscape design.

Current changes, including the repainting and application of architectural ornament to several of the garden apartment and tower buildings at Parkmerced, are largely cosmetic and do not alter the original building designs. However, the recent remodeling of the tower lobbies and entryways has resulted in the introduction of new design elements, which have altered the original building designs.

The overall landscape character at Parkmerced remains as originally designed by Thomas Church between 1941 and 1951, although original plantings have been replaced over time. One of the most dramatic and evident changes in the landscape resources since this period is the overgrowth of much of the original vegetation. Deferred landscape maintenance by previous owners has allowed certain species to grow and expand into designed viewsheds and previously open areas. This change is reversible and does not alter the overall integrity of landscape design. As individual species have exceeded their lifespan, vegetation has been replaced throughout the Parkmerced site. These changes have not been well documented and it is difficult to discern exactly which of the current species are original and which have been replaced. Recent alterations to the plantings around the tower entrances, Administration Building, and in several of the site's traffic circles mark a dramatic break with the original landscape designs of Thomas

Church. To date, these alterations have been limited to selected areas of the site, and therefore do not alter the original landscape designs for the site as a whole.

The overall form, plan, and spatial organization of Parkmerced as a whole has remained unchanged since MetLife's period of ownership, and therefore the property retains integrity of design to the period of significance.

Setting

Setting is the physical environment within and surrounding the property. Many historic neighborhoods were designed to provide a semi-rural environment within commuting distance of the city, created through the design of an open, park-like setting. Integrity of setting requires that a strong sense of historical setting be maintained within the boundaries of the property. This relies to a large extent on the retention of built resources, street plantings, parks, and open space. Elements of design greatly affect integrity of setting, and those consistent with the neighborhood's historic character or dating from the period of significance add to integrity.

The setting at Parkmerced, including the property's original site plan, built resources, street plantings, designed landscapes, and open spaces, has not been significantly altered since the property was constructed by MetLife in 1951. Although individual plantings have been removed or replaced, the Montessori School has been constructed in the Meadow, and some individual buildings have undergone minor changes, the property's setting largely remains as historically designed. Therefore, the setting retains integrity to the period of significance.

Materials

Integrity of materials includes the construction materials of dwellings, garages, roadways, walkways, fences, curbing, and other structures, as well as vegetation planted as lawns, shrubs, trees, and gardens. The presence of particular building materials may be important indicators of architectural style and methods of construction that give some neighborhoods a cohesive historic character. Integrity of materials in an architecturally significant neighborhood requires that most of the dwellings retain the key exterior materials that marked their identity during the period of significance. The retention of original plant materials, however, may be less important in assessing the integrity of a neighborhood, as these are commonly replaced over time. Plantings of similar overall character will generally convey integrity of setting, even if the integrity of particular plant materials has been lost.

The original materials of the wood-frame and concrete buildings at Parkmerced have remained relatively unaltered since the period of significance, except for the wholesale removal of most of the original steel-sash windows in 1964. Examples of materials associated with the small-scale features of the site remaining from the period of significance include architectural features such

as door surrounds, railings, doors, brick and concrete carports, signage, streetlamps, and downspouts. Original vegetation at Parkmerced has matured since the period of significance, which is a common characteristic of designed historic landscapes that, by nature, are in constant flux. As this vegetation has matured throughout the property without regular maintenance and replacement by previous owners, some of the historic views have been obstructed. Overall, however, Parkmerced retains integrity of materials to the period of significance, since the majority of the residences retain key exterior materials.

Workmanship

Workmanship is evident in the ways materials have been fashioned for functional and decorative purposes to create buildings and structures, and a landscaped setting. This includes the treatment of materials in house design, the planting and maintenance of vegetation, as well as the construction methods of small-scale features such as curbs and walls. Integrity of workmanship requires that architectural features in the landscape exhibit the artistry or craftsmanship of their builders and that the vegetation historically planted for decorative and aesthetic purposes be maintained in an appropriate fashion and replaced in kind when damaged or destroyed.

Evidence of workmanship at Parkmerced is seen in the characteristic features that remain from the period of significance, including the concrete buildings designed by Leonard Schultze and the landscaped courtyards and open spaces designed by Thomas Church. There have been few changes to the buildings and landscapes at Parkmerced since MetLife's ownership, and the original design and materials of the property largely remain as originally constructed between 1941 and 1951. One of the few large-scale alterations to the property's workmanship occurred in 1964 when all of the original steel-sash windows were replaced with aluminum-sash windows. Despite these alterations, the property retains integrity of workmanship to the period of significance.

Feeling

Although intangible, feeling is evoked by the presence of physical characteristics that convey the sense of past time and place. Integrity of feeling reflects the cumulative effect of setting, design, materials, and workmanship.

The overall feeling of Parkmerced as a distinct residential complex within San Francisco is an important aspect of the property's character. The landscape, site planning, and architecture still define this residential community according to its mid-century aesthetic and function as a residential housing complex. As a potential historic district and designed historic landscape, Parkmerced possesses an overall cohesive character, and therefore retains integrity of feeling.

Association

Association is the direct link between a historic suburb and the important events that shaped it. Additions and alterations that introduce new land uses and erase the historic principles of design threaten integrity. Integrity of association requires that a historic neighborhood convey the period when it achieved importance and that, despite changing patterns of ownership, it continues to reflect the design principles and historic associations that shaped it during the historic period.

Historically, Parkmerced was designed to meet the needs of the wartime and post-war housing demand in San Francisco and functioned as an inward-facing complex for middle class families. Today, the property continues its use as a residential housing complex. Its original appearance has not been significantly altered. A few of the original residents of Parkmerced still live in the complex, attesting to the enduring functionality of the community. Due to the intact quality of the property's historic resources and the site's continued use for housing, Parkmerced retains integrity of association to the period of significance.

CRHR Eligibility Conclusion

Parkmerced is eligible for inclusion in the California Register of Historical Resources as a historic district under Criterion 1 (Events) and Criterion 3 (Design/Construction) with a period of significance from 1941 to 1951. Most of the features at Parkmerced retain integrity from MetLife's period of ownership and together the buildings, landscapes, and associated features of Parkmerced reflect the original design and functionality of this planned residential community. This conclusion was reached through comprehensive research of the property's history, associated historic contexts, an existing conditions survey, and cultural landscape evaluation. As a property eligible for inclusion in the California Register, the property is considered a historical resource for the purposes of review under CEQA.

IMPACTS

SIGNIFICANCE CRITERIA

The San Francisco Planning Department's Initial Study Checklist provides a framework of topics to be considered in evaluating a project's impacts under CEQA. In accordance with the CEQA Guidelines, implementation of a project could have potentially significant impacts on an historic architectural resource if it were to:

- D.a.a Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5, including those resources listed in Article 10 or Article 11 of the San Francisco *Planning Code*.

The *CEQA Guidelines* (Section 15064.5(b)) establish the criteria for assessing a significant environmental impact on historical resources. They state, “[a] project with an effect that may cause a substantial adverse change in the significance of an historical resource is a project that may have a significant effect on the environment.” The *CEQA Guidelines* define “substantial adverse change” as “physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of an historical resource would be materially impaired” (Section 15064.5(b)(1)).

- For the purposes of this EIR, significance of an historic architectural resource is considered to be “materially impaired” and could have a potentially significant impact related to historic architectural resource if the project were to: Demolish or materially alter the physical characteristics that justify the inclusion of the resource in the California Register, or that justify the inclusion of the resource in a local register, or that justify its eligibility for inclusion in the California Register as determined by the lead agency (Section 15064.5(b)(2)).

IMPACT EVALUATION

To implement the Proposed Project, all of the two-story garden apartment buildings within the Project Site (170 buildings) would be demolished, along with most, if not all, of the existing interior landscaping. The existing 13-story towers would be retained.

Impact CR-1: The proposed demolition of the existing garden apartment buildings and removal of existing landscape features on the Project Site would impair the historical significance of the Parkmerced historic district historical resource. (*Significant and Unavoidable*) (Criterion D.a.a)

As discussed above, the existing Parkmerced residential complex historic district is eligible for inclusion in the CRHR as a historic district under Criterion 1 (Events) and Criterion 3 (Design/Construction) with a period of significance from 1941 to 1951. Most of the features at Parkmerced retain a high degree of integrity. As such, the Parkmerced complex is considered a historical resource for the purposes of review under CEQA.

Demolition of all of the two-story garden apartment buildings and removal of all of the interior landscaping on the Project Site would transform the existing architectural character of the Project Site, impairing the characteristics of the Parkmerced historical resource that convey its historic and architectural significance and that justify its inclusion in the CRHR. Although all of the 13-story towers would be retained, they are widely dispersed across the Project Site and only partially convey the significance of the second phase of construction. Although the major axial layout will remain intact, the integrity of Design, Setting, Materials, Workmanship, Feeling, and Association would not remain with implementation of the proposed demolition. This impact is significant under CEQA. Implementation of Mitigation Measure M-CR-1, to provide

documentation pursuant to National Park Service Standards, would reduce the adverse impact of the Proposed Project but not to a less-than-significant level.

This significant impact is considered unavoidable because no feasible mitigation is available that would preserve the essential integrity of the Parkmerced complex yet allow the Proposed Project to be substantially implemented. Demolition of most of this historical resource is necessary to implement the Proposed Project and realize the majority of its objectives. Note, however, that full and partial retention schemes for this historical resource are analyzed as alternatives to the Proposed Project in Chapter VII, Alternatives to the Proposed Project, in this EIR.

Mitigation Measure M-CR-1: Documentation and Interpretation

Documentation

The Project Sponsor shall retain a professional who meets the Secretary of the Interior's Professional Qualifications Standards for Architectural History to prepare written and photographic documentation of the Parkmerced complex within the Project Site.

The documentation for the property shall be prepared based on the National Park Service's (NPS) Historic American Building Survey (HABS) / Historic American Engineering Record (HAER) Historical Report Guidelines. This type of documentation is based on a combination of both HABS/HAER standards (Levels II and III) and NPS's policy for photographic documentation as outlined in the National Register of Historic Places and National Historic Landmarks Survey Photo Policy Expansion.

The written historical data for this documentation shall follow HABS / HAER Level I standards. The written data shall be accompanied by a sketch plan of the property. Efforts should also be made to locate original construction drawings or plans of the property during the period of significance. If located, these drawings should be photographed, reproduced, and included in the dataset. If construction drawings or plans cannot be located, as-built drawings shall be produced.

Either HABS/HAER standard large format or digital photography shall be used. If digital photography is used, the ink and paper combinations for printing photographs must be in compliance with NR-NHL Photo Policy Expansion and have a permanency rating of approximately 115 years. Digital photographs will be taken as uncompressed, TIF file format. The size of each image will be 1600x1200 pixels at 330 ppi (pixels per inch) or larger, color format, and printed in black and white. The file name for each electronic image shall correspond with the index of photographs and photograph label.

Photograph views for the dataset shall include (a) contextual views; (b) views of each side of each building and interior views, where possible; (c) oblique views of buildings; and (d) detail views

of character-defining features, including features on the interiors of some buildings. All views shall be referenced on a photographic key. This photographic key shall be on a map of the property and shall show the photograph number with an arrow to indicate the direction of the view. Historic photographs shall also be collected, reproduced, and included in the dataset.

The Project Sponsor shall transmit such documentation to the History Room of the San Francisco Public Library, and to the Northwest Information Center of the California Historical Information Resource System.

Interpretation

The Project Sponsor shall provide a permanent display of interpretive materials concerning the history and architectural features of the original Parkmerced complex within public spaces of the Project Site. The specific location, media, and other characteristics of such interpretive display shall be approved by the Historic Preservation Commission prior to any demolition or removal activities.

Impact CR-2: The proposed demolition of the existing garden apartment buildings and removal of existing landscape features on the Project Site would contribute to a cumulative impact on the historic significance of the Parkmerced historic district historical resource. (*Significant and Unavoidable*)

As described above, the Proposed Project would, in itself, result in a significant impact on a potential Parkmerced historic district historical resource.

The Parkmerced historic district resource encompasses the original Parkmerced complex, including three properties that are not owned by the Project Sponsor and are not within the Project Site: San Francisco State University, Yousef Realty, and Olympic Realty. Thus, the cumulative study area for purpose of historic architectural resources is the original Parkmerced complex. The owners of the other three properties in the original Parkmerced complex are planning for future redevelopment of their respective properties.

Considered with the Proposed Project, these potential cumulative projects would contribute to and compound a significant effect on the Parkmerced historical resources, caused primarily by the Proposed Project. This cumulative impact is considered significant and unavoidable for the reasons discussed above under Impact CR-1. Mitigation Measure M-CR-1, to provide documentation before demolition, pp. V.D.28-V.D.29, would reduce the adverse impact of the Proposed Project but not to a less-than-significant level.

D.b CULTURAL RESOURCES (Archaeological Resources and Paleontological Resources)

This section assesses the potential for the presence of archaeological resources on the Project Site, provides a context for evaluating the significance of archaeological resources that may be encountered, evaluates the potential impacts on archaeological resources, and provides mitigation measures that would avoid or minimize potential impacts on archaeological resources.

An archeological research design and treatment plan (ARDTP) has been prepared for the Proposed Project.¹ The ARDTP addresses the prehistoric, historic, and natural formation contexts of the Project Site; the potential for archaeological resources to be present; the relationship of the expected resources to significant historical / scientific research themes; and the eligibility of the expected resources for listing to the California Register of Historic Resources (CRHR). The ARDTP contains an archeological treatment plan for Phase 1 of the Proposed Project.

The analysis of the ARDTP has demonstrated that prehistoric and historical archaeological resources may be present within soils affected by the Proposed Project and that these expected resources may have sufficient scientific / historical research potential to qualify for listing in the CRHR under Evaluation Criterion 4, information important to prehistory or history. No prior soils-disturbing activities have been identified that would have significantly impaired the integrity of archaeological resources within the Project Site. A records search was performed on June 26, 2009 at the Northwest Information Center in Rohnert Park, California (file #08-1668).

The research and recommendations of the ARDTP are the basis for the analysis and conclusions of this EIR section.

SETTING

CONTEXT

In order to predict the archaeological property types that may exist within the Project Site and provide a context for evaluating the significance of archaeological resources that may be encountered, the ARDTP provides a historic context for prehistoric period and historic period settlement in the vicinity of the Project Site.

¹ Archeo-Tec, *Archaeological Research Design and Treatment Plan, Parkmerced Project, City and County of San Francisco, CA*, March 2010.

Geologic Setting

The Proposed Project is within the Coast Range, a geomorphic province characterized by a string of mountain ranges, ridges, and valleys running along the Pacific Ocean coastlines of California, Oregon, and Washington. The Franciscan Complex, which forms the major component of the Coast Ranges of California, constitutes the basement for the Coast Ranges east of the present-day San Andreas fault, including the San Francisco peninsula. The Franciscan Complex is estimated to be more than 2,000 meters below the surface. The Merced Formation overlies Franciscan Complex bedrock. The Merced Formation is estimated to be 2,000 meters thick in the Lake Merced area. The Merced Formation is overlain by the sedimentary Colma Formation on the San Francisco Peninsula, which has been described as a marine, estuarine, unconsolidated fine to medium sand with silt and clay. The Colma Formation is less than 91.5 meters thick. The Colma Formation has been dated from 70,000 to 130,000 years Before Present (B.P.). Dune sands that overlay the Colma Formation near Lake Merced probably were deposited after the last glacial maximum (less than 15,000 years B.P.). These sands extend from about 10 feet below grade, and extend to an estimated depth of 60 feet in some areas. Dune sands are overlain with “Orthents,” a catch-all grouping for soils impacted by historic and modern development. The majority of the Project Site is capped by asphalt, concrete, and modern landscaping.

Fossils have been reported in Franciscan rocks, including planktonic marine organisms, mollusks and plant microfossils (pollen and spores). The Franciscan Complex occurs at depths that would be unaffected by the Proposed Project. The sedimentary Colma Formation within San Francisco has the potential to contain paleontological resources. Fossilized remains of mammoth and bison were recovered from an excavation in the gravelly, sandy clay of the Colma Formation at the southeast base of Telegraph Hill. This find is the most abundant collection of Pleistocene vertebrates reported in San Francisco.²

Natural Setting

The San Francisco Bay (or Franciscan Valley) was a low-lying plain cut by the now-vanished California River. The valley supported riparian forests and oak savannahs and was home to tule elk, deer, and antelope, as well as megafauna³ before their extinction. It is estimated that during the last glacial maximum, more than 15,000 years ago, global sea level was at least 100 meters lower than today. At that time, the coastline was likely approximately 10 kilometers west of its current position. A warming climate caused glacial melting causing sea levels to rise. At some time between 15,000-10,000 years B.P., the ocean flooded the Merced Valley, creating a small inlet with access to the ocean that likely extended farther east than Lake Merced does today.

² Peter U. Rodda, “Late Pleistocene Vertebrates from Downtown San Francisco,” *Journal of Paleontology* (Abstract), Volume 67, No. 6, November 1993.

³ Megafauna are large or very large land animals.

By 8,000 years B.P., rising sea levels caused inundation of the San Francisco Bay, burying the old shore under deep sediments. In addition to burying the bayshore, this flooding of the Bay Area caused ocean currents to deposit sediments across the mouth of the inlet that was the Merced Valley. In dry times, evaporation would mean that there was no flow to the ocean, and eventually this sand bar came to separate the inlet from the ocean entirely, creating Lake Merced.

The location of the Project Site is suggestive of a good camping and resource exploitation area. The presence of drainage immediately to the south, with a marsh draining into the lake, and a minor drainage just to north would provide inhabitants with ample faunal and botanical resources. Animals would be attracted to the drainage and lake, and the lake's edge and marsh would support a great number of useful plants, including seed plants, *Typha* (cattail) with its edible roots, and stems and leaves for mats and houses. Willows growing along the lake edge and drainage could provide materials for basketry, house framework, and other uses. The proximity to the ocean would offer shellfish, fish, and other resources. If oaks were in the area, they would seasonally provide acorns. A flat area of land adjacent to water would have been an ideal location for exploitation of local resources, but any flat spot of land may have been adequate for the inhabitants' needs and thus been occupied. The permanent source of fresh water currently known as Lake Merced would have been a valuable resource and make the presence of prehistoric habitation in the immediate area a strong possibility.

Prehistoric Period

Current archaeological evidence suggests humans have continuously occupied California since 13,500 years B.P, although no sites older than 6,000 years B.P. have been recorded in the San Francisco Peninsula. The human presence in California is described in three periods: the Pleistocene-Holocene Transition (13,500–9,000 years B.P.); the Middle Holocene (9,000–4,000 years B.P.); and the Late Holocene (4,000 years B.P. to present). These are characterized by major regional shifts in settlement patterns, technology, economy, and trade which are evident in the archaeological record.

Pleistocene–Holocene Transition (13,500-9,000 years B.P.)

Sites from the Pleistocene-Holocene transition have been found in Northern California, but no Pleistocene-Holocene transition sites have been found in San Francisco or its immediate surroundings. More than 400 fluted projectile points, exhibiting a high degree of variability, have been found throughout California. The early fluted-point-wielding Californians were probably a sparse population of semi-sedentary bands of hunter-gathers who lived for the most part in open-air sites, although they also lived in rock shelters in some areas. Deep refuse deposits dating to the Early Holocene are absent throughout California, suggesting that people used locations only briefly, and then abandoned them, or reoccupied areas for short recurrent periods. They hunted large and small mammals, as well as waterfowl. Shellfish were a staple, though their use was less

predominant during the Early Holocene than it was in later times. Seeds were likely collected. Early Holocene sites contained handstones and milling slabs, minimally modified cutting and scraping tools, and other chipped stone tools, as well as marine shellfish and the remains of a variety of mammals.

Middle Holocene (9,000-4,000 years B.P.)

After about 8,000 B.P., a general shift in subsistence occurred with specialized technology and exploitation of new ecological niches. In the absence of big game food sources, people began to exploit more diversified animal species and shifted to an increased reliance on plants and seeds. This resource diversification required seasonal migrations in order to access different environments throughout the year. Consequently, the “tool kit” of prehistoric peoples became more specialized, growing to include varied methods of food processing. The diverse habitats and year-round availability of food in Central California also contributed to the shift to exploitation of resources other than big game. The increasingly prominent role of seed collecting is reflected in the archaeological record by large numbers of food grinding implements. As the use of acorns became more predominant, heavy, deep-basined mills and handstones came into use.

Late Holocene (4,000–Present)

Beginning around 4,000 B.P. the climate began to shift from warm and dry to cooler and wetter conditions, causing an adjustment to new environmental conditions. This period is characterized by further niche specialization, a refinement of various technologies, and specialized exploitation of plant and animal species. Many sites dating to the Late Holocene in the San Francisco Bay region are shellmounds, midden sites containing large quantities of mollusk shells. Sites dating to the Late Holocene have been found in San Francisco, primarily in the South of Market region. These sites are all multi-activity shellmound and midden sites.

The area of the San Francisco Peninsula between the San Francisco Bay and the Pacific Ocean has been attributed to a linguistic subgroup of the native Ohlone people. Upon arrival in northern California, Spanish colonists grouped the numerous Ohlone linguistic groups under one heading, which they dubbed Costeño, or coastal people. This term later became Anglicized to “Costanoan.” Ohlone social structure was complicated, organized into at least 50 distinct tribelets, united through language, trade, and intermarriage. The Ohlone lived in primarily fixed villages, on a diet consisting of acorns, nuts, grass, seeds, berries, fish, and mollusks such as mussels and abalone from San Francisco Bay and the Pacific Ocean. Other animals included in the diet were elk, pronghorn, deer, salmon, perch, ducks, geese, quail, and other waterfowl. Ohlone material culture included woven baskets, animal skin aprons or capes, shell beads, abalone pendants, and bone and wood earrings. Houses were dome-shaped and built of willows and tule.

Evidence for prehistoric indigenous occupation is limited in the Lake Merced area. The Project Site would have been a habitable location for indigenous populations. Inhabitants may have used reeds from around the lake; these and other plant materials have likely decayed over the years. The area was populated with deer. The lake would have provided resources (notably tule reeds for boat and home construction), and the nearby seacoast may provided fish, shellfish, and sea mammals. During excavations on the San Francisco State University campus, immediately north of the Project Site, a stone pestle was uncovered. In addition, a small shell midden was found on the coast directly west of Lake Merced. Another site in close proximity to the Project Site is an unexcavated shell midden located along Lake Merced Boulevard at the high point of drainage into Lake Merced.

Historical Period

Spanish and Early Mexican Period (1774-1835)

The first recorded encounter of non-native explorers with the Lake Merced area was the arrival of Captain Fernando Rivera y Moncada's expedition in 1774. The goal of the expedition was to locate a mission site on the peninsula. Upon discovery of what is now Lake Merced, Father Palóu, a Franciscan priest who was part of the group, named the lake "La Laguna De Nuestra Señora de la Merced" (The Lake of Our Lady of Mercy).

At this time Bay Area indigenous inhabitants were organized into tribelets that defended fixed territories under independent leaders. The first baptisms at Mission San Francisco de Asís, now more commonly called Mission Dolores, took place on June 24, 1777. Conversion and catechism were largely facilitated by the church's emphasis on routine and ritual, as well as bestowing clothing and food to native families that moved into the villages adjacent to the missions. Much of the land on the peninsula was under the jurisdiction of the Spanish missions. Historical accounts indicate that the Mission used the Lake Merced area as a corral for mission-owned livestock.

Early Settler Period (1835-1867)

The Lake Merced area was under the jurisdiction of Mission Dolores until the mid-1830s when secularization resulted in the parceling up of much of the former Mission land holdings into large, privately-held ranches.⁴ José Jesús Castro, the governor of the Mexican state of Alta California, granted 2,200 acres of land around and including Lake Merced to cattle rancher Jose Antonio Galindo in 1835. The property was named Rancho Laguna de la Merced, and included the

⁴ The land was supposed to eventually be given to the neophyte (Native Americans who had been converted to the Christian faith) Indians who had supported the missions, but was instead divided up among Mexican claimants.

Project Site. Galindo most likely used the land for cattle grazing. An early map of the property commissioned by Galindo shows no standing structures. Subsequently, the Galindo palizada dwelling was built in 1835, and was located at the south end of the lake. In 1837, Galindo sold the land to Francisco de Haro. A map of Rancho Laguna de la Merced during de Haro's ownership shows a corral that may have been within the Project Site.

On July 8, 1846, Yerba Buena (renamed San Francisco) passed from Mexican to American jurisdiction, when the sloop-of-war *Portsmouth* under Captain John B. Montgomery's command raised the stars and stripes and claimed California for the United States. Although the transition from Mexican to American jurisdiction was peaceful and uneventful in most of Northern California, it had significant implications for ranchers and other land owners. In 1851, the United States Congress passed "An Act to Ascertain and Settle Private Land Claims in the State of California." All holders of Spanish and Mexican land grants were to present their titles for confirmation before the Board of California Land Commissioners, and any land that the Board could not confirm reverted to public land. Among those claims brought before the Board were those of de Haro's heirs, which were confirmed, appealed, and ultimately upheld in court in 1858. Title was vested jointly among de Haro's seven surviving children equally as tenants-in-common. Numerous challenges to title arose as a result of claims by squatters and by erroneous transfers on the part of de Haro's heirs. Eventually, speculator David Mahoney acquired title to the shares of at least five of the seven heirs.

Because of its status as a recognizable landmark far from the City center, Lake Merced was a preferred location for fighting duels. In 1859, a famous duel took place between U.S. Senator David Broderick and California Associate Supreme Court Justice David Terry at a duel site traversing a sandy country road that passed through the Project Site. This road was known as the Lake House Road and was the only road to Lake Merced in the 1850s.

Water Company Period (1868-1940)

In 1868 Spring Valley Water Works purchased the Clear Lake Water Company and Lake Merced Water Company in a bid to gain a monopoly on the San Francisco water market. Clear Lake Water Company and Lake Merced Water Company had simultaneously been trying to acquire Lake Merced, a rich source of water located relatively close to the city of San Francisco, through condemnation. The condemnation case continued well after the Spring Valley Water Works had purchased both companies. The first pump station at Lake Merced was established around 1877 on the east side of the lake. This facility was reported to include two dwellings within the southwest corner of the Project Site: an Engineer's Cottage and a Bunk House housing additional laborers.

Although the Spring Valley Water Company (SVWC) needed legal rights to water within the Lake Merced watershed, it required use of only a small portion of land around the lake. The

SVWC leased land to owners of small truck farms that took advantage of the heavy fog to grow fog-loving plants. The SVWC also leased land as residences, rail line rights-of-way, public and private utilities easements, and for other purposes. After it sold Lake Merced to the City of San Francisco and no longer needed to maintain the facilities at the lake, the SVWC rented out its former Engineer's Cottage and Bunk House to local farmers.

SVWC also leased land to the San Francisco Golf Club when it moved to Junipero Serra Boulevard in 1905. The golf course stretched along the western side of Junipero Serra Boulevard, from the southern end of the Project Site almost to present-day Sloat Boulevard. The clubhouse and associated facilities were located east of Junipero Serra Boulevard, as no buildings were allowed to be built on SVWC land.

ARCHAEOLOGICAL PROPERTY TYPES THAT MAY BE PRESENT WITHIN THE PROJECT SITE

While it is impossible to predict all cultural materials that may be encountered during excavation, the property types listed here are likely to be encountered within the Project Site, based on ethnographic research, research into historic land use patterns, and on a review of archaeological property types encountered at nearby sites.

Prehistoric Property Types

Generally speaking, any intact prehistoric deposit found within the Project Site should be assumed to be of scientific significance and therefore eligible for the California Register under Criterion 4 (Information Potential).

Permanent Sites

Multi-activity, year-round sites may contain village sites, shellmounds, midden, hearth and ash features, house pits, and burials. Such sites are particularly significant for archaeological study as data derived from them may address a variety of research questions, notably those related to cultural patterns and social organization.

Seasonal Sites

Cultural materials typically present in a seasonal site include dense areas of shell midden containing mammal, bird, and fish bones, evidence of stone and bone tool making, and beads and other decorative objects. The analysis of such sites, if found, would contribute to the understanding of prehistoric land use in the area.

Lithic Scatters

Flaked stone tools and waste flakes from their manufacture are typically found on the ground in the form of a diffuse, scattered deposit. These sites are significant in that they can answer a variety of research questions about prehistoric technologies and activities, as well as potentially supplying temporal data for any deposits in which they are found. However, when lithic scatters are found on the ground surface, associated temporal data are somewhat less useful for identifying deposition dates for any associated cultural deposit; surface scatters are generally assumed to have been subject to a greater degree of disturbance than those associated with buried deposits.

Isolated Artifacts

The prehistoric inhabitants of California used a wide range of materials in their daily lives, including tools made of stone, bone, antler, and shell; decorative items made from shell, bone, and stone; baskets and woven textiles made from plant fiber; and clothing and other items made from the skin and fur of animals. These items, just as today, were often lost or discarded over the course of a person's lifetime, and may be found as "isolated" artifacts, meaning that they are not apparently associated with a discrete archaeological feature or site. When such items are found outside the context of a site or feature the ability of such artifacts to address research themes is limited. However, an isolated artifact exhibiting unusual or formerly unknown characteristics may add new and significant data to our understanding of past lifeways, even in the absence of contextual details.

Prehistoric Cemetery

A site containing numerous formally interred human burials is considered a cemetery site. There are three identified types of cemetery sites in the Bay Area: (1) cemeteries located close to villages and found within soil rich in midden, (2) cemeteries located far from villages in essentially sterile sites, and (3) mounds which appear dedicated to cemetery purposes, contain remnants from mortuary feasting, and whose burials are formal.

Any formal cemetery can yield complex and valuable data: skeletal pathology and bioarchaeological⁵ analysis of burials can offer data revealing the physical health, diet, and mortality of the population, and mortuary analysis of the entire burial assemblage can offer insight into the behavior, social structure, and belief systems of the population.

⁵ The study of animal bones from archaeological sites.

Isolated Burials and Features

Prehistoric human burials are always considered a significant find, due both to their importance to their descendants and because a great deal of information about past peoples' health and traditional culture can be gleaned from their analysis.

Historical Period Property Types

Refuse

The most common and informative expected historical property types are refuse features which result from the occupation of the area. Hollow features include pits, privies and wells. Such property types were created specifically for functional use. During their use or upon abandonment, they become a receptacle for refuse. Sheet refuse accumulates in broad scatters on living surfaces over a period of time as people discard refuse in their yard, farms and working areas, a common nineteenth century practice. Refuse features provide evidence of the behaviors of the people who used the Project Site. Refuse features can often be dated and connected to specific individuals that lived on the site.

Architecture

Architectural properties include structural remains such as foundations, wall footings, platforms, collapsed wood buildings, ovens, and stoves. In many cases, the remains correlate to structures depicted on historical maps and other documents. In these instances, the ability of those remains to contribute to important research domains may be limited unless accompanied by a diverse artifact assemblage. Many research questions are often better suited to other research methods such as analysis of primary documents.

REGULATORY FRAMEWORK

The Identification and Evaluation of Archaeological Resources as “Historical Resources”

CEQA requires that the effects of a project on an archaeological resource shall be taken into consideration and that the archaeological resource be evaluated as either an “historic resource” (*CEQA Guidelines* Section 15064.5 (a)) or a “unique archaeological resource” (*CEQA Guidelines* Section 15064.5 (a) (2)). If a project may affect an archaeological resource, then the *CEQA Guidelines* require that it shall first be determined if the archaeological resource is an “historic resource,” that is, if the archaeological resource meets the criteria for listing in the California Register of Historical Resources (CRHR). As described on p. V.D.42, to be eligible for listing to the CRHR under Criteria 1, 2, or 3, an archaeological site must contain artifact assemblages, features, or stratigraphic relationships associated with important events, or important persons, or be exemplary of a type, period, or method of construction (*CEQA Guidelines* Section 15064.5

(a)(1) and (3) and (c)(1) and (2)). As described on p. V.D.42, to be eligible under Criterion 4, an archaeological site need only to show the potential to yield importation information. An archaeological resource that qualifies as a “historic resource” under CEQA, generally, qualifies for listing under Criterion “4” of the CRHR (*CEQA Guidelines* Section 15064.5 (a)(3)(D)). An archaeological resource may qualify for listing under Criterion “4” when it can be demonstrated that the resource has the potential to significantly contribute to questions of scientific / historical importance. The research value of an archaeological resource can only be evaluated within the context of the historical background of the site of the resource and within the context of prior archaeological research related to property type represented by the archaeological resource.⁶

An archaeological site that is not determined to be an “historic resource” may nonetheless meet the criteria to be considered a “unique archaeological resource.” If the lead agency determines that the project will have a significant effect on a unique archaeological resource, the environmental impact report must address the issue of those resources. (Pub. Res. Code Section 21083.2(a)). A “unique archaeological resource” means an archaeological artifact, object, or site about which it can be clearly demonstrated that, without merely adding to the current body of knowledge, there is a high probability that it meets any of the following criteria: (1) contains information needed to answer important scientific research questions and that there is a demonstrable public interest in that information; (2) has a special and particular quality such as being the oldest of its type or the best available example of its type; or (3) is directly associated with a scientifically recognized important prehistoric or historic event or person. (Pub. Res. Code Section 21083.2(g)).

Treatment of Historical Resources of an Archaeological Nature

If a lead agency determines that the archaeological site is an historical resource, *CEQA Guidelines*, Section 15126.4(b)(3) apply. “Public agencies should, whenever feasible, seek to avoid damaging effects on any historical resource of an archaeological nature.” Preservation in place is the preferred manner of mitigating impacts to archaeological sites. Some of the means that may be used to achieve preservation in place include planning construction to avoid an archaeological site; incorporating the site within open space; covering the site with soil and developing facilities without foundations (such as tennis courts and parking lots); or deeding the site into a permanent conservation easement.

When data recovery through excavation is the only feasible mitigation, a data recovery plan shall be prepared and adopted prior to any excavation being undertaken. The plan must meet certain requirements and shall be deposited with the California Historical Resources Regional Information Center. Archaeological sites known to contain human remains shall be treated in

⁶ California Office of Historic Preservation, *Preservation Planning Bulletin No. 5*.

accordance with the provisions of Section 7050.5 of the Health and Safety Code. If an artifact must be removed during project excavation or testing, curation may be the appropriate mitigation.

Data recovery shall not be required for an historical resource if the lead agency determines that testing or studies already completed have adequately recovered the scientifically consequential information from and about the archaeological or historical resource, provided that the determination is documented in the EIR and that the studies are deposited with the California Historical Resources Regional Information Center.

Human Remains

When there is a probable likelihood of Native American human remains within the Project Site, *CEQA Guidelines* Section 15064.5(d) call for lead agency consultation with the appropriate Native Americans as identified by the Native American Heritage Commission. “The applicant may develop an agreement for treating or disposing of, with appropriate dignity, the human remains and any items associated with Native American burial with the appropriate Native Americans.”

In the event of accidental discovery of human remains in any location other than a dedicated cemetery, *CEQA Guidelines* Section 15064.5(e) calls for the following:

- (1) There shall be no further excavation or disturbance of the site or any nearby area reasonably suspected to overlie adjacent human remains until:
 - The coroner of the county in which the remains are discovered must be contacted to determine that no investigation of the cause of death is required, and
 - If the coroner determines the remains to be Native American:
 - The coroner shall contact the Native American Heritage Commission with 24 hours.
 - The Native American Heritage Commission shall identify the person or persons it believes to be the most likely descended from the deceased Native American.
 - The most likely descendent may make recommendations to the landowner or the person responsible for the excavation work, for means of treating or disposing of, with appropriate dignity, the human remains and associated grave goods..., or
- (2) Where the following conditions occur, the landowner or his authorized representative shall rebury the Native American human remains and associated grave goods with appropriate dignity on the property in a location not subject to further subsurface disturbance.
 - The Native American Heritage Commission is unable to identify a most likely descendent or the most likely descendent failed to make a recommendation within 24 hours after being notified by the commission.

- The descendent identified fails to make a recommendation; or
- The landowner or his authorized representative rejects the recommendation of the descendent, and mediation by the Native American Heritage Commission fails to provide measures acceptable to the landowner.

Accidental Discovery

Under *CEQA Guidelines* Section 15064.5(f), “[A] lead agency should make provisions for historical or unique archaeological resources accidentally discovered during construction.” These provisions should include an immediate evaluation of the find by a qualified archaeologist. If the find is determined to be an historical resource, contingency funding and a time allotment sufficient for implementation of avoidance measures or appropriate mitigation should be available. Work may continue on other parts of the building site while historical resource mitigation takes place.

IMPACTS

SIGNIFICANCE CRITERIA

CEQA requires that the effects of a project on archaeological resource shall be taken into consideration and that if a project may affect an archaeological resource that it shall first be determined if the archaeological resource is an “historical resource,” *CEQA Guidelines* Section 15064.5(a) defines a “historical resource” as:

- A resource listed in, or determined to be eligible by the State Historical Resources Commission, for listing in the California Register of Historical Resources (CRHR).
- A resource included in a local register of historical resources, as defined in ... the Public Resources Code ... or identified as significant in an historical resource survey meeting the requirements ... of the Public Resources Code, shall be presumed to be historically or culturally significant.
- Any ... building, structure, ... site ... which a lead agency determines to be historically significant or significant in the ... annals of California ... provided the lead agency’s determination is supported by substantial evidence in light of the whole record. Generally, a resource shall be considered by the lead agency to be “historically significant” if the resource meets the criteria for listing on the California Register of Historical Resources.

Under *CEQA Guidelines* Section 15064.5(a)(3), even if a resource is not included on any local, state or federal register, or identified in a qualifying historical resources survey, a lead agency may still determine that a resource is an historical resource for the purposes of CEQA. A lead agency shall consider a resource to be historically significant if it finds that the resource meets the criteria for listing in the CRHR. Such a determination must be supported by substantial evidence

in light of the whole record. Under Public Resources Code Section 5024.1, an historic resource is eligible for listing in the CRHR if it:

- (1) Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage (“Events”);
- (2) Is associated with the lives of persons important in our past (“Persons”);
- (3) Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values (“Design/Construction”); or
- (4) Has yielded, or may be likely to yield, information important in prehistory or history (“Information Potential”).

To be eligible for listing in the CRHP under Criteria 1, 2, or 3, an archeological site must contain artifact assemblages, features, or stratigraphic relationships associated with important events, or important persons, or be exemplary of a type, period, or method of construction (*CEQA Guidelines* Section 15064.5(a)(1) and (3) and (c)(1) and (2)). An archeological resource that qualifies as a “historical resource” under CEQA, generally, qualifies for listing under Criterion “4” of the CRHR (*CEQA Guidelines* Section 15064.5 (a)(3)(D)). To be eligible under Criterion 4, an archaeological site need only show the *potential* to yield important information that would significantly contribute to questions of scientific/historical importance. The research value of an archaeological resource can only be evaluated within the context of the historical background of the site of the resource and within the context of prior archaeological research related to the property type represented by the archaeological resource.⁷

The Planning Department’s Initial Study Checklist Form provides a framework of topics to be considered in evaluating a project’s impacts under CEQA. Implementation of a project could have a potentially significant impact related to archaeological resources if the project were to:

- Cause a substantial adverse change in the significance of a historical resource;
- Cause a substantial adverse change in the significance of a unique archaeological resources;
- Disturb any human remains, including those interred outside of formal cemeteries; or
- Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature.

IMPACT EVALUATION

Development plans of the 20-year-long mixed-use development program include necessary ground disturbance activities related to construction of new commercial and retail uses, transit

⁷ California Office of Historic Preservation, *Preservation Bulletin No. 5*.

facilities, and utilities and infrastructure within the Project Site. The proposed development is expected to involve four major phases, estimated to begin around 2010 and conclude by 2030.

The Project includes plans for low- to mid-rise buildings and towers in the western, north-central and southeastern portions of the Project Site. Basement depths are proposed to reach approximately 12 to 24 feet, though actual total impacts will be deeper due to foundation support. As noted in Section N. Geology and Soils, there are several areas of deep artificial fill on the Project Site; these areas have been identified as potential zones of liquefaction. Foundation plans, as well as plans for grading and planned utilities, will be finalized after site-specific geotechnical studies have been performed in compliance with the requirements of the San Francisco Building Code; however, preliminary reports conclude that the proposed one- to five-story buildings would likely be constructed from wood frame, have one basement level, and should have mat foundations supported by several feet of compacted fill. The 6- to 14-story buildings, particularly those located in areas on the Project Site of deep fill, would likely have drilled, jet-grouted, or driven piles that extend beneath the fill, estimated to be 30 to 80 feet below basements. It is likely that mat foundations can be used for these taller buildings in locations when two below-grade levels are planned. When only one below-grade level is planned, these buildings may require ground improvement beneath the mat foundation or, alternatively, the building may be supported on shallow end-bearing piles. Soils disturbance associated with the currently proposed building construction would involve an estimated 1,132,900 cubic yards of excavation, while landscape features will involve an estimated 90,000 cubic yards of excavation. The creation of one-and-two-level below-grade parking areas will require the use of shoring, since space constraints preclude the use of sloping. The use of tiebacks associated with some shoring systems, as well as the driving of soldier pile shafts around the periphery of the excavation, should these be chosen at Parkmerced, would create additional soils impacts.

Impact CR-3: Project construction activities could disturb significant archaeological resources, if such resources are present within the Project Site. (*Less than Significant with Mitigation*)

As described above, there is a reasonable presumption that significant archaeological features are present within the Project Site. Unless mitigated, disturbance and/or removal of such features could materially impair the ability of such features to contribute important information about California prehistory or history.

The ARDTP establishes procedures for further archaeological investigation of the Project Site should further archaeological investigation be deemed necessary. It identifies important research issues that could be addressed by archaeological data that may be encountered within the Project Site. Examples include the following:

- Chronology and Cultural History: Unlike historical archaeological sites, for which written records may exist and thus contextualize archaeological findings, archaeologists

must formulate a timeline for prehistoric sites almost exclusively through their cultural assemblages. The study of prehistoric archaeological assemblages, if encountered within the Project Site, would allow such features to be placed within the particular time periods and cultural contexts within which they were created.

- Subsistence and Settlement Patterns: Study of prehistoric artifactual assemblages could provide information about where people lived from season to season, how they structured their communities, what resources were used at various times of the year, and what types of items/materials were important at different times.
- Status Markers: Study of grave goods and the presence of trade goods such as shell ornaments and beads could provide information about the development of a social hierarchy.
- Succession of Prehistoric Populations: Changes in cultural behaviors are often linked to changes in the environment, technological innovation or evolution, and the growth or intrusion/migration of cultural groups. Study of habitation sites could address research questions regarding whether the San Francisco peninsula was continuously occupied by a prehistoric population, or if there are measurable gaps in time of human presence within the region.
- Trade, Transport, and Inter-Regional Contact: Evidence of trade can typically be documented by the presence or absence of items whose origin or source is exotic (non-local). Objects of value have been exchanged for other significant objects throughout prehistory and historical times, and often are tied to available resources and political issues such as cultural boundaries and control over various resources.

Site disturbance could impair the ability of the Project Site to yield important scientific and historical information relating to these and other research issues. Unless mitigated, implementation of the Proposed Project could impair the significance of archaeological resources on the Project Site under CRHR Criterion 4 (Information Potential). This effect would be considered a substantial adverse change in the significance of an historical resource and would therefore be a potentially significant impact under CEQA.

Mitigation Measure M-CR-3a, pp. V.D.45-V.D.48, calls for a qualified archaeological consultant to prepare and submit a plan for pre-construction archaeological testing, construction monitoring, and data recovery, for approval by the San Francisco Environmental Review Officer (ERO) prior to ground-breaking activities for Phase I of the Proposed Project. Mitigation Measure M-CR-3b, pp. V.D.48-V.D.49 calls for a qualified archaeological consultant to prepare and submit an archaeological treatment plan based on a reasonable presumption that archaeological resources may be present within the Project Site, prior to any ground-breaking activities for Phases II-IV. Implementation of the approved plan(s) for testing, monitoring, and data recovery under Mitigation Measures M-CR-3a and M-CR-3b would ensure that the significance of the resource under CRHR Criterion 4 would be preserved and/or realized in place. With implementation of Mitigation Measures M-CR-3a and M-CR-3b, the Proposed Project would not cause a substantial adverse change to the scientific significance of an archaeological resource.

Mitigation Measure M-CR-3a: Archaeological Testing, Monitoring, Data Recovery and Reporting for Phase I

Based on a reasonable presumption that archaeological resources may be present within the project site, the following measures shall be undertaken to avoid any potentially significant adverse effect from the proposed project on buried or submerged historical resources. The project sponsor shall retain the services of a qualified archaeological consultant having expertise in California prehistoric and urban historical archaeology. The archaeological consultant shall undertake an archaeological testing program as specified herein. In addition, the consultant shall be available to conduct an archaeological monitoring and/or data recovery program if required pursuant to this measure. The archaeological consultant's work shall be conducted in accordance with this measure and the requirements of the ARDTP (Archeo-Tec, Archeological Research Design and Treatment Plan, Parkmerced Project, March 2010) at the direction of the Environmental Review Officer (ERO). In instances of inconsistency between the requirements of the project ARDTP and the requirements of this mitigation measure, the requirements of this archaeological mitigation measure shall prevail. All plans and reports prepared by the consultant as specified herein shall be submitted first and directly to the ERO for review and comment, and shall be considered draft reports subject to revision until final approval by the ERO. Archaeological monitoring and/or data recovery programs required by this measure could suspend construction of the project for up to a maximum of four weeks. At the direction of the ERO, the suspension of construction can be extended beyond four weeks only if such a suspension is the only feasible means to reduce to a less-than-significant level potential effects on a significant archaeological resource as defined in CEQA Guidelines Section 15064.5 (a)(c).

Archaeological Testing Program

The archaeological consultant shall prepare and submit to the ERO for review and approval an archaeological testing plan (ATP). The archaeological testing program shall be conducted in accordance with the approved ATP. The ATP shall identify the property types of the expected archaeological resource(s) that potentially could be adversely affected by the proposed project, the testing method to be used, and the locations recommended for testing. The purpose of the archaeological testing program will be to determine to the extent possible the presence or absence of archaeological resources and to identify and to evaluate whether any archaeological resource encountered on the site constitutes an historical resource under CEQA.

At the completion of the archaeological testing program, the archaeological consultant shall submit a written report of the findings to the ERO. If based on the archaeological testing program the archaeological consultant finds that significant archaeological resources may be present, the ERO in consultation with the archaeological consultant shall determine if additional measures are warranted. Additional measures that may be undertaken include additional archaeological testing, archaeological monitoring, and/or an archaeological data recovery program. If the ERO

determines that a significant archaeological resource is present and that the resource could be adversely affected by the proposed project, at the discretion of the project sponsor either:

- A) The proposed project shall be re-designed so as to avoid any adverse effect on the significant archaeological resource; or
- B) A data recovery program shall be implemented, unless the ERO determines that the archaeological resource is of greater interpretive than research significance and that interpretive use of the resource is feasible.

Archaeological Monitoring Program (AMP)

If the ERO in consultation with the archaeological consultant determines that an archaeological monitoring program shall be implemented the archaeological monitoring program shall minimally include the following provisions:

- The archaeological consultant, project sponsor, and ERO shall meet and consult on the scope of the AMP reasonably prior to any project-related soils-disturbing activities commencing. The ERO in consultation with the archaeological consultant shall determine what project activities shall be archaeologically monitored. In most cases, any soils-disturbing activities, such as demolition, foundation removal, excavation, grading, utilities installation, foundation work, driving of piles (foundation, shoring, etc.), site remediation, etc., shall require archaeological monitoring because of the risk these activities pose to potential archaeological resources and to their depositional context;
- The archaeological consultant shall advise all project contractors to be on the alert for evidence of the presence of the expected resource(s), of how to identify the evidence of the expected resource(s), and of the appropriate protocol in the event of apparent discovery of an archaeological resource;
- The archaeological monitor(s) shall be present on the project site according to a schedule agreed upon by the archaeological consultant and the ERO until the ERO has, in consultation with the project archaeological consultant, determined that project construction activities could have no effects on significant archaeological deposits;
- The archaeological monitor shall record and be authorized to collect soil samples and artifactual/ecofactual material as warranted for analysis;
- If an intact archaeological deposit is encountered, all soils-disturbing activities in the vicinity of the deposit shall cease. The archaeological monitor shall be empowered to temporarily redirect demolition/excavation/pile driving/construction activities and equipment until the deposit is evaluated. If in the case of pile-driving activity (foundation, shoring, etc.), the archaeological monitor has cause to believe that the pile-driving activity may affect an archaeological resource, the pile-driving activity shall be terminated until an appropriate evaluation of the resource has been made in consultation with the ERO. The archaeological consultant shall immediately notify the ERO of the encountered archaeological deposit. The archaeological consultant shall make a reasonable effort to assess the identity, integrity, and significance of the encountered archaeological deposit, and present the findings of this assessment to the ERO.

Whether or not significant archaeological resources are encountered, the archaeological consultant shall submit a written report of the findings of the monitoring program to the ERO.

Archaeological Data Recovery Program

The archaeological data recovery program shall be conducted in accord with an archaeological data recovery plan (ADRP). The archaeological consultant, project sponsor, and ERO shall meet and consult on the scope of the ADRP prior to preparation of a draft ADRP. The archaeological consultant shall submit a draft ADRP to the ERO. The ADRP shall identify how the proposed data recovery program will preserve the significant information the archaeological resource is expected to contain. That is, the ADRP will identify what scientific/historical research questions are applicable to the expected resource, what data classes the resource is expected to possess, and how the expected data classes would address the applicable research questions. Data recovery, in general, should be limited to the portions of the historical property that could be adversely affected by the proposed project. Destructive data recovery methods shall not be applied to portions of the archaeological resources if non-destructive methods are practical.

The scope of the ADRP shall include the following elements:

- Field Methods and Procedures. Descriptions of proposed field strategies, procedures, and operations.
- Cataloguing and Laboratory Analysis. Description of selected cataloguing system and artifact analysis procedures.
- Discard and De-accession Policy. Description of and rationale for field and post-field discard and de-accession policies.
- Interpretive Program. Consideration of an on-site/off-site public interpretive program during the course of the archaeological data recovery program.
- Security Measures. Recommended security measures to protect the archaeological resource from vandalism, looting, and non-intentionally damaging activities.
- Final Report. Description of proposed report format and distribution of results.
- Curation. Description of the procedures and recommendations for the curation of any recovered data having potential research value, identification of appropriate curation facilities, and a summary of the accession policies of the curation facilities.

Human Remains and Associated or Unassociated Funerary Objects

The treatment of human remains and of associated or unassociated funerary objects discovered during any soils-disturbing activity shall comply with applicable State and Federal laws. This shall include immediate notification of the Coroner of the City and County of San Francisco and in the event of the Coroner's determination that the human remains are Native American remains, notification of the California State Native American Heritage Commission (NAHC) who shall appoint a Most Likely Descendant (MLD) (Pub. Res. Code Sec. 5097.98). The archaeological

consultant, project sponsor, and MLD shall make all reasonable efforts to develop an agreement for the treatment of, with appropriate dignity, human remains and associated or unassociated funerary objects (CEQA Guidelines Sec. 15064.5(d)). The agreement should take into consideration the appropriate excavation, removal, recordation, analysis, custodianship, curation, and final disposition of the human remains and associated or unassociated funerary objects.

Final Archaeological Resources Report

The archaeological consultant shall submit a Draft Final Archaeological Resources Report (FARR) to the ERO that evaluates the historical significance of any discovered archaeological resource and describes the archaeological and historical research methods employed in the archaeological testing/monitoring/data recovery program(s) undertaken. Information that may put at risk any archaeological resource shall be provided in a separate removable insert within the final report.

Once approved by the ERO, copies of the FARR shall be distributed as follows: California Archaeological Site Survey Northwest Information Center (NWIC) shall receive one (1) copy and the ERO shall receive a copy of the transmittal of the FARR to the NWIC. The Major Environmental Analysis division of the Planning Department shall receive two copies (bound and unbound) of the FARR along with copies of any formal site recordation forms (CA DPR 523 series) and/or documentation for nomination to the National Register of Historic Places/California Register of Historical Resources. In instances of high public interest in or the high interpretive value of the resource, the ERO may require a different final report content, format, and distribution than that presented above.

Mitigation Measure M-CR-3b: Archaeological Treatment Plan for Phases II-IV

Based on a reasonable presumption that archaeological resources may be present within the Project Site, the following measures shall be undertaken to avoid any potentially significant adverse effect from Phases II-IV of the Proposed Project on buried archaeological resources. The Project Sponsor shall retain the services of a qualified archaeological consultant having expertise in California prehistoric and urban historical archaeology. The archaeological consultant shall prepare an archaeological treatment plan (TP). The archaeological consultant's work shall be conducted in accordance with this measure at the direction of the Environmental Review Officer (ERO). All plans and reports prepared by the consultant as specified herein shall be submitted first and directly to the ERO for review and comment, and shall be considered draft reports subject to revision until final approval by the ERO.

Archaeological Treatment Plan. The archaeological consultant shall meet and consult with the ERO on the scope of the TP prior to preparation of the TP. The TP shall be submitted to the ERO for review and approval prior to the Project ground-breaking activities for Phases II-IV.

Archaeological field investigations for Phases II-IV shall be conducted in accordance with the approved TP. The TP shall identify project-specific vertical / horizontal areas of archaeological sensitivity and appropriate archaeological identification and evaluation strategies, and archaeological mitigatory protocols applicable to specific project activities / improvements (for example, excavation building foundation installation, grading, etc.) with the potential to affect archaeological properties. Mitigation strategies requiring archaeological testing plans (ATP) and archaeological monitoring plans (AMP) shall conform to the requirements for preparation and implementation including preparation of archaeological investigation and data recovery results reporting of an ATP and AMP in Mitigation Measure M-CR-3a.

Impact CR-4: Project construction activities could disturb human remains, if such resources are present within the Project Site. (*Less than Significant with Mitigation*)

Should human remains present within the Project Site be encountered during construction activities, implementation of Mitigation Measures M-CR-3a and M-CR-3b would be required. Mitigation Measures M-CR-3a and M-CR-3b, pp. V.D.45-V.D.49, call for compliance with applicable state and federal laws regarding the treatment of human remains and of associated or unassociated funerary objects discovered during any soils-disturbing activity. This shall include immediate notification of the Coroner of the City and County of San Francisco and in the event of the Coroner's determination that the human remains are Native American remains, notification of the California State Native American Heritage Commission (NAHC) who shall appoint a Most Likely Descendant (MLD) (Public Resources Code Section 5097.98). The archaeological consultant, Project Sponsor, and MLD shall make all reasonable efforts to develop an agreement for the treatment of, with appropriate dignity, human remains and associated or unassociated funerary objects (*CEQA Guidelines* Section 15064.5(d)). The agreement should take into consideration the appropriate excavation, removal, recordation, analysis, custodianship, curation, and final disposition of the human remains and associated or unassociated funerary objects.

With implementation of Mitigation Measures M-CR-3a and M-CR-3b, the Proposed Project would not cause a substantial adverse change to the scientific significance of an archaeological resource.

Impact CR-5: Project construction activities could disturb paleontological resources. (*Less than Significant with Mitigation*)

Given that the sedimentary Colma Formation has yielded significant vertebrate fossils within the San Francisco peninsula, paleontological resources could exist in the Colma Formation that underlies the Project Site. Project construction activities under the Proposed Project could disturb significant paleontological resources, if such resources are present within the Project Site. Site disturbance could impair the ability of the Project Site to yield important scientific information. Unless mitigated, implementation of the Proposed Project could impair the significance of

paleontological resources on the Project Site and would therefore be considered a potentially significant impact under CEQA.

Mitigation Measure M-CR-5, shown below, calls for a qualified paleontologist to implement an approved Paleontological Resources Monitoring and Mitigation Program during construction and earth-moving activities in areas where the ground has been previously disturbed, or in areas of artificial fill, or in areas underlain by nonsedimentary rocks, or in areas where exposed sediment would be buried, but are otherwise undisturbed. Implementation of the approved plan for monitoring, recovery, identification, and curation under Mitigation Measures M-CR-3a and M-CR-3b, would ensure that the scientific significance of the resource under CRHR Criterion 4 (Information Potential) would be preserved and/or realized. With implementation of Mitigation Measure M-CR-5, the Proposed Project would not cause a substantial adverse change to the scientific significance of a paleontological resource.

Mitigation Measure M-CR-5: Paleontological Resources Monitoring and Mitigation Program

The Project Sponsor shall retain the services of a qualified paleontological consultant having expertise in California paleontology to design and implement a Paleontological Resources Monitoring and Mitigation Program (PRMMP). The PRMMP shall include a description of when and where construction monitoring would be required; emergency discovery procedures; sampling and data recovery procedures; procedure for the preparation, identification, analysis, and curation of fossil specimens and data recovered; preconstruction coordination procedures; and procedures for reporting the results of the monitoring program.

The PRMMP shall be consistent with the Society for Vertebrate Paleontology (SVP) Standard Guidelines for the mitigation of construction-related adverse impacts to paleontological resources and the requirements of the designated repository for any fossils collected. During construction, earth-moving activities shall be monitored by a qualified paleontological consultant having expertise in California paleontology in the areas where these activities have the potential to disturb previously undisturbed native sediment or sedimentary rocks. Monitoring need not be conducted in areas where the ground has been previously disturbed, in areas of artificial fill, in areas underlain by nonsedimentary rocks, or in areas where exposed sediment would be buried, but otherwise undisturbed.

The consultant's work shall be conducted in accordance with this measure and at the direction of the City's Environmental Review officer (ERO). Plans and reports prepared by the consultant shall be submitted first and directly to the ERO for review and comment, and shall be considered draft reports subject to revision until final approval by the ERO. Paleontological monitoring and/or data recovery programs required by this measure could suspend construction of the Proposed Project for up to a maximum of four weeks. At the direction of the ERO, the

suspension of construction can be extended beyond four weeks only if such a suspension is the only feasible means to reduce potential effects on a significant paleontological resource as previously defined to a less-than-significant level.

Impact CR-6: Disturbance of archaeological and paleontological resources within Project Site could contribute to a cumulative loss in the ability of the site to yield significant historic and scientific information. (*Less than Significant with Mitigation*)

When considered with other past and proposed development projects along and near the San Francisco shoreline, the disturbance of archaeological and paleontological resources within Project Site could contribute to a cumulative loss in the ability of the site to yield significant historic and scientific information. As discussed above, implementation of an approved plan for testing, monitoring, and data recovery would preserve and realize the information potential of archaeological and paleontological resources. The recovery, documentation, and interpretation of information about archaeological and paleontological resources that may be encountered within the Project Site would enhance knowledge prehistory and history. This information would be available to future archaeological and paleontological studies, contributing to the body of scientific and historic knowledge. With implementation of Mitigation Measures M-CR-3a and M-CR-3b, pp. V.D.45-V.D.49, and Mitigation Measure M-CR-5, pp.V.D.50-V.D.51, the Proposed Project would not contribute to a significant adverse cumulative impact on archaeological or paleontological resources.

E. TRANSPORTATION AND CIRCULATION

This section analyzes the potential project-level and cumulative impacts on transportation and circulation resulting from implementation of the Proposed Project. Transportation-related issues of concern that are addressed include traffic on local and regional roadways, transit, bicycles, pedestrians, parking, freight loading, and construction-related activities. Transportation impacts are assessed for the land use development program for weekday AM and PM commute periods, and also for weekend midday conditions. This section also identifies mitigation measures that would reduce or avoid significant impacts.

This section is based on information contained in the Parkmerced Project Transportation Impact Analysis Report, prepared by Fehr & Peers.¹

SETTING

The transportation Study Area includes all aspects of the transportation network that may be measurably affected by the Proposed Project. The transportation Study Area is defined by travel corridors and by facilities such as bus stops and transit stations. It includes the freeway segments, freeway ramps, and existing and proposed street intersections that residents and visitors would use in traveling to and from the Proposed Project.

A total of 26 existing intersections, nine freeway segments (five in the northbound and four in the southbound direction of State Route 1 [SR 1]), and three merge/diverge sections on SR 1 were identified as the key locations that would likely be affected by the Proposed Project and were therefore selected for detailed study of the Proposed Project's impacts. The study intersections include a number of intersections along the 19th Avenue/Junipero Serra Boulevard corridor (SR 1) and ramps near the Junipero Serra Boulevard/Brotherhood Way interchange. The 26 study intersections are:

1. Brotherhood Way/Alemanya Boulevard/Sagamore Street
2. Junipero Serra Boulevard/Sloat Boulevard/St. Francis Boulevard/Portola Drive
3. Junipero Serra Boulevard/Ocean Avenue/Eucalyptus Drive
4. Junipero Serra Boulevard/Winston Drive
5. Junipero Serra Boulevard/Holloway Avenue
6. 19th Avenue/Junipero Serra Boulevard
7. Junipero Serra Boulevard/Font Boulevard

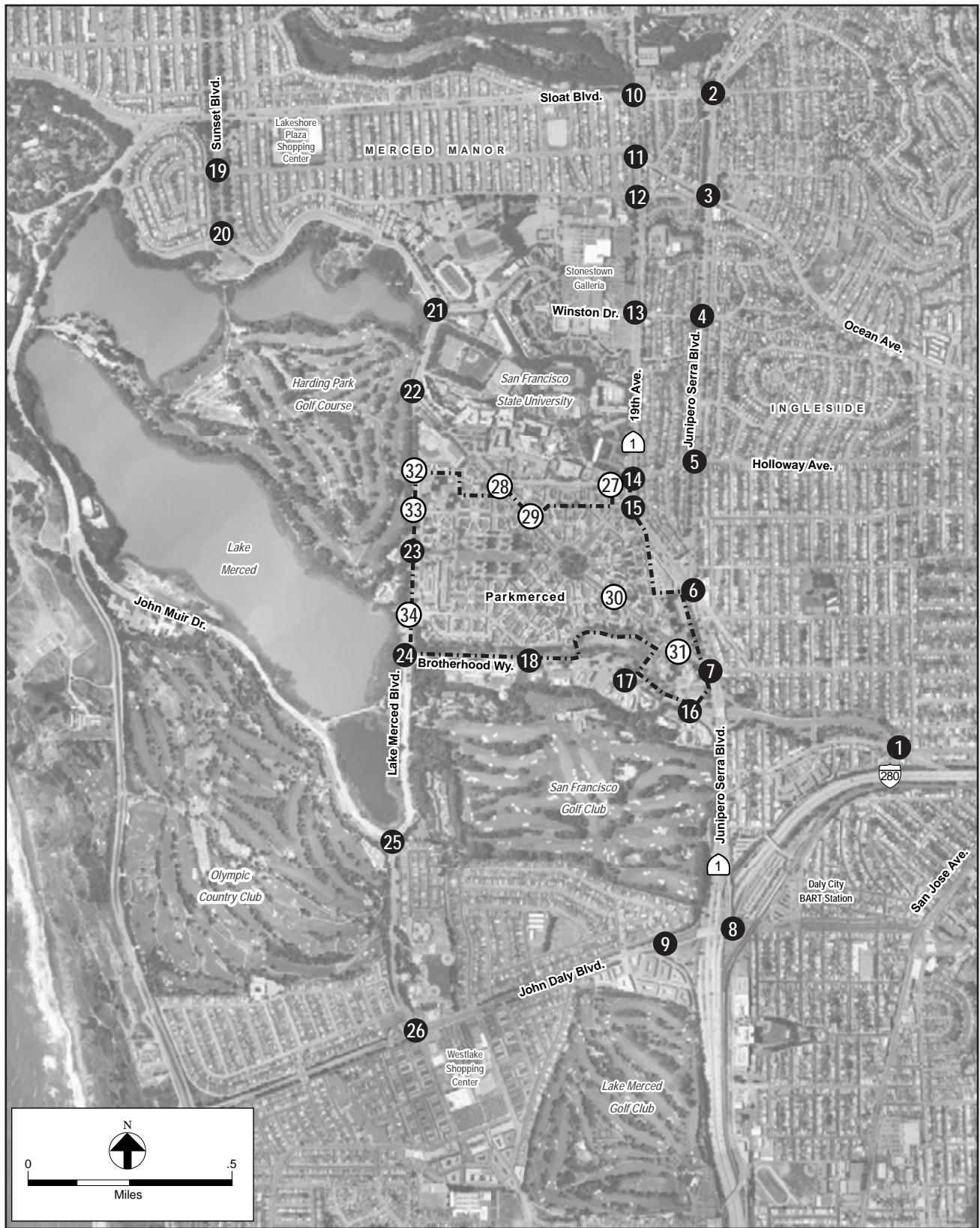
¹ Fehr & Peers, *Final Transportation Impact Analysis 2010*. This document is available for public review at the Planning Department, 1650 Mission Street, Suite 400, as part of Case File No. 2008.0021E.

8. Junipero Serra Boulevard/John Daly Boulevard/I-280 Northbound On-Ramp/
I-280 Southbound Off-Ramp/SR 1 Northbound On-Ramp
9. SR 1 Southbound On- and Off-Ramps/John Daly Boulevard
10. 19th Avenue/Sloat Boulevard
11. 19th Avenue/Ocean Avenue
12. 19th Avenue/Eucalyptus Drive
13. 19th Avenue/Winston Drive
14. 19th Avenue/Holloway Avenue
15. 19th Avenue/Crespi Drive
16. Brotherhood Way/Chumasero Drive
17. Brotherhood Way/East Driveway – Bridgemont School, Congregation Beth Israel, and
Armenian Congregation
18. Brotherhood Way/West Driveway – Greek Orthodox and Open Bible Churches
19. Sunset Boulevard/Ocean Avenue
20. Sunset Boulevard/Lake Merced Boulevard
21. Lake Merced Boulevard/Winston Drive
22. Lake Merced Boulevard/Font Boulevard
23. Lake Merced Boulevard/Higuera Avenue
24. Lake Merced Boulevard/Brotherhood Way
25. Lake Merced Boulevard/John Muir Drive
26. John Daly Boulevard/Lake Merced Boulevard

The above intersections were selected for analysis because they are typically congested during peak periods due to traffic traveling to and from the 19th Avenue corridor from San Mateo County and points south along Interstate 280 (I-280), or are along other streets adjacent to the Project Site, and are therefore most likely to experience increases in peak hour traffic associated with the Proposed Project. Figure V.E.1, Study Intersections, presents the locations of the study intersections.

An additional eight study intersections within the Project Site were selected for evaluation under new conditions with the Proposed Project only, because they would either be new intersections or would be substantially changed with construction of the Proposed Project, making comparisons to existing conditions not meaningful. Those intersections are as follows:

27. Holloway Avenue/Varela Avenue
28. Font Boulevard/Holloway Avenue/Pinto Avenue
29. Font Boulevard/Serrano Drive



SOURCE: Fehr & Peers

- - - - PROJECT BOUNDARY
- ① STUDY INTERSECTIONS
- ②⑦ PROJECT ONLY STUDY INTERSECTIONS

PARKMERCED PROJECT

FIGURE V.E.1: STUDY INTERSECTIONS

30. Font Boulevard/Gonzalez Drive
31. Font Boulevard/Chumasero Drive
32. Lake Merced Boulevard/Vidal Drive
33. Lake Merced Boulevard/Acevedo Drive
34. Lake Merced Boulevard/Gonzalez Drive

The transit analysis includes an assessment of the Muni transit lines that would serve the Project Site and/or would be affected by vehicular traffic generated by the Proposed Project.

ROADWAY NETWORK

Regional Access

Regional travel to and from the Project Site involves the use of regional transportation facilities, highways and transit services that link San Francisco with other parts of the Bay Area and Northern California. Parkmerced is accessible by local streets with connections to and from regional freeways and highways in the state system.

Interstate 280 (I-280) is a six- to eight-lane major freeway that serves as a major regional connector between the City of San Jose and the communities of San Mateo County with Downtown San Francisco. The freeway provides a direct connection to US 101 and terminates at surface streets in the South of Market area. In the vicinity of the Project Site, I-280 carries approximately 431,000 vehicles per day.

State Route 1 (SR 1) is a major north-south route that generally travels along the California coast. Within the vicinity of the Project, SR 1 connects the Golden Gate Bridge to I-280 via Junipero Serra Boulevard, 19th Avenue, and Park Presidio Drive. Along the Project Site frontage and to the north, it is a six-lane arterial, 19th Avenue. To the south, it becomes Junipero Serra Boulevard and transitions into a six-lane freeway before reaching John Daly Boulevard. In the vicinity of the Project Site, SR 1 carries approximately 82,000 to 115,000 (at Brotherhood Way) vehicles per day.

Local Access

Junipero Serra Boulevard is a principal north-south arterial in the southwest part of San Francisco, extending from I-280 in Daly City to its intersection with Sloat Boulevard and Portola Drive just north of the Project Site. This route turns into Portola Drive and then Market Street, making it an arterial route into Downtown San Francisco. Freeway and arterial traffic merges onto this route near the Project Site, I-280 from the south and 19th Avenue from the north. The *San Francisco General Plan* has designated this street as a major arterial. In the vicinity of the

Project Site, Junipero Serra Boulevard has four travel lanes in each direction. No parking is allowed on either side of the street south of Felix Avenue. In the Project Study Area, Junipero Serra has no bicycle facilities.

In general, sidewalks are provided on both sides of Junipero Serra Boulevard. North of Ocean Avenue, sidewalks are only provided on the west side; however, the frontage road on the east side of the street does have sidewalks on the east side. South of Brotherhood Way, a walking path is provided on the east side of the roadway, which terminates at Alemany Boulevard.

There are no transit lines that run along Junipero Serra Boulevard between 19th Avenue and Ocean Avenue. North of Ocean Avenue, the K Ingleside, K owl, and the M owl, along with the 17 Parkmerced and 91 owl buses, run to the Sloat Boulevard/Junipero Serra Boulevard/Portola Drive intersection. South of 19th Avenue, the 28 19th Avenue, 28L 19th Avenue Limited, and San Francisco State University (SFSU) Shuttle run to Daly City BART.

19th Avenue is another principal north-south arterial running from Randolph Street and Byxbee Street just east of the Project Site through the Sunset District into Golden Gate Park. This street is also SR 1 as it routes through the Sunset District, through Golden Gate Park, where it becomes Crossover Drive and merges with Park Presidio Boulevard, which eventually merges onto US 101 continuing over the Golden Gate Bridge. It serves as the major through street connecting the South Bay to Marin County and is designated as a major arterial by the *San Francisco General Plan*. Adjacent to the Project Site, 19th Avenue has three travel lanes in each direction. The M Ocean View light rail line runs in the center of 19th Avenue between Holloway Avenue to Eucalyptus Drive. Left turns are prohibited at most intersections along the corridor. On-street parking is permitted on both sides of the street, with time restrictions for non-permit holders. Sidewalks run on both sides of 19th Avenue within the Project Study Area.

Within the Project Study Area, 19th Avenue serves several transit lines for varying lengths: the 28 19th Avenue, 28L 19th Avenue Limited, SFSU Shuttle, 29 Sunset, 17 Parkmerced, and the M Ocean View.

Lake Merced Boulevard is a north-south arterial extending between Daly City and Sunset Boulevard, along the west side of the Project Site. The *San Francisco General Plan* has designated this street a secondary arterial. In the vicinity of the Project Site, the street has two travel lanes in each direction. Both a Class I bike path (west side of the street) and Class III bike route (Route 85) run along Lake Merced Boulevard.

Lake Merced Boulevard provides a sidewalk on its east side between John Daly Boulevard and John Muir Drive. North of John Muir Drive, a separated bike and pedestrian path is provided on the west side of the street. Although a proper facility has not been constructed, an informal

footpath can be identified on the east side of the roadway. The separated path on the west side continues along Lake Merced parallel to Lake Merced Boulevard. The path on the east side of the street terminates at Vidal Drive. North of the Project Site, there are sidewalks on both sides of the street.

Lake Merced Boulevard serves SamTrans Route 122, Muni routes 18 46th Avenue and 29 Sunset, and the SFSU Shuttle for varying lengths.

Brotherhood Way is an east-west arterial extending from Lake Merced Boulevard to the intersection of Alemany Boulevard and Sagamore Street. It is a connector to Junipero Serra Boulevard/SR-1 and I-280 from the southern portion of the Project Site. This street has two travel lanes in each direction for its entire length. Brotherhood Way is designated as a secondary arterial by the *San Francisco General Plan*. This street has a Class II² bike lane from Saint Charles Avenue to Alemany Boulevard. On-street parking is not permitted.

West of the Holy Trinity Greek Orthodox Church along Brotherhood Way, there is a sidewalk on the north side of the street. An informal footpath can be identified on the south side. To the east of the church, there are sidewalks on both sides of the street until the interchange with Junipero Serra Boulevard, where again there is a sidewalk on the north side and a footpath on the southern side. East of the interchange, a separated pathway is provided on both sides of the street.

There are no transit lines on Brotherhood Way between Lake Merced Boulevard and Chumasero Drive. The 17 Parkmerced exits the Parkmerced site from Chumasero and runs east along Brotherhood Way through the Brotherhood Way/Alemany Boulevard/Sagamore Street intersection.

Holloway Avenue is an east-west roadway extending from Font Boulevard, running through the residential neighborhood of Merced Heights, and ending in the Ingleside neighborhood at Harold Avenue. This street connects the Project Site to City College of San Francisco. From Font Boulevard to 19th Avenue, the street provides one lane in each direction, with metered street parking on the north side and unrestricted street parking on the south side. The street also provides a Class II bike lane in both directions (Route #90). There are sidewalks on both sides of Holloway. The 29 Sunset travels along Holloway Avenue from 19th Avenue to Beverly Street.

Font Boulevard is the main roadway running through the Project Site from Lake Merced Boulevard in the northwest to Junipero Serra Boulevard in the southeast. It is a diagonal road that is a key design feature of the original Parkmerced development. There is one lane in each

² Class II bikeways are paved areas of roadways that are designated with stripes and established for the preferential use of bicycles.

direction. On-street parking is permitted on both sides of the street, with time restrictions for non-permit holders. Sidewalks are provided on both sides of Font Boulevard, with a large landscaped buffer for the majority of the length. Font Boulevard provides centralized service to the Project Site for the 17 Parkmerced.

Crespi Drive is a local street in the Project Site that serves as a main entrance into Parkmerced from 19th Avenue. It is another diagonal street radiating from Juan Bautista Circle. The street has one lane in each direction and diagonal street parking on both sides, with time restrictions for non-permit holders. Similar to Font Boulevard, sidewalks are provided on both sides of Crespi Drive, with a large landscaped buffer for the majority of the length. The 17 Parkmerced and 29 Sunset currently use the roundabout on Crespi Drive near 19th Avenue to reverse direction.

Intersection Operations

Existing conditions at the study intersections were analyzed for the peak hour of the typical weekday morning (7:00 to 9:00 AM) and evening (4:00 to 6:00 PM) peak periods, as well as the peak hour of the weekend midday peak period (generally 12 noon to 1:00 PM) at select intersections. The weekend peak hour analysis was conducted at only a subset of all intersection locations because this time period is not routinely included in transportation analyses. The weekend peak hour analysis of some intersections was performed to determine the relatively similar traffic volumes and operations on weekend peak hours compared to the weekday peak periods. The weekday peak periods are consistent with most transportation analyses conducted in San Francisco and were selected because they represent the times during typical days that routinely experience the highest traffic volumes and greatest congestion.

Traffic conditions at the study intersections were evaluated using level of service (LOS). Level of service is a qualitative description of operating conditions ranging from LOS A, or free-flow conditions with little or no delay, to LOS F, or jammed conditions with excessive delays. The Impacts subsection, below, presents the analysis methodology and the LOS definitions for signalized and unsignalized intersections. Table V.E.1 defines each of the levels of service and shows the correlation between average control delay and level of service.

Existing operating conditions for the study intersections are presented under Impacts in Tables V.E.11 through V.E.13 on pp. V.E.55–V.E.61. During the weekday AM and PM and weekend midday peak hours, most study intersections currently operate at LOS D or better, with the following exceptions:

- Junipero Serra Boulevard/Sloat Boulevard/St. Francis Boulevard/Portola Drive operates at LOS E in the weekday AM peak hour, LOS F in the weekday PM peak hour, and LOS F during the weekend midday peak hour

Table V.E.1: LOS Definitions for Signalized and Unsignalized Intersections

Control/LOS	Description of Operations	Average Control Delay (seconds per vehicle)
Signalized		
A	Insignificant Delays: No approach phase is fully used and no vehicle waits longer than one red indication.	≤ 10
B	Minimal Delays: An occasional approach phase is fully used. Drivers begin to feel restricted.	> 10.0 and ≤ 20.0
C	Acceptable Delays: Major approach phase may become fully used. Most drivers feel somewhat restricted.	> 20.0 and ≤ 35.0
D	Tolerable Delays: Drivers may wait through no more than one red indication. Queues may develop but dissipate rapidly without excessive delays.	> 35.0 and ≤ 55.0
E	Significant Delays: Volumes approaching capacity. Vehicles may wait through several signal cycles and long queues form upstream.	> 55 and ≤ 80
F	Excessive Delays: Represents conditions at capacity, with extremely long delays. Queues may block upstream intersections.	> 80.0
Unsignalized		
A	No delay for STOP-controlled approach.	≤ 10.0
B	Operations with minor delays.	> 10.0 and ≤ 15.0
C	Operations with moderate delays.	> 15 and ≤ 25.0
D	Operations with some delays.	> 25.0 and ≤ 35.0
E	Operations with high delays and long queues.	> 35.0 and ≤ 50.0
F	Operations with extreme congestion, with very high delays and long queues unacceptable to most drivers.	> 50.0

Source: *Highway Capacity Manual – Special Report 209* (Transportation Research Board, 2000).

- 19th Avenue/Junipero Serra Boulevard operates at LOS E in the weekday AM peak hour, LOS F in the weekday PM peak hour, and LOS F during the weekend midday peak hour
- Junipero Serra Boulevard/John Daly Boulevard/I-280 Northbound On-Ramp/I-280 Southbound Off-Ramp/SR 1 Northbound On-Ramp operates at LOS F in the weekday PM peak hour
- 19th Avenue/Sloat Boulevard operates at LOS E in the weekday AM peak hour, LOS F in the weekday PM peak hour, and LOS E during the weekend midday peak hour
- 19th Avenue/Ocean Avenue operates at LOS F in the weekday PM peak hour
- 19th Avenue/Winston Drive operates at LOS F in the weekday PM peak hour
- 19th Avenue/Holloway Avenue operates at LOS E in the weekday PM peak hour

- Brotherhood Way/Chumasero Drive operates at LOS E in the weekday AM and PM peak hours
- Brotherhood Way/West Driveway³ – Greek Orthodox and Open Bible Churches operates at LOS F in the weekday AM and PM peak hours (Northbound Approach)
- Sunset Boulevard/Lake Merced Boulevard operates at LOS F in the weekday AM peak hour (Eastbound Approach)
- Lake Merced Boulevard/Higuera Avenue operates at LOS E in the weekday AM and PM peak hours
- Lake Merced Boulevard/John Muir Drive operates at LOS F in the weekday AM and PM peak hours (Eastbound Approach)

Freeway Mainline Operations

The LOS for a freeway section, weaving section, and ramp junction with the freeway is based on vehicle density (passenger cars/lane/mile) and service volume (passenger cars/hour) using the relationships presented in Table V.E.2. Service volume is the primary measure of the overall weaving segment. The specific level of service, and thus service volume, is prescribed by the weaving movement predicated on the weaving volume, number of lanes, and length of weave relationship.⁴

Freeway mainline analysis was conducted at the following segments:

- SR 1 Northbound – Between I-280 and John Daly Boulevard
- SR 1 Northbound – Between John Daly Boulevard and Alemany Boulevard
- SR 1 Northbound – Between Loop On-Ramp from Brotherhood Way and Loop Off-Ramp to Brotherhood Way
- SR 1 Northbound – Between Loop Off-Ramp from Brotherhood Way and Direct On-Ramp from Brotherhood Way
- SR 1 Northbound – Between Brotherhood Way and 19th Avenue
- SR 1 Southbound – Between 19th Avenue and Brotherhood Way
- SR 1 Southbound – Between Loop Off-Ramp to Brotherhood Way and Direct On-Ramp from Brotherhood Way
- SR 1 Southbound – Between Brotherhood Way and John Daly Boulevard

³ This intersection was signalized in early 2010. However, at the time the transportation analysis was conducted, it was unsignalized and no signalization was assumed.

⁴ The value of service volume is determined with the aid of monographs published in *Completion of Procedures for Analysis and Design of Traffic Weaving Sections*, by J. Leisch & Associates, September 1983.

Table V.E.2: LOS Definitions for Freeway Mainline Segments, Weaving Segments, and Ramp Junctions

LOS	Description of Operations	Maximum Density (passenger cars per mile per lane)		Service Volume (passenger cars per hour)		
		Basic Freeway Sections	Freeway Weaving Segments and Ramp Junctions	Freeway Weaving Sections (lanes)		
				2	3	4
A	Free-flow speeds prevail. Vehicles are almost completely unimpeded in their ability to maneuver within the traffic stream.	< 11	< 10	< 750	< 800	< 850
B	Free-flow speeds are maintained. The ability to maneuver with the traffic stream is only slightly restricted.	> 11 to 18	> 11 to 20	>750 to 1,000	>800 to 1,100	>850 to 1,200
C	Flow with speeds at or near free-flow speeds. Freedom to maneuver within the traffic stream is noticeably restricted, and lane changes require more care and vigilance on the part of the driver.	> 18 to 26	> 20 to 28	>1,000 to 1,250	>1,100 to 1,350	>1200 to 1,450
D	Speeds decline slightly with increasing flows. Freedom to maneuver with the traffic stream is more noticeably limited, and the driver experiences reduced physical and psychological comfort.	> 26 to 35	> 28 to 35	>1,250 to 1,550	>1,350 to 1,600	>1,450 to 1,650
E	Operation at capacity. There are virtually no usable gaps within the traffic stream, leaving little room to maneuver. Any disruption can be expected to produce a breakdown with queuing.	> 35 to 45	> 35	>1,550 to 1,900	>1,600 to 1,900	>1,650 to 1,900
F	Represents a breakdown in flow.	> 45	Demand exceeds capacity		>1,900	

Source: *Highway Capacity Manual (HCM)* – Chapter 23: Basic Freeway Sections and Chapter 25: Ramps and Ramp Junctions Methodology, Transportation Research Board, 2000; and *Completion of Procedures for Analysis and Design of Traffic Weaving Sections*, Jack E. Leisch & Associates, September 1983.

- SR 1 Southbound – Between Off-Ramp to John Daly Boulevard and On-Ramp from John Daly Boulevard

All analysis segments experience LOS D or better conditions, except for SR 1 northbound between the Loop On-Ramp from Brotherhood Way and the Loop Off-Ramp to Brotherhood Way, which operates at LOS F in the weekday AM and PM peak hours; and SR 1 southbound between Brotherhood Way and John Daly Boulevard, which operates at LOS E in the weekday AM and PM peak hours. Existing operating conditions at the freeway mainline segments are

provided in Tables V.E.15 and V.E.16, respectively, under Impacts on pp.V.E.74–V.E.75 and V.E.76-V.E.77.

Ramp Operations

A ramp junction analysis was conducted to determine the operating conditions for ramp volumes merging with and diverging from freeway mainline traffic flow. Freeway ramps were evaluated using the *Highway Capacity Manual 2000* methodology for ramp merge and diverge conditions. Service levels at the on- and off-ramp junctions are determined based on density, as calculated using the freeway volumes and the ramp volumes at each study location. Similar to the freeway mainline, the operating characteristics of the ramps are described using the concept of LOS (see Table V.E.2).

Freeway ramp junction analysis was conducted at the following ramp locations:

- SR 1 Northbound Off-Ramp to Palmetto Avenue
- SR 1 Northbound On-Ramp from Palmetto Avenue
- SR 1 Southbound Loop Off-Ramp to Brotherhood Way

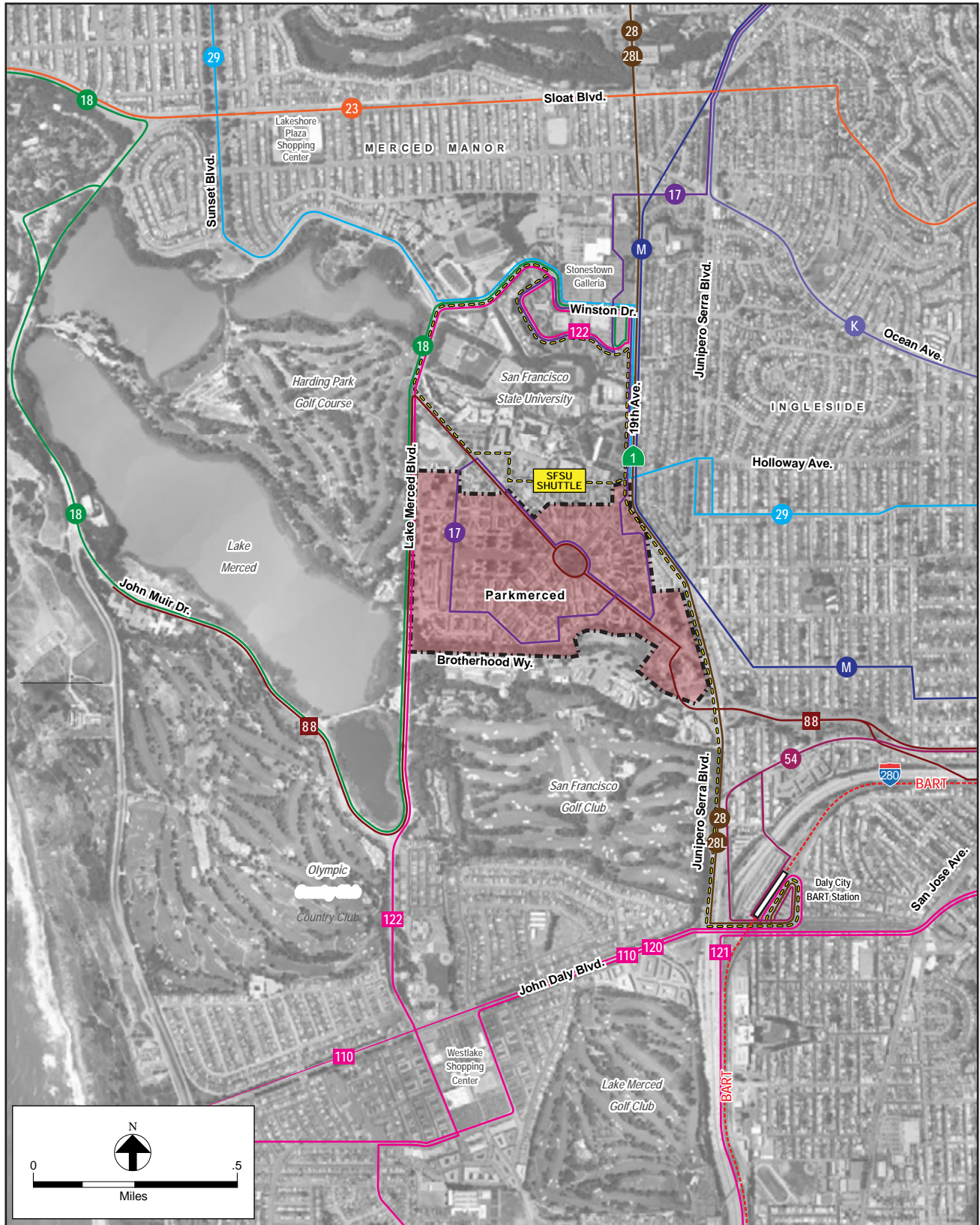
During the weekday AM and PM peak hours, all of the ramp junctions currently operate at LOS D or better. Existing operating conditions at the freeway ramp junctions are provided in Tables V.E.15 and V.E.16.

TRANSIT

The Study Area is relatively well-served by public transit, with routes providing crosstown, community, downtown, and regional service. Local service within the Study Area is provided by the SFMTA (Muni) bus and light rail lines, which can be used for access to regional transit operators. Service to and from the East Bay is provided by BART and AC Transit; service to and from the North Bay is provided by Golden Gate Transit buses; and service to and from the Peninsula and South Bay is provided by SamTrans, BART, and Caltrain.

Figure V.E.2: Existing Transit Network presents the Muni lines serving the Study Area. Table V.E.3 summarizes the frequency of service for the Muni bus and light rail lines serving the Study Area. This information reflects Muni lines prior to the December 5, 2009, service changes.⁵ Peak period service on most bus lines provides headways between buses of 8 to 15 minutes. The 17 Parkmerced has peak period headways between buses of 20 minutes.

⁵ As of December 5, 2009, there were changes to the 88 Mission-BART Shuttle route. The segment of the line west of Alemany Boulevard/Sickles Avenue serving Park Merced and neighborhoods bordering Lake Merced was discontinued.



SOURCE: Fehr & Peers

Muni

- 17 17-PARKMERCED
- 18 18-46TH AVENUE
- 23 23-MONTEREY
- 28 28-19TH AVENUE
- 28L 28L-19TH AVENUE LIMITED
- 29 29-SUNSET
- 54 54-FELTON
- 88 88-BART SHUTTLE

- J J-CHURCH
- K K-INGLESIDE
- M M-OCEAN VIEW

SFSU SHUTTLE

SAMTRANS

110-120-121-122

BART

--BART--

PARKMERCED PROJECT

FIGURE V.E.2: EXISTING TRANSIT NETWORK

Table V.E.3: Muni Lines Serving Project Study Area

Route	Frequency of Service (average time in minutes)		
	AM (7:00 to 9:00 AM)	Midday (9:00 AM to 4:00 PM)	PM (4:00 to 6:00 PM)
17 Parkmerced	20	30	20
18 46 th Avenue	15	20	15
23 Monterey	15	20	15
28 19 th Avenue	8.5	12	10
28L 19 th Avenue Limited	10	10	--
29 Sunset	10	15	10
K Ingleside	8.5	10	8.5
M Ocean View	8.5	10	8.5

Source: SFMTA, November 2009

BART operates regional rail transit service in the metropolitan Bay Area connecting San Francisco with the East Bay and northern San Mateo County. The nearest BART stations to Parkmerced are at the Balboa Park and Daly City stations. Muni connections can be made to the following BART stations from the Parkmerced area: Daly City station via 28 19th Avenue or 28L 19th Avenue Limited; Balboa Park station via the 29 Sunset; or Civic Center station via the M Ocean View. BART operates at service frequencies of 3 minutes in the peak periods for intra-San Francisco travel.

Caltrain provides rail passenger service on the Peninsula between Gilroy and San Francisco. The Peninsula Corridor Joint Powers Board (JPB), a joint powers agency consisting of San Francisco, San Mateo, and Santa Clara Counties, operates the service. Caltrain currently operates 86 trains each weekday, with a combination of express, limited, and local services. Headways during the peak periods are approximately 10 to 30 minutes. From the Project Site, riders can reach Caltrain by taking BART from the Balboa Park or Daly City Station to the Millbrae BART Station.

SamTrans is operated by the San Mateo County Transit District, which provides bus service between San Mateo County and San Francisco. SamTrans operates 12 diesel bus lines that serve San Francisco, including nine routes into the downtown area. However, only one route – Route 122 along Lake Merced Boulevard – serves the Parkmerced site. This route provides service from the Project Site to Stonestown Shopping Center and Westlake Shopping Center in Daly City. Headways during the peak commuting periods are approximately 20 minutes.

AC Transit is the primary bus operator for the East Bay, including Alameda and western Contra Costa Counties. AC Transit operates 37 routes between the East Bay and San Francisco, all of

which terminate at the Transbay Transit Terminal, located on Mission Street, downtown between First and Fremont Streets. Most Transbay service is peak-hour and peak-direction (to San Francisco during the AM peak period and from San Francisco during the PM peak period), with headways of 15 to 30 minutes per route. To reach Parkmerced, riders must transfer at the Transbay Terminal to the M Ocean View line by walking a block from Mission Street to Market Street.

Golden Gate Transit (bus service), operated by the Golden Gate Bridge, Highway, and Transportation District (GGBHTD), provides bus service between the North Bay (Marin and Sonoma Counties) and San Francisco. Golden Gate Transit operates 18 commuter bus routes and two basic routes with service between cities in the North Bay and San Francisco. Most routes serve either the Civic Center (via Van Ness Avenue and Mission Street) or the Financial District (via Battery and Sansome streets). Basic bus routes operate at 15- to 90-minute headways, depending on the time and day of the week. Commute and ferry feeder bus routes operate at more frequent intervals in the mornings and evenings.

Golden Gate Transit does not provide local service to Parkmerced. Golden Gate Transit Route 70 (daily service) can be accessed at the Golden Gate Bridge Toll Plaza via the 28 19th Avenue. Golden Gate Transit Route 70/80 runs with approximate headways of 30 minutes during peak periods.

Golden Gate Transit (ferry service), also operated by the GGBHTD, provides ferry service between the North Bay and San Francisco. During the AM and PM peak periods, ferries operate between Larkspur and San Francisco and between Sausalito and San Francisco. The San Francisco terminal is located at the Ferry Building, on the Embarcadero at Market Street. From the Study Area, access to the Ferry Building would require travel along the M Ocean View line to the Embarcadero station.

SFSU Shuttle (students and faculty only) currently provides free service to the campus community during the fall and spring semesters. It connects to the Daly City BART station, Parkmerced, SFSU, and the Stonestown Galleria.

BICYCLES

Existing bicycle facilities in the Study Area include routes that are part of the San Francisco Bicycle Network. Bikeways are typically classified as Class I, Class II, or Class III facilities.⁶ Class I bikeways are paths with exclusive right-of-way for use by bicyclists or pedestrians.

⁶ Bicycle facilities are defined by the State of California in the California Streets and Highway Code Section 890.4.

Class II bikeways are bicycle lanes striped with the paved areas of roadways and established for the preferential use of bicycles. Class III bikeways are signed bicycle routes that allow bicycles to share travel lanes with vehicles. Figure V.E.3: Existing Bicycle Route Network presents the bicycle routes within the Study Area as identified in the Official San Francisco Bike Route System.

In June 2009, the *San Francisco Bicycle Plan Final EIR* was approved by the Planning Commission and the Bicycle Plan was approved by the SFMTA Board. In August 2009, the Board of Supervisors affirmed certification of the *Final EIR*. Near-term improvement projects on the existing bicycle network in the Study Area are noted below, and both near-term and long-term improvements are described in additional detail in the “Methodology” section under Impacts, on p. V.E.23.

Route #50: This route is an east-west Class III facility (bicycle route) that runs along Sloat Boulevard from the Great Highway and continues along Portola Drive.

Route #60: This route is an east-west Class III facility (wide curb-lane) that runs along Vicente Street from the Great Highway to 14th Avenue.

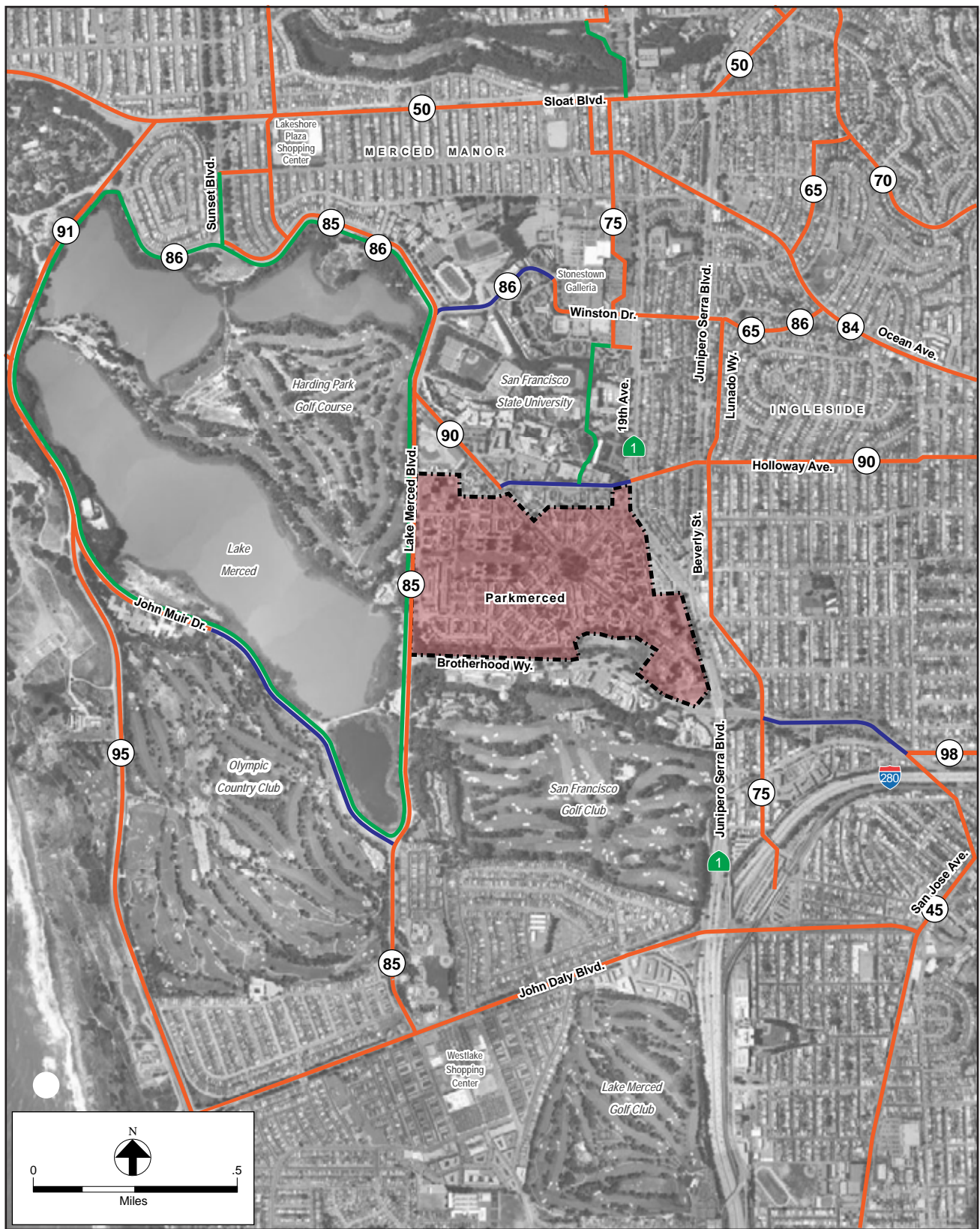
Route #75: This route is a north-south Class III facility that connects the Daly City BART station to Golden Gate Park. It is designated as a bike route and runs parallel to Junipero Serra via St. Charles Avenue, 19th Avenue, Beverly Street, and the Junipero Serra Boulevard frontage. It continues through Stonestown Mall and along 20th Avenue toward Golden Gate Park as a wide curb lane. There is one section where the route becomes a Class I facility, just north of Sloat Boulevard, as it passes through Stern Grove.

Route #84: This route is an east-west Class III facility (bicycle route) that runs along Ocean Avenue from 21st Street to the east.

Route #85: This route is a north-south Class III facility (wide curb lane) that runs along 34th Avenue and Lake Merced Boulevard from John Daly Boulevard to the north.

Route #86: This route is a recreational Class I facility that circles Lake Merced. It then extends eastward along Winston Drive as a Class II facility and eventually becomes a Class III facility at Buckingham Way. It connects to Route #84 at Ocean Avenue.

Route #90: This route is an east-west bike facility that runs along Holloway Avenue and Font Boulevard from Lake Merced Boulevard to the east. It varies as a Class II and Class III over its length.



SOURCE: Fehr & Peers

PARKMERCED PROJECT

FIGURE V.E.3: EXISTING BICYCLE ROUTE NETWORK

Route #91: This route is a north-south Class III facility (bike route) that runs along Skyline Boulevard and John Muir Drive from Sloat Boulevard to Lake Merced Boulevard south of Lake Merced.

Route #95: This route is a north-south Class III facility (bike route) that runs along Skyline Boulevard from John Daly Boulevard and continues along the Great Highway.

Bicycle connections to nearby destinations from the Project Site are limited and mainly consist of bike routes shared with vehicles. Most routes have average connectivity, as the bike facilities do not remain consistent through the entire route. As a result, bicycle activity in the Study Area is relatively low. Weekday PM peak period bicycle counts were conducted at three intersections along 19th Avenue near the Project Site. Hourly bicycle counts ranged from 5 to 20 bicycles per hour, with the greatest number on Holloway Avenue, near San Francisco State University, and the Stonestown Shopping Center.

PEDESTRIANS

The pedestrian network in the Project Study Area has a high level of connectivity, although conditions are not always favorable to pedestrians. Almost all streets within the Study Area provide sidewalks on both sides. Additionally, high-visibility crosswalks have been installed at key locations.

Some concerns with the existing pedestrian environment in the Study Area have been observed and are described below:

- The 19th Avenue/Junipero Serra intersection presents extremely long pedestrian crossing distances (in excess of 150 feet to cross one leg of the intersection, and due to the lack of a crosswalk on the south side of the intersection, 290 feet to travel from the southeast corner to the northwest corner) with one of the crossings being angled over seven lanes of auto traffic and a rail crossing. Coupled with the high speeds of traffic along the corridor, this is not an inviting pedestrian crossing. Additionally, a crossing is not provided on the southern leg of the intersection.
- The Junipero Serra Boulevard/Brotherhood Way interchange does not provide formal pedestrian connections around the facility. Observed pedestrian volumes are relatively low and formal footpaths have not been provided along Brotherhood Way.
- Uncontrolled movements along Lake Merced Boulevard, such as the westbound right-turn from Brotherhood Way, present pedestrian conflicts with high-speed traffic. The uncontrolled movements for the automobiles do not encourage awareness of pedestrians.
- The narrow and exposed sidewalk along 19th Avenue south of Holloway Avenue presents an uncomfortable pedestrian experience due to the high volume and speed of auto traffic.
- Along with the Muni M Ocean View, many buses stop along 19th Avenue, requiring pedestrians to cross the arterial. Transit riders destined for the Daly City or Balboa

BART station also need to catch connector buses running along 19th Avenue, which requires crossing from the center-running M Ocean View to the curbside bus stops.

- There is no crosswalk provided to cross Font Boulevard at the Junipero Serra Boulevard/Font Boulevard intersection. This presents an approximately 140 foot unprotected crossing. The wide roadway promotes high-speed driving.
- Street corners with no curb ramps on the existing Project Site present challenges to wheelchair users and do not comply with Americans with Disabilities Act (ADA) guidelines.

Weekday PM peak period pedestrian counts were conducted at three intersections along 19th Avenue near the Project Site. Hourly pedestrian counts ranged from approximately 80 pedestrians per hour at Sloat Boulevard to nearly 900 pedestrians per hour at Holloway Avenue, near SFSU, the Stonestown Shopping Center, and the SFSU station.

At these locations, the pedestrian volumes are substantial enough to cause pedestrians to overflow the crosswalks, street corners, and transit platforms. At both locations, pedestrians cross to and from the center median of 19th Avenue to access the light-rail stops.

A Crowding Analysis (*Highway Capacity Manual*, 2000) was conducted to draw a baseline of the conditions on the platform. The LOS for a pedestrian queuing area is based on pedestrian density (pedestrians/square foot) using the relationships presented in Table V.E.4.

Table V.E.4: LOS Definitions for Pedestrian Queuing Areas

LOS	Space (ft ² /person)
A	> 13
B	> 10–13
C	> 6–10
D	> 3–6
E	> 2–3
F	≤ 2

Source: Highway Capacity Manual, Transportation Research Board, 2000.

This methodology reports LOS C conditions in the AM peak hour and LOS C/D conditions in the PM peak hour. The design of the light rail vehicle platform and the nature of the pedestrian flows at this location tend to present some inefficiencies with the space provided on the platform. Observed conditions at certain times would be described as worse than LOS C or D. These will be used as a comparative baseline for evaluating the Project. A detailed discussion of the analysis of the pedestrian queuing areas is provided in the Impact analysis on pp. V.E.98-V.E.101.

PARKING

On-street parking in the Project Site is almost entirely Residential Preferential Permit parking, meaning that only residents with permits may legally park beyond the time restriction. General parking is permitted from 8:00 AM to 6:00 PM, Monday through Friday, with varying time limits (1 hour, 2 hour, or 4 hour). Many of the wider streets, such as Crespi Drive, Font Boulevard, and Serrano Drive, accommodate perpendicular/angled parking. Along the Project Site's boundary with SFSU, Holloway Avenue is metered on the north side with varying time limits from 15 minutes to 2 hours (cost of \$2 per hour). There are also metered motorcycle parking spaces with a 10-hour time limit (cost of \$0.40 per hour).

Surveys of on-street parking were conducted during the typical midday and evening peak period of parking demand within the Project Site and along both sides of 19th Avenue, Junipero Serra Boulevard, Holloway Avenue, and Font Boulevard adjacent to the site. During the evening peak period, parking spaces on 14 of 27 surveyed street segments were observed to be 90 percent occupied or greater. Overall, parking in the survey area was at least 80 percent occupied in both peak periods.

Off-street parking is provided by parking structures and surface lots within the Project Site and along both sides of 19th Avenue, Junipero Serra Boulevard, Holloway Avenue, and Font Boulevard adjacent to the site. Unlike the on-street parking, off-street parking was found to be less than 50 percent occupied in both the midday and evening peak periods.

REGULATORY FRAMEWORK

This section provides a summary of the plans and policies of the City and County of San Francisco, and regional, state, and federal agencies that have policy and regulatory control over the Project Site. These plans and policies include the *San Francisco General Plan*, the Better Streets Plan, the San Francisco Bicycle Plan, and the Transit First Policy.

Federal, State, and Regional

There are no federal, state, or regional transportation regulations applicable to the Proposed Project.

Local

San Francisco General Plan

The Transportation Element of the *San Francisco General Plan* is composed of objectives and policies that relate to the nine aspects of the citywide transportation system: General Regional

Transportation, Congestion Management, Vehicle Circulation, Transit, Pedestrian, Bicycles, Citywide Parking, and Goods Management. The Transportation Element contains the following objectives that are directly pertinent to consideration of the Proposed Project:

- Use the transportation system as a means for guiding development and improving the environment. (Transportation Element Objective 2)
- Improve bicycle access to San Francisco from all outlying corridors. (Transportation Element Objective 9)
- Establish public transit as the primary mode of transportation in San Francisco and as a means through which to guide future development and improve regional mobility and air quality. (Transportation Objective 11)
- Develop and implement a plan for operational changes and land use policies that will maintain mobility and safety, despite a rise in travel demand that could otherwise result in system capacity deficiencies. (Transportation Element Objective 14)
- Establish a street hierarchy system in which the function and design of each street are consistent with the character and use of the adjacent land. (Transportation Element Objective 18)
- Improve the city's pedestrian circulation system to provide for efficient, pleasant, and safe movement. (Transportation Element Objective 23)
- Improve the ambiance of the pedestrian environment. (Transportation Element Objective 24)
- Provide secure and convenient parking facilities for bicycles. (Transportation Element Objective 28)
- Relate the amount of parking in residential areas and neighborhood commercial districts to the capacity of the city's street system and land use patterns. (Transportation Element Objective 34)
- Meet short-term parking needs in neighborhood shopping districts consistent with preservation of a desirable environment for pedestrians and residents. (Transportation Element Objective 35)
- Make freeway and major surface street improvements to accommodate and encourage truck/service vehicles in industrial areas away from residential neighborhoods. (Transportation Element Objective 39)

The Project Site is relatively isolated from the rest of the City. Existing bicycle activity in the project vicinity is low mobile throughout the day. Further, the surrounding transportation system in the vicinity is relatively auto-oriented, with limited pedestrian facilities and wide roads, which can be difficult to cross.

Better Streets Plan

The Better Streets Plan (draft June 2008) focuses on creating a positive pedestrian environment through measures such as careful streetscape design and traffic calming measures to increase

pedestrian safety. The Better Streets Plan includes guidelines for the pedestrian environment, which it defines as the areas of the street where people walk, shop, sit, play, or interact. Generally speaking, the guidelines are for design of sidewalks and crosswalks; however, in some cases, the Better Streets Plan includes guidelines for certain areas of the roadway, particularly at intersections.

San Francisco Bicycle Plan

The *San Francisco Bicycle Plan* describes a City program to provide the safe and attractive environment needed to promote bicycling as a transportation mode. The certification of the *San Francisco Bicycle Plan Final EIR* was affirmed by the Board of Supervisors in August 2009. The *San Francisco Bicycle Plan* identifies near-term improvements that could be implemented within the next five years, as well as policy goals, objectives, and actions to support these improvements. It also includes long-term improvements, and minor improvements that would be implemented to facilitate bicycling in San Francisco. Those near-term improvements are discussed on pp. V.E.37-V.E.40.

Transit First Policy

In 1998, the San Francisco voters amended the City Charter (section 16.102) to include a Transit-First Policy. The Transit-First Policy is a set of principles that underscore the City's commitment to prioritize travel by transit, bicycle, and on foot over private automobile travel. These principles are embodied in the policies and objectives of the Transportation Element of the *General Plan*. All City boards, commissions, and departments are required, by law, to implement transit-first principles in conducting City affairs.

IMPACTS

SIGNIFICANCE CRITERIA

The City has not formally adopted significance thresholds for impacts related to transportation, but generally considers that implementation of the Proposed Project would have significant impacts on transportation resources if it were to:

- Conflict with an applicable plan, ordinance or policy establishing a measure of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit;
- Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways;

- Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks;
- Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment);
- Result in inadequate emergency access; or
- Conflict with adopted policies, plans, or programs regarding public transit, bikeways, or pedestrian facilities, or otherwise substantially decrease the performance or safety of such facilities.

The transportation and circulation impact findings herein are also based on the following significance criteria used by the San Francisco Planning Department for the determination of impacts associated with a proposed project.

- Traffic – The operational impact on signalized intersections is considered significant when project-related traffic causes the intersection’s level of service to deteriorate from LOS D or better to LOS E or F, or from LOS E to LOS F. The operational impacts on unsignalized intersections are considered potentially significant if project-related traffic causes the level of service at the worst approach to deteriorate from LOS D or better to LOS E or F and Caltrans signal warrants would be met, or if it would cause Caltrans signal warrants to be met when the worst approach is already operating at LOS E or F. The project may result in significant adverse impacts at intersections that operate at LOS E or F under existing conditions depending upon the magnitude of the project’s contribution to the worsening of the average delay per vehicle. In addition, the project would have a significant adverse impact if it would cause major traffic hazards or contribute considerably to cumulative traffic increases that would cause deterioration in levels of service to unacceptable levels.

Caltrans’ policy is to maintain freeway mainline and ramp operations at the LOS C/D threshold based on the *Guide for the Preparation of Traffic Impact Studies* (Caltrans, December 2002). However, Caltrans acknowledges that this may not always be feasible and if an existing facility is operating at less than the appropriate target LOS, the existing service level should be maintained. For purposes of this study, the operational impact on freeway facilities is considered significant when project-related traffic causes the facility level of service to deteriorate from LOS D or better to LOS E or F, or from LOS E to LOS F. The project may result in significant adverse impacts at facilities that operate at LOS E or F under existing conditions, depending upon the magnitude of the project’s vehicular contribution to the facility.

- Transit – The project would have a significant effect on the environment if it 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 significant adverse impacts in transit service levels could result. With the Muni and regional transit screenlines analyses, the project would have a significant effect on the transit provider if project-related transit trips would cause the capacity utilization standard to be exceeded during the PM peak hour.

- Pedestrians – The project would have a significant effect on the environment if it would result in substantial overcrowding on public sidewalks, create potentially hazardous conditions for pedestrians, or otherwise interfere with pedestrian access to the site and adjoining areas.
- Bicycles – The project would have a significant effect on the environment if it would create potentially hazardous conditions for bicyclists or otherwise substantially interfere with bicycle access to the site and adjoining areas.
- Loading – The project would have a significant effect on the environment if it 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 created potentially hazardous conditions or significant delays affecting traffic, transit, bicycles, or pedestrians.
- Emergency Vehicle Access – The project would have a significant effect on the environment if it would result in inadequate emergency access.
- Construction – Construction-related impacts generally would not be considered significant due to their temporary and limited duration.

METHODOLOGY

This section presents the methodology for developing Existing Plus Project and 2030 Cumulative conditions, and information considered in the travel demand and impact analysis. Specifically, this section addresses, in the following order:

1. Approach to impact analysis, including analysis years and analysis methodology;
2. Future 2030 baseline transportation improvements that are not part of the Proposed Project but that were assumed to be in place for the analysis of 2030 Cumulative conditions;
3. Transportation improvements proposed as part of the Proposed Project, assumed to be completed, and included in assessment of travel demand and impact analysis;
4. Methodology and results of the Proposed Project travel demand forecasts for the development program; and
5. Methodology for development of 2030 Cumulative conditions traffic forecasts.

Evaluation Approach

The analysis of the Proposed Project was conducted for existing and future year 2030 conditions. “Existing Plus Project” conditions assess the near-term impacts of the Proposed Project, while “2030 Cumulative Plus Project” conditions assess the long-term impacts of the Proposed Project. Year 2030 was selected as the future analysis year, since the San Francisco County Transportation Authority (SFCTA) travel demand forecasting model (SF-CHAMP) used in this analysis develops traffic and transit forecasts for cumulative development and growth through the year 2030.

Impacts of the Proposed Project were assessed by comparing existing conditions with the Proposed Project to existing conditions without the Proposed Project, as well as by comparing the 2030 Cumulative conditions to existing conditions without the Proposed Project, and examining the Proposed Project's contribution to identified significant impacts.

For both Existing plus Project and 2030 Cumulative conditions, the analysis was conducted for conditions with and without a Project Variant. The Project Variant would involve converting the additional southbound through lane proposed on 19th Avenue to a High-Occupancy Vehicle/Transit/Toll (HOT) lane, rather than using it for mixed-flow traffic. Only transit vehicles, carpools, and vehicles paying a toll would have access to the lane. There would be no change to the land use configuration and no change to other transportation aspects under the variant. For purposes of this study, it is assumed that toll and carpool occupancy requirements would be set in order to achieve 75 percent capacity, thereby assuring uncongested flow.

Further, for both the Proposed Project and the Project Variant, sub-variant was evaluated. Under the sub-variant, a right-turn lane ingress would be constructed along 19th Avenue between Crespi Drive and Junipero Serra Boulevard at Cambon Drive. This new access location would provide ingress only and would not provide access out onto 19th Avenue. The right turn would be designed for slow speed with an approximately 90 degree turn. A crosswalk would be provided across Cambon Drive to connect the sidewalk along the west side of 19th Avenue. The key differences between the two scenarios are described below:

- Project: The right-turn could be provided as a shared movement from the fourth southbound mixed-flow through lane constructed as part of the Proposed Project.
- Project Variant: The design for this sub-variant has not yet been fully developed. Therefore, it is uncertain whether vehicles would turn into the driveway via the HOT lane or whether an additional separate right-turn lane would be constructed. A right-turn lane would be beneficial on the west side of the fourth southbound lane, to minimize vehicular interference with transit flow. This lane could be installed by removing on-street parking north of the ingress.⁷

Intersection Analysis

The analysis of study intersections was conducted using a method documented by the Transportation Research Board (TRB) in the 2000 Highway Capacity Manual (HCM). For intersections, LOS is based on "control delay." Control delay is defined as the delay directly associated with the traffic control device (i.e., a stop sign or a traffic signal) and specifically includes initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay. These delay estimates are considered meaningful indicators of driver discomfort and

⁷ Since Proposed Project traffic would need to travel into the HOT lane to enter the driveway, some means of exemption from a toll should be considered.

frustration, fuel consumption, and lost travel time. Table V.E.1, in Setting on p.V.E.8 presented the relationship between LOS and control delay for signalized intersections.

For Existing plus Project analyses, the Proposed Project was determined to have a significant traffic impact at an intersection if Proposed Project-generated trips would cause an intersection currently operating at LOS D or better to operate at LOS E or LOS F, or intersections currently operating at LOS E to deteriorate to LOS F conditions. At intersections that currently operate at LOS E or LOS F, and would continue to operate at LOS E or LOS F under Existing plus Project conditions, the increase in Project vehicle trips was reviewed to determine whether the increase would contribute considerably to critical movements operating at LOS E or LOS F.

In the analysis of 2030 Cumulative conditions, for intersections expected to operate at LOS E or F under 2030 Cumulative conditions, the increase in vehicle trips attributable to the Proposed Project was reviewed to determine whether the increase would contribute considerably to critical movements operating at LOS E or LOS F.

Freeway and Ramp Junction Analysis

The operations of freeway mainline segments and ramp junctions were also evaluated using the concept of LOS. The relationships between operating characteristics and LOS for freeway mainline section, weaving section, and ramp junctions, were presented in Table V.E.2, in Settings on p. V.E.10.

For freeway mainline and ramp junction analyses, locations where the Proposed Project would result in a change from LOS D or better under existing conditions to LOS E or LOS F, or from LOS E to LOS F under Existing plus Project conditions, are identified as significant project impacts. At locations that currently operate at LOS E or LOS F and would continue to operate at LOS E or LOS F under Existing plus Project conditions, the Proposed Project trips, as a percentage of total traffic volumes on the facility, were reviewed to determine whether the increase would contribute considerably to total volumes on the facility.

Similar to intersections, in the analysis of 2030 Cumulative conditions, for freeway and ramp facilities expected to operate at LOS E or F under 2030 Cumulative conditions, the increase in vehicle trips attributable to the Proposed Project was reviewed to determine whether the increase would contribute considerably to critical movements operating at LOS E or LOS F.

Transit Capacity Utilization

The impact of additional transit ridership generated by the Proposed Project was assessed by comparing the projected ridership to the available transit capacity. Transit “capacity utilization” refers to transit riders as a percentage of the capacity of a transit line, or group of lines combined

and analyzed as cordons or screenlines across which the transit lines travel. The transit capacity utilization analysis was conducted for three conditions:

- At three Study Area screenlines in the project vicinity to identify the localized impacts of Project transit trips on Muni routes,
- At the four standard downtown screenlines used to assess impacts on transit service between downtown and the rest of the City. The downtown screenline analysis is conducted at the maximum load point (i.e., the point of greatest demand) for most transit lines traveling into and out of downtown, and
- At the three standard regional screenlines to determine impacts on regional service providers.

Muni

The number of existing AM and PM peak hour riders was obtained from Muni monitoring data. Future year 2030 Cumulative No Project conditions transit ridership was forecasted using the SF-CHAMP travel demand model. The service capacity of each line was estimated by multiplying the passenger capacity of each transit vehicle by the number of actual trips that occurred when the ridership data were collected. The capacity includes seated passengers and an appreciable number of standing passengers per vehicle (the number of standing passengers is between 30 and 80 percent of the seated passengers depending upon the specific transit vehicle configuration). The maximum loads, including both seated and standing passengers, vary by vehicle type and are 45 passengers for a 30-foot bus, 63 passengers for a 40-foot bus, 94 passengers for a 60-foot bus, and 119 passengers for a light-rail vehicle. The utilization capacity percentage was then calculated by comparing the ridership demand to the capacity provided. Muni has established a capacity utilization standard of 85 percent.

The Muni capacity utilization analysis was conducted at four Study Area cordons at the perimeter of the Study Area. The four Study Area screenlines and Muni lines included in each analysis screenline are:

- North screenline—18 46th Avenue, 28 19th Avenue, 28L 19th Avenue Limited, 29 Sunset
- Northeast screenline—M Ocean View
- East screenline—M Ocean View, 29 Sunset
- South Screenline—28 19th Avenue, 28L 19th Avenue Limited

Downtown screenlines examine the overall utilization of Muni transit capacity into and out of downtown San Francisco from the northeast, northwest, southeast, and southwest of San Francisco. The downtown screenline analysis is included in the *SF Guidelines*, and has been recently updated to 2030 conditions as part of the analysis of the Planning Department's Transit Center District Plan project.

Regional Service Providers

Regional transit service was evaluated at the screenline level for the locations where different regional transit service enters San Francisco, including the North Bay (Golden Gate Transit and Ferries), East Bay (BART, AC Transit, ferries), and South Bay (BART, Caltrain, SamTrans). All of the regional transit operators except BART have a one-hour load factor standard of 100 percent, which would indicate that all seats are full. BART has a peak period load factor standard of 115 percent, which indicates that all seats are full, and an additional 15 percent of the seating capacity are standees (i.e., 1.15 passengers per seat). The regional screenline analysis is included in the *SF Guidelines*, and has been recently updated to 2030 conditions as part of the analysis of the Planning Department's downtown Transit District Center project.

Additional information regarding the transit capacity utilization analysis, and illustration of the location of cordon and screenline locations, is included in the *Transportation Study*.

Transit Delay

Project impacts on transit were measured in terms of increases to transit travel times on routes serving the project vicinity that would be most likely affected by congestion associated with Project-generated vehicle trips. The analysis evaluated the increases to transit travel times associated with the following three influencing factors:⁸

- **Traffic congestion delay**—Traffic congestion associated with increases in area traffic slows down transit vehicles and results in increased transit travel times. Traffic congestion delays were calculated by summing the average vehicular delay at each intersection along the transit line's route within the Study Area. The increase in total route segment delay is equal to the increase in travel time associated with the Proposed Project.
- **Transit re-entry delay**—Transit vehicles typically experience delays after stopping to pick up and drop off passengers while waiting for gaps in adjacent street traffic in order to pull out of bus stops. As traffic volumes on the adjacent street increase, re-entering the flow of traffic becomes more difficult and transit vehicles experience increased delay. Transit re-entry delay was calculated using empirical data presented in the 2000 Highway Capacity Manual (HCM). Total transit re-entry delay for each route was calculated as the sum of transit re-entry delay at each stop within the Study Area.

⁸ The methodology used is similar to that used in the *San Francisco Bicycle Plan EIR*, San Francisco Planning Department, Case File No. 2007.0347E, Certified June 25, 2009, except that methodology included the additional transit delay associated with substantial increases in bicycle volumes, which was appropriate for a project contemplating large-scale changes to the City's bicycle network. Bicycle volumes are not expected to substantially change as part of this project, so the "bicycle delay" was not included. However, instead, the evaluation for the Parkmerced Project includes the added delay associated with increases in passenger boardings, which is more appropriate for this project since the Proposed Project includes major improvements to area transit service.

- **Passenger boarding delay**—Although increases in transit ridership are generally viewed positively, the amount of time a transit vehicle has to stop to pick up and drop off passengers (i.e., the transit vehicle dwell time) is directly correlated to the number of passengers boarding the vehicle. If, as proposed, the Project includes substantial improvements to transit service in the future (and as general transit ridership grows), vehicles would have to spend more time at stops, which may increase overall transit travel times. Passenger boarding delay was calculated assuming 2 seconds per passenger boarding for buses, and 0.5 seconds per passenger boarding for light rail vehicles. Passenger boardings within the Study Area were estimated by examining the increases in ridership across the Study Area cordons.

The Proposed Project was determined to have a significant impact if it would increase transit travel times such that additional transit vehicles would be required to maintain the proposed headways. This was assumed to be the case if either the Proposed Project's travel time increases on a particular route would be greater than one-half its proposed headway, or if the number of required vehicles estimated using SFMTA's cost/scheduling model, which takes into account scheduled breaks and extra time built into schedules, would increase by one or more vehicles with the addition of the Proposed Project characteristics.

Bicycle and Pedestrians Analyses

The analysis includes a qualitative assessment of existing pedestrian and bicycle conditions in the Study Area. Bicycle conditions are described as they relate to the Project Site, including bicycle routes, safety and right-of-way issues, conflicts with traffic, and grade changes.

Observations indicate that pedestrian crowding occurs during peak periods at the adjacent SFSU Muni Light Rail Station, particularly during the PM peak hour. Existing weekday PM peak hour pedestrian volumes were collected at three crosswalks near the Project Site, including 19th Avenue/Holloway Avenue (adjacent to the SFSU Station). Based on Proposed Project-generated increases in transit ridership, the potential impact of additional passengers on the capacity of existing station platform area was evaluated.

The *2000 HCM* provides a framework for analyzing levels of service for pedestrian facilities based on pedestrian density. Pedestrian density can be indicative of crowding and can indicate whether additional queuing space is needed at transit stations. Pedestrian density is measured either at crosswalk waiting areas (typically corners) or other pedestrian waiting areas by dividing the number of pedestrians likely to arrive and queue during a specific period by the area of waiting space available, and determining the maximum pedestrian density. Table V.E.3 in the Setting section on pp. V.E.17-V.E.18 shows the LOS criteria for pedestrians, based on the *HCM* methodology.

Loading Analysis

Loading analysis for the Proposed Project was conducted by comparing the loading supply that would be required pursuant to the San Francisco Planning Code Section 152 to the projected demand that would be generated by the proposed land uses. The loading analysis was conducted for the Proposed Project as a whole and for specific building uses. Peak loading demands were determined using methods consistent with the *2002 Transportation Impact Analysis Guidelines for Environmental Review (SF Guidelines)*.

Parking Analysis

Parking analysis for the Proposed Project was conducted by comparing the proposed parking supply that would be required by San Francisco Planning Code Section 151 to the projected demand that would be generated by the proposed land uses. The peak parking demand for each of the proposed uses was calculated based on the methodology contained in the *SF Guidelines*.

Future 2030 Baseline Transportation Improvements

In addition to improvements proposed by the Project, the analysis assumes completion of certain planned and reasonably foreseeable transportation improvements in the project vicinity that, although not part of the Proposed Project, could affect circulation. These improvements would be completed by the City and County of San Francisco directly or through development approvals.

Roadway Improvements

All roadway improvements considered in the analysis of year 2030 conditions are proposed as part of the Project.

Transit Improvements

SFMTA has proposed changes to several of the lines that would serve the Study Area as part of its Transit Effectiveness Project (TEP). The TEP is a comprehensive review of Muni operations, with numerous proposals for service and street network changes to address issues related to reliability, travel times, and service areas. Service planning changes are budget-neutral, while additional funding will be required for capital needs (e.g., additional buses). SFMTA will pursue Proposition K funds and federal grants for capital funding. The proposed changes affecting the Study Area include:

- The 28L 19th Avenue Limited would extend to Van Ness Avenue/North Point on Lombard Street and to Mission/Geneva via I-280. This route currently terminates at Park Presidio Boulevard and Lake Street at the north end and Daly City BART station at the south end. This route would no longer serve Daly City BART station and would reroute to the Balboa Park BART station via 19th Avenue, Brotherhood Way, I-280, and Geneva Avenue. The 28L 19th Avenue Limited would be expanded to an all-day “rapid” service.

With the combined 28 19th Avenue and 28L 19th Avenue Limited changes, combined service along 19th Avenue and Park Presidio Boulevard would operate every 5 minutes.

- The 18 46th Avenue would reroute away from Lake Merced to provide a more direct link between San Francisco Zoo and Stonestown Shopping Center via Sloat Boulevard, Sunset Boulevard, Lake Merced Boulevard, and Winston Drive. The 18 46th Avenue currently makes a circuitous route to the San Francisco Zoo via Lake Merced Boulevard to John Muir Drive to Skyline Boulevard.
- The 17 Parkmerced would reroute to serve Daly City BART and the Westlake Shopping Center. The 18 46th Avenue service along John Muir Drive and Lake Merced would be replaced by the 17 Parkmerced. The 17 Parkmerced currently runs through Stonestown Shopping Center and terminates at Parkmerced. The re-routed 17 Parkmerced would extend from Parkmerced to Sloat Avenue/Everglade Drive via Chumasero Drive, Junipero Serra Boulevard, John Daly Boulevard, Lake Merced Boulevard, John Muir Drive, and Skyline Boulevard.
- The 88 BART Shuttle would terminate west of Sickles/Alemanly and would be replaced by a modified 17 Parkmerced. The 88 BART Shuttle extended past Sickles/Alemanly into Parkmerced and continued onto John Muir Drive prior to the TEP improvements. Service on the remaining section of the 88 Mission/BART Shuttle would be increased from a bus every 8 to 9 minutes to a bus every 7 to 8 minutes during the weekday AM peak hour and from a bus every 10 minutes to a bus every 7 to 8 minutes during the weekday PM peak hour. As of December 5, 2009, the segment west of Alemanly Boulevard/Sickles Avenue was discontinued.
- The J Church would extend to SFSU to improve rail connections to Noe Valley and the Mission District. The J Church currently terminates at the Balboa Park Station. Frequency on the extended J Church would increase from a train every 8 to 9 minutes to a train every 6 to 7 minutes during the weekday AM peak hour and from a train every 7 to 8 minutes to a train every 6 minutes during the weekday PM peak hour.
- The M Ocean View would terminate at SFSU. The M Ocean View currently routes past Parkmerced and terminates at Balboa Park Station. Frequencies during the weekday AM and PM peak hours would drop from a train every 8 to 9 minutes to a train every 10 minutes.

Bicycle Improvements

The *San Francisco Bicycle Plan*, adopted in June 2009, identifies near-term improvements that could be implemented within the next five years, as well as policy goals, objectives, and actions to support these improvements. It also includes long-term improvements and minor improvements that would be implemented to facilitate bicycling in San Francisco. Funds for Bicycle Plan improvements would be available from the State Bicycle Transportation Account and San Francisco Measure C funding. SFMTA, the San Francisco Recreation and Park Department (SFRDP), the Port of San Francisco (Port), or the San Francisco Department of Public Works (under the direction of SFMTA or SFRPD), would implement improvements, depending on which entity has jurisdiction. The San Francisco Bicycle Plan includes a number of minor, near-term, and long-term improvements in the Study Area, which are summarized in Table V.E.5, below.

Table V.E.5: Study Area Bicycle Improvements

Improvement ^a	Location	Project # ^b
Minor Improvements		
Various (address gaps and deficiencies in the current bike network)	Sloat Boulevard	Not Specified
	Lake Merced Boulevard	
	Clearfield Drive from Sloat Boulevard to Lake Merced Boulevard	
	Ocean Avenue from Sunset Boulevard to Clearfield Drive	
	20th Avenue from Sloat Boulevard to Buckingham Way	
	21st Avenue from Sloat Boulevard to Ocean Avenue	
	Winston Drive/Cerritos Avenue from Buckingham Way to Ocean Avenue	
	Font Boulevard from Lake Merced Boulevard to Holloway Avenue	
	Lunado Way/Beverly Street from Cerritos Avenue to 19th Avenue	
	19th Avenue from Beverly Street to Brotherhood Way	
St. Charles Avenue from Brotherhood Way to Belle Avenue/I-280		
Near-Term Improvements		
Bicycle Lanes	Sagamore Street and Sickles Avenue (from Alemany Boulevard to Brotherhood Way)	5-12
	Buckingham Way (from 19th Avenue to 20th Avenue)	8-2
	Holloway Avenue (from Junipero Serra Boulevard to Varela Avenue)	8-3
	John Muir Drive (from Lake Merced Boulevard to Skyline Boulevard)	8-4
	Sloat Boulevard (from Great Highway to Skyline Boulevard)	8-5
Mixed use paths	19th Avenue (from Buckingham Way to Holloway Avenue)	8-1
Long-Term Improvements		
A major improvement of an existing route or potential future additions. No preliminary facility designs are available for long-term improvements	Brotherhood Way between Arch Street and Lake Merced Boulevard	Not Specified

Notes:

^a Minor improvements described as listed in the *San Francisco Bicycle Plan* are generally aimed at addressing continuity problems along specific corridors, as opposed to substantial new projects.

^b The specific treatments along each corridor are not described in detail in the *Bicycle Plan*.

Project # for Bicycle Lane and Mixed Use Path projects refers to the project number defined in the *San Francisco Bicycle Plan* (SFCTA, 2009). No project numbers were specified for minor and long-term improvements.

Source: San Francisco Bicycle Plan, SFMTA, June 26, 2009; Figure 1-5: Recommended Near-Term and Long-Term Improvements to the Bicycle Route Network

Transportation Improvements Proposed as Part of the Project

The Project Site is relatively isolated from the rest of the City. Existing bicycle activity in the project vicinity is low throughout the day. Further, the surrounding transportation system in the Project vicinity is relatively auto-oriented, with limited pedestrian facilities and wide roads, which can be difficult to cross. Consistent with the objectives and policies of the *San Francisco General Plan*, key goals of the Proposed Project are to prioritize walking, bicycling and transit travel, making these attractive and practical transportation options. The land use program and transportation program developed for the Proposed Project consist of strategies to contain as many trips as possible within the Project Site and to maximize the usefulness of walking and bicycling, parking strategies designed to discourage the overall usage of private automobiles, increased transit service, and a Transportation Demand Management Plan. Features of the Proposed Project designed to promote pedestrian, bicycle and transit travel include the following:

- The development pattern is designed to facilitate walking and cycling for internal trips, and light rail and bus service for trips elsewhere;
- Streets are designed to support a variety of travel modes at moderate to low speeds.
- All of the homes within the community are within a 5-minute walk of a transit stop (or a 10-minute walk of a light rail station), where frequent service would be available; and,
- New and improved transit service would be provided to the Project Site.

The specific improvements included in the Proposed Project are discussed below.

Transit Improvements

The Proposed Project has been formulated to implement the City's Transit-First Policy by encouraging development that promotes use of public transit. Specifically, the Proposed Project includes substantial improvements to transit service, including extension of the M Ocean View light rail line, associated new stations, shuttles to the Daly City BART station, and shuttles between the Project Site and nearby shopping centers. Furthermore, the development program and street design is designed to encourage and facilitate walking to nearby transit stops.

Specifically the Proposed Project would include the following transit improvements, illustrated in Figure V.E.4 Proposed Transit Improvements, which were assumed as part of the future transportation system:

- The M Ocean View line would be rerouted through the Project Site, entering from the north at 19th Avenue and Holloway Avenue, continuing southwest toward the intersection of Crespi and Gonzalez Drives, continuing along the eastern edge of the neighborhood core towards Font Boulevard/Gonzalez Drive, turning east on Felix Avenue, and exiting Parkmerced to the east at 19th Avenue/Junipero Serra Boulevard. Tail-tracks would be



SOURCE: SOM, Turnstone Consulting

PARKMERCED PROJECT

FIGURE V.E.4: PROPOSED TRANSIT IMPROVEMENTS

provided in the site in order to allow every other train to turn back rather than continuing on to the Balboa Park station. The proposed alignment of the M Ocean View is an extension of, adding travel time and length to, the TEP recommendation to terminate the M Ocean View at SFSU. The J Church, proposed in the TEP to be extended along the M Ocean View route toward SFSU, would terminate instead in this proposal as currently configured at Balboa Park, the M Ocean View would extend from the terminal in Parkmerced east across Junipero Serra Boulevard to reconnect with its alignment east of SR 1. Alternative Muni rail alignments to this Project proposal are also analyzed and discussed in Chapter VII. Alternatives.

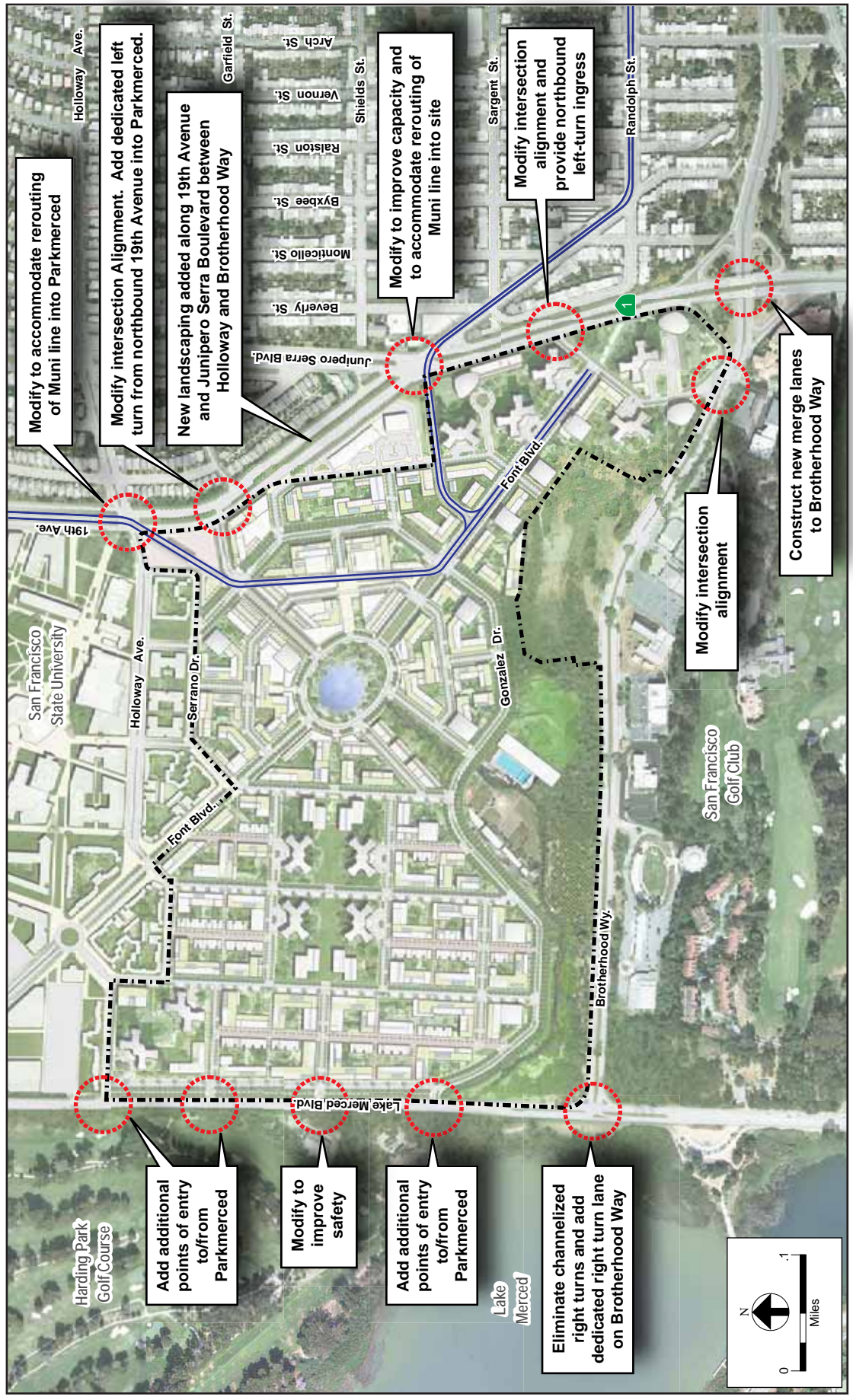
- The Muni Metro would have an exclusive right-of-way through the Project Site. Design treatments including cobblestones, landscaping, and signage would be installed to prevent vehicles, pedestrians, and bicycles from traveling on the tracks. Intersections, crosswalks, and sidewalks would be designed to reduce pedestrian/transit conflicts.
- Three new stations would be created within the Project Site. The first would replace the existing SFSU station in the 19th Avenue median with a station located on the Project Site near the 19th Avenue/Holloway Avenue intersection. The second station would be located along the eastern edge of the neighborhood core, near Juan Bautista Circle, south of Diaz Avenue. There would also be a third, terminal station just west of Chumasero Drive along Font Boulevard where alternating M Ocean View trains would layover and turn back, without continuing on to Balboa Park station. No existing stations or stops would be eliminated.
- A low-emissions vehicle shuttle to the Daly City BART station would enter the Project Site via Chumasero Drive, circulate through the Project Site, then head south nonstop to the Daly City BART station. Shuttles would operate every 7 ½ minutes during peak periods, and every 15 minutes during off-peak periods.
- A “shopper shuttle,” operating during midday and evenings, would travel between the Project Site and nearby shopping centers. The shuttle would enter the Project Site via Higuera Avenue and run along Lake Merced Boulevard to Stonestown Shopping Center and Westlake Shopping Center in Daly City (stopping at the Project Site with each north-south pass).

Implementation of the Project Variant or sub-variant (in conjunction with either the Proposed Project or the Project Variant) would not affect the transit improvements proposed.

Roadway Improvements

The Project would include on-site and external transportation improvements. The internal street network and external roadway improvements were designed to safely accommodate multi-modal transportation within the Project Site, and include roadway and streetscape improvements on roadways outside of the Project Site, consistent with the Better Streets Plan and as shown in Figure V.E.5 Proposed Roadway Improvements. Proposed roadway improvements are:

- **19th Avenue/Holloway Avenue:** To minimize delays to southbound 19th Avenue traffic due to the proposed reroute of the M Ocean View into the Project Site, a fourth southbound through lane would be created by relocating the curb along SFSU to the west.



SOURCE: SOM, Turnstone Consulting

PROJECT BOUNDARY
 INTERSECTION MODIFICATION
 PROPOSED MUNI RAIL

PARKMERCED PROJECT

FIGURE V.E.5: PROPOSED ROADWAY IMPROVEMENTS

The intersection would also be reconfigured to eliminate free (i.e., uncontrolled) turns and decrease corner radii, which would improve pedestrian safety.

- **19th Avenue/Crespi Drive – New Northbound Left Turn Lane:** A new northbound left turn lane would be provided from 19th Avenue into the Project Site at Crespi Drive. This would provide direct access to Parkmerced from the south via a single northbound left-turn lane created from the existing train median that would no longer be used with the proposed re-route of the M Ocean View.
- **19th Avenue/Crespi Drive - Realignment:** To allow adequate space for a transit hub in the northeast corner of the site, the intersection of 19th Avenue and Crespi Drive would be realigned and relocated south of the existing location, with Crespi Drive reconfigured to create a more conventional “T” intersection. A fourth southbound through lane (continued from 19th/Holloway) would extend through this intersection.
- **Junipero Serra Boulevard/19th Avenue:** To increase vehicular capacity, a fourth southbound lane (continued from 19th/Holloway) would extend through this intersection. Also, an additional northbound lane on Junipero Serra Boulevard would be created within the existing planted median, for a total of five lanes. The northbound lanes would be restriped to convert the existing shared through-left turn lane into a third exclusive left turn lane and a second dedicated through lane to increase capacity. The northbound 19th Avenue left-turn to southbound Junipero Serra Boulevard would be removed to eliminate conflict with streetcar operations.
- **Chumasero Drive/Junipero Serra Boulevard – New Intersection:** To establish a southern entrance into Parkmerced, Chumasero Drive would be realigned and extended to Junipero Serra Boulevard. A new traffic signal would be installed at this intersection and a northbound left-turn lane on Junipero Serra Boulevard would be created in the planted median to create a direct access point to Parkmerced from the south. The eastbound lane on Chumasero Drive would be restricted to right-turn only onto Junipero Serra Boulevard. The Font Avenue intersection with Junipero Serra Boulevard would be removed.
- **New Auxiliary Lanes on Brotherhood Way:** To increase vehicular capacity and improve the existing merging area, a third lane on Brotherhood Way would be created in both the eastbound and westbound directions underneath Junipero Serra Boulevard.
- **Chumasero Drive/Brotherhood Way:** To improve access into Parkmerced, Chumasero Drive would be realigned to a new intersection west of Thomas More Way to create two signalized “T” intersections. The additional westbound merge lane on Brotherhood Way (recommended above) would be extended through the southbound Junipero Serra Boulevard off-ramp, through Chumasero Drive, and become a right-turn only lane into the future 800 Brotherhood Way development.
- **Lake Merced Boulevard/ Brotherhood Way:** To reduce the high vehicle travel speeds and improve pedestrian safety, the northbound channelized right-turn lane would be eliminated and replaced with a single right-turn lane. The westbound channelized right-run lane would be replaced with a double right-turn lane. A third northbound receiving lane on Lake Merced Boulevard would be established.
- **Additional Access Points along Lake Merced Boulevard:** To accommodate the future traffic increases generated by the Proposed Project, three new signalized intersections

would be established on Lake Merced Boulevard at Vidal Drive, Acevedo Avenue and Gonzalez Drive. Southbound left-turn lanes and northbound right-turn lanes would be created at each new intersection and the existing intersection at Higuera Avenue.

Project Variant

As described in the “Evaluation Approach” subsection above, the Project Variant would include the same roadway improvements as the Proposed Project. However, with the Project Variant, the additional southbound lane proposed for 19th Avenue and Junipero Serra Boulevard would be restricted to transit vehicles, high-occupancy vehicles, and drivers who pay a toll to use the lane, known as a “HOT lane.” The lane would be priced to achieve approximately 75 percent occupancy.

Project Sub-Variant

Both the Project and Project Variant include a sub-variant. Under the sub-variant, a right-turn ingress would be constructed along 19th Avenue between Crespi Drive and Junipero Serra Boulevard at Cambon Drive. This new access location would provide ingress only and would not provide access out onto 19th Avenue. The right-turn would be designed for slow speed with an approximately 90 degree turn. A crosswalk would be provided across Cambon Drive to connect the sidewalk along the west side of 19th Avenue. The key differences between the two scenarios are as follows:

- Project with sub-variant: The right-turn could be provided as a shared a movement from the fourth southbound mixed-flow through lane constructed as part of the Project.
- Project Variant with sub-variant: The design for this sub-variant has not yet been fully developed. Therefore, it is uncertain whether vehicles would turn into the driveway via the HOT lane or whether a separate right-turn lane would be constructed. A right-turn lane would be beneficial on the west side of the fourth southbound lane, to minimize vehicular interference with transit flow. This could be installed by removing on-street parking north of the ingress. Further, HOT lane enforcement would need to be a consideration when designing this ingress.

Bicycle Improvements

The Proposed Project does not include provision of new bicycle facilities outside of the Project Site; however, the Project would not preclude improvements proposed as part of the Bicycle Plan summarized in Table IV.E.5. The Proposed Project would construct and fund bicycle facility

improvements within the Project Site, as illustrated on Figure V.E.6: Proposed Bicycle Circulation Improvements. The improvements proposed are:

- Class I⁹ bike paths (paved, off street) along the proposed Gonzalez Drive from Lake Merced Boulevard to Serrano Drive;
- Class II¹⁰ bike lanes on Vidal Drive, Pinto Avenue, Tapia Drive, Rivas Drive¹¹, and a portion of Arballo Drive;
- Eight bike stations (Arballo Drive (2), Rivas Drive, Tapia Drive/Serrano Drive, Gonzalez Drive/Grijaiva Drive, Valera Avenue/Holloway Avenue, Diaz Avenue, and Font Boulevard) offering bicycles on loan would be located throughout the site. Patrons would obtain a bicycle at minimal cost from any station and return the bicycle to any other station; and
- Bicycle shop in the retail center.

There would be bicycle parking in each commercial parking facility and in residential garages. New commercial buildings with at least 20,000 gsf of floor area would provide locker and shower facilities. Bicycle racks would also be installed along the streetscape of commercial and some residential streets. These improvements would provide a contiguous network within the Project Site, and connections to the citywide bicycle network.

Implementation of the Project Variant or sub-variant (in conjunction with either the Proposed Project or the Project Variant) would not affect the bicycle improvements proposed.

Transportation Demand Management Plan

The Transportation Demand Management (TDM) Plan for Parkmerced would be consistent with the policies of various City agencies, and would work with similar programs at neighboring San Francisco State University. The proposed TDM Plan would target residents, employees and visitors, and could include the strategies described in this section.¹²

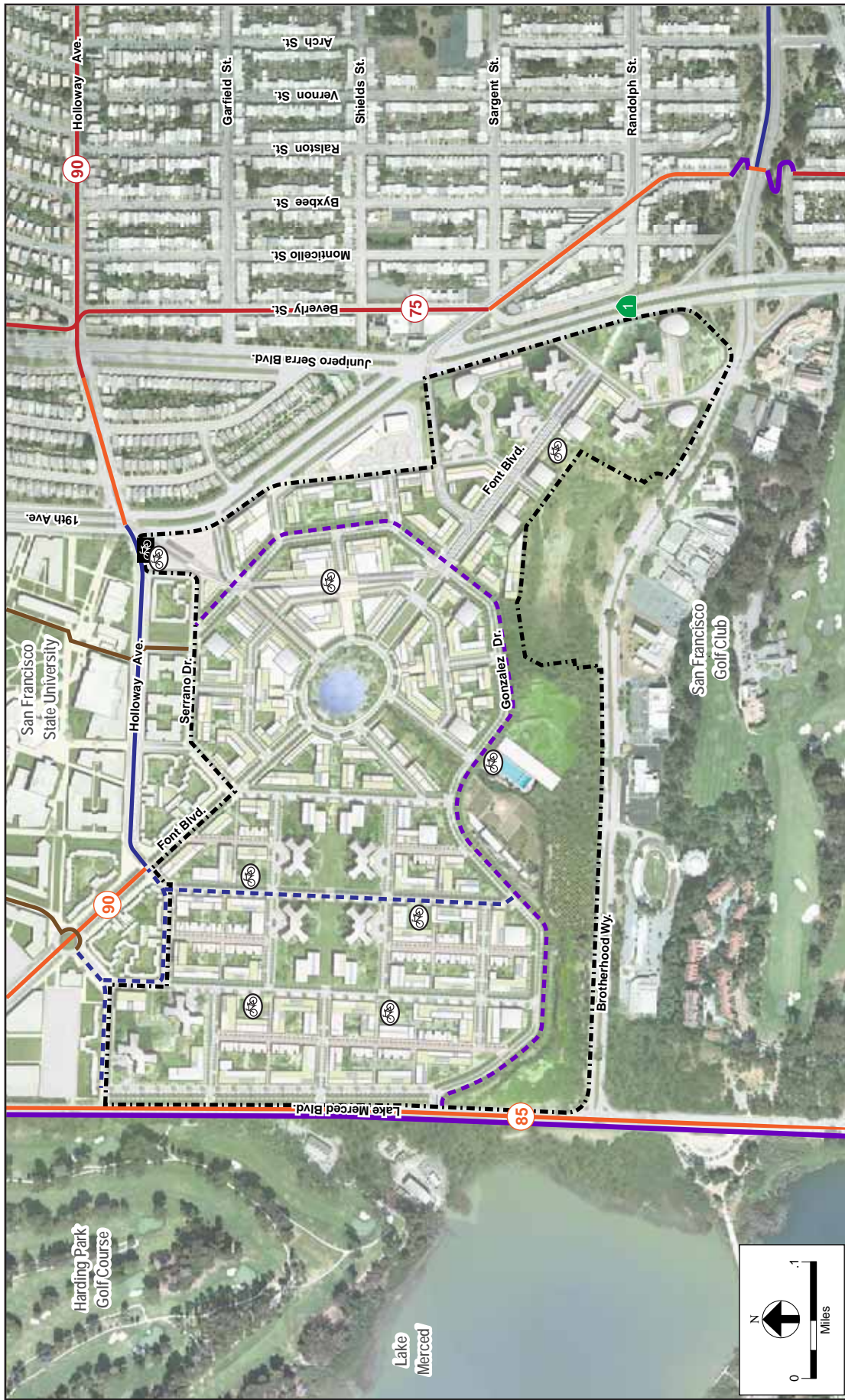
- **Transportation Coordinator.** An on-site Transportation Coordinator (TC) would provide residents, employers, employees, and visitors with information regarding available transportation alternatives. The Transportation Coordinator would be responsible for implementation, monitoring and improvement of the measures of the TDM Plan.

⁹ **Class I Bike Paths** are facilities specifically designated for the exclusive use of bicycles and pedestrians. Class I bike paths are separate from streets, although they may cross roadways.

¹⁰ **Class II Bike Lanes** are striped lanes on a street or highway, designated for use by bicycles.

¹¹ Although the bicycle facility proposed along Tapia Drive and Rivas Drive would be separated from the roadway by landscaping, it is considered a Class II facility for purposes of this study.

¹² See *Parkmerced Transportation Plan* for further detail of TDM measures; (AECOM; Parkmerced Transportation Plan, Preliminary Draft; April 2, 2009).



SOURCE: SOM, Turnstone Consulting

In general, the streets within Parkmerced would be residential type streets in which bicycles would share the roadway with automobiles. Each roadway would not specifically be designed as a bicycle route.

PARKMERCED PROJECT

FIGURE V.E.6: PROPOSED BICYCLE CIRCULATION IMPROVEMENTS

- Online Transportation Information, including transit route maps, schedules and fees; bicycle route maps and station locations; real-time carshare availability; and real-time transit arrival information.
- Carpool/Vanpool Elements. The TDM would offer carpool and vanpool services. Designated spaces in parking facilities would be provided free to vanpools. The transit centers would have designated signed areas for casual carpooling.
- Carshare Elements. Local carshare organizations would establish a network of carshare vehicles parked in 11 hubs located throughout Parkmerced. Carshare members would reserve a car and pay based on how much they drive, thus reducing the fixed costs associated with private automobile ownership.
- Site-specific bicycle, pedestrian and transit plans would be established and designed to complement and support the citywide plans.
- Wayfinding and signage system would be implemented, directing residents and visitors to popular destinations, carshare hubs, transit services and bicycle routes.
- High-speed wireless internet would be available to encourage telecommuting and online shopping.
- Business centers equipped with computers, printers and videoconferencing capabilities would be established in each neighborhood center and provide delivery/mail concierge service.
- Deliveries to the grocery store and other high-volume commercial uses would be scheduled to avoid peak commute periods.
- A car rental facility would be located on-site, catering to long-term needs or to those who do not have a carshare membership.
- A smart card would be introduced, allowing residents to pay for parking or borrow bike station bicycles using one card.
- Bike stations would be strategically located around the Project Site and a bike sharing program would be implemented.
- Transit passes and SFMTA parking cards would be available on-site.

Implementation of the Project Variant or sub-variant (in conjunction with either the Proposed Project or the Project Variant) would not affect the Transportation Demand Management Plan.

Proposed Project Travel Demand

This section presents the travel demand methodology and results for the Proposed Project development, including total person trip generation by mode, vehicle trip generation, parking demand and loading demand. As described in Chapter III. Project Description, the Proposed Project would involve reconstructing the existing Parkmerced development, retaining 1,683 dwelling units, replacing 1,538 dwelling units, and adding 5,679 net new dwelling units, for a total of 8,900 dwelling units on the site. The Proposed Project also includes construction of a

new neighborhood core containing neighborhood-serving retail and office space, including such potential uses as a grocery store, restaurants, and banks. Small neighborhood-serving retail uses would be constructed outside of the neighborhood core in close proximity to residential units throughout the Project Site. A new K-5 school and day care facility, fitness center, and new open space uses, including athletic fields, an approximately 2-acre organic farm, and community gardens would also be provided.

Person and Vehicle Trip Generation

The transportation effects of travel demand generated by the Proposed Project were determined by calculating the person-trips generated by the Proposed Project land uses, on a daily basis and during the AM, PM, and weekend midday peak hours. After determining the number of person trips generated by the Proposed Project, the trips were distributed to geographical origins/destination areas, including five San Francisco areas (downtown, Superdistrict 1, Superdistrict 2, Superdistrict 3, Superdistrict 4) and three other regions in the Bay Area (South Bay, East Bay and North Bay).¹³ The mode split analysis then determined the portion of these trips made via automobile, transit, or any other mode of transportation, based upon the origin/destination of the trips, the purpose of the trips, and the availability of various modes. Finally, automobile occupancy rates were determined, to yield the average number of individuals in a vehicle, and, thus, determine the number of vehicles that would be traveling to and from the Project Site.

The methods commonly used for forecasting trip generation of development projects in San Francisco are based on person-trip generation rates, trip distribution information, and mode split data described in the *SF Guidelines*. These data are based on a number of detailed travel behavior surveys conducted within San Francisco. The data in the *SF Guidelines* are generally accepted as more appropriate than conventional methods because of the relatively unique mix of uses, density, availability of transit, and cost of parking commonly found in San Francisco. However, the methods described in the *SF Guidelines* cannot be directly applied to the Proposed Project because of its large scale, specific location in the southwestern corner of San Francisco and its distinctive character.

Similarly, standard trip generation rates, such as those provided by *Trip Generation*, 7th Edition, 2003, Institute of Transportation Engineers, would not be suitable for the Proposed Project, unless

¹³ Superdistricts are travel analysis zones established by the Metropolitan Transportation Commission (MTC). San Francisco is divided into four Superdistricts delineated to capture the different travel characteristics that are associated with the various street network, transit opportunities, and geographical constraints of different areas of San Francisco. Note that the “South Bay” region as discussed in this analysis includes all of San Mateo County and points south.

appropriate adjustments were made to account for the Proposed Project size, mix, and availability of transit.

To account for the trip-making patterns of the Proposed Project, a state-of-the-practice trip generation forecasting method was used in this analysis. This method was originally developed by Fehr & Peers and others for the U.S. Environmental Protection Agency (EPA) and has been endorsed for use in project-specific and planning-level analyses by a number of jurisdictions, including the California Department of Transportation (Caltrans). This method is commonly referred to as the “4D” method, and generally accounts for the following factors that may influence travel behavior:

- Development scale—the amount of trips generated increases as the amount of development increases;
- Density of the project—the higher the project’s density, the less vehicular traffic generated per unit of development;
- Diversity of uses—an appropriate mix of uses can lead to internalization of trips and trip-linking within a project; and,
- Design of project—a walkable, pedestrian- and bicycle-oriented circulation system can help to reduce automobile dependence within a Project Site.

The general concept behind the 4D method is that projects that deviate from a base case (in this case, ITE trip generation rates which represent a “national average”) with respect to the four bulleted variables above exhibit different traffic generation patterns. Elasticities have been derived from travel behavior surveys from the Bay Area to help estimate how traffic generation changes as a function of changes in the 4Ds. Those elasticities are used to adjust the base case trip generation to account for the project’s density, diversity, and pedestrian/bicycle friendliness (i.e., design) compared to typical suburban developments reflected in the ITE trip generation rates. Applying the 4D method results in a percentage reduction in vehicular traffic generation from the base case (i.e., *ITE Trip Generation*).

The travel demand analysis assumes implementation of the Proposed Project’s improvements to transit service and a travel demand management (TDM) program, as described above. Under 2030 cumulative conditions, the transit improvements would also include those proposed as part of SFMTA’s Transit Effectiveness Program (TEP).

The steps in determining the Proposed Project’s trip generation by mode include:

1. Trip Generation: The number of weekday and weekend person trips generated by the land use program was calculated using the 4D methodology. This process calculates the number of person trips generated by the Proposed Project (based on ITE rates) and estimates the percentage of those trips that occur internal to the Project area. The remaining external trips are then taken and used in the Project off-site impact analysis.

2. Trip Purpose: The external trips calculated in Step 1 are separated into work and non-work trips, based on relative distributions contained in the *SF Guidelines*.
3. Trip Distribution: Once the trips are calculated by purpose, they are distributed to districts throughout San Francisco and the Bay Area. These districts are defined within the SF-CHAMP travel demand forecasting model, maintained by the San Francisco County Transportation Authority (SFCTA). To account for more nuanced trip patterns within San Francisco, they were further disaggregated into neighborhoods. This trip distribution calibration was done in consultation with the San Francisco Planning Department, San Francisco Municipal Transportation Agency, and the SFCTA.
4. Transit Mode Share Utility: Using relative drive and transit travel times between various districts throughout San Francisco, regression-based utility models were developed for work and non-work trips to determine the relationship between travel time and cost and transit mode share for each trip type. The Transit Mode Share Utility model assumed the transit improvements that would be provided as part of Project improvements.
5. Auto and Vehicle Trips: Auto person trips are calculated by subtracting transit trips from all external person trips for each destination zone. The number of vehicle trips was determined based on independent average vehicle occupancies for work and non-work trips. The *SF Guidelines* indicate that the average vehicle occupancy for work trips is 1.21, and 1.96 for non-work trips.¹⁴
6. Trip Assignment: After estimating the transit mode share between the Parkmerced Project and each of the districts, the number of transit riders were assigned to specific transit routes serving or proposed to serve the Study Area.

The result of Steps 1-6 above is a projected person-trip generation, by land use and by mode, for the weekday AM and PM and weekend midday peak hours.

Table V.E.6 summarizes the Proposed Project peak hour person-trips by mode and vehicle trips for the weekday AM and PM peak hours, and the weekend midday peak hour. Between 21 and 31 percent of total peak hour person trips would be internal/linked trips that would remain within the Project Site and would occur primarily by walking and bicycling. The external trips would occur via auto, transit (bus and light rail), and bicycle modes; approximately 81 percent of peak hour external trips would occur by auto, 16 percent by transit, and 3 percent by bicycling. Of the external weekend midday trips, approximately 83 percent would be by auto, 14 percent by transit, and about 3 percent by bicycle mode.

¹⁴ Takes average occupancy of retail and “other” trips from tables E-16 and E-17 of *SF Guidelines* to arrive at average non-work occupancy. Takes the weighted average of work (Table E-6) and non-work trips average vehicle occupancies using work non-work split demonstrated in Table 11 of *SF Guidelines*.

Table V.E.6: External Person-Trip Generation by Mode

Peak hour	External Person-Trip Generation				Vehicle-Trips ¹
	Auto	Transit	Bike	Total	
<i>AM Peak Hour</i>					
Proposed Project	4,916	990	185	6,089	2,952
<i>Trip Generation at Existing Site²</i>	<i>2,117</i>	<i>908</i>	<i>91</i>	<i>3,116</i>	<i>1,331</i>
<u>Net New Trips</u>	<u>2,799</u>	<u>82</u>	<u>94</u>	<u>2,973</u>	<u>1,621</u>
<i>PM Peak Hour</i>					
Proposed Project	7,705	1,462	283	9,448	4,522
<i>Trip Generation at Existing Site²</i>	<i>2,260</i>	<i>968</i>	<i>99</i>	<i>3,387</i>	<i>1,421</i>
<u>Net New Trips</u>	<u>5,445</u>	<u>494</u>	<u>184</u>	<u>6,061</u>	<u>3,101</u>
<i>Weekend Midday Peak Hour</i>					
Proposed Project	7,156	1,213	259	8,628	4,190
<i>Trip Generation at Existing Site²</i>	<i>1,754</i>	<i>751</i>	<i>77</i>	<i>2,629</i>	<i>1,103</i>
<u>Net New Trips</u>	<u>5,402</u>	<u>462</u>	<u>182</u>	<u>5,999</u>	<u>3,087</u>

Notes:

1. Vehicle-trips include passenger vehicles and vans.
2. Based on counts of peak hour vehicle traffic counted at the access points to the existing Parkmerced site. Reflects only those existing uses that would be replaced by the Proposed Project. Trips generated by the replacement units are also included in the trips associated with the Proposed Project.

Source: Fehr & Peers, 2009

The distribution of the weekday AM and PM work and non-work trips to and from San Francisco and areas outside of San Francisco for the Proposed Project are presented in Table V.E.7. The majority of transit trips would occur within the boundaries of San Francisco, with a greater portion of work trips occurring by transit than non-work trips. Within San Francisco the greatest number of trips would occur between the Project Site and Superdistrict 1. Superdistrict 1 represents the downtown core of San Francisco and consists of the Financial District, SoMa, North Beach, and Chinatown. For trips outside of San Francisco, the majority of work trips would be to the South Bay (San Jose) while the majority of non-work trips would be to northern San Mateo County (Brisbane, Daly City, San Bruno and South San Francisco).

The Project Variant would have the same travel demand characteristics as the Proposed Project. Further, implementation of the sub-variant (in conjunction with either the Proposed Project or the Project Variant) would not affect the travel demand forecasts.

Table V.E.7: External Peak Hour Trip Distribution Patterns

Zone Number	Place of Trip Origin/Destination	% Work Trips ²	% Non-Work Trips ²	AM		PM	
				Work Trips	Non-Work Trips	Work Trips	Non-Work Trips
1	Parkmerced ¹	0%	0%				
2	San Francisco State University	3.1%	8.1%	81	294	111	494
3	Stonestown	3.6%	11.5%	94	418	128	702
4	Sunset	11.6%	10.5%	303	381	414	641
5	Downtown	18.1%	2.8%	473	102	646	171
6	South of Market	5.5%	1.3%	144	47	196	79
7	North Beach/China Town	5.9%	0.9%	154	33	211	55
8	Western Market	5.0%	5.0%	131	182	178	305
9	Marina/Northern Heights	4.7%	3.5%	123	127	168	214
10	Richmond	3.1%	3.4%	81	123	111	207
11	Mission/Potrero	3.0%	5.9%	78	214	107	360
12	Noe/Glen Park/Bernal	1.0%	2.2%	26	80	36	134
13	Bayshore	1.5%	3.3%	39	120	54	201
14	Outer Mission	1.5%	3.5%	39	127	54	214
15	Hill District	3.0%	4.0%	78	145	107	244
16	East Bay	3.7%	3.5%	97	127	132	214
17	North Bay	1.0%	3.5%	26	127	36	214
18	South Bay	12.0%	2.8%	313	102	428	171
19	Brisbane/Eastern Daly City	2.2%	2.0%	57	73	79	122
20	Western Daly City/Colma	5.5%	13.8%	144	501	196	842
21	San Bruno/South San Francisco	5.0%	8.5%	131	309	178	519
Total San Francisco		70.6%	65.9%	1,844	2,394	2,519	4,021
Total East Bay		3.7%	3.5%	97	127	132	214
Total North Bay		1.0%	3.5%	26	127	36	214
Total South Bay/Other		24.7%	27.1%	645	984	881	1,654

Notes:

1. Trips within the Parkmerced development are considered internal to the Project; therefore, no trips were distributed to the zone.
2. These percentages represent the total percentage of trips traveling between each zone to and from the Project; however, the inbound and outbound split for the AM and PM peak hours are not represented in this table. Appendix J of the *Transportation Study* contains a trip distribution matrix showing each origin-destination pair's distribution and should be referenced for the Project's inbound and outbound split for each zone.

Source: Fehr & Peers, September 2009

Loading Demand

The *SF Guidelines* methodology for estimating commercial vehicle and freight loading/loading demand was used to calculate the Proposed Project demand. Daily truck trips generated per 1,000 square feet were calculated based on the rates contained in the *SF Guidelines*, then converted to hourly demand based on a 9-hour day and a 25-minute average stay. Average hourly demand was converted to a peak hour demand by applying a peaking factor, as specified in the *SF Guidelines*. Table V.E.8 presents the number of trucks that would be generated by the Proposed Project land uses on a daily basis, and the demand for loading dock spaces during the peak hour of loading activities.

Table V.E.8: Proposed Project Loading Demand

Land Use	Size (Square Feet)	Daily Service/Freight Vehicle Trips	Number of Loading Spaces	
			Peak Hour	Average Hour
Residential	11,500,000	345	20.0	16.0
Retail	230,000	51	2.9	2.3
Office	80,000	17	1.0	0.8
Educational	25,000	3	0.1	0.1
Maintenance	100,000	46	2.7	2.1
Fitness Center	64,000	<u>6</u>	<u>0.4</u>	<u>0.3</u>
Total		468	24	22

Source: *SF Guidelines*, 2002; Fehr & Peers 2009.

The Project Variant would have the same loading demand characteristics as the Proposed Project. Further, implementation of the sub-variant (in conjunction with either the Proposed Project or the Project Variant) would not affect the loading demand forecasts.

Parking Demand

The *SF Guidelines* methodology for estimating parking demand was used to calculate the parking demand associated with the Proposed Project land uses. Parking demand was estimated separately for residential and non-residential uses as follows:

- Residential Parking Demand—For individual development projects, residential parking demand is estimated based on the number and type of housing unit (i.e., studios/one bedroom versus two and two-plus bedroom units, and affordable versus market rate housing) that would be constructed.
- Non-Residential Parking Demand—Non-residential demand was estimated for both short-term and long-term demand. Long-term demand refers to demand generated by employee trips by auto, while short-term demand refers to demand associated with visitor

trips. Long-term demand was calculated by applying the vehicle mode choice by Project subarea to the projected number of new employees associated with each land use. Average hour short-term demand was calculated by applying an average turnover of 5.5 vehicles per space to the daily non-work trips by vehicle (one-way trips).

Table V.E.9 presents the residential and non-residential parking demand for the Proposed Project.

Table V.E.9: Proposed Project Parking Demand

Classification	Land Use		Short-Term ¹	Long-Term ¹	Total
	Net New	Employees ¹			
Retail	193 ksf	551	681	372	1,052
Supermarket	37 ksf	106	57	71	129
Office	19 ksf	69	3	46	49
Bank	4 ksf	14	28	10	38
Dentist/Medical Office	39 ksf	141	36	95	131
Restaurant	18 ksf	75	107	51	158
Fitness Center	64 ksf	213	69	144	212
Day Care	3.9 ksf	13	11	9	20
Elementary School	21.1 ksf	70	3	47	50
Residential	8,900 Du	02	<u>0</u>	<u>11,570</u>	<u>11,570</u>
TOTAL			994	12,415	13,490

Notes:

1. Calculated using rates published in the *SF Guidelines* (2002); see Transportation Impact Analysis Report for detailed calculation explanation.
2. Assumes maintenance employees park in a secured maintenance yard/garage not open to the public.

Source: SF Guidelines, 2002; Fehr & Peers, 2009

The Project Variant would have the same parking demand characteristics as the Proposed Project. Further, implementation of the sub-variant (in conjunction with either the Proposed Project or the Project Variant) would not affect the parking demand forecasts.

Development of 2030 Cumulative No Project Conditions

The Future year 2030 conditions were developed during preparation of the *19th Avenue Corridor Study*¹⁵ via a three-step process that used (1) the SFCTA travel demand model (SF-CHAMP) to determine background traffic growth on Study Area roadways, (2) traffic volume overlays to reflect traffic volume turning movements associated with proposed nearby developments that are

¹⁵ San Francisco Planning Department, *19th Avenue Corridor Study*; February 12, 2010.

not fully reflected in the SF-CHAMP model output, and (3) the Project-related travel demand as summarized in Table V.E.6.

SF-CHAMP Model Growth Projections

Future year 2030 traffic volume forecasts were estimated based on cumulative development and growth identified by the SF-CHAMP travel demand model. The SF-CHAMP model is an activity-based travel demand model that has been validated to represent future transportation conditions in San Francisco and is updated regularly. The model predicts person travel for a full day based on assumptions of growth in population, housing units and employment, which are then allocated to different periods throughout the day, using time-of-day sub-models. The SF-CHAMP model predicts future person travel by mode for auto, transit, walk, and bicycle trips. The SF-CHAMP model also provides forecasts of vehicular traffic on regional freeways, major arterials, and local roadway networks, and considers the available roadway capacity, origin-destination demand, and travel speeds when assigning the future travel demand.

The SFCTA model divides San Francisco into approximately 981 geographic areas, known as Traffic Analysis Zones (TAZs). The SFCTA Model also includes zones outside of the City for which data are obtained through the current Metropolitan Transportation Commission (MTC) Model. For each TAZ, the SFCTA Model estimates the travel demand based on TAZ population and employment growth assumptions developed by the Association of Bay Area Governments (ABAG); determines the origin and destination and mode of travel (auto, transit, walk and bicycle) for each trip; and assigns those trips to the transportation system (roadway network and transit lines). The SFCTA output is developed on weekday daily and three-hour AM and PM period bases.

The SFCTA Model travel demand estimates incorporate the ABAG land use and socio-economic database and growth forecasts for the year 2030 (Projections 2007), which provide forecasts of economic and population growth for the County of San Francisco, as well as for the remaining eight Bay Area counties. Within San Francisco, the San Francisco Planning Department is responsible for allocating ABAG's countywide growth forecast to each SFCTA Model TAZ, based on existing zoning and approved plans, using an area's potential zoning capacity and the anticipated extent of redevelopment of existing uses.

The increase in vehicle trips between existing conditions and year 2030 conditions is based on comparisons between model output that represents Existing conditions and model output for 2030 (Cumulative) conditions. The growth is then added to Existing intersection traffic volumes.

Local Development Traffic Overlays

In the project vicinity, several development proposals have recently been approved or have been identified as potential development in the 19th Avenue Corridor study area. While rough estimates of these projects had been included as part of the growth projections used for developing future conditions using the SF-CHAMP model, in order to account for the localized effects of traffic and transit demand, the trip generation associated with these projects was extracted from the SF-CHAMP model output, and more refined travel demand estimates used in the environmental review of these projects were added to the traffic volume estimates developed in the previous step.

Specifically, these projects consist of the following:

- 77 Cambon Drive;
- 800 Brotherhood Way;
- Ardenwood;
- Stonestown Shopping Center;
- San Francisco State University (SFSU) Master Plan Buildout;
- San Francisco Unified School District's School of the Arts site development; and
- 1150 Ocean Avenue.

Travel demand and vehicle assignments were obtained from technical analyses conducted for the EIRs for these projects. If EIRs had not been certified yet, the analysis of the latest traffic and transit data, including vehicle assignments, were obtained from the Planning Department. The new vehicle and transit trips associated with each development were then manually added to the SFCTA Model 2030 conditions.

Weekend Midday Peak Hour Traffic Forecasts

Since the SF-CHAMP model is a weekday travel demand model, future year weekend midday peak hour conditions were estimated based on the net growth developed for the weekday PM condition. Weekday PM to weekend midday conversion factors were developed for each intersection, based on the existing relationship between weekday PM and weekend midday peak hour, as determined from counts of existing traffic at both times.

Application of Project Trips

The trips associated with the Proposed Project were applied to the base year 2030 volumes to yield the final Cumulative (year 2030) conditions. The trip generation, average vehicle

occupancy, trip distribution, mode split, and trip assignment assumptions, as described earlier in this document were applied.

IMPACT EVALUATION

On-Site and Off-Site Construction Impacts

Impact TR-1: Construction of the Proposed Project (with or without the proposed sub-variant) or Project Variant (with or without the proposed sub-variant) would result in transportation impacts in the Proposed Project vicinity due to construction vehicle traffic and road construction associated with the realignment of the existing light rail tracks. (*Significant and Unavoidable with Mitigation*)

Construction for the Proposed Project would occur over four phases; the greatest effort would occur in the first phase. The duration of each phase would vary, depending on the type of development (e.g., residential, retail, office) and the amount of building space included in each phase. Initial construction activities would include demolition of existing structures, utility relocation and site clearance and grading. Construction impacts within the Project Site would affect new residents, employees, and visitors to the area. Overall, throughout the construction period the addition of worker-related vehicles and transit trips would be less than those associated with Project conditions at full buildout.

During construction of the Proposed Project phases, building activities would generate traffic volumes from construction workers, truck deliveries of supplies and construction equipment, and the hauling of soils during grading and excavation. Table V.E.10 presents the phases for the Project, the number of construction workers that would be on-site on a daily basis, as well as the maximum number of construction truck trips that would travel to and from the sites on a daily basis.

Table V.E.10: Construction Trip Generation

Phase	Workers per Day	Truck Trips per Day ¹
Phase I	316	164
Phase II	192	90
Phase III	255	124
Phase IV	128	116

Notes:

1. Truck Trips per Day assumes a five year period for each construction phase with an evenly distributed truck flow throughout each work-week over those five years.

Source: Fehr & Peers, 2010

As identified in Table V.E.10, construction trips per phase are expected to be far less than what the Proposed Project itself is expected to produce.

Construction related activities would generally occur Monday through Friday, between 7:00 A.M. and 8:00 P.M., and the typical work shift for most construction workers would be from 7:00 A.M. to 3:30 P.M. Construction is not anticipated to occur on weekends or holidays, but may occur on an as-needed basis. The hours of construction would be stipulated by the Department of Building Inspection.

The primary construction truck routes in the Project Study Area would be Lake Merced Boulevard, Brotherhood Way, 19th Avenue, and Junipero Serra Boulevard.

In general, construction-related transportation impacts would include impacts in the immediate vicinity of the portions of the Proposed Project under construction, and on roadways within the Project Site. Since the Proposed Project includes building construction as well as construction of a new street system and transit route extensions into the Project Site, all construction operations would include plans for the closure of traffic/parking lanes and sidewalks adjacent to construction sites. The closure of sidewalks and parking lanes could last throughout the entire construction phase for each building or group of buildings. It is possible that more than one location within the Project Site could be under construction at any one time and that multiple travel lane closures may be required.

During the construction period, temporary and intermittent disruption to existing and proposed transit routes and bus stops may occur, and some bus routes may need to be temporarily rerouted. In addition, temporary and intermittent interference to transit operations caused by increased truck movements to and from the construction sites may occur. Any change in transit routes and stops would have to be coordinated and approved by the SFMTA.

Due to the reduction in travel lanes, the remaining travel lanes would become more congested with automobiles, trucks and buses, which would pose a greater challenge for bicycle travel in the area. Since bicycle traffic in the project vicinity is relatively low, this impact is not anticipated to be significant. Existing pedestrian volumes along the key access routes and at the proposed construction sites are low and, therefore, any sidewalk closures or rerouting of the walkway would not significantly affect pedestrian circulation. In general, temporary pedestrian walkways would be maintained in order to facilitate pedestrian movements.

Cumulative development in the Study Area includes the reasonably foreseeable mixed-use projects at 71-111 Cambon Drive and at 1150 Ocean Avenue (In Balboa Park Station Area Plan); residential developments at 800 Brotherhood Way, 445 Wawona Street (Arden Wood), and 700 Font Boulevard; and the *San Francisco State University Master Plan*. Although no construction

has been initiated for any of the cumulative projects, it is possible that several could be under construction at the same time. Given the magnitude of development proposed for the area, the Proposed Project's prolonged construction period, and the lack of certainty about the timing of other development projects in the area, significant Project-related and significant Project contributions to cumulative traffic and circulation impacts could occur on some roadways, such as Lake Merced Boulevard, Brotherhood Way, 19th Avenue, and Junipero Serra Boulevard. Cumulative impacts would include construction detours and increased travel times, although the extent and duration of delay would vary depending on individual driver's origin and destination, time of travel and use of alternate routes. Implementation of individual traffic control plans would minimize impacts associated with each project and reduce each project's contribution to cumulative impacts in the Study Area. However, some disruption and increased delays could still occur even with implementation of traffic control plans, and it is possible that significant construction-related traffic impacts on local and regional roadways could still occur.

Implementation of the Project Variant, or the sub-variant (either in conjunction with the Proposed Project or the Project Variant), would have the same construction impacts as the Proposed Project.

Mitigation Measure M-TR-1 would require the development of a Construction Traffic Management Program that would provide information to contractors to minimize the possibility for construction traffic-related conflicts on the roadway system. Implementation of M-TR-1 would help reduce the Proposed Project's construction-related traffic impacts. Given the magnitude of the proposed development and the duration of the construction period, some disruptions and increased delays could still occur even with implementation of M-TR-1, and it is possible that significant construction-related transportation impacts on local San Francisco and regional roadways could still occur. Construction-related transportation impacts would therefore remain significant and unavoidable.

M-TR-1: Parkmerced Construction Traffic Management Program. The Project Sponsor shall develop and implement a Construction Traffic Management Program to minimize impacts of the Project and its contribution to cumulative impacts related to construction activities and construction traffic. The program shall provide necessary information to various contractors and agencies as to how to maximize the opportunities for complementing construction management measures and to minimize the possibility of conflicting impacts on the roadway system, while safely accommodating the traveling public in the area. The program shall supplement and expand, rather than modify or supersede any manual, regulations, or provisions set forth by SFMTA, DPW or other City departments and agencies.

Preparation of the Construction Management Program shall be the responsibility of the Project Sponsor, and shall be reviewed and approved by SFMTA and DPW prior to initiation of construction. The program shall:

- Identify construction traffic management practices in San Francisco, as well as other jurisdictions that could provide useful guidance for a project of this size and characteristic.
- Describe procedures required by different departments and/or agencies in the City for implementation of a construction management plan, such as reviewing agencies, approval process, and estimated timelines.
- Identify construction traffic management strategies and other elements for the Project, and present a cohesive program of operational and demand management strategies designed to maintain acceptable traffic operations during periods of construction activities in the Project area. These could include construction strategies, demand management strategies, alternate route strategies, and public information strategies.
- Coordinate with other projects in construction in the immediate vicinity, so that they can take an integrated approach to construction-related traffic impacts.
- Present guidelines for selection of construction traffic management strategies.

Implementation of M-TR-1 would help reduce the Proposed Project's construction-related traffic impacts. Given the magnitude of the proposed development and the duration of the construction period, some disruptions and increased delays could still occur even with implementation of M-TR-1, and it is possible that significant construction-related transportation impacts on local San Francisco and regional roadways could still occur. Construction-related transportation impacts would therefore remain significant and unavoidable.

Operational Impacts

Impact TR-2: Implementation of the Proposed Project would result in significant traffic impacts at study intersections. (*Significant and Unavoidable with Mitigation*)

Under Existing plus Project conditions, Proposed Project impacts were assessed by comparing conditions with the Proposed Project to existing conditions without the Proposed Project. The Proposed Project was determined to have a significant traffic impact at an intersection if Proposed Project-generated trips would cause an intersection operating at LOS D or better under existing conditions to operate at LOS E or LOS F, or intersections operating at LOS E under existing conditions to deteriorate to LOS F conditions. At intersections that currently operate at LOS E or LOS F under Existing Conditions, and would continue to operate at LOS E or LOS F with the Proposed Project, the increase from Proposed Project vehicle trips was reviewed to determine whether the increase would contribute considerably to critical movements operating at LOS E or LOS F. The "Evaluation Approach" section under Impacts on pp. V.E.23-V.E.29, presents the methodology used to determine Proposed Project impacts and whether the Proposed Project would contribute considerably to intersections currently operating at LOS E or LOS F conditions.

Table V.E.11, Table V.E.12, and Table V.E.13 present the comparison of intersection LOS for Existing and Existing plus Project conditions. The results indicate that of the 34 study intersections, 13 are projected to operate at unacceptable levels under existing conditions with the Proposed Project during at least one peak hour. At 7 of the 13 study intersections with unacceptable operations, the Proposed Project would result in project-specific impacts.

- 19th Avenue/Sloat Boulevard – LOS E to LOS F in the AM peak hour
- 19th Avenue/Winston Drive – LOS D to LOS E in the weekend midday peak hour
- 19th Avenue/Crespi Drive – LOS C to LOS E in the PM peak hour
- Sunset Boulevard/Lake Merced Boulevard – LOS C to LOS E in the PM peak hour
- Lake Merced Boulevard/Winston Drive – LOS C to LOS E in the AM peak hour and LOS D to LOS F in the PM peak hour
- Lake Merced Boulevard/Font Boulevard – LOS D to LOS F in the AM peak hour and LOS C to LOS F in the PM peak hour
- Lake Merced Boulevard/Brotherhood Way – LOS D to LOS E in the AM peak hour, LOS C to LOS F in the PM peak hour, and LOS C to LOS E in the weekend midday peak hour

At some of the intersections listed above to which the Proposed Project would cause project-specific impacts in one or more peak hours, the Proposed Project may also contribute considerably to intersections operating at LOS E or F with and without the Proposed Project during other peak hours. A discussion of the Proposed Project's impact at each of these intersections, potential mitigation measures to reduce impacts where feasible, and the resulting operating conditions at each intersection following mitigation, is provided below.

19th Avenue/Sloat Boulevard – Although the Proposed Project's contribution to AM peak hour traffic volumes at this intersection is relatively small, increases generally would be added to congested movements along 19th Avenue, which somewhat magnifies their effect. To improve operating conditions at this intersection to acceptable levels, additional vehicle capacity would be required along 19th Avenue. Substantial improvement could only be accomplished through major changes, such as widening 19th Avenue to the east and west to add more lanes. This would require demolition of existing structures and substantial right-of-way acquisition; therefore, the measure was not further considered. Furthermore, 19th Avenue is a Caltrans facility; therefore, even if space were physically available, implementation of mitigation measures cannot be guaranteed by the City. Traffic impacts at this intersection under the Project conditions would remain significant and unavoidable.

Table V.E.11: Intersection Levels of Service – Existing, Existing plus Project, and 2030 Cumulative Conditions – AM Peak Hour

Intersection		Existing			Existing plus Project			2030 Cumulative plus Project		
		Del ¹	V/C ⁷	LOS	Del ¹	V/C ⁷	LOS	Del ¹	V/C ⁷	LOS
1	Brotherhood Way/Alemanay Blvd/Sagamore St	15		B	15		B	17		B
2	Junipero Serra Blvd/Sloat Blvd/St. Francis Blvd/Portola Dr	65		E	63		E	> 80	1.1	F
3	Junipero Serra Blvd/Ocean Ave/Eucalyptus Dr	32		C	32		C	47		D
4	Junipero Serra Blvd/Winston Dr	29		C	29		C	38		D
5	Junipero Serra Blvd/Holloway Ave	30		C	30		C	35		D
6	19th Ave/Junipero Serra Blvd	58		E	36		D	57		E
7	Junipero Serra Blvd/Font Blvd	28 (EB)		D	12		B	25		B
8	Junipero Serra Blvd/John Daly Blvd/I-280 Northbound On-Ramp/I-280 Southbound Off-Ramp/SR 1 Northbound On-Ramp	41		D	41		D	42		D
9	SR 1 Southbound On- and Off-Ramps/John Daly Blvd	20		C	20		B	20		C
10	19th Ave (SR 1)/Sloat Blvd	58		E	> 80	1.4	F	> 80	1.5	F
11	19th Ave (SR 1)/Ocean Ave	24		C	24		C	46		D
12	19th Ave (SR 1)/Eucalyptus Dr	14		B	13		B	23		C
13	19th Ave (SR 1)/Winston Dr	38		D	41		D	> 80	1.3	F
14	19th Ave (SR 1)/Holloway Ave	41		D	34		C	62		E
15	19th Ave (SR 1)/ Crespi Dr	37		D	47		D	74		E
16	Brotherhood Way/Chumasero Dr	78		E	17		B ⁵	20		B

Table V.E.11 (Continued)

Intersection		Existing			Existing plus Project			2030 Cumulative plus Project		
		Del ¹	V/C ⁷	LOS	Del ¹	V/C ⁷	LOS	Del ¹	V/C ⁷	LOS
17	Brotherhood Way/East Driveway – Bridgemont School, Congregation Beth Israel and Armenian Congregation	12		B	13		B	17		B
18	Brotherhood Way/West Driveway Greek Orthodox and Open Bible Churches	> 50 (NB)		F	> 50 (NB)		F ³	> 50 (NB)		F
19	Sunset Blvd/Ocean Ave	12		B	12		B	14		B
20	Sunset Blvd/Lake Merced Blvd	> 50 (EB)		F	> 50 (EB)		F	> 50 (EB)		F
21	Lake Merced Blvd/Winston Dr	22		C	58		E	> 80	0.8	F
22	Lake Merced Blvd/Font Blvd	39		D	> 80	1.2	F	> 80	1.4	F
23	Lake Merced Blvd/Higuera Ave	67		E	38		D ⁶	38		D
24	Lake Merced Blvd/Brotherhood Way	43		D	69		E	> 80	1.8	F
25	Lake Merced Blvd/John Muir Dr	> 50 (EB)		F	> 50 (EB)		F ³	> 50 (EB)		F
26	John Daly Blvd/Lake Merced Blvd	29		C	32		C	35		C
27	Holloway Ave/Varela Ave ³				12 (SB)		B	13 (SB)		B
28	Font Blvd/Holloway Ave/Pinto Ave ³				11		B	16		C
29	Font Blvd/Serrano Dr ²				8		A	8		A
30	Font Blvd/Gonzalez Dr ²				36		D	45		D
31	Font Blvd/Chumasero Dr ^{2,4}				9		A	11		B
32	Lake Merced Blvd/Vidal Dr ^{2,4}				22		C	46		D
33	Lake Merced Blvd/Acevedo Dr ^{2,4}				21		C	43		D

Table V.E.11 (Continued)

Intersection		Existing			Existing plus Project			2030 Cumulative plus Project		
		Del ¹	V/C ⁷	LOS	Del ¹	V/C ⁷	LOS	Del ¹	V/C ⁷	LOS
34	Lake Merced Blvd/Gonzalez Dr ^{2,4}				36		D	47		D

Notes:

Bold = unacceptable operations, **Shaded** = significant impact;

1. Signalized and all-way stop controlled intersection level of service based on average control delay per vehicle, according to the Highway Capacity Manual - Special Report 209 (Transportation Research Board, 2000). Side-street stop-controlled intersection level of service based on worst control delay, according to the HCM - Special Report 209 (Transportation Research Board, 2000).
2. Because the Proposed Project would fundamentally change the character, and in many cases, the design of intersections within the Parkmerced site, a comparison of conditions with the project to conditions without the project would not be meaningful. Therefore, these intersections were evaluated under conditions with the Proposed Project only.
3. This intersection does not satisfy the Caltrans peak hour signal warrant and is thus impacts are not considered significant.
4. Project would install a signal at this location.
5. Operations improve at this location due to the southern leg no longer being aligned with the intersection. This simplifies the operations at Chumasero.
6. Operations improve at this location due to redistribution of traffic to new Project accesses along Lake Merced Boulevard.
7. V/C ratio provided for comparison purposes at signalized intersections operating at LOS F, when HCM calculations for average delay do not provide meaningful comparison data.

Source: Fehr & Peers, 2009.

Table V.E.12: Intersection Levels of Service – Existing, Existing plus Project, and 2030 Cumulative Conditions – PM Peak Hour

Intersection		Existing			Existing plus Project			2030 Cumulative plus Project		
		Del ¹	V/C ⁸	LOS	Del ¹	V/C ⁸	LOS	Del ¹	V/C ⁸	LOS
1	Brotherhood Way/Alemanay Blvd/Sagamore St	16		B	16		B	17		B
2	Junipero Serra Blvd/Sloat Blvd/St. Francis Blvd/Portola Dr	> 80	1.0	F	> 80	1.0	F	> 80	1.2	F
3	Junipero Serra Blvd/Ocean Ave/Eucalyptus Dr	32		C	30		C	70		E
4	Junipero Serra Blvd/Winston Dr	28		C	29		C	49		D
5	Junipero Serra Blvd/Holloway Ave	29		C	29		C	32		C
6	19th Ave/Junipero Serra Blvd	> 80	1.1	F	58		E ²	> 80	0.9	F
7	Junipero Serra Blvd/Font Blvd	30 (EB)		D	10		B	31		C
8	Junipero Serra Blvd/John Daly Blvd/I-280 Northbound On-Ramp/I-280 Southbound Off-Ramp/SR 1 Northbound On-Ramp	> 80	1.2	F	> 80	1.2	F	> 80	1.5	F
9	SR 1 Southbound On- and Off-Ramps/John Daly Blvd	23		C	23		C	26		C
10	19th Ave (SR 1)/Sloat Blvd	> 80	1.5	F	> 80	1.5	F	> 80	1.6	F
11	19th Ave (SR 1)/Ocean Ave	> 80	1.4	F	> 80	1.4	F	> 80	1.6	F
12	19th Ave (SR 1)/Eucalyptus Dr	50		D	49		D	> 80	1.2	F
13	19th Ave (SR 1)/Winston Dr	> 80	1.3	F	> 80	1.4	F	> 80	1.7	F
14	19th Ave (SR 1)/Holloway Ave	61		E	38		D ²	> 80	0.9	F
15	19th Ave (SR 1)/Crespi Dr	20		C	59		E	> 80	0.8	F
16	Brotherhood Way/Chumasero Dr	68		E	11		B ⁶	> 80	0.9	F

Table V.E.12 (Continued)

Intersection		Existing			Existing plus Project			2030 Cumulative plus Project		
		Del ¹	V/C ⁸	LOS	Del ¹	V/C ⁸	LOS	Del ¹	V/C ⁸	LOS
17	Brotherhood Way/East Driveway – Bridgemont School, Congregation Beth Israel and Armenian Congregation	2		A	2		A	6		A
18	Brotherhood Way/West Driveway Greek Orthodox and Open Bible Churches	> 50 (NB)		F	> 50 (NB)		F ⁴	> 50 (NB)		F
19	Sunset Blvd/Ocean Ave	12		B	14		B	31		C
20	Sunset Blvd/Lake Merced Blvd	24		C	44 (NB)		E	> 50 (EB)		F
21	Lake Merced Blvd/Winston Dr	48		D	> 80	0.8	F	> 80	1.3	F
22	Lake Merced Blvd/Font Blvd	33		C	> 80	1.4	F	> 80	1.6	F
23	Lake Merced Blvd/Higuera Ave	59		E	34		D ⁷	45		D
24	Lake Merced Blvd/Brotherhood Way	30		C	> 80	1.7	F	> 80	2.2	F
25	Lake Merced Blvd/John Muir Dr	> 50 (EB)		F	> 50 (EB)		F ⁴	> 50 (EB)		F
26	John Daly Blvd/Lake Merced Blvd	29		C	39		D	60		E
27	Holloway Ave/Varela Ave ³				30 (SB)		D	> 50 (SB)		F
28	Font Blvd/Holloway Ave/Pinto Ave ³				12		B	21		C
29	Font Blvd/Serrano Dr ³				8		A	9		A
30	Font Blvd/Gonzalez Dr ^{3,5}				33		C	38		D
31	Font Blvd/Chumasero Dr ^{3,5}				12		B	15		B
32	Lake Merced Blvd/Vidal Dr ^{3,5}				20		C	36		D
33	Lake Merced Blvd/Acevedo Dr ^{3,5}				20		C	35		D

Table V.E.12 (Continued)

Intersection		Existing			Existing plus Project			2030 Cumulative plus Project		
		Del ¹	V/C ⁸	LOS	Del ¹	V/C ⁸	LOS	Del ¹	V/C ⁸	LOS
34	Lake Merced Blvd/Gonzalez Dr ^{3,5}				47		D	71		E

Notes:

Bold = unacceptable operations, **Shaded** = significant impact; Signal = Signalized intersection; AWS = All-Way Stop-Controlled intersection; SSS = Side-Street Stop-Controlled intersection; Dash indicates intersection not analyzed under existing conditions.

1. Signalized and AWS intersection level of service based on average control delay per vehicle, according to the Highway Capacity Manual - Special Report 209 (Transportation Research Board, 2000). Side-street stop-controlled intersection level of service based on worst control delay, according to the HCM - Special Report 209 (Transportation Research Board, 2000).
2. Impacts at this intersection are considered less than significant as the overall delay at the intersection would be reduced under conditions with the Proposed Project. This occurs because the Proposed Project would increase vehicular capacity at the intersection and would create new access points along 19th Avenue that disperse traffic away from this intersection.
3. Because the Proposed Project would fundamentally change the character, and in many cases, the design of intersections within the Parkmerced site, a comparison of conditions with the project to conditions without the project would not be meaningful. Therefore, these intersections were evaluated under conditions with the Proposed Project only.
4. This intersection does not satisfy the Caltrans peak hour signal warrant and is thus impacts are not considered significant.
5. Project would install a signal at this location.
6. Operations improve at this location due to the southern leg no longer being aligned with the intersection. This simplifies the operations at Chumasero.
7. Operations improve at this location due to redistribution of traffic to new Project accesses along Lake Merced Boulevard.
8. V/C ratio provided for comparison purposes at signalized intersections operating at LOS F, when HCM calculations for average delay do not provide meaningful comparison data.

Table V.E.13: Intersection Levels of Service – Existing, Existing plus Project, and 2030 Cumulative Conditions – Weekend Midday Peak Hour

Intersection		Existing			Existing plus Project			2030 Cumulative plus Project		
		Del ¹	V/C ³	LOS	Del ¹	V/C ³	LOS	Del ¹	V/C ³	LOS
2	Junipero Serra Blvd/Sloat Blvd/St. Francis Blvd/Portola Dr	> 80	1.0	F	> 80	1.0	F	> 80	1.2	F
6	19th Ave/Junipero Serra Blvd ²	> 80	1.6	F	> 80	1.3	F ²	> 80	1.5	F ²
10	19th Ave (SR 1)/Sloat Blvd	56		E	61		E	> 80	1.6	F
13	19th Ave (SR 1)/Winston Dr	42		D	69		E	> 80	1.7	F
14	19th Ave (SR 1)/Holloway Ave	14		B	31		C	57		E
24	Lake Merced Blvd/Brotherhood Way	25		C	61		E	> 80	1.9	F

Notes:

Bold = unacceptable operations, **Shaded** = significant impact; Signal = Signalized intersection

1. Signalized and all-way stop controlled intersection level of service based on average control delay per vehicle, according to the Highway Capacity Manual - Special Report 209 (Transportation Research Board, 2000). Side-street stop-controlled intersection level of service based on worst control delay, according to the HCM - Special Report 209 (Transportation Research Board, 2000).
2. Impacts at this intersection are considered less than significant as the overall delay at the intersection would be reduced under conditions with the Proposed Project. This occurs because the Proposed Project would increase vehicular capacity at the intersection and would create new access points along 19th Avenue that disperse traffic away from this intersection.
3. V/C ratio provided for comparison purposes at signalized intersections operating at LOS F, when HCM calculations for average delay do not provide meaningful comparison data.

Source: Fehr & Peers, 2010

19th Avenue/Winston Drive – The Proposed Project’s impacts at this intersection generally would be due to increases in traffic along both Winston Drive and 19th Avenue. To improve operating conditions, additional travel lanes would be needed. Due to the presence of the M Ocean View light rail line in the center median and generally constrained environment, space for additional travel lanes could not be allocated without major changes. To accommodate additional right-of-way needed for additional lanes, demolition of existing structures and substantial right-of-way acquisition would be required. Further, widening the roadway, which would increase pedestrian crossing distances across 19th Avenue or Winston Drive, would be inconsistent with San Francisco’s goal of improving pedestrian circulation and safety in the Study Area. Therefore, mitigation measures involving substantially increased capacity were considered infeasible, and were not considered further.

Restriping the eastbound shared through-left-turn lane as a dedicated left turn-lane would result in a dual left-turn lane, a single through lane, and a dedicated right-turn lane. This could be accomplished without widening the approach and would improve intersection operations to acceptable LOS D or better conditions in the AM and PM peak hours. However, this would present a pedestrian safety conflict, by providing a dual left-turn lane operating on the same phase as a conflicting crosswalk with high pedestrian volumes. Therefore, implementation of this improvement measure would be inconsistent with the City’s goals of promoting walking and bicycling and are therefore considered infeasible. Because no feasible mitigation measures were identified, Project-related impacts at this intersection would be significant and unavoidable.

19th Avenue/Crespi Drive – The Project’s impacts at this intersection would be due primarily to the new northbound left-turn lane from 19th Avenue to Crespi Drive, proposed as part of the Project.

Mitigation Measure M-TR-2A would remove the proposed northbound left-turn lane from 19th Avenue onto Crespi Drive from the Proposed Project. Implementing mitigation measure M-TR-2A would reduce the impact at this intersection to a less-than-significant level.

Sunset Boulevard/Lake Merced Boulevard – In the PM peak hour, operating conditions would worsen from LOS C under Existing conditions to LOS E with the Proposed Project. The intersection would meet Caltrans peak hour traffic signal warrants under both Existing conditions and future conditions with the Proposed Project in the PM peak hour. The degradation in level of service in the PM peak hour would be primarily due to the increased level of traffic traveling southbound on Sunset Boulevard, which increases delay for the stop-controlled northbound left-turn movement.

Mitigation Measure M-TR-2B would require that a new traffic signal be installed at the Sunset Boulevard/Lake Merced Boulevard intersection. With implementation of M-TR-2B, operations at

this intersection would improve to acceptable LOS D or better in the PM peak hour. However, since SFMTA is currently evaluating the feasibility of this measure and has not yet finalized its evaluation, implementation M-TR-2B is uncertain, and Project-related impacts at this intersection would remain significant and unavoidable.

Lake Merced Boulevard/Winston Drive – At the signalized Lake Merced Boulevard/Winston Drive intersection, the intersection operating conditions would degrade in the AM peak hour from LOS C under Existing conditions to LOS E with the Proposed Project. Operations in the PM peak hour would degrade from LOS D under Existing conditions to LOS F with the Proposed Project. The degradation in level of service would be primarily due to Project-related traffic added to the northbound and southbound through, northbound right-turn and westbound left-turn movements. The Project’s impact would be significant in the AM and PM peak hours.

Mitigation Measure M-TR-2C would involve constructing a new northbound right-turn lane from Lake Merced Boulevard into eastbound Winston Drive. Implementation of mitigation measure M-TR-2C would improve operations at this intersection to acceptable LOS D or better in the AM and PM peak hours. However, the feasibility of this measure is uncertain due to the adjacent unsignalized intersection, approximately 75 feet south of Winston Drive, which would conflict with the northbound right-turn lane. Further study is required to determine whether this mitigation measure is feasible. However, because the feasibility of this measure is uncertain, Project-related impacts at this intersection would remain significant and unavoidable.

Lake Merced Boulevard/Font Boulevard – At the signalized Lake Merced Boulevard / Font Boulevard intersection, the intersection operating conditions would degrade in the AM peak hour from LOS D under Existing conditions to LOS F with the Proposed Project. Operations during the PM peak hour would degrade from LOS C under Existing conditions to LOS F with the Proposed Project. The degradation in level of service would be primarily due to substantial traffic volume increases on nearly all approaches to the intersection. The Proposed Project’s impacts would be significant in the AM and PM peak hours.

Mitigation Measure M-TR-2D would involve restriping and removing existing on-street parking to provide a third northbound through lane and a second southbound left-turn lane at this intersection. With implementation of M-TR-2D, operations at this intersection would improve to acceptable LOS D or better conditions in the AM and PM peak hours. However, a dual left-turning movement against a pedestrian signal may be considered a safety hazard. Further, since a feasibility study would be required, implementation of M-TR-2D is uncertain, and therefore, Project-related impacts at this intersection would remain significant and unavoidable.

Lake Merced Boulevard/Brotherhood Way – At the signalized Lake Merced Boulevard / Brotherhood Way intersection, operating conditions would degrade from LOS D in the AM peak

hour, LOS C in the PM peak hour, and LOS C during the weekend midday peak hour under Existing conditions to LOS E in the AM peak hour, LOS F in the PM peak hour, and LOS E in the weekend peak hour with the Proposed Project. The degradation in level of service would be primarily due to significant levels of Project-related traffic added to the northbound through, southbound left and westbound right-turn movements. The Proposed Project's impact would be significant in the weekday AM and PM peak hours and the weekend peak hour.

Mitigation Measure M-TR-2E would involve reconfiguring the intersection such that the westbound right-turn and the southbound left-turn movements were the primary movements of the intersection and the northbound approach of Lake Merced Boulevard would operate as the "minor" approach. With implementation of mitigation measure M-TR-2E, operations at this intersection would improve, but would continue to operate at LOS F during both the AM and PM peak hours. However, operating conditions would be substantially better than conditions without the improvements.

To achieve acceptable operating conditions at this intersection, a second northbound left-turn lane, in addition to the improvements identified above, would need to be constructed. However, this would present a pedestrian safety conflict with the crosswalk on the northern leg of the intersection. Therefore, implementation of this improvement measure would be inconsistent with the City's goals of promoting walking and bicycling and are therefore considered infeasible.

Because a feasibility study is required to determine the feasibility of M-TR-2E, and because even with implementation of M-TR-2E, the intersection would continue to operate at LOS F in the AM and PM peak hours, the Proposed Project's impact at this intersection would remain significant and unavoidable.

Summary of Impact TR-2

Overall, implementation of mitigation measures M-TR-2A through M-TR-2E would improve operations at some of the seven study intersections. However, in a number of cases, the feasibility of mitigation measures is uncertain. Implementation of mitigation measures below that would require discretionary approval actions by the SFMTA or other public agencies is considered uncertain because public agencies subject to CEQA cannot commit to implementing any part of a proposed project, including proposed mitigation measures, until environmental review is complete. Thus, while the SFMTA has reviewed the feasibility of several mitigation measures proposed to address significant impacts, implementation of these measures cannot be assured until after certification of this EIR. Even with implementation of all mitigation measures, six of the seven intersections would continue to operate unacceptably. Only impacts of 19th Avenue / Crespi Drive could be mitigated to a less-than-significant level. Therefore, Impact TR-2 would remain significant and unavoidable.

M-TR-2A: Do not construct the proposed northbound left-turn lane from 19th Avenue onto Crespi Drive. The northbound left-turn lane from 19th Avenue to Crespi Drive would require southbound traffic on 19th Avenue to stop to allow northbound left-turning traffic. Eliminating this proposed improvement would cause Project-related traffic inbound to the Project to take alternative routes to access the site; however, the amount of additional Project-related traffic routed through other intersections would not be enough to cause additional significant impacts at those intersections.

Implementing mitigation measure M-TR-2A would reduce the Proposed Project impact at this intersection to a less-than-significant level.

M-TR-2B: Install a traffic signal at Sunset Boulevard/Lake Merced Boulevard. Installation of the signal shall be the responsibility of the SFMTA, and shall be implemented prior to completion of the Project or as otherwise specified in the Development Agreement; however, SFMTA is not financially responsible for funding this improvement or the study of its feasibility. The SFMTA shall design and implement the measure as necessary.

With implementation of M-TR-2B, operations at this intersection would improve to acceptable LOS D or better in the PM peak hour. However, since SFMTA is currently evaluating the feasibility of this measure and has not yet finalized its evaluation, implementation M-TR-2B is uncertain, and Project-related impacts at this intersection would remain significant and unavoidable.

M-TR-2C: Construct a dedicated northbound right-turn lane from Lake Merced Boulevard to eastbound Winston Drive. This improvement would provide a dedicated lane for the relatively large number of vehicles expected to execute the northbound right-turn movement. Implementation of the roadway improvement would require roadway widening to the east, which necessitates relocation of the sidewalk, a utility box, a signal mast, and several other elements.

Implementation shall be the responsibility of SFMTA, and shall be completed prior to completion of the Project or as otherwise specified in the Development Agreement. SFMTA shall design and implement the measure as necessary; however, SFMTA is not financially responsible for funding this improvement or the study of its feasibility.

Implementation of mitigation measure M-TR-2C would improve operations at this intersection to acceptable LOS D or better in the AM and PM peak hours. However, the feasibility of this measure is uncertain due to the adjacent unsignalized intersection, approximately 75 feet south of Winston Drive, which would conflict with the northbound right-turn lane. Further study is required to determine whether this mitigation measure is feasible. However, because the feasibility of this measure is uncertain, Project-related impacts at this intersection would remain significant and unavoidable.

M-TR-2D: Provide a third northbound through lane and a second southbound left-turn lane. This mitigation measure would require restriping the northbound right-turn lane at the Lake Merced Boulevard/State Drive intersection as a through lane and removing the on-street parking on the north side of the intersection to recreate the dedicated right-turn lane (assuming that it is required for acceptable operations at this intersection).

Additionally, providing a second southbound left-turn lane at this intersection would require removal of on-street parking on the south side of Font Boulevard to create a second receiving lane, as well as the removal of some spaces on the west side of Lake Merced Boulevard and shifting the through travel lanes to the west to make room for the second southbound left-turn lane.

Implementation would require significant roadway restriping and signal optimization and coordination at multiple intersections, as well as the removal of approximately 25 parking spaces. If feasible, implementation of this measure shall be the responsibility of SFMTA, and shall be implemented prior to completion of the Project or as otherwise specified in the Development Agreement; however, SFMTA is not financially responsible for funding this improvement or the study of its feasibility. SFMTA shall design and implement the measure as necessary.

With implementation of M-TR-2D, operations at this intersection would improve to acceptable LOS D or better conditions in the AM and PM peak hours. However, a dual left-turning movement against a pedestrian signal may be considered a safety hazard. Further, since a feasibility study would be required, implementation of M-TR-2D is uncertain, and therefore, Project-related impacts at this intersection would remain significant and unavoidable.

M-TR-2E: Reconfigure the westbound right-turn and southbound left-turn as the primary movements of the intersection. This would convert the northbound approach of Lake Merced Boulevard into the “minor” approach to the intersection. Although the configuration may be able to fit within the existing right-of-way at the intersection, further study is needed to determine the feasibility of this measure. A conceptual intersection configuration is presented in the Project’s Transportation Study.

If implemented, the intersection reconfiguration shall be the responsibility of SFMTA, and shall be implemented prior to completion of the Project or as otherwise specified in the Development Agreement. SFMTA shall design and implement the measure as necessary; however, SFMTA is not financially responsible for funding this improvement or the study of its feasibility.

With implementation of mitigation measure M-TR-2E, operations at this intersection would improve, but would continue to operate at LOS F during both the AM and PM peak hours. However, operating conditions would be substantially better than conditions without the improvements.

To achieve acceptable operating conditions at this intersection, a second northbound left-turn lane, in addition to the improvements identified above, would need to be constructed. However, this would present a pedestrian safety conflict with the crosswalk on the northern leg of the intersection. Therefore, implementation of this mitigation measure would be inconsistent with the City's goals of promoting walking and bicycling and is therefore considered infeasible.

Because a feasibility study is required to determine the feasibility of M-TR-2E, and because even with implementation of M-TR-2E, the intersection would continue to operate at LOS F in the AM and PM peak hours, the Project's impact at this intersection would remain significant and unavoidable.

Impact TR-3: Implementation of the Proposed Project would result in considerable traffic contributions at study intersections that operate at LOS E or LOS F under Existing Conditions (*Significant and Unavoidable with Mitigation*)

With implementation of the Proposed Project, two intersections that currently operate at unacceptable LOS E or F would continue to operate at LOS E and LOS F conditions. The Proposed Project's contribution to traffic volumes at the critical movements was examined and it was determined that the Proposed Project vehicle trips would represent a significant contribution, thereby resulting in significant project impacts.

Junipero Serra Boulevard/Sloat Boulevard/St. Francis Boulevard/Portola Drive – At the signalized Junipero Serra Boulevard/Sloat Boulevard/St. Francis Boulevard/Portola Drive intersection, the intersection would operate at an unacceptable LOS E during the AM peak hour and LOS F during the weekday PM peak hour and weekend midday peak hour under both Existing and Project conditions. The Proposed Project would contribute substantial increases to the southbound through movement from Portola Drive to Junipero Serra Boulevard during the weekday PM and weekend midday peak hours (9 percent during the PM peak hour and 17 percent during the weekend peak hour). The Proposed Project's impact at this intersection would be significant in the PM peak hour and weekend midday peak hour.

The Proposed Project's impacts at this intersection are generally due to increases in traffic along Junipero Serra Boulevard. Substantial improvement could only be accomplished through major changes. Due to the presence of the M Ocean View and K Ingleside light rail lines in the center median, generally constrained environment, and complex intersection geometry, space for additional travel lanes could not be allocated. To accommodate additional right-of-way needed for additional lanes, demolition of existing structures and substantial right-of-way acquisition would be required. Further, widening the roadway, which would increase pedestrian crossing distances across Junipero Serra Boulevard, would be inconsistent with San Francisco's goal of improving pedestrian circulation and safety in the Study Area. Therefore, mitigation measures

involving increased capacity were considered infeasible. Therefore, the Project's impact to this intersection would be significant and unavoidable.

Junipero Serra Boulevard/John Daly Boulevard/I-280 Northbound On-Ramp/I-280 Southbound Off-Ramp/SR 1 Northbound On-Ramp – At the signalized Junipero Serra Boulevard/John Daly Boulevard/I-280 Northbound On-Ramp/I-280 Southbound Off-Ramp/SR 1 Northbound On-Ramp intersection, the intersection would operate at an unacceptable LOS F during the PM peak hour under Existing and Project conditions. The Proposed Project would contribute substantial increases to the critical northbound left-turn from Junipero Serra Boulevard to westbound John Daly Boulevard (28 percent). The Proposed Project's impact at this intersection would be significant in the PM peak hour.

Substantial improvement could only be accomplished through major changes. Due to the generally constrained environment and complex intersection geometry, space for additional travel lanes could not be allocated. To accommodate additional right-of-way needed for additional lanes, demolition of adjacent land uses and substantial right-of-way acquisition would be required. Therefore, traffic impacts at this intersection under the Project conditions would remain significant and unavoidable.

Summary of Impact TR-3

Mitigation Measure M-TR-2C would involve constructing a new northbound right-turn lane from Lake Merced Boulevard into eastbound Winston Drive. Overall, implementation of mitigation measure M-TR-2C would improve operations at one of the three study intersections. However, the feasibility of this mitigation measure is uncertain, and even with implementation of mitigation measure M-TR-2C, one intersection would continue to operate unacceptably. Therefore, Impact TR-3 would remain significant and unavoidable.

Impact TR-4: Implementation of the Proposed Project would have less than significant traffic impacts at four study intersections that operate at LOS E or LOS F under Existing Conditions (*Less than Significant*)

With implementation of the Proposed Project, four intersections would operate at LOS E or F in one or more peak hours where the Proposed Project's contribution to traffic volumes at critical movements would represent a less than significant contribution to LOS E or LOS F operating conditions. Therefore, impacts would be less than significant.

19th Avenue/Junipero Serra Boulevard – The signalized intersection would operate at an unacceptable LOS E during the AM peak hour and LOS F during the PM and weekend peak hours under existing conditions. Due to capacity enhancements included in the Proposed Project, operating conditions would improve to LOS D in the AM peak hour and LOS E in the PM peak

hour under Project conditions. The weekend peak hour would remain at LOS F, but the Proposed Project would contribute no more than 2 percent to critical movements. Therefore, the Proposed Project's impact at this intersection would be less than significant in the weekday AM and PM and weekend midday peak hours.

19th Avenue/Ocean Avenue – The signalized intersection would operate at an unacceptable LOS F during the PM peak hour under Existing and Proposed Project conditions. The Proposed Project would slightly reduce volumes on the critical southbound through movement on 19th Avenue; therefore, the Proposed Project's impact at this intersection would be less than significant in the PM peak hour.

Brotherhood Way/West Driveway Holy Trinity Greek Orthodox and Open Bible Churches – The unsignalized intersection¹⁶ would operate at an unacceptable LOS F during both the AM and PM peak hours under existing and Project conditions. The intersection would not meet Caltrans peak hour signal warrants under Project conditions; therefore, the Proposed Project's impact at this intersection would be less than significant in both the AM and PM peak hours.

John Muir Drive/Lake Merced Boulevard – The unsignalized intersection would operate at an unacceptable LOS F during both the AM and PM peak hours under existing and Project conditions. The intersection would not meet Caltrans peak hour signal warrants under Project conditions; therefore, the Proposed Project's impact at this intersection would be less than significant in both the AM and PM peak hours.

Impact TR-5: Implementation of the Project Variant would result in the same significant traffic impacts as the Proposed Project, as identified in Impacts TR-2 and TR-3 plus significant traffic impacts at two additional study intersections compared to the Proposed Project. (*Significant and Unavoidable with Mitigation*)

Although the travel demand characteristics of the Project Variant would be identical to the Proposed Project, three intersections (19th Avenue/Junipero Serra Boulevard, 19th Avenue / Holloway Avenue, and 19th Avenue/Crespi Drive) would have different configurations under conditions with the Project Variant than with the Proposed Project. Table V.E.14 presents the intersection LOS for those three intersections under Existing Conditions, Existing plus Project conditions, and Existing plus Project Variant conditions.

¹⁶ This intersection was signalized in early 2010. However, at the time the transportation analysis was conducted, it was unsignalized and no signalization was assumed. The Proposed Project's impact at this intersection was considered less than significant because the intersection volumes did not meet peak hour signal installation warrant criteria at the time the study was conducted.

Table V.E.14: Intersection Operations for Project Variant

Intersection ³			Control	Existing Conditions			Existing Plus Project Conditions			Existing Plus Project Variant ¹		
				Delay ¹	V/C	LOS	Delay ¹	V/C	LOS	Delay ¹	V/C	LOS
AM	6	19th Ave/Junipero Serra Blvd	Signal	58		E	36		D	37		D
	14	19th Ave (SR 1)/Holloway Ave	Signal	41		D	34		C	66		E
	15	19th Ave (SR 1)/Crespi Dr	Signal	37		D	47		D	63		E
PM	6	19th Ave/Junipero Serra Blvd	Signal	> 80	1.1	F	58		E²	58		E²
	14	19th Ave (SR 1)/Holloway Ave	Signal	61		E	38		D	60		E
	15	19th Ave (SR 1)/Crespi Dr	Signal	20		C	59		E	61		E

Notes: **Bold** = unacceptable operations, **Shaded** = significant impact; Signal = Signalized intersection

1. Signalized and all-way stop controlled intersection level of service based on average control delay per vehicle, according to the Highway Capacity Manual - Special Report 209 (Transportation Research Board, 2000).
2. Impact at this intersection are not considered significant as Project-related traffic does not contribute considerably to critical movements at the intersection.
3. The Holloway Avenue/19th Avenue, Crespi Drive/19th Avenue, and Junipero Serra Boulevard/19th Avenue intersections would be the only study intersections affected by the HOT lane; therefore, these are the only intersections presented in this table.

Source: Fehr & Peers, 2010

As illustrated in Table V.E.14, the intersections of 19th Avenue/Holloway Avenue and 19th Avenue/Crespi Drive would experience significant impacts associated with the Project Variant.

19th Avenue/Holloway Avenue – At the signalized 19th Avenue/Holloway Avenue intersection, operations would degrade from an acceptable LOS D under Existing conditions to an unacceptable LOS E during the AM peak hour under conditions with the Project Variant. This is a significant impact of the Project Variant in the AM peak hour.

Mitigation measure M-TR-5 would require the fourth southbound travel lane on 19th Avenue to be implemented as a mixed-flow lane, as presented in the Proposed Project, rather than as a HOT lane. With implementation of mitigation measure M-TR-5, Project Variant-related impacts at this intersection would be less than significant. The mitigation measure, however, would have a significant secondary transit impact due to its conversion of the HOT lane. Due to the generally constrained environment, providing additional travel lanes along 19th Avenue is not feasible, and therefore M-TR-5's secondary impact to transit would remain significant.

19th Avenue/Crespi Drive – The Proposed Project would cause this intersection to deteriorate from LOS C to LOS E in the PM peak hour. The Project Variant would also cause this degradation. However, the Project Variant would also cause this intersection to deteriorate from LOS D to LOS E in the AM peak hour. This would be an additional significant impact associated with the Project Variant. Implementing mitigation measure M-TR-2A, which would reduce the Proposed Project's impact at this intersection in the PM peak hour to less than significant levels, would also reduce the Project Variant's impact at this intersection in the AM and PM peak hours to a less-than-significant level.

M-TR-5: Configure the fourth travel lane on southbound 19th Avenue as a mixed flow lane as presented in the Project. Implementing this mitigation measure would result in acceptable intersection operations during the AM and PM peak hours; however, this configuration was intended to provide a benefit to transit and to encourage high-occupancy vehicles. A secondary impact would be the lost benefit to transit travel times.

As described under Impact TR-27, restricting the fourth southbound lane on 19th Avenue to transit, high-occupancy vehicle, and those willing to pay a toll would improve transit travel times and lessen the Proposed Project's impact on the 28 19th Avenue Muni line. Implementation of this mitigation measure would revert transit conditions to those described for the Proposed Project, and the secondary impact of this Mitigation Measure to transit travel times would be significant.

With implementation of mitigation measure M-TR-5, Project Variant-related impacts at this intersection would be less than significant. The mitigation measure, however, would have a significant secondary transit impact due to its conversion of the HOT lane. Due to the generally constrained environment, providing additional travel lanes along 19th Avenue is not feasible, and therefore M-TR-5's secondary impact to transit would remain significant .

Summary of Impact TR-5

Intersection impacts identified in Impact TR-5 would remain the same with implementation of the sub-variant in conjunction with the Project Variant. With implementation of the sub-variant, the Project Variant's significant impacts would remain significant and unavoidable.

Impact TR-6: Implementation of the sub-variant in conjunction with the Proposed Project would result in the same traffic impacts at study intersections as identified in Impacts TR-2, TR-3, and TR-4 for conditions with the Proposed Project. (Significant and Unavoidable with Mitigation)

The sub-variant would involve constructing a right-turn ingress along 19th Avenue between Crespi Drive and Junipero Serra Boulevard at Cambon Drive. The anticipated impact of this sub-variant in conjunction with the Proposed Project is minor. Some of the vehicles that would execute a

right-turn at Crespi Drive would instead continue south on 19th Avenue and turn right onto Cambon Drive. No other changes in traffic circulation would be expected to result.

The right turn can be provided as a shared movement from the fourth southbound mixed-flow through lane constructed as part of the Proposed Project. Vehicles slowing to make the right-turn ingress may impede the flow of traffic at this location. However, the impact associated with this “friction” would simply be relocated from Crespi Drive, where drivers would otherwise turn.

Intersection impacts identified in Impacts TR-2, TR-3, and TR-4 would remain the same with implementation of the sub-variant in conjunction with the Proposed Project. With implementation of the sub-variant, the Proposed Project’s significant impacts, as identified in Impacts TR-2, TR-3, and TR-4 would remain significant and unavoidable.

Impact TR-7: Implementation of the sub-variant in conjunction with the Project Variant would result in the same traffic impacts at study intersections as identified in Impact-TR-5 for conditions with the Project Variant. (*Significant and Unavoidable with Mitigation*)

The sub-variant would involve constructing a right-turn ingress along 19th Avenue between Crespi Drive and Junipero Serra Boulevard at Cambon Drive. The anticipated impact of this sub-variant in conjunction with the Project Variant would be minor. Some of the vehicles that would execute a right-turn at Crespi Drive would instead continue south on 19th Avenue and turn right onto Cambon Drive. No other changes in traffic circulation would be expected to result.

Vehicles turning into a new driveway at Cambon Drive would be relocated from Crespi Drive – from near the beginning of the HOT lane to near the middle. Although delays associated with vehicles turning into Cambon Drive would simply be relocated from Crespi Drive, they would cause a more fundamental degradation in the quality of the HOT lane, because they would prevent vehicles from reaching full travel speeds and achieving a real advantage over vehicles in the other mixed flow lanes. While this wouldn’t necessarily worsen significant impacts to transit compared to conditions with the Proposed Project (i.e., no HOT lane), this condition would not be consistent with the goals of the HOT lane. Implementation of improvement measure I-TR-7 would provide a southbound right turn deceleration lane, in addition and adjacent to the HOT lane, at the new access from 19th Avenue at Cambon Drive to avoid interference with HOT lane operations. However, this improvement measure is not required to address significant impacts.

Intersection impacts identified in Impact TR-5 would remain the same with implementation of the sub-variant in conjunction with the Project Variant. With implementation of the sub-variant, the Project Variant’s significant impacts would remain significant and unavoidable.

I-TR-7: Provide a southbound right turn deceleration lane at the new access from 19th Avenue at Cambon Drive to avoid interference with HOT lane operations. As an improvement measure, to avoid conflict with the through traffic, a right-turn deceleration lane should be constructed on the west side of the fourth southbound lane, allowing vehicular access from 19th Avenue to Cambon Drive, minimizing disruption to flow in the HOT lane.

This would require the removal of on-street parking in the vicinity of the ingress. Although not needed to avoid a significant impact, implementation of I-TR-7 would ensure that the HOT lane remains an attractive alternative for high-occupancy vehicles and those willing to pay a toll.

Impact TR-8: Implementation of the Proposed Project would result in significant traffic impacts on one freeway segment. (*Significant and Unavoidable*)

Table V.E.15 presents the results of the freeway mainline section, weaving section, and ramp junction analysis for Existing and Existing plus Project conditions. The Proposed Project would contribute substantial traffic volumes to one freeway weaving section operating at LOS E under existing conditions.

Southbound SR 1 (Junipero Serra Boulevard): Weaving Segment Between On-ramp from Brotherhood Way and Direct Off-ramp to John Daly Boulevard – Project traffic would increase volumes on this segment and cause it to deteriorate from LOS E in the PM peak hour under existing conditions to LOS F conditions. Therefore, the Proposed Project's impact would be significant in the PM peak hour. The projected poor operating conditions on the affected freeway segment could only be improved by creating additional mainline capacity, which would require acquisition and demolition of adjacent land uses. This would exceed the reasonable scope of the Proposed Project and would be outside the control of the lead agency. Therefore, mitigation of this impact to a less-than-significant level is considered to be infeasible. The Proposed Project's impact to this freeway segment LOS would be significant and unavoidable.

Table V.E.15: Freeway Mainline Section, Weaving Section, and Ramps Junction LOS – AM Peak Hour

Segment	Facility Type	Existing Conditions		Project Conditions		Cumulative (Project) Conditions	
		Density/Service Volume ¹	LOS	Density/Service Volume ¹	LOS	Density/Service Volume ¹	LOS
Northbound SR 1							
Between Off-ramp to I-280 and On-ramp from John Daly Boulevard	Basic	27.0	D	27.7	D	31.8	D
Between On-ramp from John Daly Boulevard and Off-ramp to Alemany Boulevard	Weave	1,330	C	1,354	D	1,555	D
Palmetto Avenue Off-ramp	Diverge	26.8	C	27.3	C	30.3	D
Palmetto Avenue On-ramp	Merge	25.0	C	25.5	C	28.7	D
Between Loop On-ramp from Brotherhood Way and Loop Off-ramp to Brotherhood Way	Weave	1,038	F²	1,074	F³	1,259	F
Between Loop Off-ramp from Brotherhood Way and Direct On-ramp from Brotherhood Way	Basic	21.9	C	22.4	C	26.4	D
Between Direct On-ramp from Brotherhood Way 19 th Avenue	Basic	19.2	C	19.8	C	23.5	C
Southbound SR 1							
Between 19 th Avenue and Direct Off-ramp to Brotherhood Way	Basic	20.9	C	21.6	C	24.4	C
Brotherhood Way Loop Off-ramp	Diverge	26.2	C	27.0	C	30.0	D
Between Loop Off-ramp to Brotherhood Way and Direct On-ramp from Brotherhood Way	Basic	24.6	C	25.3	C	26.4	D
Between Direct On-ramp from Brotherhood Way to Direct Off-ramp to John Daly Boulevard	Weave	1,709	E	1,888	E	1,978	F

Table V.E.15 (Continued)

Segment	Facility Type	Existing Conditions		Project Conditions		Cumulative (Project) Conditions	
		Density/ Service Volume ¹	LOS	Density/ Service Volume ¹	LOS	Density/ Service Volume ¹	LOS
Between Direct Off-ramp to John Daly Boulevard and Direct On-ramp from John Daly Boulevard	Basic	29.1	D	31.1	D	32.8	D

Notes:

Shaded = significant impact; LOS = Level of Service; Segments operating at LOS E or LOS F conditions highlighted in **bold**.

1. Density (for basic, diverge, and merge sections) or service volume (for weave sections). Density is measured as passenger cars per mile per lane (pc/mi/ln). Service volume is reported as the measure of effectiveness, pc/h = passenger cars per hour.
2. Due to the design of this weave – specifically, the northbound off-ramp to Brotherhood Way – the actual capacity is much less than the default of 1,900 vehicles per hour set within the Leisch method. To validate to existing conditions, the capacity of the weaving segment was set to 1000 vehicles per hour.
3. Not a significant impact because the auxiliary lane on Brotherhood Way included in the Proposed Project would increase capacity of the off-ramp substantially more than the increased level of Project-related traffic.

Source: Fehr & Peers, 2010

Impact TR-9: Implementation of the Proposed Project would have significant traffic impacts at two freeway segments that operate at LOS E or LOS F under Existing Conditions (*Significant and Unavoidable with Mitigation*)

Table V.E.15 and Table V.E.16 present the results of the freeway mainline section, weaving section, and ramp junction analysis for existing, existing plus Project, and 2030 Cumulative conditions. With implementation of the Proposed Project, two freeway weaving segments would continue to operate at LOS E and LOS F conditions during at least one peak hour. The Proposed Project contribution to traffic volumes on these facilities was examined and it was determined that the Proposed Project vehicle trips would represent a significant contribution, thereby resulting in significant project impacts.

Table V.E.16: Freeway Mainline Section, Weaving Section, and Ramps Junction LOS – PM Peak Hour

Segment	Facility Type	Existing Conditions		Project Conditions		Cumulative (Project) Conditions	
		Density/ Service Volume ¹	LOS	Density/ Service Volume ¹	LOS	Density/ Service Volume ¹	LOS
Northbound SR 1							
Between Off-ramp to I-280 and On-ramp from John Daly Boulevard	Basic	27.0	D	29.3	D	35.3	E
Between On-ramp from John Daly Boulevard and Off-ramp to Alemany Boulevard	Weave	1,330	C	1,533	D	1,818	E
Palmetto Avenue Off-ramp	Diverge	26.8	C	28.5	D	32.7	D
Palmetto Avenue On-ramp	Merge	25.0	C	26.9	C	31.4	D
Between Loop On-ramp from Brotherhood Way and Loop Off-ramp to Brotherhood Way	Weave	1,038	F²	1,478	F	1,395²	F
Between Loop Off-ramp from Brotherhood Way and Direct On-ramp from Brotherhood Way	Basic	21.9	C	20.2	C	22.0	C
Between Direct On-ramp from Brotherhood Way 19 th Avenue	Basic	19.2	C	22.2	C	20.5	C
Southbound SR 1							
Between 19 th Avenue and Direct Off-ramp to Brotherhood Way	Basic	20.9	C	21.4	C	28.0	D
Brotherhood Way Loop Off-ramp	Diverge	26.2	C	27.2	C	33.5	D
Between Loop Off-ramp to Brotherhood Way and Direct On-ramp from Brotherhood Way	Basic	24.6	C	24.0	C	29.2	D
Between Direct On-ramp from Brotherhood Way to Direct Off-ramp to John Daly Boulevard	Weave	1,709	E	1,963	F	2,340	F

Table V.E.16 (Continued)

Segment	Facility Type	Existing Conditions		Project Conditions		Cumulative (Project) Conditions	
		Density/Service Volume ¹	LOS	Density/Service Volume ¹	LOS	Density/Service Volume ¹	LOS
Between Direct Off-ramp to John Daly Boulevard and Direct On-ramp from John Daly Boulevard	Basic	29.1	D	26.2	D	32.2	D

Notes:

Shaded = significant impact; LOS = Level of Service; Segments operating at LOS E or LOS F conditions highlighted in **bold**.

1. Density (for basic, diverge, and merge sections) or service volume (for weave sections). Density is measured as passenger cars per mile per lane (pc/mi/ln). Service volume is reported as the measure of effectiveness, pc/h = passenger cars per hour.
2. Due to the design of this weave – specifically, the northbound off-ramp to Brotherhood Way – the actual capacity is much less than the default set within the Leisch method. To validate to existing conditions, the capacity of the weaving segment was set to 1000 vehicles per hour.

Source: Fehr & Peers, 2010

Northbound SR 1 (Junipero Serra Boulevard): Weaving Segment Between Loop On-ramp from Brotherhood Way and Loop Off-ramp to Brotherhood Way – This segment of SR 1

operates at LOS F in the AM and PM peak hours under Existing conditions. Traffic from the Proposed Project would increase volumes on this segment by less than 5 percent in the AM peak hour, which would be considered a less than significant contribution. Therefore, the Project’s impact would be less than significant in the AM peak hour. However, project traffic would increase volumes on this segment by over 40 percent in the PM peak hour compared to Existing conditions. This would be a significant contribution.

Mitigation Measure M-TR-9 would eliminate the weaving segment by removing the loop on-ramp from eastbound Brotherhood Way to northbound SR 1. In its place, M-TR-9 would require construction of an eastbound left-turn lane from Brotherhood Way on the east side of the structure that connects with the direct on-ramp from westbound Brotherhood Way. Implementation of mitigation measure M-TR-9 would improve the weaving section operation to acceptable LOS in the AM and PM peak hours with implementation of the Proposed Project. However, because this facility is under Caltrans jurisdiction and requires further analysis to determine feasibility, the identified mitigation measures cannot be guaranteed by the City. Traffic impacts at this facility under the Project conditions would remain significant and unavoidable.

Southbound SR 1 (Junipero Serra Boulevard): Weaving Segment Between On-ramp from Brotherhood Way and Direct Off-ramp to John Daly Boulevard – This segment of SR 1 operates at LOS E in the AM peak hour under Existing conditions. Project traffic would increase volumes on this segment by more than 5 percent, which would be considered a significant contribution. Therefore, the Proposed Project's impact would be significant in the AM peak hour.

The Proposed Project would also cause this weaving segment to deteriorate from LOS E to LOS F during the PM peak hour, which was discussed as part of Impact TR-8. As discussed earlier, there are no feasible mitigation measures to improve operations at this facility. Therefore, Project-related impacts on this weaving segment would remain significant and unavoidable.

M-TR-9: Eliminate the weaving segment between the loop on-ramp from Brotherhood Way and the loop off-ramp to Brotherhood Way by reconfiguring the interchange. Specifically, evaluate the feasibility of closing the loop on-ramp from eastbound Brotherhood Way to northbound SR 1 and instead constructing an eastbound left-turn lane from Brotherhood Way on the east side of the structure. The direct on-ramp from westbound Brotherhood Way to northbound SR 1 should be configured with one access point to serve traffic from westbound Brotherhood Way and those making a left-turn from eastbound Brotherhood Way.

The eastbound left turn-lane can and shall be constructed to approximately 150 feet in length, which would sufficiently serve the demand for that particular movement (no greater than 50 vehicles per hour under Existing plus Project conditions). Ultimately, this measure may require a design exception from Caltrans. The 95th percentile queue in both the AM and PM peak hours with the Project would be approximately 50 feet, or about two car lengths.

This analysis assumes a relatively uniform stream of opposing westbound traffic. However, in practice, gaps in westbound traffic would be created by the signalized Brotherhood Way/Arch Street intersection, which may allow the left-turn maneuver to operate better than reported.

Implementation of the intersection reconfiguration shall be the responsibility of SFMTA and Caltrans, and shall be implemented prior to completion of the Project or as otherwise specified in the Development Agreement. SFMTA and Caltrans shall conduct a focused technical study of the design and implement the measure as necessary. SFMTA and Caltrans are not financially responsible for funding this improvement or the study of its feasibility.

Implementation of mitigation measure M-TR-9 would improve the weaving section operation to acceptable LOS in the AM and PM peak hours with implementation of the Proposed Project. However, implementation of mitigation measures that would require discretionary approval actions by the SFMTA or other public agencies, such as Caltrans, is considered uncertain because public agencies subject to CEQA cannot commit to implementing any part of a proposed project, including proposed mitigation measures, until environmental review is complete. Thus, while the

SFMTA has reviewed the feasibility of several mitigation measures proposed to address significant impacts, implementation of these measures cannot be assured until after certification of this EIR and approval by Caltrans. Traffic impacts at this facility under the Project conditions would remain significant and unavoidable.

Impact TR-10: Implementation of the Project Variant would have significant traffic impacts at the same freeway segments expected to experience significant traffic impacts associated with the Proposed Project, as identified in Impacts TR-8 and TR-9. (*Significant and Unavoidable with Mitigation*)

The Project Variant would not affect travel demand or roadway configurations at Study Area freeway facilities. As discussed under Impact TR-9, mitigation measure M-TR-9 would eliminate the weaving segment by removing the loop on-ramp from eastbound Brotherhood Way to northbound SR 1. In its place, M-TR-9 would require construction of an eastbound left-turn lane from Brotherhood Way on the east side of the structure that connects with the direct on-ramp from westbound Brotherhood Way. Implementation of mitigation measure M-TR-9 would improve the weaving section operation to acceptable LOS in the AM and PM peak hours with implementation of the Project Variant. However, this facility is under Caltrans jurisdiction and requires further analysis to determine feasibility, and the identified mitigation cannot be guaranteed by the City. Therefore, the Project Variant's impacts to Study Area freeway facilities would be identical to the Proposed Project and would remain significant and unavoidable.

Impact TR-11: Implementation of the sub-variant, either in conjunction with the Proposed Project or the Project Variant would have significant traffic impacts at the same freeway segments expected to experience significant traffic impacts associated with the Proposed Project, as identified in Impacts TR-8 and TR-9. (*Significant and Unavoidable with Mitigation*)

The sub-variant would not affect travel demand or roadway configurations at Study Area freeway facilities. As discussed under Impact TR-9, mitigation measure M-TR-9 would eliminate the weaving segment by removing the loop on-ramp from eastbound Brotherhood Way to northbound SR 1. In its place, M-TR-9 would require construction of an eastbound left-turn lane from Brotherhood Way on the east side of the structure that connects with the direct on-ramp from westbound Brotherhood Way. Implementation of mitigation measure M-TR-9 would improve the weaving section operation to acceptable LOS in the AM and PM peak hours with implementation of the Project Variant. However, this facility is under Caltrans jurisdiction and requires further analysis to determine feasibility, and the identified mitigation cannot be guaranteed by the City. Therefore, with implementation of the sub-variant, the Project and Project Variant's impacts to Study Area freeway facilities would be identical to the Proposed Project and would remain significant and unavoidable.

Impact TR-12: Implementation of the Proposed Project would exceed the available transit capacity of transit routes serving the Project Study Area. (*Significant and Unavoidable*)

Table V.E.17 summarizes the capacity utilization for each of the four Study Area screenlines for the AM and PM peak hours for Existing, Existing plus Project, and 2030 Cumulative conditions. The total AM and PM peak hour transit travel demand on Muni under Project conditions could be accommodated within Muni's 85 percent capacity utilization standard on all four Study Area screenlines in the AM peak hour and three of the four Study Area screenlines in the PM peak hour. However, Project-related transit trips would cause the Study Area northeast screenline to exceed Muni's capacity utilization standard of 85 percent in the outbound (toward Parkmerced) direction during the PM Peak Hour. This would be a significant Project impact.

Providing additional capacity by adding an additional car to the M Ocean View line during the PM peak hour would allow the M Ocean View line to operate under 85 percent capacity utilization. There are two ways in which this might be accomplished. One way would be to add another train, decreasing the headways of the M Ocean View. However, based on initial conversations with SFMTA staff, the subway along Market Street currently operates at capacity during peak hours and additional trains cannot be added. A second way to increase capacity would be to add a third car to some of the M Ocean View trains during the PM peak hour; they currently operate as two-car trains during peak hours. While a three-car train can be served in the subway, the surface level stations are not currently configured to serve a three-car train. The cost associated with upgrading the stations along the M Ocean View line to serve three-car trains would be substantial, and in some locations, space may not be physically available.

Adding an additional train run during the PM peak hour is not feasible due to capacity constraints in the Market Street Subway. The cost of retrofitting all existing surface platforms to serve three-car trains on the M Ocean View line far exceeds the reasonable capability and responsibility of the Project Sponsor, and would represent a series of improvements for which no fair share funding mechanism has been established. Therefore, the Proposed Project's impact to capacity utilization on the Study Area northeast screenline would be significant and unavoidable.

Impact TR-13: Implementation of the Project Variant would result in significant impacts on to the same Muni Study Area Screenlines as identified in Impact TR-12 for the Proposed Project. (*Significant and Unavoidable*)

The Project Variant would not change travel demand or transit capacity at Study Area screenlines, compared to the Proposed Project. Therefore, with implementation of the Project Variant, the Project Variant's impacts to the Study Area northeast screenline would be identical to the Proposed Project and would remain significant and unavoidable.

Table V.E.17: Muni Study Area Screenline Ridership and Capacity Utilization

Screenline/Line	Existing Conditions			Project Conditions			2030 Cumulative Conditions		
	Ridership	Capacity	Utilization	Ridership	Capacity	Utilization	Ridership	Capacity	Utilization
AM Peak Hour									
Inbound (Leaving Parkmerced)									
North Screenline	724	1,323	55%	740	1,323	56%	998	1,296	77%
Northeast Screenline	1,038	1,666	62%	1,132	1,666	68%	1,320	1,212	109%
East Screenline	399	2,044	20%	399	1,211	33%	557	1,254	44%
South Screenline	96	756	13%	96	756	13%	174	432	40%
Outbound (Toward Parkmerced)									
North Screenline	665	1,188	56%	673	1,188	57%	945	1,350	70%
Northeast Screenline	363	1,414	26%	399	1,414	28%	581	1,212	48%
East Screenline	550	1,738	32%	550	1,031	53%	737	1,254	59%
South Screenline	421	648	65%	429	648	66%	499	432	116%

Table V.E.17 (Continued)

Screenline/Line	Existing Conditions			Project Conditions			2030 Cumulative Conditions		
	Ridership	Capacity	Utilization	Ridership	Capacity	Utilization	Ridership	Capacity	Utilization
PM Peak Hour									
Inbound (Leaving Parkmerced)									
North Screenline	548	810	68%	577	810	71%	734	918	80%
Northeast Screenline	796	1,212	66%	911	1,212	75%	1,145	1,212	94%
East Screenline	772	1,684	46%	773	977	79%	760	930	82%
South Screenline	184	324	57%	192	324	59%	342	324	106%
Outbound (Toward Parkmerced)									
North Screenline	676	918	74%	717	918	78%	851	972	88%
Northeast Screenline	1,194	1,414	84%	1,359	1,414	96%	1,547	1,212	128%
East Screenline	526	1,590	33%	526	984	53%	572	930	62%
South Screenline	131	378	35%	131	378	35%	264	378	70%

Notes: **Bold** indicates screenlines that exceed Muni's 85 percent capacity utilization standard.

Source: Muni, 2008 and Fehr & Peers, 2010

Impact TR-14: Implementation of the sub-variant, either in conjunction with the Proposed Project or the Project Variant, would result in significant impacts on the same Muni Study Area Screenlines as identified in Impact TR-12 for the Proposed Project. (*Significant and Unavoidable*)

The sub-variant would not change travel demand or transit capacity at Study Area screenlines. Therefore, with implementation of the sub-variant, either in conjunction with the Proposed Project or the Project Variant, the Project and Project Variant's impacts to the Study Area northeast screenline would be identical to the Proposed Project and would remain significant and unavoidable.

Impact TR-15: Implementation of the Proposed Project would add transit trips to the Downtown Screenlines, but would not increase demands in excess of available capacity. (*Less than Significant*)

Table V.E.18 summarizes the capacity utilization for the downtown screenlines for the AM and PM peak hours for existing and Project conditions as well as cumulative conditions. The Proposed Project would only add riders through the southwest Downtown screenline. Riders would only be added to this screenline in the peak-direction. Ridership on other screenlines would remain unchanged. With the addition of Project trips, all Downtown screenlines would continue to operate within Muni's 85 percent utilization standard. Therefore, Proposed Project impacts on transit capacity utilization at the Downtown Screenlines would be less than significant, and no mitigation measures are required.

Impact TR-16: Implementation of the Project Variant would add transit trips to the Downtown Screenlines, but would not increase demands in excess of available capacity. (*Less than Significant*)

The Project Variant would not affect travel demand or transit capacity at Study Area screenlines, compared to the Proposed Project. Therefore, with implementation of the Project Variant, the Project Variant's impacts on Muni's Downtown Screenlines would be identical to the Proposed Project and would remain less than significant. No mitigation measures are required.

Impact TR-17: Implementation of the sub-variant, either in conjunction with the Proposed Project or the Project Variant, would add transit trips to the Downtown Screenlines, but would not increase demands in excess of available capacity. (*Less than Significant*) (Criteria E.f,E.h)

The sub-variant would not affect travel demand or transit capacity at the Downtown Screenlines. Therefore, with implementation of the sub-variant, either in conjunction with the Proposed Project or the Project Variant, the impacts on Muni's Downtown Screenlines would be identical to the Proposed Project and would remain less than significant. No mitigation measures are required.

Table V.E.18: Muni Downtown Screenline Ridership and Capacity Utilization

	Existing			Existing plus Project			2030 Cumulative Conditions		
	Riders	Capacity	% Utilization	Project Trips	Total Riders	% Utilization	Ridership	Capacity	% Utilization
AM Peak Hour									
Northeast	1,882	3,781	50%	0	1,882	50%	2,629	3,857	68%
Northwest	7,434	11,437	65%	0	7,434	65%	8,199	11,983	68%
Southwest	4,248	6,301	67%	0	4,248	67%	7,172	10,197	70%
Southeast	6,627	8,699	76%	112	6,739	77%	7,216	10,045	72%
Total	20,191	30,218	67%	112	20,303	67%	25,216	36,082	70%
PM Peak Hour									
Northeast	1,886	3,599	52%	0	1,886	52%	2,643	4,699	56%
Northwest	6,621	10,123	65%	0	6,621	65%	7,413	11,612	64%
Southwest	4,668	7,028	66%	0	4,668	66%	7,856	9,940	79%
Southeast	7,434	9,623	77%	157	7,591	79%	8,408	10,703	79%
Total	19,909	30,373	66%	157	20,143	66%	26,320	36,954	71%

Source: Fehr & Peers, 2009

Impact TR-18: Implementation of the Proposed Project would add transit trips to the Regional Screenlines, but would not increase demands in excess of available capacity and would not contribute significantly to Regional Screenlines where overall ridership is projected to exceed available capacity. (*Less than Significant*)

Project transit improvements would not affect the capacity of the Regional Screenlines; however, a portion of the net increase in transit trips from the Proposed Project would cross the South Bay screenline and contribute to total ridership at this location. Table V.E.19 summarizes the capacity utilization for the regional transit provider screenlines for the AM and PM peak hours for existing, existing plus Project, and 2030 cumulative conditions.

The Proposed Project would contribute ridership increases to regional transit to and from the South Bay. The South Bay Regional Screenline would operate within the 100 percent capacity utilization standard for regional transit operators.

The East Bay Regional Screenline would operate above the 100 percent capacity utilization in the AM and PM peak hours. This is primarily due to overcrowding on BART, which has a 115 percent capacity utilization standard. However, as summarized in the Transportation Study, due to changes in geographical trip distribution and transit mode share compared to existing travel from the Parkmerced site, the Proposed Project may actually decrease overall ridership on the East Bay Regional Screenline. To be conservative, the analysis assumes no net increase to the East Bay Regional Screenline. The Proposed Project would not contribute to increases in capacity utilization on the East Bay Regional Screenline. Therefore, the Proposed Project's impacts to regional transit capacity would be less than significant, and no mitigation measures are required.

Impact TR-19: Implementation of the Project Variant would add transit trips to the Regional Screenlines, but would not increase demands in excess of available capacity. (*Less than Significant*)

The Project Variant would not affect travel demand or transit capacity at Regional Screenlines, compared to the Proposed Project. Therefore, with implementation of the Project Variant, the Project Variant's impacts to Regional Screenlines would be identical to the Proposed Project and would remain less than significant. No mitigation measures are required.

Table V.E.19: Regional Screenline Ridership and Capacity Utilization

Screenline/Operator	Existing			Project Conditions			2030 Cumulative Conditions			
	Ridership	Capacity	Utilization	Ridership	Capacity	Utilization	Ridership	Capacity	Utilization	
AM Peak Hour¹										
<i>East Bay</i>										
BART	18,064	14,700	123%	18,064	14,700	123%	35,113	19,600	179%	
AC Transit	1,670	3,058	55%	1,670	3,058	55%	3,246	5,500	59%	
Ferries	667	1,186	56%	667	1,186	56%	1,912	2,386	80%	
Subtotal	20,401	18,944	108%	20,401	18,944	108%	40,271	27,486	147%	
<i>North Bay</i>										
GGT Bus	1,510	2,655	57%	1,510	2,655	57%	2,564	2,475	104%	
Ferries	949	1,700	56%	949	1,700	56%	1,612	1,700	95%	
Subtotal	2,459	4,355	56%	2,459	4,355	56%	4,176	4,175	100%	
<i>South Bay</i>										
BART	11,185	10,640	105%	11,302	10,640	106%	11,861	14,000	85%	
Caltrain	2,128	3,250	65%	2,128	3,250	65%	4,374	6,400	68%	
SamTrans	686	1,060	65%	686	1,060	65%	785	1,060	74%	
Subtotal	13,999	14,950	94%	14,116	14,950	94%	17,020	21,460	79%	
Total All AM Screenlines	36,859	38,249	96%	36,976	38,249	97%	61,467	53,121	116%	
PM Peak Hour²										
<i>East Bay</i>										
BART	16,985	14,140	120%	16,985	14,140	120%	29,348	19,600	150%	
AC Transit	2,517	4,193	60%	2,517	4,193	60%	4,349	6,600	66%	
Ferries	702	1,519	46%	702	1,519	46%	2,081	2,719	77%	
Subtotal	20,204	19,852	102%	20,204	19,852	102%	35,779	28,919	124%	

Table V.E.19 (Continued)

Screenline/Operator	Existing			Project Conditions			2030 Cumulative Conditions			
	Ridership	Capacity	Utilization	Ridership	Capacity	Utilization	Ridership	Capacity	Utilization	
<i>North Bay</i>										
GGT Bus	1,397	2,205	63%	1,397	2,205	63%	2,457	2,205	111%	
Ferries	906	1,700	53%	906	1,700	53%	1,594	1,700	94%	
Subtotal	2,303	3,905	59%	2,303	3,905	59%	4,051	3,905	104%	
<i>South Bay</i>										
BART ¹	9,545	10,360	92%	9,718	10,360	94%	10,195	14,000	73%	
Caltrain	1,986	3,250	61%	1,986	3,250	61%	3,925	6,400	61%	
SamTrans	575	940	61%	575	940	61%	396	940	42%	
Subtotal	12,106	14,550	83%	12,279	14,550	84%	14,516	21,340	68%	
Total All PM Screenlines	34,613	38,307	90%	34,786	38,307	91%	54,346	54,164	100%	

Notes:

1. AM peak hour ridership includes trips originating from stations within San Francisco but outside of Downtown (16th Street /Mission, 24th Street/Mission, Glen Park, and Balboa Park). Although these trips do not originate in the South Bay, they pass through the MLP (Civic Center).
2. PM peak hour ridership includes trips bound for stations within San Francisco but outside of Downtown (16th Street/Mission, 24th Street/Mission, Glen Park, and Balboa Park). Although these trips are not bound for the South Bay, they pass through the MLP (Civic Center).

Shading indicates screenlines that exceed capacity utilization standard.

Source: BART, 2008; AC Transit, 2008; WETA, 2008; GGBHTD, 2008; Caltrain, 2008; SamTrans, 2008; Fehr & Peers, 2009.

Impact TR-20: Implementation of the sub-variant, either in conjunction with the Proposed Project or the Project Variant, would add transit trips to the Regional Screenlines, but would not increase demands in excess of available capacity. (*Less than Significant*)

The sub-variant would not affect travel demand or transit capacity at Regional Screenlines. Therefore, with implementation of the sub-variant, either in conjunction with the Proposed Project or the Project Variant, the impacts to Regional Screenlines would be identical to the Proposed Project and would remain less than significant. No mitigation measures are required.

Impact TR-21: The Proposed Project would reroute the M Ocean View light rail line into the Project Site, extending its route and imparting an additional five minutes of travel time to complete each run. Without additional light rail vehicles, Muni could not operate this longer route at current headways. (*Significant and Unavoidable with Mitigation*)

If the M Ocean View route is made longer, via the proposed extension of the route into the Project Site, Muni would not be able to maintain the existing or planned spacing between vehicles (i.e., headways) unless additional vehicles were purchased. Longer headways would reduce transit capacity, resulting in a significant impact on transit.

Mitigation measure M-TR-21A would require an additional vehicle for the M Ocean View light rail line to allow maintenance of existing and proposed vehicle spacing over a longer route. Mitigation measure M-TR-21B would implement Transit Signal Priority (TSP) treatments to improve travel times on the M Ocean View, potentially lessening the need for M-TR-21A. Implementing either Mitigation Measure M-TR-21A or M-TR-21B would allow Muni to maintain transit headways, and would reduce the Proposed Project's impact to less than significant levels.

M-TR-21A: Purchase an additional light rail vehicle for the M Ocean View. Purchase and insert another light-rail vehicle into the system in order to maintain headways. This will allow Muni to maintain proposed headways on the M Ocean View with a slightly longer route. The procurement of new light rail vehicles shall be completed by SFMTA, and shall be completed prior to operating the rerouted system. However, new transit vehicles required to serve the Proposed Project shall not be the financial responsibility of SFMTA.

M-TR-21B: Install Transit Signal Priority (TSP) treatments to improve transit travel times on the M Ocean View such that M-TR-21A (an additional vehicle) is not required. A study shall be conducted to determine whether TSP treatments could improve transit travel times along the M Ocean View corridor. If feasible, implement Transit Signal Priority (TSP) measures along the M Ocean View corridor between the Project Site and the West Portal Station. To reduce the Proposed Project's impact to the M Ocean View line, the TSP measures would need to improve the travel time by approximately 50 seconds in the AM peak period and 30 seconds in the PM peak period.

Achieving these reductions would reduce the Project's impact to travel time to less than half the headway of the current M Ocean View. SFMTA and Caltrans shall design and implement the measure prior to operating the rerouted system; however, SFMTA and Caltrans are not financially responsible for funding this improvement or the study of its feasibility.

Implementing either Mitigation Measure M-TR-21A or M-TR-21B would allow Muni to maintain transit headways, and would reduce the Proposed Project's impact to less-than-significant levels. However, Mitigation Measure M-TR-21B would be preferable because it would not only allow Muni to maintain transit headways, but would also improve travel times for riders. Implementation of mitigation measures above that would require discretionary approval actions by the SFMTA or other public agencies is considered uncertain because public agencies subject to CEQA cannot commit to implementing any part of a proposed project, including proposed mitigation measures, until environmental review is complete. Thus, while the SFMTA has reviewed the feasibility of several mitigation measures proposed to address significant impacts, implementation of these measures cannot be assured until after certification of this EIR. Because M-TR-21B requires a feasibility study, and it is unknown whether M-TR-21A or M-TR-21B would be implemented, Project-related impacts on the M Ocean View in the AM and PM peak hours would be significant and unavoidable.

Impact TR-22: Implementation of the Proposed Project would contribute traffic to existing traffic volumes at intersections along the Lake Merced Boulevard corridor, which would increase travel times and impact operations of the 18 46th Avenue bus line. (*Significant and Unavoidable with Mitigation*)

Project-related transit delays due to congestion on Study Area roadways and passenger loading delays associated with increased ridership would result in significant impacts on the operation of the 18 46th Avenue bus line. Within the Study Area, the route would experience substantial delays along a key corridor — Lake Merced Boulevard. Overall, Project-related congestion would add up to 15 minutes of delay per bus during the AM peak hour and over 30 minutes of delay per bus during the PM peak hour. This roundtrip delay would be incurred along Lake Merced Boulevard starting at John Muir Boulevard and continuing through several intersections to Winston Drive and then returning through the same intersections. This would necessitate an additional vehicle in the AM peak hour and two additional vehicles in the PM peak hour. This would be a significant impact in the AM and PM peak hours.

The 18 46th Avenue route may be changed as part of the TEP and could be unaffected if it were no longer to traverse the Project area. Since the 17 Parkmerced is expected to take over part of the 18 46th Avenue route, the 17 Parkmerced route would be impacted in the same fashion as described herein for the 18 46th Avenue. For purposes of this EIR, the 18 46th Avenue route is discussed.

Mitigation measure M-TR-22A would construct the intersection improvements described in M-TR-2C (a dedicated northbound right-turn lane at the Lake Merced Boulevard/Winston Drive intersection), M-TR-2D (reconfiguring the northbound approach to consist of a third through lane and also providing a second southbound left-turn lane at the Lake Merced Boulevard/Font Boulevard intersection), and M-TR-2E (reconfiguring the westbound right-turn and southbound left-turn movements at the Lake Merced Boulevard/Brotherhood Way intersection to be the primary movements) to improve transit travel times. Mitigation measure M-TR-22B would involve constructing a transit-only queue jump lane on Lake Merced Boulevard at Font Boulevard and southbound queue jump lanes on Lake Merced Boulevard at State Drive and Font Boulevard. Mitigation measure M-TR-22C would require the purchase of additional vehicles to maintain proposed headways in a more congested environment.

M-TR-22A: Construct intersection mitigations to reduce congestion caused by vehicular delay. To address Project impacts to the 18 46th Avenue, the Project Sponsor in cooperation with SFMTA shall implement the improvements described in mitigation measures M-TR-2C (construct a dedicated northbound right-turn lane at the Lake Merced Boulevard/Winston Drive intersection), M-TR-2D (reconfigure the northbound approach to consist of a third through lane and provide a second southbound left-turn lane at the Lake Merced Boulevard/Font Boulevard intersection), and M-TR-2E (Reconfigure the westbound right-turn and southbound left-turn as the primary movements of the Lake Merced Boulevard/Brotherhood Way intersection). This involves lane modifications at several intersections along Lake Merced Boulevard to increase vehicular capacity, thus reducing approach delay at those intersections.

M-TR-22B: Maintain the proposed headways of the 18 46th Avenue. The Project Sponsor in cooperation with SFMTA shall conduct a study to evaluate the effectiveness and feasibility of the following improvements which could reduce Project impacts on transit operations along the Lake Merced Boulevard corridor, generally between Brotherhood Way and Winston Drive. The study shall create a monitoring program to determine the implementation extent and schedule (as identified below) to maintain the proposed headways of transit lines impacted by the Project.

- A transit-only queue-jump lane should be considered on Lake Merced Boulevard at Font Boulevard. This treatment could be constructed within the existing curb-to-curb right of way for the northbound direction.
- Southbound queue-jumps are viable at State Drive and Font Boulevard with removal of on-street parking. However, these treatments may conflict with mitigation measures M-TR-2C, M-TR-2D, and M-TR-2E (collectively summarized in M-TR-22A), which have been designed to reduce the Project's traffic impacts.

These improvements would collectively benefit not only the 18 46th Avenue prior to the TEP improvements, but also SamTrans Route 122, and the proposed "shopper shuttle."

SFMTA shall design and implement the measure as necessary; however, SFMTA is not financially responsible for funding this improvement or the study of its feasibility. The

Project Sponsor shall fully fund the costs of implementing the transit priority improvements (either the improvements identified above, or alternative improvements of equal or greater effectiveness and comparable cost) as determined by the study and the monitoring program. Other options to be evaluated in the study could include comprehensive replacement of stop-controlled intersections with interconnected traffic signals equipped with transit priority elements.

M-TR-22C: Purchase additional transit vehicles as necessary to mitigate the Project impacts to headways on the 18 46th Avenue. Should mitigation measures M-TR-22A or M-TR-22B not be feasible or effective, the Project Sponsor shall work with SFMTA to purchase additional transit vehicles and contribute to operating costs and facility improvements as necessary to mitigate the Project impacts to headways for the transit line. While this mitigation measure would allow headways to be maintained, it does not mitigate the transit travel time delay. The procurement of new transit vehicles shall be completed by SFMTA. However, new transit vehicles required to serve the Proposed Project shall not be the financial responsibility of SFMTA.

Implementation of mitigation measures above that would require discretionary approval actions by the SFMTA or other public agencies is considered uncertain because public agencies subject to CEQA cannot commit to implementing any part of a proposed project, including proposed mitigation measures, until environmental review is complete. Thus, while the SFMTA has reviewed the feasibility of several mitigation measures proposed to address significant impacts, implementation of these measures cannot be assured until after certification of this EIR.

Implementation of M-TR-22A would improve conditions, but alone would not likely reduce transit peak hour travel times enough to reduce the Project's impact during the AM and PM peak hours to less-than-significant levels. Therefore, with implementation of mitigation measure M-TR-22A alone, the Project's impact to the 18 46th Avenue bus line in the AM and PM peak hour would remain significant. Further, since the implementation of mitigation measure M-TR-22B is uncertain (due to the need for further study and the conflict with mitigation measures M-TR-2C, M-TR-2D, and M-TR-2E), its feasibility is uncertain. In addition, implementation of M-TR-22C alone, without M-TR-22A or M-TR-22B, may not be sufficient to reduce impacts to less than significant levels. Therefore, Project-related impacts on this route would be significant and unavoidable.

Impact TR-23: Implementation of the Proposed Project would contribute traffic to existing traffic volumes at intersections along the 19th Avenue corridor, which would increase travel times and affect operations of the 17 Parkmerced.
(Significant and Unavoidable with Mitigation)

Project-related transit delays due to congestion on Study Area roadways and passenger loading delays associated with increased ridership would result in significant impacts on the operation of the 17 Parkmerced bus route. Within the Study Area, the route would experience substantial delays along a key corridor – 19th Avenue, between Holloway Avenue and Winston Drive.

Overall, Project-related congestion would add up to 7 minutes of delay per bus during the PM peak hour, which would necessitate an additional vehicle in the PM peak hour. This would be a significant impact in the PM peak hour.

The 18 46th Avenue route may be changed as part of the TEP and the 17 Parkmerced is expected to take over part of the 18 46th Avenue route. Under those circumstances, impacts described previously for the 18 46th Avenue would apply to the 17 Parkmerced. For purposes of this EIR, the current route was evaluated.

Mitigation measure M-TR-23 would involve implementing transit-only lanes on 19th Avenue between Holloway Avenue and Winston Drive.

M-TR-23: Maintain the proposed headways of the 17 Parkmerced. The Project Sponsor in cooperation with SFMTA and Caltrans shall conduct a study to evaluate the effectiveness and feasibility of implementing transit-only lanes along the length of 19th Avenue between Holloway Avenue and Winston Drive. If feasible, the transit lanes shall be installed. SFMTA and Caltrans shall design and implement the measure as necessary; however, SFMTA and Caltrans are not financially responsible for funding this improvement or the study of its feasibility.

Implementation of mitigation measure M-TR-23 would require substantial study and public outreach, and would result in secondary traffic impacts associated with the removal of a mixed-flow traffic lane. Further, implementation of mitigation measures that would require discretionary approval actions by the SFMTA or other public agencies is considered uncertain because public agencies subject to CEQA cannot commit to implementing any part of a proposed project, including proposed mitigation measures, until environmental review is complete. Thus, while the SFMTA has reviewed the feasibility of several mitigation measures proposed to address significant impacts, implementation of this measure cannot be assured until after certification of this EIR. This measure would also require approval by Caltrans, which is responsible for improvements to this section of 19th Avenue. Because of the amount of additional study required and the multiple jurisdictions that would be required to adopt it, its feasibility is uncertain. Therefore, Project-related impacts on this route would remain significant and unavoidable.

Impact TR-24: Implementation of the Proposed Project would contribute traffic to existing traffic volumes at intersections along the 19th Avenue corridor, which would increase travel times and affect operations of the 28 19th Avenue and 28L 19th Avenue Limited. (*Significant and Unavoidable with Mitigation*)

Project-related transit delays due to congestion on Study Area roadways and passenger loading delays associated with increased ridership would result in significant impacts on the operation of the 28 19th Avenue and 28L 19th Avenue Limited bus lines. Within the Study Area, the routes would experience substantial delays along 19th Avenue. Overall, Project-related congestion would add up to 9 minutes of delay per bus during the PM peak hour. This delay would

necessitate one additional vehicle for the 28 19th Avenue and one additional vehicle for the 28L 19th Avenue Limited in the PM peak hour. The Proposed Project's impact to the 28 19th Avenue and 28L 19th Avenue Limited routes would be significant in the PM peak hour.

Mitigation measure M-TR-24 would implement the Project Variant (i.e., would convert the fourth southbound lane on 19th Avenue to a HOT lane), and would improve transit travel times on the 28 19th Avenue lines.

M-TR-24: Implement the Project Variant (i.e., conversion of the fourth southbound lane to high-occupancy vehicle, toll, and transit-only use). Converting the fourth southbound lane on 19th Avenue proposed by the Project to a "HOT" lane would improve travel times on the 28 19th Avenue. Conditions with this treatment in place are discussed under Impact TR-27. Implementation of M-TR-24 would preclude implementation of M-TR-5.

Implementation or mitigation measure M-TR-24 (i.e., implement the Project Variant) would improve transit travel times on the 28 19th Avenue and 28 19th Avenue Limited. However, because implementation of the Project Variant is uncertain, this mitigation measure may not be feasible. Thus, the Project's impacts to the 28 19th Avenue and 28 19th Avenue Limited in the PM peak hour would remain significant and unavoidable.

Impact TR-25: Implementation of the Proposed Project would contribute traffic to existing traffic volumes at intersections along the Sunset Boulevard, Lake Merced Boulevard, Winston Drive, and 19th Avenue corridors, which would increase travel times and affect operations of the 29 Sunset. (*Significant and Unavoidable with Mitigation*)

Project-related transit delays due to congestion on Study Area roadways and passenger loading delays associated with increased ridership would result in significant impacts to the operation of the 29 Sunset bus line. Within the Study Area, the route would experience substantial delays along key corridors – Sunset Boulevard, Lake Merced Boulevard, Winston Drive, and 19th Avenue. Overall, Project-related congestion would add up to 8 minutes of delay per bus during the PM peak hour. This delay would necessitate an additional vehicle in the PM peak hour. The Proposed Project's impact to the 29 Sunset line would be significant in the PM peak hour.

Mitigation measure M-TR-25A is the same as M-TR-23, which addresses transit improvements along 19th Avenue from Holloway Avenue to Winston Drive. Mitigation measure M-TR-25B would involve transit priority treatments along Lake Merced Boulevard, between Winston Drive and Sunset Boulevard. Mitigation measure M-TR-25C would require the purchase of additional vehicles to maintain proposed headways in a more congested environment.

M-TR-25A: Implement mitigation measure M-TR-23 which addresses transit improvements (i.e. transit-only lanes) along 19th Avenue from Holloway Avenue to Winston Drive.

M-TR-25B: Maintain the proposed headways of the 29 Sunset. The Project Sponsor in cooperation with SFMTA shall conduct a study to evaluate the effectiveness and feasibility of installing transit priority elements along Lake Merced Boulevard, between Winston Drive and Sunset Boulevard. This may include, but is not limited to, queue-jump lanes and transit-only lanes. SFMTA shall design and implement the measure as necessary; however, SFMTA is not financially responsible for funding this improvement or the study of its feasibility. The Project Sponsor shall fully fund the costs of implementing the transit priority improvements (either the improvements identified above, or alternative improvements of equal or greater effectiveness and comparable cost) as determined by the study and the monitoring program.

M-TR-25C: Purchase additional transit vehicles as necessary to mitigate the Project impacts to headways on the 29 Sunset. Should mitigation measures M-TR-25A or M-TR-25B not be feasible or effective, the Project Sponsor shall work with SFMTA to purchase additional transit vehicles and contribute to operating costs and facility improvements as necessary to mitigate the Project impacts to headways for the transit line. The procurement of new transit vehicles shall be completed by SFMTA. However, new transit vehicles required to serve the Proposed Project shall not be the financial responsibility of SFMTA

Implementation of mitigation measures above that would require discretionary approval actions by the SFMTA or other public agencies is considered uncertain because public agencies subject to CEQA cannot commit to implementing any part of a proposed project, including proposed mitigation measures, until environmental review is complete. Thus, while the SFMTA has reviewed the feasibility of several mitigation measures proposed to address significant impacts, implementation of these measures cannot be assured until after certification of this EIR.

Implementation of M-TR-25A alone would not likely reduce transit peak hour travel times enough to eliminate the need for an additional transit vehicle in the PM peak hour. Implementation of mitigation measure M-TR-25B or a combination of the two mitigation measures could reduce the impacts on the 29 Sunset bus line to a less-than-significant level. However, SFMTA has not determined the feasibility of these mitigation measures. In addition, implementation of M-TR-25C alone, without M-TR-25A or M-TR-25B, may not be sufficient to reduce impacts to less than significant levels. Therefore, Project-related impacts on this route would remain significant and unavoidable.

Impact TR-26: Implementation of the Proposed Project would contribute traffic to existing traffic volumes at intersections along the Lake Merced Boulevard corridor, which would increase travel times and affect operations of a SamTrans bus line along this facility. (*Significant and Unavoidable with Mitigation*)

Project-related transit delays due to congestion on Study Area roadways and passenger loading delays associated with increased ridership would result in significant impacts on the operation of SamTrans Route 122. Within the Study Area, SamTrans Route 122 would experience substantial delays at key intersections along Lake Merced Boulevard, including at Brotherhood Way, Higuera Avenue, and Font Boulevard. Overall, the Project-related congestion would add up to 10 minutes of delay per bus during the AM peak hour and over 15 minutes of delay per bus in the PM peak hour. This would be a significant impact in the AM and PM peak hours.

Mitigation measure M-TR-26 includes mitigation measures M-TR-22A (lane modifications to several intersections along Lake Merced Boulevard) and M-TR-22B (implementation of transit priority and queue jump treatments on Lake Merced Boulevard).

M-TR-26: Maintain proposed headways on SamTrans Route 122. To address Project impacts to SamTrans Route 122, implement mitigation measures M-TR-22A (lane modifications at several intersections along Lake Merced Boulevard) and M-TR-22B (implementation of transit priority and queue-jump treatments on Lake Merced Boulevard).

Since SamTrans Route 122 shares a route with the 18 46th Avenue, improvements designed to reduce travel time impacts to the 18 46th Avenue would also benefit SamTrans Route 122.

Implementing mitigation measure M-TR-26 would reduce the Project impact to a less-than-significant level. However, as described in the discussion of mitigation measures M-TR-22A and M-TR-22B, feasibility of these measures is uncertain. Therefore, Project-related impacts on SamTrans Route 122 in the AM and PM peak hours would be significant and unavoidable.

Impact TR-27: Implementation of the Project Variant would contribute traffic to existing traffic volumes at intersections along key transit corridors, which would cause congestion and increase travel times and impact operations of transit lines. The Project Variant would have the same significant impacts as identified for the Proposed Project in Impacts TR-21 to TR-26. (*Significant and Unavoidable with Mitigation*)

The Project Variant's impacts on transit travel times would be identical to those of the Proposed Project, except for those routes that travel along 19th Avenue. Transit currently experiences delay along the 19th Avenue corridor due to congestion, which is forecasted to increase with the Proposed Project. The HOT lane proposed as part of the Project Variant would provide three major benefits to transit operations: decreased travel time, increased reliability, and decreased operating costs. The HOT lane would improve transit running times along the Proposed Project

frontage. The reduced single-occupancy vehicle utilization of the HOT lane would provide more efficient transit service due to reduced approach delay, faster travel speeds, and less conflicting traffic when entering the flow of traffic from a bus stop. However, the improvements to transit travel times would be relatively moderate, primarily due to the relatively short length of the HOT lane treatment.

Although transit impacts to lines serving 19th Avenue would be slightly reduced compared to the Proposed Project, the Project Variant's impact to travel times would remain significant and unavoidable.

Impact TR-28: Implementation of the sub-variant, either in conjunction with the Proposed Project or the Project Variant, would contribute traffic to existing traffic volumes at intersections along key transit corridors, which would cause congestion and increase travel times and impact operations of transit lines. With implementation of the sub-variant, the Proposed Project and Project Variant would have the same significant impacts as identified for the Proposed Project in Impacts TR-21 to TR-26. (*Significant and Unavoidable with Mitigation*)

The sub-variant would not change travel demand or result in substantial changes to traffic congestion in the Study Area compared to the Proposed Project. Under conditions with the Project Variant and implementation of the sub-variant, traffic turning right into Cambon Drive from southbound 19th Avenue would interfere with transit and traffic flow in the HOT lane, reducing its benefits. Improvement measure I-TR-7, which would provide a dedicated southbound right-turn lane into Cambon Drive, would ensure that traffic turning into the Project Site did not affect speeds in the HOT lane, allowing the HOT lane to achieve its maximum travel time advantage. However, this improvement measure would not be necessary to mitigate significant impacts, because the HOT lane would not reduce significant impacts on transit operations to less-than-significant levels.

With implementation of the sub-variant, either in conjunction with the Proposed Project or the Project Variant, the impacts to transit travel times would be nearly identical to the Proposed Project or Project Variant, and would remain significant and unavoidable.

Impact TR-29: As part of implementation of the Proposed Project (with or without the proposed sub-variant) or Project Variant (with or without the proposed sub-variant), bicycle facilities within the Project Site would be constructed to serve additional users. (*Less than Significant*)

The street network for the Proposed Project would not preclude any proposed bicycle network improvements identified in the San Francisco Bicycle Plan. No official City bicycle routes are proposed to run through the Project Site, but all roadways within the Project Site are proposed, at a minimum, to be shared facilities for both vehicles and bicycles.

A number of existing and proposed Study Area roadways would include bicycle facilities in the form of bicycle lanes (Class II facilities) or signed routes (Class III facilities – e.g., roadways with shared use arrow designations) that would facilitate bicycling within and in the vicinity of the Proposed Project.

A new Class I facility is proposed to connect to the Lake Merced Class I facility (Route 85) via the Lake Merced Boulevard/Gonzalez Drive intersection. This would travel through the Project Site along Gonzalez Drive until it reaches the proposed new transit center in the northeast corner of the Project Site. A Class II facility is proposed to run north-south along an internal roadway on the western side of the Project Site.

Overall, bicycle access and the environment for bicycling would improve within and in the vicinity of the Project Site. Further, as shown in Table V.E.6, the entire Parkmerced site would generate less than 300 bicycle trips per hour during peak hours. These trips would be dispersed among several bicycle facilities providing access to and within the Project Site. However, even if most of these bicycle trips were to use a single bicycle facility, bicycle volumes exceeding 200 riders per hour are common in San Francisco. For example, a recent study of Valencia Street, which is considered a desirable facility, identified a peak hour ridership of 215 bicycles per hour.¹⁷ Therefore, the bicycle facilities within the Proposed Project Site would be adequate to meet the bicycling demand associated with the Proposed Project uses.

With implementation of the auxiliary lanes proposed on Brotherhood Way at the Junipero Serra Boulevard interchange, bicyclists would merge across the lane where drivers would not expect to have to yield. This would be an undesirable configuration for cyclists compared to the existing conditions; however, the roadway configuration would be consistent with the Highway Design Manual Chapter 1000 – Bikeway Planning and Design (Caltrans, 2006), and therefore would be a less than significant impact. No mitigation measures are required.

Bicycle conditions with implementation of the Project Variant would be identical to conditions with implementation of the Proposed Project. Implementation of the sub-variant, either in conjunction with the Proposed Project or the Project Variant, would create a new access location to the Project Site from southbound 19th Avenue at Cambon Drive. Introducing a new driveway would introduce a new point of conflict for bicycles, but if properly designed, the impact of this new conflict point would be less than significant.

Improvement measure I-TR-29 would install colored bike lane treatments to direct cyclists through the Brotherhood Way/Junipero Serra Boulevard interchange by raising auto awareness of

¹⁷ San Francisco Department of Parking And Traffic; 2000; Sallaberry, Michael. *Valencia Street Bicycle Lanes – A One Year Evaluation*.

bicycles. Implementation of improvement measure I-TR-29 would improve conditions for bicyclists at the Brotherhood Way/Junipero Serra Boulevard interchange. Regardless, the impact would be less than significant, and no mitigation is required.

I-TR-29: Install colored bike lanes to direct cyclists through the Brotherhood Way/Junipero Serra Boulevard interchange and raise auto awareness of bicycles.

This improvement measure may not achieve the same level of comfort for cyclists that exists under current conditions, but it would improve conditions with implementation of the auxiliary lanes.

Implementation of this improvement measure would require approval by Caltrans, which operates the facility. Therefore, because implementation of this improvement measure would require approval by another agency, the feasibility of implementing this improvement measure is uncertain.

Implementation of improvement measure I-TR-29 would improve conditions for bicyclists at the Brotherhood Way/Junipero Serra Boulevard interchange. Regardless, the impact is considered less than significant, and no mitigation is required.

Impact TR-30: As part of implementation of the Proposed Project (with or without the proposed sub-variant) or Project Variant (with or without the proposed sub-variant), pedestrian facilities within the Project Site would be constructed to serve additional users. (*Less than Significant*)

The Proposed Project would provide enhancements to pedestrian facilities internal and external to the Project Site.

External Pedestrian Improvements

Proposed enhancements to the 19th Avenue/Holloway Avenue, 19th Avenue/Crespi Drive, Junipero Serra Boulevard/19th Avenue, Junipero Serra Boulevard/Chumasero Drive, Junipero Serra Boulevard/Brotherhood Way, Brotherhood Way/Chumasero Drive, Lake Merced Boulevard/Brotherhood Way, Lake Merced Boulevard/Higuera Avenue intersections and the proposed new intersections along Lake Merced Boulevard would improve the pedestrian environment by providing pedestrian bulb-outs, removing uncontrolled traffic movements, setting traffic signals to automatically call WALK phases without the need for pedestrian pushbuttons, and improving aesthetic conditions (see *19th Avenue Corridor Study*, February 12, 2010). These improvements would shorten pedestrian crossing times, could result in reduced motorist speeds, and would make the pedestrian environment more visible to motorists. However, a fourth southbound through lane is proposed along 19th Avenue. This may be considered a qualitative decline in the pedestrian environment for pedestrians using crosswalks along this segment of 19th

Avenue. However, sufficient crossing time would be provided in accordance with SFMTA pedestrian crossing speed standards.

The proposed new intersections along Lake Merced Boulevard would provide new crosswalks connecting Parkmerced to Lake Merced and the Class I bicycle and pedestrian trail on the west side of the road.

As described earlier, the existing SFSU Muni Metro station currently experiences periods of high pedestrian crowding, particularly near the end of classes. The proposed relocation of the SFSU Muni Metro station, which is currently in the center of 19th Avenue, into the Project Site would enhance pedestrian conditions at the 19th Avenue/Holloway Avenue intersection. The new station would have a large plaza area within the Project Site that would better accommodate the expected peak pedestrian volumes. The relocation would also provide better access to the station, as pedestrians would no longer have to cross 19th Avenue, a busy and congested corridor, but would instead cross the smaller and less congested Holloway Avenue.

Implementing the Project Variant would result in identical external pedestrian improvements compared to the Proposed Project. Implementation of the sub-variant, either in conjunction with the Proposed Project or the Project Variant, would create a new access location to the Project Site from southbound 19th Avenue at Cambon Drive. Introducing a new driveway would provide a new location for pedestrian access to the Project Site, but would also introduce a new point of conflict for pedestrians. If properly designed, the impact of this new conflict point would be less than significant and no mitigation measures would be required.

Internal Pedestrian Improvements

The Proposed Project would better integrate the Project Site into the city's pedestrian network by providing increased and improved pedestrian connections between the Project Site and the surrounding network. New connections to the Class I facility on Lake Merced Boulevard would be provided at the new intersections proposed along Lake Merced Boulevard. Additionally, a new pedestrian connection is proposed from Gonzalez Drive to a central location on Brotherhood Way. This connection would provide direct pedestrian access to the church and school uses on the south side of Brotherhood Way. Inside the Project Site, sidewalks are proposed on all roadways with neighborhood pedestrian access bisecting many blocks.

Implementation of the Project Variant, or the sub-variant (either in conjunction with the Proposed Project or Project Variant), would have identical internal pedestrian improvements compared to the Proposed Project.

Overall, with the Project, pedestrian access would improve over Existing conditions. The additional pedestrian trips associated with the Proposed Project could be accommodated within

the existing and proposed sidewalk network. Pedestrian volumes external to the site are generally low, with the exception of pedestrian facilities between the SFSU Muni Metro station and SFSU. These facilities would experience increased pedestrian demand due to the Proposed Project, especially with the relocation of the SFSU Muni station into the site.

A qualitative assessment was conducted of potential pedestrian impacts resulting from increased travel demand outside of the Project Site. As noted in previous sections, the Proposed Project would increase vehicle and bicycle volumes in the Sunset District, which would increase the potential for pedestrian-vehicle and pedestrian-bicycle conflicts, particularly in locations with high levels of vehicle traffic and constrained pedestrian facilities. The Proposed Project's sidewalk network improvements on 19th Avenue, Junipero Serra Boulevard, Brotherhood Way, and Lake Merced Boulevard would improve and better define the pedestrian network on these roadways.

With the Proposed Project, the number of pedestrians on streets outside of the Project Site would increase as a result of the land use development on site, rerouting of transit lines, and overall increase in commercial activity in the area. New shopping opportunities would attract pedestrians from adjacent neighborhoods into the Project Site.

The San Francisco Department of Public Health (DPH) analyzes pedestrian injuries in traffic collisions from a public health perspective. DPH notes that traffic collisions in general are a leading cause of death and injury in the United States. Beyond direct injuries and deaths, as matter of public health, DPH states that increased pedestrian safety can encourage walking, which in turn can have direct health benefits such as reducing obesity and indirect benefits such as improved air quality resulting from lesser traffic volumes.

There are a number of factors that contribute to increased pedestrian-vehicle collisions, and the number of collisions at an intersection is a function of the traffic volume, travel speeds, intersection configuration, traffic control, surrounding land uses, location, and number of pedestrians. The Proposed Project would result in a substantial change in the street network in the Project Site, and includes street improvements that would enhance pedestrian safety in the Project Site and beyond.

Generally, the pedestrian facilities within the Proposed Project have been designed to be consistent with the Draft Better Streets Plan. The guidelines in the Draft Better Streets Plan have been developed to accommodate typical levels of pedestrian activity in vibrant mixed-use, commercial, and residential neighborhoods within San Francisco. The Proposed Project would generate similar levels of pedestrian activity compared to other mixed-use neighborhoods in San Francisco. Therefore, the existing and proposed pedestrian facilities would be adequate to meet the pedestrian demand associated with the Proposed Project land uses, and the impacts on

pedestrian circulation within and in the vicinity of the Project Site would be less than significant. No mitigation measures are required.

Impact TR-31: Implementation of the Proposed Project (with or without the proposed sub-variant) or Project Variant (with or without the proposed sub-variant), would increase the need for loading spaces. (*Less than Significant*)

Loading impacts assessment associated with the Proposed Project includes a comparison of the demand for the loading spaces to the minimum number of loading spaces that would be required by the loading supply ratios provided in the *Parkmerced Design Guidelines and Standards* document for the Proposed Project. As indicated in “Loading Analysis” in the “Evaluation Approach” subsection on p. V.E.29, the demand for loading spaces was estimated based on the proposed development program and the daily truck trip generation rates for each 1,000 gross square feet of use, then converted to an hourly demand for spaces.

If the loading demand is not met on site and could not be accommodated within on-street loading zones, trucks could temporarily double-park and partially block local streets while loading and unloading goods which could result in disruptions and impacts to traffic and transit operations, as well as to bicyclists and pedestrians.

Table V.E.20 summarizes the estimate of daily truck trips generated by the proposed land uses and the associated demand for loading dock spaces during the peak hour of loading activities (which generally occurs between 10:00 a.m. and 1:00 p.m.) and the estimated supply. The estimated loading supply would be greater than the loading demand during the peak hour of loading operations.

Table V.E.20: Summary of Project Loading Demand and Supply

Daily Truck Trip Generation ¹	Peak Hour Loading Space Demand ¹	Average Hour Loading Space Demand ¹	Supply
531	31	25	72

Notes:

1. Trip Generation and Space Demand calculated following the *SF Guidelines*.

Source: Fehr & Peers, 2010

The Project Variant would have the same the same loading supply and peak demands as the Proposed Project. Further, implementation of the sub-variant (either in conjunction with the Proposed Project or the Project Variant) would not affect loading supply or demand. Project impacts related to loading operations would be less than significant. No mitigation measures are required.

Impact TR-32: Implementation of the Proposed Project (either with or without the sub-variant) or the Project Variant (either with or without the sub-variant) would not affect air traffic. (*No Impact*)

The Project Site is not near an airfield; San Francisco International Airport is about 9 miles to the southeast, while the Oakland International Airport is about 15 miles to the east. This distance is outside of the limit for objects near airports in the guidance published by the Federal Aviation Administration (FAA) (within 20,000 feet or less than 4 miles from an airport). Therefore, there would be no impacts on air traffic safety, and no mitigation measures are required.

Impact TR-33: Implementation of the Proposed Project (either with or without the sub-variant) or the Project Variant (either with or without the sub-variant) would not create hazards due to any proposed design features. (*No Impact*)

The Proposed Project includes construction of new roadways, reconstruction of existing roadways within the Project Site, and realignment of Muni light rail tracks that would be designed in accordance with City standards, and would need to be reviewed and approved by the City prior to construction. Therefore, the Proposed Project would not create impacts related to transportation hazards and no mitigation measures are required.

Impact TR-34: Implementation of the Proposed Project (either with or without the sub-variant) or the Project Variant (either with or without the sub-variant) would not result in significant emergency access impacts. (*Less than Significant*)

The Proposed Project includes construction of new roadways and reconstruction of existing roadways within the Project Site. Existing emergency response routes would be maintained in their existing locations or rerouted as necessary. Further, all development would be designed in accordance with City standards, which include provisions that address access for emergency vehicles (e.g., minimum street widths, minimum turning radii, etc.).

Implementation of the Project Variant may slightly improve emergency access compared to the Proposed Project, because emergency vehicles traveling on southbound 19th Avenue would have access to the HOT lane, which would be designed and operated to achieve approximately 75 percent capacity during peak periods, and would likely be less congested than conditions without the HOT lane. Further, implementation of the sub-variant, either in conjunction with the Proposed Project or the Project Variant would provide an additional access location at Cambon Drive, which would be a slight improvement to overall emergency access to the Project Site compared to conditions without the access at Cambon Drive.

Overall, the Project's impacts on emergency access would be less than significant, and no mitigation measures are required.

Parking

The parking assessment associated with the Proposed Project includes a comparison of the parking demand to both the proposed parking supply and the parking standards required by the San Francisco Planning Code, Section 151.

Table V.E.21 summarizes the Proposed Project’s parking supply, the forecasted peak parking demand, and the parking supply required by the San Francisco Planning Code, Section 151.

Table V.E.21: Summary of Proposed Project Parking Supply, Demand, and Code Requirements

Source	Parking Spaces	Shortfall (-) / Surplus (+) Compared to Supply (9,450 Off-Street Spaces)
San Francisco Planning Code Requirements	9,646	-196
Total Demand (<i>SF Guidelines</i>)	14,190	- 3,059

Source: Fehr & Peers, 2009

Overall, the Project proposes 11,131 parking spaces, including 1,681 on-street spaces. Of these spaces, fewer would be distributed on the eastern side of the Project Site where transit is more readily accessible and more would be provided on the western side of the site. The majority of off-street parking would be provided by basements constructed below the residential, retail, office and fitness uses.

The *SF Guidelines* methodology for estimating parking demand was used to calculate the parking demand associated with the land uses for the Proposed Project. The calculation identified a total demand of 14,190 parking spaces. The parking demand calculations represent the number of spaces that would be required in order to accommodate all the vehicles anticipated to result from the Proposed Project if the proposed parking supply was unconstrained.

Table V.E.21 shows that the proposed parking supply would be less than both the required number of spaces according to the *San Francisco Planning Code*, Section 151, and anticipated demand calculated using the *SF Guidelines*.

San Francisco does not consider parking supply as part of the permanent physical environment and therefore, does not consider changes in parking conditions to be environmental impacts as defined by CEQA. However, this report presents a parking analysis to inform the public and the decision makers as to the parking conditions that could occur as a result of implementing the proposed project.

Parking conditions are not static, as 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.

Parking deficits are considered to be social effects, rather than impacts on the physical environment as defined by CEQA. Under CEQA, a project's social impacts need not be treated as significant impacts on the environment. Environmental documents should, however, address the secondary physical impacts that could be triggered by a social impact. (CEQA Guidelines § 15131(a).) The social inconvenience of parking deficits, such as having to hunt for scarce parking spaces, is not an environmental impact, but there may be secondary physical environmental impacts, such as increased traffic congestion at intersections, air quality impacts, safety impacts, or noise impacts caused by congestion. In the experience of San Francisco transportation planners, however, 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 in particular, would be in keeping with the City's "Transit First" policy. The City's Transit First Policy, established in the City's Charter Article 8A, Section 8A.115 provides that "parking policies for areas well served by public transit shall be designed to encourage travel by public transportation and alternative transportation." As noted elsewhere in this document, the Proposed Project would include improvements to the transit, bicycle, and pedestrian circulation systems within and adjacent to the project site. Further, the Proposed Project's physical layout is designed to encourage transit use, bicycling, and walking as primary transportation modes. The Proposed Project's parking shortfall would encourage use of these alternative modes and would, therefore, be consistent with the City's Transit First Policy.

The 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 project site and then seek parking farther away if convenient parking is unavailable. Moreover, the secondary effects of drivers searching for parking is typically offset by a reduction in vehicle trips due to others who are aware of constrained parking conditions in a given area. Hence, any secondary environmental impacts which may result from a shortfall in parking in the vicinity of the proposed project would be minor, and the traffic assignments used in the transportation analysis, as well as in the associated air quality, noise and pedestrian safety analyses, reasonably addresses potential secondary effects.

Cumulative Impacts

The geographic context for the analysis of cumulative transportation impacts is the Study Area, which as explained earlier, includes all aspects of the transportation network that may be measurably affected by the Project.

As noted in the Transportation Study, impacts associated with the Proposed Project, Project Variant, and the sub-variant (either in conjunction with the Proposed Project or the Project Variant) related to bicycle and pedestrian circulation, parking and loading supply and demand, and construction would be localized and site-specific and would not contribute to impacts from other developments within San Francisco. The Proposed Project, Project Variant, and the sub-variant (either in conjunction with the Proposed Project or the Project Variant) would make no significant contribution to cumulative pedestrian and bicycle conditions related to travel within San Francisco.

Impact TR-36: Implementation of the Proposed Project would contribute to significant cumulative traffic impacts at 14 study intersections (*Significant and Unavoidable with Mitigation*)

Tables V.E.11 through V.E.13 present the comparison of intersection LOS for 2030 Cumulative conditions with existing and existing plus Project conditions. The results indicate that of the 34 study intersections, 20 intersections would operate at unacceptable LOS E or F in at least one peak hour under 2030 cumulative conditions. Of those intersections, the Proposed Project would contribute considerably to critical congested movements at the following 14 intersections and the Project's contribution to cumulative impacts would be significant:

- Junipero Serra Boulevard/Sloat Boulevard/St. Francis Boulevard/Portola Drive
- Junipero Serra Boulevard/John Daly Boulevard/I-280 Northbound On-Ramp/I-280 Southbound Off-Ramp/SR 1 Northbound On-Ramp
- 19th Avenue/Sloat Boulevard
- 19th Avenue/Winston Drive
- 19th Avenue/Holloway Avenue
- 19th Avenue/Crespi Drive
- Brotherhood Way/Chumasero Drive
- Sunset Boulevard/Lake Merced Boulevard
- Lake Merced Boulevard/Winston Drive
- Lake Merced Boulevard/Font Boulevard
- Lake Merced Boulevard/Brotherhood Way
- Lake Merced Boulevard/John Muir Drive

- John Daly Boulevard/Lake Merced Boulevard
- Lake Merced Boulevard/Gonzalez Drive

A discussion of the Proposed Project's cumulative impact at each of these intersections, potential mitigation measures to reduce impacts where feasible, and the resulting operating conditions at each intersection following mitigation is provided below.

Junipero Serra Boulevard/Sloat Boulevard/St. Francis Boulevard/Portola Drive – At the signalized Junipero Serra Boulevard/Sloat Boulevard/St. Francis Boulevard/Portola Drive intersection, the intersection would operate at an unacceptable LOS E during the AM peak hour under Existing conditions, and would degrade to LOS F under 2030 cumulative conditions. It would also operate at an unacceptable LOS F during the PM peak hour and weekend midday peak hour under both the Existing and 2030 cumulative conditions. The critical southbound through movement at this intersection would operate at unacceptable LOS E or F during those peak hours. The Proposed Project's contribution to cumulative traffic increases would be considerable to the critical southbound through movement during the PM peak hour and weekend midday peak hour. The Proposed Project's contribution to critical movements during the AM peak hour would not be considerable. . This would be a cumulatively significant impact in the weekday PM and weekend midday peak hours.

The cumulative impact at this intersection is generally due to increases in traffic along Junipero Serra Boulevard. Substantial improvement could only be accomplished through major changes. Due to the presence of the M Ocean View and K Ingleside light rail lines in the center median, generally constrained environment, and complex intersection geometry, space for additional travel lanes could not be allocated. To accommodate additional right-of-way needed for additional lanes, demolition of existing structures and substantial right-of-way acquisition would be required. Further, widening the roadway, which would increase pedestrian crossing distances across Junipero Serra Boulevard, would be inconsistent with San Francisco's goal of improving pedestrian circulation and safety in the Study Area. Therefore, mitigation measures involving increased capacity were considered infeasible. Therefore, the Proposed Project's contribution to the cumulative impact at this intersection would be significant and unavoidable.

Junipero Serra Boulevard/John Daly Boulevard/I-280 Northbound On-Ramp/I-280 Southbound Off-Ramp/SR 1 Northbound On-Ramp – At the signalized Junipero Serra Boulevard/John Daly Boulevard/I-280 Northbound On-Ramp/I-280 Southbound Off-Ramp/SR 1 Northbound On-Ramp intersection, the intersection would operate at an unacceptable LOS F during the PM peak hour under Existing and cumulative conditions. The Proposed Project would contribute considerable increases in traffic to the critical northbound left-turn from Junipero Serra Boulevard to westbound John Daly Boulevard (24 percent). This would be a cumulatively significant impact.

Due to the generally constrained environment and complex intersection geometry, space for additional travel lanes could not be allocated. Substantial improvement could only be accomplished through major changes. To accommodate additional right-of-way needed for additional lanes, demolition of adjacent land uses and substantial right-of-way acquisition would be required. Therefore, the Proposed Project's contribution to the cumulative impact at this intersection would be significant and unavoidable.

19th Avenue/Sloat Boulevard – At the signalized 19th Avenue/Sloat Boulevard intersection, the intersection operating conditions would degrade in the AM peak hour from LOS E under Existing conditions to LOS F with 2030 cumulative conditions. In the PM and weekend midday peak hours, the intersection would operate at LOS F under existing and cumulative conditions. However, the Proposed Project would not contribute considerable additional traffic to critical movements in the PM or weekend midday peak hour. The degradation in level of service in the AM peak hour would be primarily due to traffic along this segment of 19th Avenue. The Proposed Project was determined to have a significant Project-specific impact at this intersection during the AM peak hour, and therefore the Project's contribution to cumulative impacts would be considered significant.

Although the Proposed Project's contribution to AM peak hour traffic volumes at this intersection would be relatively small, increases would generally be added to congested movements along 19th Avenue, which somewhat magnifies their effect. To improve operating conditions at this intersection to acceptable levels, additional vehicle capacity would be required along 19th Avenue. Substantial improvement could only be accomplished through major changes, such as widening 19th Avenue to add more lanes. To accommodate additional right-of-way needed for additional lanes, 19th Avenue would need to be widened to the east and west. This would require demolition of existing structures and substantial right-of-way acquisition; therefore, the measure was not further considered. Furthermore, 19th Avenue is a Caltrans facility; therefore, even if space were physically available, implementation of identified mitigations cannot be guaranteed by the City. Therefore, the Proposed Project's contribution to the cumulative impact at this intersection would be significant and unavoidable.

19th Avenue/Winston Drive – At the signalized 19th Avenue/Winston Drive intersection, the intersection would operate at LOS D during the AM peak hour and weekend midday peak hour under existing conditions, and would degrade to LOS F under 2030 cumulative conditions. Additionally, the intersection operates at an unacceptable LOS F during the PM peak hour under existing conditions and the Project would contribute considerably on multiple critical approaches. Specifically, the Proposed Project would contribute 20 percent of traffic to the critical eastbound through movement in the AM peak hour. In the PM peak hour, the Proposed Project would contribute 6 percent to the critical northbound left-turn and eastbound through movements, both of which would operate at LOS F. In the weekend midday peak hour, the Proposed Project's

contribution to critical movements would be similar to the weekday PM peak hour. The Project's contribution to critical movements would be considerable and would be a cumulatively significant impact during all three study peak hours.

The cumulative impact at this intersection is generally due to increases in traffic along both 19th Avenue and Winston Drive. Substantial improvement could only be accomplished through major changes. Due to the presence of the M Ocean View light rail line in the center median, generally constrained environment, and complex intersection geometry, space for additional travel lanes could not be allocated. To accommodate additional right-of-way needed for additional lanes, demolition of existing structures and substantial right-of-way acquisition would be required. Further, widening the roadway, which would increase pedestrian crossing distances across 19th Avenue, would be inconsistent with San Francisco's goal of improving pedestrian circulation and safety in the Study Area. Therefore, mitigation measures involving increased capacity were considered infeasible. Therefore, the Proposed Project's contribution to the cumulative impact at this intersection would be significant and unavoidable.

19th Avenue/Holloway Avenue – At the signalized 19th Avenue/Holloway Avenue intersection, the intersection operations would degrade from an acceptable LOS D during the AM peak hour and LOS B during the weekend midday peak hour under Existing conditions to an unacceptable LOS E under 2030 cumulative conditions. Further, PM peak hour conditions operate at LOS E under existing conditions and would degrade to an unacceptable LOS F under 2030 cumulative conditions. The Project would contribute 8 percent of traffic to the critical eastbound through movement during the AM peak hour at this intersection, which would be considered a cumulatively considerable contribution. The Project's contribution to traffic volumes in the PM peak hour and weekend midday peak hours would not be considerable. The Project's considerable contribution during the AM peak hour would be a cumulatively significant impact.

Mitigation measure M-TR-36B would involve retiming the signal at this intersection to allocate more green time to the east-west movements. Implementation of mitigation measure M-TR-36B would achieve acceptable operations at this intersection. This measure could affect a larger system of coordinated signals; therefore, because this mitigation measure would require further evaluation, its implementation is uncertain. Therefore, the Proposed Project's contribution to the cumulative impact at this intersection would remain significant and unavoidable.

19th Avenue/Crespi Drive – At the signalized 19th Avenue/Crespi Drive intersection, the intersection operates at an acceptable LOS D and C during the AM and PM peak hours, respectively, under existing conditions and would degrade to LOS E in the AM peak hour and LOS F in the PM peak hour under 2030 cumulative conditions. The Proposed Project would not contribute considerable volumes to critical movements operating unacceptably at this intersection; however, this intersection was projected to experience a significant Project-related

impact during the PM peak hour under Existing plus Project conditions. Therefore, the Proposed Project's impact at this intersection would also be considered cumulatively significant.

Mitigation measure M-TR-2A would exclude the proposed northbound left-turn lane from 19th Avenue onto Crespi Drive from the Proposed Project. Implementation of M-TR-2A would reduce the Project's cumulative impact at this intersection to a less-than-significant level.

Brotherhood Way/Chumasero Drive – At the signalized Brotherhood Way/Chumasero Drive intersection, the intersection would degrade from an unacceptable LOS E during the PM peak hour under existing conditions to LOS F under 2030 cumulative conditions. The Proposed Project would add 38 percent and 17 percent of traffic to the critical southbound left-turn and westbound through movements, respectively, which both operate at LOS F during the PM peak hour. This would be a cumulatively considerable contribution and, therefore, a cumulatively significant impact.

Mitigation measure M-TR-36C would involve construction of a dedicated westbound right-turn lane and conversion of the existing shared westbound through/right-turn lane to a dedicated through lane. With implementation of mitigation measure M-TR-36C, acceptable LOS could be achieved and the cumulative impact would be reduced to a less-than-significant level. However, SFMTA has not determined the feasibility of this mitigation. Because this mitigation measure would require further evaluation, its implementation is uncertain. Therefore, the Proposed Project's contribution to the cumulative impact at this intersection would remain significant and unavoidable.

Sunset Boulevard/Lake Merced Boulevard – At the unsignalized Sunset Boulevard/Lake Merced Boulevard intersection, the intersection operating conditions would degrade in the PM peak hour from LOS C under Existing conditions to LOS F under 2030 cumulative conditions. This intersection meets Caltrans peak hour signal warrants. Further, the Proposed Project would contribute 11 percent of traffic to the uncontrolled southbound through movement, which conflicts with the critical northbound left-turn movement. The critical northbound left-turn movement operates at LOS F. The Proposed Project's contribution to poor operating conditions under cumulative conditions would be considerable. Therefore, this is a cumulatively significant impact in the PM peak hour.

Mitigation measure M-TR-2B would construct a new traffic signal at this intersection. Implementation of M-TR-2B would improve operations at this intersection to acceptable levels. However, SFMTA is currently evaluating the feasibility of this measure and has not yet finalized its evaluation. Therefore, implementation of M-TR-2B is uncertain, and the Proposed Project's contribution to the cumulative impact at this intersection would remain significant and unavoidable.

Lake Merced Boulevard/Winston Drive – At the signalized Lake Merced Boulevard/Winston Drive intersection, the intersection operating conditions would degrade in the AM peak hour from LOS C under existing conditions to LOS F under 2030 cumulative conditions. Conditions in the PM peak hour would degrade from LOS D under existing conditions to LOS F under 2030 cumulative conditions. The Proposed Project would add 13 percent and 9 percent of traffic to the critical northbound through movement, which would operate at LOS F, in the AM and PM peak hours, respectively. This would be a cumulatively considerable contribution. Therefore, this would be a cumulatively significant impact.

Mitigation measure M-TR-2C would construct a new northbound right-turn lane from Lake Merced Boulevard onto eastbound Winston Drive. Implementation of mitigation measure M-TR-2C would improve operations at this intersection, but operations would remain at an unacceptable LOS E in the PM peak hour. Additionally, the feasibility of this measure is uncertain due to the adjacent unsignalized intersection, approximately 75 feet south of Winston Drive, which would conflict with the northbound right-turn lane. Further study is required to determine whether this mitigation measure is feasible. However, because acceptable operations cannot be achieved, implementation of this measure is uncertain, and further capacity enhancements are infeasible, the Proposed Project's contribution to cumulative impacts at this intersection would remain significant and unavoidable.

Lake Merced Boulevard/Font Boulevard – At the signalized Lake Merced Boulevard/Font Boulevard intersection, the intersection operating conditions would degrade in the AM peak hour from LOS D under existing conditions to LOS F under 2030 cumulative conditions. Operations during the PM peak hour would degrade from LOS C under existing conditions to LOS F under 2030 cumulative conditions. In the AM peak hour, the Proposed Project would add 14 percent, 32 percent, and 40 percent of traffic to the critical northbound through, southbound left-turn, and westbound right-turn movements, respectively. Each of these three critical movements would operate at LOS F during the AM peak hour. In the PM peak hour, the Proposed Project would add 13 percent, 58 percent, and 36 percent of traffic to the critical northbound through, southbound left-turn, and westbound right-turn movements, respectively. These critical movements would operate at LOS F during the PM peak hour. Thus, the Proposed Project's contribution to traffic conditions in the AM and PM peak hours would be cumulatively considerable. This would be a cumulatively significant impact in the AM and PM peak hours.

Mitigation measure M-TR-2D would construct a third northbound through lane and a second southbound through lane at the intersection by restriping and elimination of some existing on-street parking. Implementation of M-TR-2D would improve operations at this intersection, but not such that operations improve to acceptable LOS D or better under 2030 cumulative conditions. To achieve acceptable operations in 2030 cumulative conditions, westbound right-turn capacity enhancements, such as providing an additional westbound right turn lane, would be

necessary in addition to M-TR-2D. However, a dual right-turn lane against a pedestrian signal is considered a safety hazard and would be inconsistent with the City's goals of promoting walking and bicycling, and would therefore be considered infeasible.

Because implementation of M-TR-2D requires further study by SFMTA and its implementation is thus uncertain, and because additional improvements, such as a second westbound right-turn lane, required in addition to M-TR-2D to achieve acceptable operations are not feasible, the Proposed Project's contribution to cumulatively significant impacts at this intersection would remain significant and unavoidable.

Lake Merced Boulevard/Brotherhood Way – At the signalized Lake Merced Boulevard /Brotherhood Way intersection, the intersection operating conditions would degrade in the PM peak hour and the weekend midday peak hour from LOS C under existing conditions to LOS F under 2030 cumulative conditions. Operations in the AM peak hour would degrade from LOS D under existing conditions to LOS F under 2030 cumulative conditions.

During the AM peak hour, the Proposed Project would add 14 percent and 19 percent of traffic to the critical northbound through and southbound left-turn movements, respectively, both of which would operate at unacceptable LOS F. During the PM peak hour, the Project would add 33 percent, 18 percent, and 19 percent of traffic to the critical northbound through, southbound left-turn, and westbound right-turn movements, respectively, all of which would operate at LOS F. During the weekend midday peak hour, the Proposed Project would add 30 percent, 25 percent, and 23 percent of traffic to the critical northbound through, southbound left-turn, and westbound right-turn movements, all of which would operate at LOS F. The Proposed Project's contribution to cumulative traffic conditions would be cumulatively considerable. Therefore, this would be a significant cumulative impact during all three peak hours.

Mitigation measure M-TR-2E would reconfigure the intersection such that the westbound right-turn and the southbound left-turn were the primary movements at the intersection. With implementation of M-TR-2E operations at this intersection would improve, but would continue to operate at LOS F during both the AM and PM peak hours. SFMTA has not yet determined the feasibility of this mitigation measure. However, if feasible, operating conditions would be substantially better than conditions without the improvements.

To achieve acceptable operating conditions at this intersection, a second northbound left-turn lane, in addition to M-TR-2E, would be required. However, provision of dual northbound left-turn lanes would present a pedestrian safety conflict with the crosswalk on the northern leg of the intersection. Therefore, implementation of this improvement measure would be inconsistent with the City's goals of promoting walking and bicycling and are therefore considered infeasible.

Because implementation of M-TR-2E requires further study by SFMTA and its implementation is thus uncertain, and because additional improvements, such as a second northbound left-turn lane, required in addition to M-TR-2E to achieve acceptable operations are not feasible, the Proposed Project's contribution to cumulatively significant impacts at this intersection would remain significant and unavoidable.

Lake Merced Boulevard/John Muir Drive – At the unsignalized Lake Merced Boulevard/John Muir Drive intersection, the intersection would operate at an unacceptable LOS F during the AM and PM peak hours under Existing and 2030 cumulative conditions. This intersection meets Caltrans peak hour signal warrants during the PM peak hour. Because the intersection does not meet Caltrans peak hour signal warrants during the AM peak hour, the cumulative impact in the AM peak hour is considered less than significant. However, during the PM peak hour, the Proposed Project would contribute 15 percent of traffic to the uncontrolled southbound through movement, which conflicts with the critical northbound left-turn movement. The northbound left-turn movement is expected to operate at LOS F in the PM peak hour. Therefore, the Proposed Project's contribution to traffic volumes in the PM peak hour is cumulatively considerable. This is a cumulatively significant impact in the PM peak hour.

Mitigation measure M-TR-36D would install a new traffic signal at this intersection. Implementation of mitigation measure M-TR-36D would improve intersection operations to acceptable levels. The Project Sponsor should contribute a fair-share toward funding this mitigation measure. However, because there is no funding mechanism in place to provide full funding for this measure, its feasibility is uncertain. Therefore, the Proposed Project's contribution to cumulatively significant impacts at this intersection would remain significant and unavoidable.

John Daly Boulevard/Lake Merced Boulevard – At the signalized John Daly Boulevard/Lake Merced Boulevard intersection, the intersection would degrade from an acceptable LOS C during the PM peak hour under existing conditions to an unacceptable LOS E under 2030 cumulative conditions. The Proposed Project would add 21 percent and 30 percent of traffic to the critical southbound left-turn and westbound right-turn movements, respectively. Both of these critical movements are expected to operate at unacceptable levels in the PM peak hour. Therefore, the Proposed Project's contribution to traffic volumes in the PM peak hour is cumulatively considerable. This is a cumulatively significant impact in the PM peak hour.

Mitigation measure M-TR-36E would convert the dedicated southbound through lane at this intersection to a third dedicated left-turn lane. Implementation of mitigation measure TR-36E would achieve acceptable operations at this intersection. The Project Sponsor would be responsible to fund a "fair share" contribution towards the implementation of mitigation measure M-TR-36E. However, there is no mechanism identified to collect the remaining funding for

implementing this mitigation measure, and its full funding is uncertain. Furthermore, the improvements identified above would be the responsibility of Daly City and could not be implemented by San Francisco. Therefore, the Proposed Project's contribution to cumulatively significant impacts at this intersection would remain significant and unavoidable.

Lake Merced Boulevard/Gonzalez Drive – At the proposed signalized Lake Merced Boulevard/Gonzalez Drive intersection, the intersection would operate at an unacceptable LOS E during the PM peak hour under 2030 cumulative conditions as designed. Congestion would be caused primarily by relatively high volumes in and out of the Project Site conflicting with heavy north-south through movements on Lake Merced Boulevard. This would be a cumulatively significant impact.

Mitigation measure M-TR-36F would install an auxiliary lane from Brotherhood Way through the Lake Merced Boulevard/Gonzalez Drive intersection to provide three northbound through lanes. With implementation of mitigation measure TR-36F, operations at this intersection would improve to acceptable LOS D or better conditions in the PM peak hour. However, because further study is required to determine feasibility of this mitigation measure, its feasibility is uncertain. Therefore, the Proposed Project's contribution to cumulatively significant impacts at this intersection would remain significant and unavoidable.

Summary of Impact TR-36

Overall, implementation of mitigation measures M-TR-36A through M-TR-36F would improve operations at some of the study intersections. However, in a number of cases, the feasibility of mitigation measures is uncertain. Implementation of mitigation measures below that would require discretionary approval actions by the SFMTA or other public agencies is considered uncertain because public agencies subject to CEQA cannot commit to implementing any part of a proposed project, including proposed mitigation measures, until environmental review is complete. Thus, while the SFMTA has reviewed the feasibility of several mitigation measures proposed to address significant impacts, implementation of these measures cannot be assured until after certification of this EIR. Therefore, Impact TR-36 would remain significant and unavoidable.

M-TR-36A: Retime signal at Junipero Serra Boulevard/Ocean Avenue/Eucalyptus Drive to allocate more green time to the east-west movements. Under future year 2030 conditions, adjustments to the traffic signal timing at this intersection could likely improve operations to within acceptable levels, based on forecasted traffic increases. Implementing this mitigation measure would achieve acceptable operations at this intersection. However, signals along the Junipero Serra Boulevard corridor are coordinated such that they operate as a system, rather than isolated signals. Traffic progression relies on the interconnectivity between each signal. Retiming this particular intersection may require evaluation of the corridor. SFMTA would be responsible for

evaluating and implementing a new signal timing plan. Implementation shall be completed prior to completion of the Project or as otherwise specified in the Development Agreement.

Implementation of mitigation measure M-TR-36A would improve operations at this intersection to acceptable levels. However, because this mitigation measure would require further evaluation, its implementation is uncertain. Therefore, the Proposed Project's contribution to the cumulative impact at this intersection would be significant and unavoidable.

M-TR-36B: Retime signal at 19th Avenue/Holloway Avenue to allocate more green time to the east-west movements. Implementing this mitigation measure would achieve acceptable operations at this intersection. However, 19th Avenue is a coordinated corridor with closely spaced intersections. Traffic progression relies on the interconnectivity between each signal. Retiming this particular intersection would require evaluation of the corridor. SFMTA would be responsible for evaluating and implementing a new signal timing plan. Implementation shall be completed prior to completion of the Project or as otherwise specified in the Development Agreement.

Implementation of mitigation measure M-TR-36B would achieve acceptable operations at this intersection. However, because this mitigation measure would require further evaluation, its implementation is uncertain. Therefore, the Proposed Project's contribution to the cumulative impact at this intersection would remain significant and unavoidable.

M-TR-36C: Construct a dedicated westbound right-turn lane and convert the shared westbound through/right-turn lane to a dedicated westbound through lane at the Brotherhood Way/Chumasero Drive intersection. Implementation of this mitigation measure would improve operations at this intersection to acceptable LOS D during the PM peak hour under 2030 cumulative conditions.

Construction of this mitigation measure would require roadway widening into the Project Site, but no major structural reconfigurations would be required. Implementation of the intersection reconfiguration shall be the responsibility of SFMTA, and shall be implemented prior to completion of the Project or as otherwise specified in the Development Agreement. SFMTA shall design and implement the measure as necessary; however, SFMTA is not financially responsible for funding this improvement or evaluating its feasibility.

With implementation of mitigation measure M-TR-36C, acceptable LOS could be achieved and the cumulative impact would be reduced to less than significant. However, SFMTA has not determined the feasibility of this mitigation. Because this mitigation measure would require further evaluation, its implementation is uncertain. Therefore, the Proposed Project's contribution to the cumulative impact at this intersection would remain significant and unavoidable.

M-TR-36D: Install a traffic signal at Lake Merced Boulevard/John Muir Drive. Installation of a traffic signal at the intersection of Lake Merced Boulevard/John Muir Drive would improve operations to acceptable levels. Implementation of the signal

installation shall be the responsibility of SFMTA, and shall be implemented prior to completion of the Project or as otherwise specified in the Development Agreement. The SFMTA shall design and implement the measure as necessary; however, SFMTA is not financially responsible for funding this improvement or evaluating its feasibility.

Implementation of mitigation measure M-TR-36D would improve intersection operations to acceptable levels. The Project Sponsor should contribute a fair-share toward funding this mitigation measure. However, because there is no funding mechanism in place to provide full funding for this measure, its feasibility is uncertain. Therefore, the Project's contribution to cumulatively significant impacts at this intersection would remain significant and unavoidable.

M-TR-36E: Convert the dedicated southbound through lane into a dedicated left-turn lane at John Daly Boulevard/Lake Merced Boulevard. This would result in the southbound approach consisting of a shared through-right-turn lane and triple left-turn lanes. To achieve adequate lane utilization, John Daly Boulevard would have to be configured to have three eastbound through travel lanes east of the intersection. This would require the removal of some pedestrian elements and converting the existing right-turn lane into the Westlake Shopping Center into a shared through/right-turn lane. If feasible, this measure shall be implemented prior to completion of the Project or as otherwise specified in the Development Agreement.

Implementation of mitigation measure M-TR-36E would achieve acceptable operations at this intersection. The Project sponsor would be responsible to fund a "fair share" contribution towards the implementation of mitigation measure M-TR-36E. However, there is no mechanism identified to collect the remaining funding for implementing this mitigation measure, and its full funding is uncertain. Furthermore, the improvements identified above would be the responsibility of Daly City and could not be implemented by San Francisco. Therefore, the Proposed Project's contribution to cumulatively significant impacts at this intersection would remain significant and unavoidable.

M-TR-36F: Install an auxiliary lane from Brotherhood Way through the Lake Merced Boulevard/Gonzalez Drive intersection to provide three northbound through lanes. Installation of the auxiliary lane shall be the responsibility of SFMTA, and shall be implemented prior to completion of the Project or as otherwise specified in the Development Agreement; however, SFMTA is not financially responsible for funding this improvement. The SFMTA shall design and implement the measure as necessary. SFMTA is currently evaluating the feasibility of this measure and has not yet finalized its evaluation.

With implementation of mitigation measure M-TR-36F, operations at this intersection would improve to acceptable LOS D or better conditions in the PM peak hour. However, because further study is required to determine feasibility of this mitigation measure, its feasibility is uncertain. Therefore, the Project's contribution to cumulatively significant impacts at this intersection would remain significant and unavoidable.

Impact TR-37: Implementation of the Proposed Project would have less than significant traffic contributions at six study intersections that would operate at LOS E or F under 2030 cumulative conditions. (*Less than Significant*)

With implementation of the Proposed Project combined with cumulative background traffic growth, six intersections would operate at LOS E or F in one or more peak hours. At these intersections, the Proposed Project's traffic volumes at critical movements would represent a less-than-significant contribution to LOS E or LOS F operating conditions. Therefore impacts would be less than significant.

Junipero Serra Boulevard/Ocean Avenue/Eucalyptus Drive – The signalized intersection would operate at unacceptable LOS E during the PM peak hour under 2030 cumulative conditions. The Proposed Project would contribute traffic to the critical southbound movement; however, this critical movement would operate at an acceptable LOS B, and therefore, the Proposed Project's contribution would not be cumulatively considerable. Therefore, the Proposed Project's contribution to cumulative impacts at this intersection would be less than significant.

19th Avenue/Junipero Serra Boulevard – The signalized intersection would operate at an unacceptable LOS E during the AM peak hour and LOS F during the PM and weekend peak hours under 2030 cumulative conditions. The Proposed Project's contribution to critical movements would be no more than 4 percent during any of the peak hours, which would not be cumulatively considerable. Therefore, the Proposed Project's contribution to cumulative impacts at this intersection would be less than significant in the AM, PM, and weekend midday peak hours.

19th Avenue/Ocean Avenue – The signalized intersection would operate at an unacceptable LOS F during the PM peak hour under 2030 cumulative conditions. The Proposed Project would slightly reduce volumes on the critical southbound through movement on 19th Avenue; therefore, the Proposed Project's contribution to cumulative impacts at this intersection would be less than significant in the PM peak hour.

19th Avenue/Eucalyptus Drive - The signalized intersection would operate at unacceptable LOS F during the PM peak hour under 2030 cumulative conditions. The Proposed Project's contribution to critical movements operating unacceptably would be less than 5 percent, which would not be cumulatively considerable. Therefore, the Proposed Project's contribution to cumulative impacts at this intersection would be less than significant.

Brotherhood Way/West Driveway Holy Trinity Greek Orthodox and Open Bible Churches

– The unsignalized¹⁸ intersection would operate at an unacceptable LOS F during both the AM and PM peak hours under existing and 2030 cumulative conditions. The intersection would not meet Caltrans peak hour signal warrants under 2030 cumulative conditions; therefore, the Proposed Project's impact at this intersection would be less than significant in both the AM and PM peak hours.

Holloway Avenue/Varela Avenue – The unsignalized intersection would operate at an unacceptable LOS F during the PM peak hour under 2030 cumulative conditions. The intersection would not meet Caltrans peak hour signal warrants; therefore, the cumulative impact at this intersection, with traffic from the Proposed Project would be less than significant in the PM peak hour.

Impact TR-38: Implementation of the Project Variant would result in significant cumulative traffic impacts at the same intersections as the Proposed Project, as identified in Impacts TR-35 and TR-36; however, cumulative traffic impacts at two intersections would be slightly more severe and/or occur more frequently compared to cumulative conditions with the Proposed Project. (*Significant and Unavoidable with Mitigation*)

Although the travel demand characteristics of the Project Variant and cumulative background traffic growth would be identical to cumulative conditions with the Proposed Project, three intersections (19th Avenue/Junipero Serra Boulevard, 19th Avenue/Holloway Avenue, and 19th Avenue/Crespi Drive) would have different configurations under cumulative conditions with the Project Variant than cumulative conditions with the Proposed Project. Table V.E.22 presents the intersection LOS for those three intersections under existing conditions, cumulative conditions with the Proposed Project, and cumulative conditions with the Project Variant.

As illustrated in the table, the 19th Avenue/Crespi Drive intersection was projected to experience a significant cumulative impact under 2030 cumulative conditions with the Proposed Project in the PM peak hour. With implementation of the Project Variant, the intersection would experience significant cumulative impacts in both the AM and PM peak hours. Mitigation measure M-TR-2A would exclude the proposed northbound left-turn lane from 19th Avenue onto Crespi Drive from the Proposed Project. Implementation of M-TR-2A would reduce the Project's cumulative impact at this intersection to a less-than-significant level.

¹⁸ This intersection was signalized in early 2010. However, at the time the transportation analysis was conducted, it was unsignalized and no signalization was assumed. The Proposed Project's impact at this intersection was considered less than significant because the intersection volumes did not meet peak hour signal installation warrant criteria at the time the study was conducted.

Table V.E.22: Intersection Operations for Project Variant

Intersection			Control	Existing Conditions			Cumulative (Project) Conditions			Cumulative (Project) Variant		
				Delay ¹	V/C	LOS	Delay ¹	V/C	LOS	Delay ¹	V/C	LOS
AM	6	19th Ave/Junipero Serra Blvd	Signal	58		E	57		E²	63		E²
	14	19th Ave /Holloway Ave	Signal	41		D	62		E	> 80	0.8	F
	15	19th Ave/Crespi Dr	Signal	37		D	74		E²	> 80	0.6	F
PM	6	19th Ave/Junipero Serra Blvd	Signal	> 80	1.1	F	> 80	0.9	F²	> 80	0.9	F²
	14	19th Ave/Holloway Ave	Signal	61		E	> 80	0.9	F²	> 80	0.9	F²
	15	19th Ave /Crespi Dr	Signal	20		C	> 80	0.8	F	> 80	0.8	F

Notes:

Bold = unacceptable operations, **Shaded** = significant impact; Signal = Signalized intersection

1. Signalized and all-way stop controlled intersection level of service based on average control delay per vehicle, according to the Highway Capacity Manual - Special Report 209 (Transportation Research Board, 2000). Side-street stop-controlled intersection level of service based on worst control delay, according to the HCM - Special Report 209 (Transportation Research Board, 2000).
2. Impacts at this intersection are not considered significant impact as Project-related traffic does not contribute considerably to critical movements at the intersection.

Source: Fehr & Peers, 2010

Additionally, the intersection of 19th Avenue/Holloway Avenue was projected to operate at LOS E and experience a significant cumulative impact under 2030 cumulative conditions with the Proposed Project in the AM peak hour. With implementation of the Project Variant, the intersection would continue to experience a significant cumulative impact in the AM peak hour; however, the impact would be exacerbated and the intersection would operate at LOS F.

Converting the HOT lane into a mixed-flow traffic lane as described in mitigation measure M-TR-5 and retiming the traffic signal at the intersection as described in mitigation measure M-TR-36B would reduce the impact at this intersection to a less than significant levels. However, implementation of mitigation measure M-TR-5 would be inconsistent with the purpose of the Project Variant. Further, implementation of mitigation measure M-TR-5 may have a significant secondary transit impact. Therefore, the feasibility of these mitigation measures is uncertain. Implementation of mitigation measure M-TR-36B could affect a larger system of coordinated signals; therefore, because this mitigation measure would require further evaluation, its implementation is uncertain. Because the feasibility of both of these mitigation measures is uncertain, the Project Variant's cumulative impact would remain significant and unavoidable.

Impact TR-39: Implementation of the sub-variant in conjunction with the Proposed Project would result in the same significant cumulative traffic impacts at study intersections as identified in Impacts TR-35 and TR-36 for cumulative conditions with the Proposed Project. (*Significant and Unavoidable with Mitigation*)

The sub-variant would involve constructing a right-turn ingress along 19th Avenue between Crespi Drive and Junipero Serra Boulevard at Cambon Drive. The anticipated impact of this sub-variant in conjunction with the Proposed Project is minor. Some of the vehicles that would execute a right-turn at Crespi Drive would instead continue south on 19th Avenue and turn right onto Cambon Drive. No other changes in traffic circulation would be expected to result. The right turn could be provided as a shared movement from the fourth southbound mixed-flow through lane constructed as part of the Proposed Project. Vehicles slowing to make the right-turn ingress may impede the flow of traffic at this location. However, the impact associated with this "friction" would simply be relocated to from Crespi Drive, where drivers would otherwise turn.

Intersection cumulative impacts identified in Impacts TR-35 and TR-36 would remain the same with implementation of the sub-variant in conjunction with the Proposed Project. With implementation of the sub-variant, the Proposed Project's significant cumulative impacts, as identified in Impacts TR-35 and TR-36, would remain significant and unavoidable.

Impact TR-40: Implementation of the sub-variant in conjunction with the Project Variant would result in the same significant cumulative traffic impacts at study intersections as identified in Impact TR-38 for cumulative conditions with the Project Variant. (*Significant and Unavoidable with Mitigation*)

The sub-variant would involve constructing a right-turn ingress along 19th Avenue between Crespi Drive and Junipero Serra Boulevard at Cambon Drive. The anticipated impact of this sub-variant in conjunction with the Project Variant would be minor. Some of the vehicles that would execute a right-turn at Crespi Drive would instead continue south on 19th Avenue and turn right onto Cambon Drive. No other changes in traffic circulation would be expected to result.

Vehicles turning into a new driveway at Cambon Drive would be relocated from Crespi Drive – from near the beginning of the HOT lane to near the middle. Although delays associated with vehicles turning into Cambon Drive would simply be relocated from Crespi Drive, they would have a more fundamental degradation to the quality of the HOT lane because they would prevent vehicles from reaching full travel speeds and achieving a real advantage over vehicles in the other mixed flow lanes. While this would not necessarily worsen significant impacts to transit compared to conditions with the Proposed Project (i.e., no HOT lane), this condition would not be consistent with the goals of the HOT lane.

Implementation of improvement measure I-TR-7 (i.e., a dedicated southbound right-turn lane from 19th Avenue to Cambon Drive) would ensure that the new access at Cambon Drive does not interfere with successful operation of the HOT lane proposed as part of the Project Variant. Cumulative intersection impacts identified in Impact TR-38 would remain the same with implementation of the sub-variant in conjunction with the Project Variant. With implementation of the sub-variant, the Project Variant's significant impacts would remain significant and unavoidable.

Impact TR-41: Implementation of the Proposed Project would contribute to significant cumulative traffic impacts at four freeway segments (*Significant and Unavoidable with Mitigation*)

Tables V.E.15 and V.E.16 present the results of the freeway mainline section, weaving section, and ramp junction analysis for Existing, Existing plus Project, and 2030 cumulative conditions. The Proposed Project would contribute to cumulatively significant impacts at four freeway segments.

Southbound SR 1 (Junipero Serra Boulevard): Weaving Segment Between Direct On-Ramp from Brotherhood Way and Direct Off-ramp to John Daly Boulevard – This segment of SR 1 operates at LOS E in the AM and PM peak hours under existing conditions and is expected to deteriorate to LOS F in both peak hours under 2030 cumulative conditions. Traffic from the Proposed Project would increase volumes on this segment by more than 5 percent during both

peak hours which would be a cumulatively considerable contribution. Therefore, the Proposed Project's impact would be significant.

The projected poor operating conditions on the affected freeway segment could only be improved by creating additional mainline capacity, which would exceed the reasonable scope of the Proposed Project and would be outside the control of the City. Therefore, mitigation to reduce this cumulative impact to a less-than-significant level would be infeasible. The Proposed Project's contribution to cumulative impacts at this freeway segment would remain significant and unavoidable.

Northbound SR 1 (Junipero Serra Boulevard): Basic segment between Off-Ramp to Northbound I-280 and On-Ramp from John Daly Boulevard – Cumulative traffic increases in 2030 would cause this basic segment to deteriorate from LOS D in the PM peak hour under existing conditions to LOS E in the PM peak hour under 2030 cumulative conditions. Conflicting traffic volumes combined with short weaving segments cause breakdown of operating conditions. The Proposed Project's contribution to traffic volumes on this freeway segment would be cumulatively considerable. Therefore, the Proposed Project's cumulative impact would be significant.

Adequate right-of-way is available to construct a fourth northbound through lane along this freeway segment to the John Daly Boulevard On-Ramp; however, the downstream weaving facility is also expected to experience significant congestion as explained in Impact TR-9. Improving this freeway segment would simply move the "bottleneck," resulting in queuing through this segment.

Therefore, mitigation of this cumulative impact to a less-than-significant level would be infeasible. The Proposed Project's contribution to this cumulative impact would remain significant and unavoidable.

Northbound SR 1 (Junipero Serra Boulevard): Weaving Segment between On-Ramp from John Daly Boulevard and Off-Ramp to Alemany Boulevard – Cumulative traffic increases in 2030 would cause this basic segment to deteriorate from LOS D in the PM peak hour under existing conditions to LOS E in the PM peak hour. Conflicting traffic volumes combined with short weaving segments cause breakdown of operating conditions. The Proposed Project's contribution to traffic volumes on this freeway segment would be cumulatively considerable. Therefore, the Proposed Project's cumulative impact would be significant.

The projected poor operating conditions on the affected freeway segment could only be improved by creating additional mainline capacity, which would exceed the reasonable scope of the Proposed Project and would be outside the control of the City. Mitigation of this cumulative

impact to a less-than-significant level is considered to be infeasible. The Project's contribution to this cumulative impact would remain significant and unavoidable.

Northbound SR 1 (Junipero Serra Boulevard): Weaving Segment Between Loop On-Ramp from Brotherhood Way and Loop Off-ramp to Brotherhood Way – This segment of SR 1 operates at LOS F in the AM and PM peak hours under existing conditions. Traffic from the Proposed Project would increase volumes on this segment by less than 5 percent in the AM peak hour, which would be considered a less-than-significant contribution. Therefore, the Project's cumulative impact would be less than significant in the AM peak hour.

Project traffic would increase volumes on this segment by over 40 percent in the PM peak hour compared to existing conditions. This would be considered a cumulatively considerable contribution. The Proposed Project's cumulative impact at this section would be significant in the PM peak hour.

Mitigation measure M-TR-9 would eliminate the weaving segment by removing the loop on-ramp from eastbound Brotherhood Way to northbound SR1. In its place, M-TR-9 would require construction of an eastbound left-turn lane from Brotherhood Way on the east side of the structure that connects with the direct on-ramp from westbound Brotherhood Way. Implementation of Mitigation Measure M-TR-9 would reduce the Proposed Project's contribution to significant cumulative impacts on this facility to less-than-significant levels. However, because the facility is under Caltrans jurisdiction and requires further analysis to determine feasibility, M-TR-9 cannot be guaranteed by the City. The Proposed Project's contribution to this cumulative impact would remain significant and unavoidable.

Impact TR-42: Implementation of the Project Variant would contribute to significant cumulative traffic impacts at four freeway segments expected to experience significant cumulative traffic impacts under future conditions with the Proposed Project, as identified in Impact TR-41. (*Significant and Unavoidable with Mitigation*)

The Project Variant would not affect travel demand or roadway configurations at Study Area freeway facilities. Therefore, the Project Variant's contribution to cumulative impacts on Study Area freeway facilities would be identical to those of the Proposed Project and would remain significant and unavoidable.

Impact TR-43: Implementation of the sub-variant, either in conjunction with the Proposed Project or the Project Variant, would contribute to significant cumulative traffic impacts at four freeway segments expected to experience significant cumulative traffic impacts under future conditions with the Proposed Project, as identified in Impact TR-41. (*Significant and Unavoidable with Mitigation*)

The sub-variant would not affect travel demand or roadway configurations at Study Area freeway facilities. Therefore, with implementation of the sub-variant, the Proposed Project with the sub-variant's (or the Project Variant with the sub-variant's) contribution to cumulative impacts on Study Area freeway facilities would be identical to the Proposed Project and would remain significant and unavoidable.

Impact TR-44: The Proposed Project would contribute transit ridership to Study Area screenlines expected to exceed available capacity under 2030 cumulative conditions. (*Significant and Unavoidable with Mitigation*)

Table V.E.17 summarizes the capacity utilization for each of the four Study Area screenlines for the AM and PM peak hours for Existing, Existing plus Project, and 2030 cumulative conditions. Three Study Area screenlines would experience demand exceeding capacity in at least one direction in at least one peak hour.

The northeast screenline (consisting solely of the M Ocean View light rail line) would experience capacity utilization greater than Muni's capacity utilization threshold of 85 percent in the AM peak hour in the inbound (toward Downtown) direction. In the PM peak hour, ridership would exceed Muni's capacity utilization threshold of 85 percent in both the inbound (toward Downtown) and outbound (away from Downtown) directions. As described in Impact TR-12 for existing plus project conditions, increasing the capacity on this Study Area screenline is not feasible, and therefore the Proposed Project's contribution to cumulatively significant impacts on this Study Area screenline would remain significant and unavoidable.

The south screenline (consisting of the 28 19th Avenue bus line) would experience capacity utilization greater than 85 percent during the AM peak hour in the outbound (away from Downtown) direction and during the PM peak hour in the inbound direction (toward Downtown).

Mitigation measure M-TR-44 would involve providing additional service along the 28 19th Avenue and 28L 19th Avenue Limited bus lines. Implementing mitigation measure M-TR-44 would reduce the cumulative impact to the south screenline to less-than-significant levels. However, because full funding has not been identified for this mitigation measure, the Proposed Project's contribution to cumulatively significant impacts to the south screenline would remain significant and unavoidable.

The north screenline (consisting of the 28 19th Avenue, the 18 46th Avenue, and the 29 Sunset bus lines) would experience capacity utilization greater than 85 percent in the PM peak hour in the outbound (away from Downtown) direction. Implementing mitigation measure M-TR-44, which would increase capacity of the 28 19th Avenue or 28L 19th Avenue Limited, would reduce cumulative impacts on the north screenline to less-than-significant levels. However, as described in the previous paragraph, implementation of mitigation measure M-TR-44 is uncertain, and therefore the Proposed Project's contribution to cumulatively significant impacts to the north screenline would remain significant and unavoidable.

M-TR-44: Provide additional capacity on the south and north screenlines by adding additional buses to the 28 19th Avenue and 28L 19th Avenue Limited lines. Providing additional service on the bus line would require further feasibility and capacity studies with coordination from SFMTA. The Project sponsor would be responsible to fund a "fair share" contribution towards the implementation of this mitigation measure. Although San Francisco does have an impact fee funding mechanism in place (i.e., Transit Impact Development Fee), the fee does not currently apply to residential projects. Therefore, funding for this improvement cannot be guaranteed.

Implementing Mitigation Measure M-TR-44 would reduce the cumulative impact on the south and north screenlines to less-than-significant levels. However, because full funding has not been identified for this mitigation measure, the Proposed Project's contribution to cumulatively significant impacts on the south and north screenlines would remain significant and unavoidable.

Impact TR-45: Implementation of the Project Variant would result in significant impacts on the same Muni Study Area Screenlines as identified in Impact TR-43 for the Proposed Project. (*Significant and Unavoidable*)

The Project Variant would not affect cumulative travel demand or transit capacity at Study Area screenlines, compared to the Proposed Project. Therefore, with implementation of the Project Variant, impacts on the Study Area northeast, south, and north transit screenlines would be identical to those of the Proposed Project and would remain significant and unavoidable.

Impact TR-46: Implementation of the sub-variant, either in conjunction with the Proposed Project or the Project Variant, would result in significant impacts on the same Muni Study Area Screenlines as identified in Impact TR-43 for the Proposed Project. (*Significant and Unavoidable*)

The sub-variant would not affect cumulative travel demand or transit capacity at Study Area screenlines. Therefore, with implementation of the sub-variant, either in conjunction with the Proposed Project or the Project Variant, impacts on the Study Area northeast, south, and north screenlines would be identical to the Proposed Project and would remain significant and unavoidable.

Impact TR-47: The Proposed Project would contribute to cumulative increases in transit ridership at the Downtown Screenlines, but total demand would not exceed available capacity. (*Less than Significant*)

Table V.E.18 summarizes the capacity utilization for the downtown screenlines for the AM and PM peak hours for existing and cumulative conditions. The Proposed Project would only add riders through the southwest Downtown screenline. Riders would be added to this screenline only in the peak-direction. Ridership on other screenlines would remain unchanged. With the addition of Proposed Project trips and other cumulative ridership increases, all Downtown screenlines would continue to operate within Muni's 85 percent utilization standard. Therefore, cumulative impacts on transit capacity utilization at the Downtown Screenlines would be less than significant, and no mitigation measures are required.

Impact TR-48: The Project Variant would contribute to cumulative increases in transit ridership at the Downtown Screenlines, but total demand would not exceed available capacity. (*Less than Significant*)

The Project Variant would not affect cumulative travel demand or transit capacity at Study Area screenlines, compared to the Proposed Project. Therefore, with implementation of the Project Variant, the Project Variant's contribution to cumulative impacts at Muni's Downtown Screenlines would be identical to the Proposed Project and would remain less than significant. No mitigation measures are required.

Impact TR-49: Implementation of the sub-variant, either in conjunction with the Proposed Project or the Project Variant, would contribute to cumulative increases in transit ridership at the Downtown Screenlines, but total demand would not exceed available capacity. (*Less than Significant*) (Criteria D.f,D.h)

The sub-variant would not affect cumulative travel demand or transit capacity at the Downtown Screenlines. Therefore, with implementation of the sub-variant, either in conjunction with the Proposed Project or the Project Variant, the contribution to impacts at Muni's Downtown Screenlines would be identical to the Proposed Project and would remain less than significant. No mitigation measures are required.

Impact TR-50: The Proposed Project would contribute to cumulative increases in transit ridership at the Regional Screenlines, but would not increase demand in excess of available capacity and would not contribute significantly to Regional Screenlines where overall cumulative ridership is projected to exceed available capacity. (*Less than Significant*)

Project transit improvements would not affect the capacity of the Regional Screenlines; however, a portion of the net increase in transit trips generated by the Proposed Project would cross the South Bay screenline and contribute to total ridership increases at this location. Table V.E.19

summarizes the capacity utilization for the regional transit provider screenlines for the AM and PM peak hours for Existing, Existing plus Project, and 2030 cumulative conditions.

The Proposed Project would contribute to ridership increases on regional transit to and from the South Bay. The South Bay transit services would operate within the 100 percent capacity utilization standard for regional transit operators. Therefore, the Proposed Project's contribution to cumulative impacts on regional transit capacity would be less than significant and no mitigation measures are required.

Impact TR-51: The Project Variant would contribute to cumulative increases in transit trips to the Regional Screenlines, but would not increase demand in excess of available capacity and would not contribute significantly to Regional Screenlines where overall cumulative ridership is projected to exceed available capacity. (*Less than Significant*)

The Project Variant would not affect cumulative travel demand or transit capacity at Regional Screenlines, compared to the Proposed Project. Therefore, with implementation of the Project Variant, the Project Variant's contribution to cumulative impacts at Regional Screenlines would be identical to the Proposed Project and would remain less than significant. No mitigation measures are required.

Impact TR-52: With implementation of the sub-variant, either in conjunction with the Proposed Project or the Project Variant, the Project would contribute to cumulative increases in transit trips to the Regional Screenlines, but would not increase demand in excess of available capacity and would not contribute significantly to Regional Screenlines where overall cumulative ridership is projected to exceed available capacity. (*Less than Significant*)

The sub-variant would not affect cumulative travel demand or transit capacity at Regional Screenlines. Therefore, with implementation of the sub-variant, either in conjunction with the Proposed Project or the Project Variant, the contribution to cumulative impacts at Regional Screenlines would be identical to the Proposed Project and would remain less than significant. No mitigation measures are required.

F. NOISE

The Setting discussion in this section explains how sound is characterized, describes the existing noise environment on and near the Project Site, provides information about how vibration is characterized, and summarizes relevant regulations and standards related to noise and vibration. The Impacts discussion describes and evaluates noise and vibration impacts. Mitigation measures are identified that would reduce otherwise significant noise and vibration impacts.

SETTING

NOISE BACKGROUND

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

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

¹ U.S. Department of Housing and Urban Development (USHUD), 1985. *The Noise Guidebook*. Available online at: <http://www.hud.gov/offices/cpd/energyenviron/environment/resources/guidebooks/noise/index.cfm>.

² U.S. Environmental Protection Agency, Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety. March, 1974. Available online at: <http://nonoise.org/library/levels74/levels74.htm>. Accessed April 28, 2010.

Table V.F.1: Typical Sound Levels Measured in the Environment

Examples of Common, Easily Recognized Sounds	Decibels (dBA) At 50 feet	Subjective Evaluations
Near Jet Engine	140	
Threshold of Pain (Discomfort)	130	Deafening
Threshold of Feeling – Hard Rock Band	120	
Accelerating Motorcycle (at a few feet away)	110	
Loud Horn (at 10 feet away)	100	
Noisy Urban Street	90	Very Loud
Noisy Factory	85	
School Cafeteria with Untreated Surfaces	80	Loud
Near Freeway Auto Traffic	60	Moderate
Average Office	50	
Soft Radio Music in Apartment	40	Faint
Average Residence Without Stereo Playing	30	
Average Whisper	20	
Rustle of Leaves in Wind	10	Very Faint
Human Breathing	5	
Threshold of Audibility	0	

Note:

Continuous exposure above 85 dBA is likely to degrade the hearing of most people. Range of speech is 50 to 70 dBA.

Source: U.S. Department of Housing and Urban Development, *The Noise Guidebook*, 1985.

Attenuation of Noise

Line sources of noise, such as roadway traffic, attenuate (lessen) at a rate of 3.0 dBA to 4.5 dBA per doubling of distance from the source, based on the inverse square law and the equation for cylindrical spreading of noise waves over hard and soft surfaces. Point sources of noise, including stationary and idle mobile sources such as idling vehicles or on-site construction equipment, attenuate at a rate of 6.0 dBA to 7.5 dBA per doubling of distance from the source, based on the inverse square law and the equations for spherical spreading of noise waves over hard and soft surfaces. For the purposes of this analysis, it is assumed that noise from line and point sources to a distance of 200 feet attenuates at rates of between 3.0 dBA and 6.0 dBA per doubling of distance, and the noise from line and point sources to a distance greater than 200 feet attenuates at a rate of 4.5 dBA to 7.5 dBA per doubling of distance, to account for the absorption of noise waves due to ground surfaces such as soft dirt, grass, bushes, and intervening structures.³

³ Caltrans (California Department of Transportation), 1998. Technical Noise Supplement, 1998.

L_{eq} , L_{dn} , and L_{max}

Time variations in noise exposure are typically expressed in terms of a steady-state energy level (called “ L_{eq} ”) that represents the acoustical energy of a given measurement. L_{eq} is used to describe noise over a specified period of time in terms of a single numerical value. The L_{eq} is the constant sound level that would contain the same acoustic energy as the varying sound level, during the same time period (i.e., the average noise exposure level for the given time period). Because community receptors are more sensitive to unwanted noise intrusion during the evening and at night, for planning purposes, an increment of 10 decibels is added to nighttime (10:00 p.m. to 7:00 a.m.) noise levels to form a 24-hour noise descriptor called the day-night noise level (L_{dn}). The maximum noise level (L_{max}) is the maximum instantaneous noise level measured during the specified measurement period. The L_{eq} , L_{max} , L_{dn} and the other statistical descriptors for noise that are used here are defined in terms of dBA using the A-weighted sound pressure level (also called sound level or noise level) scale.

Health Effects of Environmental Noise

The World Health Organization (WHO) is perhaps the best source of current knowledge regarding health impacts because European nations have continued to study noise and its health effects, while the USEPA all but eliminated its noise investigation and control program in the 1970s.⁴ According to WHO, sleep disturbance can occur when continuous indoor noise levels exceed 30 dBA or when intermittent interior noise levels reach 45 dBA, particularly if background noise is low. With a bedroom window slightly open (a reduction from outside to inside of 15 dB), the WHO criteria suggest that exterior continuous (ambient) nighttime noise levels should be 45 dBA or below, and short-term events should not generate noise in excess of 60 dBA. WHO also notes that maintaining noise levels within the recommended levels during the first part of the night is believed to be effective for the ability to fall asleep.⁵

Other potential health effects of noise identified by WHO include decreased performance for complex cognitive tasks, such as reading, attention span, problem solving, and memorization; physiological effects such as hypertension and heart disease (after many years of constant exposure, often by workers, to high noise levels); and hearing impairment (generally after long-term occupational exposure, although with shorter term exposure to very high noise levels, for example, exposure several times a year to concert noise at 100 dBA). Finally, noise can cause annoyance, and can trigger emotional reactions like anger, depression, and anxiety. WHO reports that during daytime hours few people are seriously annoyed by activities with noise levels below 55 dBA or moderately annoyed by activities with noise levels below 50 dBA.

⁴ The *San Francisco General Plan Land Use Compatibility Guidelines for Community Noise* are from this era.

⁵ World Health Organization, *Guidelines for Community Noise*. Geneva, 1999. Available on the internet at: <http://www.who.int/docstore/peh/noise/guidelines2.html>. Accessed April 28, 2010.

EXISTING NOISE ENVIRONMENT

Long-term environmental noise is primarily dependent on vehicle traffic volumes and the mix of vehicle types. The existing ambient noise environment within the Project Site, typical of most urban areas, is dominated by vehicular traffic on major thoroughfares such as 19th Avenue, Junipero Serra Boulevard, Brotherhood Way, and Lake Merced Boulevard, as well as traffic on local and interior roadways (autos, trucks, buses, and light rail trains) and the existing Muni Metro.

The San Francisco Department of Public Health (DPH) has mapped transportation noise throughout the City of San Francisco, based on modeled baseline traffic volumes derived from the San Francisco County Transportation Authority travel demand model. DPH maps indicate the areas subject to noise levels over 60 dBA (L_{dn}) and the range of L_{dn} values that occur along every street in San Francisco. The only roadway segment causing noise levels in excess of 70 dBA (L_{dn}) at the Project Site is along Junipero Serra Boulevard. Levels in excess of 65 dBA (L_{dn}) occur along 19th Avenue, Brotherhood Way, and Lake Merced Boulevard. Within the Project Site, noise levels are over 60 dBA along perimeter streets, including Holloway Avenue, Arballo Drive, Gonzalez Drive, and Cambon Drive, and on Font Boulevard and Juan Bautista Circle through the center.

In addition to vehicle traffic, continuous sources of machinery and mechanical noise also contribute to ambient noise levels. On the other hand, short-term noise sources, such as truck back-up beepers, the crashing of material being loaded or unloaded, car doors slamming and engines revving outside a nightclub, contribute very little to 24-hour noise levels but are capable of sleep disturbance and severe annoyance. The importance of noise to receptors depends on both time and context. For example, long-term high noise levels from large traffic volumes can make conversation at a normal voice level difficult or impossible, while short-term peak noise levels, if they occur at night, can disturb sleep.

Firing ranges used by the San Francisco Police Department and the San Francisco Rod and Gun Club are located west of the Project Site, on the other side of Lake Merced Boulevard. During the ambient noise measurements described below, gunshots (apparently from shotguns) were heard on occasion, but they did not affect the noise measurement results. It is known that activities at the shooting ranges have been the source of noise complaints and disturbances. Experience working with other police firing ranges has shown that certain types of gunfire can be disruptive to neighboring residents due to startle responses, such as noise from “flash-bang” weapons, and due to emotional reactions to the sound of automatic gunfire. Although noise from these sources would seldom be expected to materially affect measured noise levels, it can be disturbing to nearby residents, especially if they are unaware that such activities are present.

The Project Site has existing residential uses that rarely generate substantial noise during late night and early morning hours, when the residential population is most sensitive to the effects of noise.

An exception is the regularly scheduled garbage collection service, which may occur in early morning hours. Garbage trucks produce noise during operation of the lift and the compactor, which are operated by hydraulic systems. The equipment itself produces some noise due to impacts of refuse containers and the truck body, but the highest sustained noise levels are caused by the increase in the truck's engine speed that is needed to run the hydraulic motors. Noise levels produced by the garbage truck engines can reach over 80 dBA at a distance of 50 feet; the duration of a loading event is typically less than 30 seconds. In the existing condition, every residential block has at least one garbage container. When the garbage is collected, the residences nearest the container experience higher noise levels than the more distant units, and some units are shielded from the noise by other units.

Ambient Noise Measurements

Ambient 24-hour and short-term noise measurement data were collected throughout the Project Site to further characterize noise conditions in the vicinity. Measurements were taken at six locations beginning on April 7, 2010. Figure V.F.1: Noise Measurement Locations, illustrates these locations.

Table V.F.2 presents the measured ambient noise levels, in terms of the hourly L_{eq} range and the L_{max} , as well as the calculated L_{dn} value for each monitoring location site.

The noise measurement data indicate that ambient noise levels are generally lower in the interior of the Project Site than at the outer boundaries. This is due to the noise generated by traffic on the adjacent major roadways. Measured L_{dn} values in the interior of the Project Site were less than 65 dBA (L_{dn}), and the noise levels nearest the major roadways were in the range of 65 to 70 dBA (L_{dn}). Maximum noise levels were likely caused by individual loud vehicles on nearby roads.

Short-term (15-minute) noise measurements were performed at 20 locations to further characterize the daytime noise environment in the project vicinity. The noise measurement data included seven different statistical parameters, and observations were made of the dominant noise sources affecting the measurements. Table V.F.3, p. V.F.8, lists the short-term noise measurement results.



SOURCE: SOM, Turnstone Consulting

--- PROJECT BOUNDARY ● SHORT TERM NOISE MEASUREMENT (ST) ● LONG TERM NOISE MEASUREMENT (LT)



PARKMERCED PROJECT

FIGURE V.F.1: NOISE MEASUREMENT LOCATIONS

Table V.F.2: 24-Hour Ambient Noise Level Data in the Study Area

Measurement Location	Start Time	Noise Levels in dBA		
		Hourly L_{eq} range	L_{max}	L_{dn}
LT-1. Fence overlooking Brotherhood Way	10:00 a.m.	54–67	91	66.7
LT-2. Patio overlooking Lake Merced Boulevard	11:00 a.m.	48–65	86	61.5
LT-3. Rooftop at Diaz Avenue	12:00 p.m.	42–58	83	55.6
LT-4. Rooftop at Crespi Drive	12:00 p.m.	52–62	83	62.9
LT-5. Fence line at Garage No. 2	12:00 p.m.	51–74	94	66.3
LT-6. Apartment window on 8 th Floor of Building 46	12:00 p.m.	45–57	76	57.1

Note:
See Figure V.F.1 for measurement locations.

Source: Brown-Buntin Associates, Inc.

The short-term noise measurements also show the influence of traffic on ambient noise levels, especially adjacent to the SFSU campus, Junipero Serra Boulevard, and Brotherhood Way. In general, ambient noise levels in areas removed from the major traffic activity were well within acceptable limits for residential environments.

Noise measurements were conducted using Larson Davis Model 820 precision integrating sound level meters fitted with Bruel & Kjaer Type 4176 microphones. The meters were calibrated before use with a Bruel & Kjaer Type 4230 acoustical calibrator. Microphones were mounted at a height of about 5 feet above the ground or the rooftop on booms or tripods.

Light Rail Noise and Vibration

The Proposed Project includes rerouting the current Muni light rail line (M Ocean View) from the center median of 19th Avenue into Parkmerced. The M Ocean View line serves the area with stops in each direction every 8.5 minutes during peak hours and every 10 minutes during the midday, resulting in up to 14 train pass-bys per peak hour. To assist in evaluating potential noise

Table V.F.3: Short-Term Noise Levels in the Study Area

SITE	LOCATION	DATE	TIME	Sound Levels, dBA							Sources
				L _{eq}	L _{max}	L _{min}	L ₂	L ₈	L ₂₅	L ₅₀	
ST-1	Meadow	4/7/10	9:45	52.4	62.7	44.5	58.8	55.3	53.0	51.2	TR, AC
ST-2	Acevedo & Vidal	4/7/10	13:47	57.6	69.0	48.7	62.1	60.1	58.4	57.0	TR, AC, V, CS
ST-3	Font & Tapia	4/7/10	14:07	66.7	87.8	49.8	74.5	68.8	65.3	61.3	TR, CS
ST-4	Holloway & Arellano	4/7/10	14:34	59.9	71.0	46.9	66.7	64.0	60.8	58.0	TR, AC, V, CS
ST-5	Font & Serrano	4/7/10	15:05	57.2	74.7	46.8	64.4	60.3	56.6	53.5	TR, AC, V, CS
ST-6	Gonzalez & Bucareli	4/7/10	15:31	55.3	70.7	40.6	63.5	59.8	54.8	51.5	TR, CS
ST-7	Bucareli & Garces	4/7/10	15:52	56.3	71.2	42.4	66.9	60.5	54.8	50.0	TR, CS
ST-8	Vidal & Higuera	4/7/10	16:16	60.7	72.2	51.0	66.6	63.8	61.5	59.7	TR
ST-9	Masonic Temple	4/8/10	9:49	71.2	80.6	50.6	76.8	75.1	73.0	69.6	TR, AC
ST-10	Church of Lake Merced	4/8/10	10:12	71.5	84.2	50.5	77.8	75.7	73.1	68.3	TR, AC
ST-11	Diaz & Gonzalez	4/7/10	13:40	53.2	66.0	45.0	61.1	57.2	53.1	50.5	TR, AC
ST-12	Cambon & Cardenas	4/7/10	14:00	64.0	82.0	49.5	73.5	66.4	60.7	57.8	TR, CS
ST-13	Varella & Holloway	4/7/10	14:20	67.4	84.6	50.9	77.4	68.6	64.1	61.3	TR, AC, CS
ST-14	SFSU Campus	4/7/10	14:40	60.6	67.9	56.0	64.6	62.9	61.5	59.9	TR, V, CS
ST-15	Crespi Drive	4/7/10	15:00	57.7	75.0	44.3	63.7	61.4	54.7	52.6	TR
ST-16	San Juan Bautista Circle	4/7/10	15:20	51.0	66.6	44.7	55.1	53.7	51.9	50.3	TR, AC
ST-17	Font & Gonzalez	4/7/10	15:40	59.6	77.9	42.8	68.9	64.6	58.3	53.9	TR, V
ST-18	Josepha & Gonzalez	4/7/10	16:00	57.6	74.3	40.8	67.6	62.0	54.5	48.7	TR, AC
ST-19	Felix & Junipero Serra	4/7/10	16:20	71.3	77.0	61.3	74.5	73.4	72.4	71.3	TR
ST-20	625 Brotherhood	4/8/10	10:02	70.3	82.5	51.9	77.5	74.0	71.6	67.8	TR

Notes:

TR: Traffic AC: Aircraft V: Voices CS: Construction

See Figure V.F.1 for measurement locations.

Source: Brown-Buntin Associates, Inc.

and vibration impacts of the proposed Muni operations, noise and vibration measurements were conducted adjacent to the existing M Ocean View line route on 19th Avenue east of the Project Site.

Vibration measurements were conducted at two locations between 10:00 a.m. and 11:45 a.m. on April 7, 2010. The measurement equipment consisted of a Larson Davis Model 824 noise and vibration analyzer connected to a Bentley Nevada Model 47633 velocity transducer. The transducer was mounted to a massive aluminum plate that was placed flat on the ground surface. The system was calibrated using an IMI Model 699A02 shaker. Noise measurements were conducted using Larson Davis Models 820 and 824 precision integrating sound level meters, calibrated before use with either a Bruel & Kjaer Type 4230 or a Larson Davis Model CA-250 acoustical calibrator. Microphones were mounted at a height of about 5 feet above the ground on a tripod.

One measurement site was located at the intersection of Monticello Street and 19th Avenue, to describe the vibration levels of Muni trains passing by in a straight line. At this site, the velocity transducer was placed in soft earth immediately adjacent to the sidewalk, about 30 feet from the nearest rail. The second site, located where the 19th Avenue light rail line turns onto Randolph Street, described the vibration associated with a slow-speed turn of about 75 degrees, measured in soft earth at a distance of about 45 feet from the nearest rail. Table V.F.4 lists the results of the vibration measurements.

Table V.F.4: Measured Muni Vibration Levels

Location	Train Direction	Distance (feet)	No. of Events	Vibration Velocity Level (VdB)		
				Low	High	Energy Average
19 th Avenue at Monticello Street	NB	30	6	87.1	93.7	92.5
	SB	42	5	85.6	92.6	90.0
19 th Avenue at Randolph Street	SB	45	5	81.1	87.0	84.5
	NB	65	4	78.3	81.1	80.3

Note: NB = Northbound, SB = Southbound

Source: Brown-Buntin Associates, Inc.

It was noted that the Muni rail lines at the above measurement sites were embedded in the pavement, rather than being separated from the roadway on an isolated ballast mat as is often the case for light rail lines. The vibration measurements suggested that this placement of the rails in direct contact with the road surface enhanced the propagation of vibration to the adjacent properties and structures. The field observations suggested that the condition of the rails and wheels may have been another factor. The presence of jointed rails may also have caused measureable vibration events.

Single event noise measurements were conducted during light rail vehicle passages at the locations listed above, as well as at the intersection of Orizaba Avenue and Broad Street, where the Muni tracks turn 90 degrees. Table V.F.5 lists the results of these Muni pass-by noise measurements, performed on April 7 and 8, 2010.

Table V.F.5: Measured Muni Noise Levels

Location	Train Direction	Distance (feet)	No. of Events	A-Weighted Sound Exposure Level (SEL), dBA		
				Low	High	Energy Average
19 th Avenue at Monticello Street	NB	30	10	87.3	93.6	91.3
	SB	42	10	85.4	94.0	89.6
19 th Avenue at Randolph Street	SB	30	5	83.8	88.9	87.2
	NB	50	4	86.3	93.5	84.7
Orizaba Avenue at Broad Street	SB	30	6	83.6	98.9	93.8
	NB	50	6	83.6	86.2	84.9

Note: NB = Northbound, SB = Southbound.

Source: Brown-Buntin Associates, Inc.

The variations in measured noise levels at 19th Avenue and Monticello Street may have been due to differences in train speed and the condition or type of the rolling stock. Although questions have arisen in the past regarding possible differences in the noise levels produced by different brands of Muni light rail vehicles, the data collected for these measurements did not include the make or model of the individual trains.

The noise levels observed at the two sites where the Muni route turned varied substantially as a result of intermittent high-pitched “squeals” caused by the straight wheel flanges sometimes contacting the curved rails.

VIBRATION BACKGROUND

Vibration is an oscillatory motion through a solid medium in which the motion’s amplitude can be described in terms of displacement, velocity, or acceleration. Several different methods are used to quantify vibration. The peak particle velocity (PPV) is defined as the maximum instantaneous peak of the vibration signal. The PPV is most frequently used to describe physical vibration impacts to buildings. Typically, ground-borne vibration generated by man-made activities attenuates rapidly with distance from the source of the vibration. Sensitive receptors to vibration include structures (especially older masonry structures), people (especially residents, the elderly, and sick), and vibration-sensitive equipment.

The Federal Transit Administration (FTA) maintains guidance relative to assessing ground-borne vibration impacts, and FTA uses a logarithmic scale for vibration velocity levels (VdB), referenced to 1×10^{-6} inches/sec.⁶ Ground-borne vibration caused by rapid transit trains exceeding 75 VdB would be considered intrusive for residential land uses, and for a general assessment such as this, 72 VdB is the threshold for acceptable ground-borne vibration at a residential structure.

SENSITIVE RECEPTORS

Sensitive noise receptors are generally considered to include hospitals, nursing homes, senior citizen centers, schools, churches, libraries, and residences. Land uses within and near the Project Site are described in detail in Section V.A, Land Use. The Project Site contains 3,221 existing rental apartments and a private pre-school/day care facility that are considered sensitive receptors. Nearby religious institutions along Brotherhood Way, San Francisco State University (SFSU), and residential development on either side of 19th Avenue and Junipero Serra Boulevard are also considered sensitive. Stern Grove and Lowell High School are sensitive land uses that are more distant than the on-site and adjacent residences. Nearby recreational uses that surround Lake Merced, including golf courses and the San Francisco Zoo, are not considered to be noise sensitive because they are areas of active recreation where quiet is not essential for the area to serve its intended purpose. There are no hospitals or convalescent homes in the project vicinity.

REGULATORY FRAMEWORK

California Noise Insulation Standards

State regulations include requirements for the construction of new hotels, motels, apartment houses, and dwellings other than detached single-family dwellings that are intended to limit the extent of noise transmitted into habitable spaces. These requirements are collectively known as the California Noise Insulation Standards and are found in Title 24 of the California Code of Regulations. For limiting noise transmitted between adjacent dwelling units, the noise insulation standards specify the extent to which walls, doors, and floor-ceiling assemblies must block or absorb sound. For limiting noise from exterior sources, the noise insulation standards set forth an interior standard of 45 dBA (L_{dn}) in any habitable room and, where such units are proposed in areas subject to noise levels greater than 60 dBA (L_{dn}), a demonstration of how dwelling units have been designed to meet this interior standard is required. If the interior noise level depends upon windows being closed, the design for the structure must also include a heating, ventilation, and air conditioning (HVAC) system that will provide for adequate fresh air ventilation as specified by the building code.

⁶ U.S. Department of Transportation and Federal Transit Administration, Transit Noise and Vibration Impact Assessment, FTA-VA-90-1003-06, May 2006 (hereinafter “U.S. DOT/FTA, Transit Noise and Vibration”).

San Francisco General Plan

The Environmental Protection Element of the *San Francisco General Plan* contains Land Use Compatibility Guidelines for Community Noise.⁷ These guidelines, which are similar to but differ somewhat from state guidelines promulgated by the Governor's Office of Planning and Research, indicate maximum acceptable noise levels for various newly developed land uses.

These guidelines are presented in Figure V.F.2: San Francisco Land Use Compatibility Chart for Community Noise. Though this figure presents a range of noise levels that are considered compatible or incompatible with various land uses, the maximum "satisfactory" noise level is 60 dBA (L_{dn}) for residential and hotel uses, 65 dBA (L_{dn}) for school classrooms, libraries, churches and hospitals, 70 dBA (L_{dn}) for playgrounds, parks, office buildings, retail commercial uses and noise-sensitive manufacturing/communications uses, and 77 dBA for other commercial uses such as wholesale, some retail, industrial/manufacturing, transportation, communications, and utilities. If these uses are proposed to be located in areas with noise levels that exceed these guidelines, a detailed analysis of noise reduction requirements will normally be necessary prior to final review and approval.

San Francisco Noise Ordinance

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

⁷ San Francisco, 1996. San Francisco General Plan, adopted on June 27, 1996. Available online at: http://www.sf-planning.org/ftp/General_Plan/index.htm. Accessed April 28, 2010

Figure V.F.2: San Francisco Land Use Compatibility Chart for Community Noise

Land Use Category	Sound Levels and Land Use Consequences (L _{dn} Values in dB)						
	55	60	65	70	75	80	85
Residential – All Dwellings, Group Quarters	[Light gray bar from 55 to 60] [Dark gray bar from 60 to 70] [Black bar from 70 to 85]						
Transient Lodging - Motels, Hotels	[Light gray bar from 55 to 60] [Dark gray bar from 60 to 75] [Black bar from 75 to 85]						
School Classrooms, Libraries, Churches, Hospitals, Nursing Homes, etc.	[Light gray bar from 55 to 65] [Dark gray bar from 65 to 70] [Black bar from 70 to 85]						
Auditoriums, Concert Halls, Amphitheaters, Music Shells	[Light gray bar from 55 to 70] [Dark gray bar from 70 to 75] [Black bar from 75 to 85]						
Sports Arenas, Outdoor Spectator Sports	[Light gray bar from 55 to 75] [Dark gray bar from 75 to 80] [Black bar from 80 to 85]						
Playgrounds, Parks	[Light gray bar from 55 to 70] [Dark gray bar from 70 to 75] [Black bar from 75 to 85]						
Golf Courses, Riding Stables, Water-Based Recreation Areas, Cemeteries	[Light gray bar from 55 to 75] [Dark gray bar from 75 to 80] [Black bar from 80 to 85]						
Office Buildings – Personal, Business, and Professional Services	[Light gray bar from 55 to 70] [Dark gray bar from 70 to 75] [Black bar from 75 to 85]						
Commercial – Wholesale and Some Retail, Industrial/Manufacturing, Transportation, Communication, and Utilities	[Light gray bar from 55 to 75] [Dark gray bar from 75 to 80] [Black bar from 80 to 85]						
Manufacturing – Noise-Sensitive Communications – Noise-Sensitive	[Light gray bar from 55 to 70] [Dark gray bar from 70 to 75] [Black bar from 75 to 85]						

[Light gray bar] Satisfactory, with no special noise insulation requirements.

[Dark gray bar] 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.

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

[Black bar] New construction or development should generally not be undertaken.

Source: San Francisco, 1996. San Francisco General Plan, adopted on June 27, 1996. Available online at: http://www.sf-planning.org/ftp/General_Plan/index.htm. Accessed April 28, 2010.

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

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

Section 2908 prohibits any person, between the hours of 8:00 p.m. of any day and 7:00 a.m. of the following day to erect, construct, demolish, excavate for, alter, or repair any building or structure if the noise level created is in excess of the ambient noise level by 5 dBA at the nearest property line unless a special permit has been applied for and granted by the Director of Public Works.

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

As is common for noise standards, the permitted noise level for fixed residential interior noise limits identified in Section 2909(d) is lower at night than during the day. For example, maximum noise levels at any sleeping or living room inside any dwelling unit located on residential property must not exceed 45 dBA between 10:00 p.m. and 7:00 a.m., and 50 dBA between 7:00 a.m. and 10:00 p.m.

IMPACTS

SIGNIFICANCE CRITERIA

Implementation of the Proposed Project would have a significant noise impact if it were to:

- F.a Expose people to or generate noise levels in excess of standards established in the San Francisco General Plan or noise ordinance (Article 29 of the Police Code);
- F.b Expose people to or generate excessive groundborne vibration or groundborne noise levels;
- F.c Result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project;
- F.d Result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project;
- F.e For a project located within an area covered by an airport land use plan (or, where such a plan has not been adopted, within two miles of a public airport or public use airport), expose people residing or working in the project area to excessive noise levels;
- F.f For a project within the vicinity of a private airstrip, expose people residing or working in the project area to excessive noise levels; or
- F.g Be substantially affected by existing noise levels.

The Proposed Project is not located within an area covered by an airport land use plan or within 2 miles of a public airport or public use airport; nor is it within the vicinity of a private airstrip. Therefore, the Proposed Project would not expose people residing or working in the area to excessive airport or airstrip noise. This issue is not addressed further in this EIR.

METHODOLOGY

Temporary, construction-related noise impacts associated with the Proposed Project are analyzed in this EIR in a manner consistent with all development projects within San Francisco. Generally, compliance with the San Francisco Noise Ordinance, which is required by law, and implementation of project-specific mitigation measures would reduce construction noise effects from any development phase to a less-than-significant level.

This analysis identifies potential noise impacts associated with future development that could result from the Proposed Project. Operational noise issues evaluated in this section include: (1) noise generated by automobile, bus, and light rail traffic and the noise created by new fixed and stationary sources on the Project Site (e.g., district energy system, wind turbines, fire station, and police and fire substation(s), etc.) that would occur under future growth associated with the Proposed Project; and (2) compatibility of potential future uses with San Francisco Land Use Compatibility Guidelines for Community Noise. Traffic noise modeling was completed using the Federal Highway Administration Highway Traffic Prediction Noise Model (FHWA RD 77-108).

Traffic noise level significance is determined by comparing the predicted noise levels to the Land Use Compatibility Guidelines for Community Noise and by comparing the increased traffic noise levels to the Federal Interagency Committee on Noise (FICON) significance recommendations, which assess the annoyance effects of changes in ambient noise levels resulting from aircraft operations. Although the FICON recommendations were specifically developed to assess aircraft noise impacts, they are applicable to all sources of noise described in terms of cumulative noise exposure metrics such as the L_{dn} . FICON significance recommendations are provided in Table V.F.6.

The FICON findings are based upon studies that relate aircraft and traffic noise levels to the percentage of persons highly annoyed by the noise. Annoyance is a summary measure of the general adverse reaction of people to noise that generates speech interference, sleep disturbance, or interference with the desire for a tranquil environment. The rationale for the FICON findings is that it is possible to consistently describe the annoyance of people exposed to transportation noise in terms of L_{dn} or CNEL.⁸

The changes in noise exposure that are shown in Table V.F.6 are expected to result in equal changes in annoyance at sensitive land uses. As indicated in the table, an increase in traffic noise of 5 dB or more would be significant where the existing ambient noise level is less than 60 dBA (L_{dn}), an increase in traffic noise of 3 dB or more would be significant where the existing ambient noise level is between 60 and 65 dBA (L_{dn}), and an increase of 1.5 dB or more would be significant where the ambient noise level is more than 65 dBA (L_{dn}).

Table V.F.6: Measures of Substantial Increase for Transportation Noise Exposure

Ambient Noise Level Without Project (L_{dn})	Significant Impact Assumed to Occur if the Project Increases Ambient Noise Levels By:
<60 dB	+5.0 dB or more
60-65 dB	+ 3.0 dB or more
>65 dB	+ 1.5 dB or more

Source: Federal Interagency Committee on Noise (FICON), Federal Agency Review of Selected Airport Noise Analysis Issues, August 1992.

Ground-borne vibration impacts associated with construction and changes in operation of the light rail system are described using a general assessment methodology established in the FTA Transit Noise and Vibration guidelines. A general assessment uses reference levels and standardized propagation curves for typical transit vehicles to establish the potential for a significant impact. If the general assessment reveals a project-related ground-borne vibration level greater than 72 VdB at residential uses, then additional study would be needed to refine the

⁸ Community Noise Equivalent Level (CNEL). The equivalent energy (or energy average) sound level during a 24-hour day, obtained after the addition of 5 decibels to sound levels in the evening from 7 p.m. to 10 p.m. and 10 decibels to sound levels in the night before 7 a.m. and after 10 p.m.

assessment and establish site-specific measures to mitigate the impact. Impact characterization depends on the ability of the San Francisco Municipal Transportation Agency (SFMTA) to successfully implement and carry out future site-specific noise and vibration measures.

IMPACT EVALUATION

Construction

Impact NO-1: Project-related construction activities would increase noise levels above existing ambient conditions. (*Less than Significant with Mitigation*) (Criteria F.a, F.c, F.d)

Construction activities that would be associated with the Proposed Project are anticipated to occur continuously for approximately 20 years. Construction activities would include site preparation, grading, placement of infrastructure, placement of foundations for structures, and fabrication of structures. Demolition, excavation, and construction activities would require the use of heavy trucks, excavating and grading equipment, material loaders, cranes, concrete breakers, and other mobile and stationary construction equipment.

Future noise levels related to construction within and adjacent to the Project Site would fluctuate depending on the particular type, number, and duration of uses of various pieces of construction equipment. Construction activities could generate significant amounts of noise within the Project Site and on roadways accessing the site, corresponding to the particular phase of building construction and the noise-generating equipment used during construction. In addition, construction-related material haul trips would raise ambient noise levels along haul routes, depending on the number of truck haul trips made and types of vehicles used. Table V.F.7 provides typical noise levels produced by various types of construction equipment that would be used for construction.

Average noise levels at sensitive receptor locations would vary by construction phase, and would depend on the equipment used, the duration of the construction phase, and the proximity of construction activity to the noise-sensitive receptors. Noise from construction activities generally attenuates at a rate of 6 to 7.5 dBA per doubling of distance from the noise source. Current information on the proposed construction techniques indicates that drilled, jet-grouted, or driven piles may be appropriate for foundations into fill. Should construction require “impact activities” such as pile driving, noise levels could be as high as 95 dBA at 100 feet. Non-impact tools used during construction would be capable of generating average noise levels of approximately 80 dBA at 100 feet.

Table V.F.7: Typical Noise Levels from Construction Equipment

Construction Equipment	Noise Level (dBA, L_{eq} at 50 feet)
Truck	88
Air Compressor	81
Concrete Mixer	85
Scraper	89
Jack Hammer	88
Dozer	85
Paver	89
Generator	81
Pile Driver	101
Backhoe	80

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

Construction noise would be substantially greater than existing ambient noise levels and would have the potential to result in significant impacts to existing sensitive receptors. Although proposed construction activities would occur over a period of approximately 20 years, the construction activities that would impact sensitive receptors at any one location would be temporary. The loudest construction activities, such as pile driving, grading, excavation, etc., would occur over a fraction of the total construction period for the given phase, and once the particular construction activity was completed, the associated noise would no longer be experienced by the affected receptors.

Proposed construction would be required to comply with the San Francisco Noise Ordinance, which prohibits construction activities between 8:00 p.m. and 7:00 a.m. and limits noise from any individual piece of construction equipment, except impact tools, to 80 dBA at 100 feet unless the construction activity would occur during allowable hours. Mitigation Measures M-NO-1a and M-NO-1b, use of equipment with lower noise emissions and sound controls or barriers where feasible, location of stationary equipment as far as possible from sensitive receptors, use of noise-reducing pile driving techniques such as pre-drilling pile holes where feasible, and designation of a noise coordinator, would decrease construction noise levels and minimize the significant effects.

As long as construction activities that would occur as part of the Proposed Project would comply with the noise ordinance and feasible mitigation measures to reduce noise levels at receptor locations are implemented, construction noise impacts would be reduced to less-than-significant levels.

Mitigation Measure M-NO-1a: Reduce Noise Levels During Construction

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

- Provide enclosures and mufflers for stationary equipment, shroud or shield impact tools, and install barriers around particularly noisy activities at the construction sites so that the line of sight between the construction activities and nearby sensitive receptor locations is blocked to the maximum feasible extent;
- Use construction equipment with lower noise emission ratings whenever possible, particularly for air compressors;
- Provide sound-control devices on equipment no less effective than those provided by the manufacturer;
- Locate stationary equipment, material stockpiles, and vehicle staging areas as far as practicable from sensitive receptor locations;
- Prohibit unnecessary idling of internal combustion engines;
- Require applicable construction-related vehicles and equipment to use designated truck routes to access the project sites;
- Implement noise attenuation measures to the extent feasible, which may include, but are not limited to, noise barriers or noise blankets. The placement of such attenuation measures shall be reviewed and approved by the Director of Public Works prior to issuance of development permits for construction activities.
- Designate a Noise Disturbance Coordinator who shall be responsible for responding to complaints about noise during construction. The telephone number of the Noise Disturbance Coordinator shall be conspicuously posted at the construction site and shall be provided to the City. Copies of the construction schedule shall also be posted at nearby noise-sensitive areas.

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

The Project Sponsor shall require its construction contractor to use noise-reducing pile driving techniques if nearby buildings are subject to pile driving noise and vibration. These techniques shall include pre-drilling pile holes (if feasible, based on soils; see Mitigation Measure M-NO-2, pp. V.F.20-V.F.21) to the maximum feasible depth, installing intake and exhaust mufflers on pile driving equipment, vibrating piles into place when feasible, and installing shrouds around the pile driving hammer where feasible.

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

Impact NO-2: Construction activities could expose persons and structures to excessive ground-borne vibration or ground-borne noise levels. (*Less than Significant with Mitigation*) (Criterion F.b)

There are no adopted state or local policies or standards for ground-borne vibration. The average person is quite sensitive to ground motion, and levels as low as 0.50 mm/sec (0.02 inches/sec) can be detected by the human body when background noise and vibration levels are low. Vibration intensity is expressed as peak particle velocity (PPV), which is simply the maximum speed that the ground moves while it temporarily shakes. Since ground-shaking speeds are very small, PPV is measured in inches per second. The Federal Railroad Administration (FRA) and the Federal Transit Administration (FTA) have published guidance relative to vibration impacts. According to the FRA, fragile buildings can be exposed to ground-borne vibration (PPV) levels of 0.5 inches/sec without experiencing structural damage.⁹ The California Department of Transportation (Caltrans) recommends that extreme care be taken when sustained pile driving occurs within 25 feet of any building, or within 50 to 100 feet of a historic building or a building in poor condition.¹⁰

Ground-borne vibration from construction activities that involve “impact activities” (such as pile driving) could produce detectable vibration within nearby buildings and sensitive receptors unless proper mitigation is followed. Mitigation Measure M-NO-2 would decrease the vibration impacts associated with construction activities through implementation of such techniques as pre-drilling for piles and the development of a comprehensive monitoring program to detect ground settlement or lateral movement of structures. With implementation of Mitigation Measure M-NO-2, potential vibration impacts would be reduced to levels that would be considered less than significant.

Mitigation Measure M-NO-2: Pre-Construction Assessment to Minimize Vibration Levels Associated with Impact Activities

The Project Sponsor shall hire a qualified geotechnical engineer to conduct a pre-construction assessment of existing subsurface conditions and the structural integrity of nearby buildings subject to pile driving noise and vibration prior to receiving a building permit. If recommended by the geotechnical engineer, for structures or facilities within 50 feet of pile driving activities, the Project Sponsor shall require ground-borne vibration monitoring of nearby structures. Such

⁹ Federal Railroad Administration (FRA), High Speed Ground Transportation Noise and Vibration Impact Assessment. Final, 2005.

¹⁰ California Department of Transportation (Caltrans), *Transportation Related Earthborne Vibrations (Caltrans Experiences)*. Technical Advisory, Vibration TAV-02-01-R9601, February 20, 2002.

methods and technologies shall be based on the specific conditions at the construction site such as, but not limited to, the following:

- Pre-construction surveying of potentially affected structures;
- Underpinning of foundations of potentially affected structures, as necessary;
- The construction plan shall include a monitoring program to detect ground settlement or lateral movement of structures in the vicinity of impact activities. Monitoring results shall be submitted to the Department of Building Inspection. In the event of unacceptable ground movement, as determined by the Department of Building Inspection, all impact work shall cease and corrective measures shall be implemented. The impact program and ground stabilization measures shall be reevaluated and approved by the Department of Building Inspection.

Operations

Impact NO-3: Project-related traffic would increase noise levels above existing ambient conditions. (*Significant and Unavoidable*) (Criteria F.c, F.d)

The Proposed Project would result in a net increase of approximately 37,000 vehicle trips per day and fewer than 10 additional bus trips per day. Based on baseline and future traffic projections developed as part of the transportation analysis for the Proposed Project, baseline and future noise levels were estimated for representative major roadway segments within and adjacent to the Project Site. Modeled weekday L_{dn} traffic noise level estimates for the major roadway segments are presented in Table V.F.8. The change in noise levels caused by the Proposed Project is quantified and compared with either the 5 dB, 3 dB, or 1.5 dB threshold from FICON (Table V.F.6), depending on existing ambient noise levels, to characterize whether the change would be significant.

As shown in Table V.F.8, potentially significant weekday traffic noise level increases would be associated with the Proposed Project only along Gonzalez Drive, on the new roadway segment connecting Lake Merced Boulevard to the interior of the Project Site. The predicted substantial increase in traffic noise levels along the affected portion of Gonzalez Drive is associated with a significant change in land use: the introduction of a new roadway and ultimate replacement of existing low-density residences with high-density units. Since the new residential units would have no prior exposure to the existing noise environment, the increase in noise levels would be of little consequence there. At any existing residences that remain unchanged when the new road is placed into service, the changes in traffic noise levels could be significant until those units are replaced, and this impact may be unavoidable because relocating tenants may be infeasible. For the residences that remain along the new road, the absolute traffic noise level predicted at the nearest buildings after the Project is implemented would remain within conditionally acceptable limits and be less than 65 dBA (L_{dn}). The traffic noise increase experienced by any on-site residents along the future alignment of Gonzalez Drive connecting Lake Merced Boulevard to the

Table V.F.8: Modeled Weekday Project Traffic Noise Levels

Roadway	Segment	dBA (L _{dn})		Difference, dB	Significant Increase?
		Existing	Existing Plus Proposed Project		
Alemanly Blvd	West of Brotherhood Way	67.3	68.1	0.7	No
Brotherhood Way	North of Alemany Blvd	63.4	64.1	0.7	No
Junipero Serra Blvd	So. of St. Francis	63.2	63.4	0.2	No
Junipero Serra Blvd	So. of Ocean	63.0	63.1	0.2	No
Junipero Serra Blvd	So. of Winston	62.6	62.7	0.1	No
Junipero Serra Blvd	So. of Holloway	65.9	65.8	-0.1	No
Junipero Serra Blvd	So. of 19 th Ave.	70.0	70.1	0.1	No
19 th Avenue	West of Junipero Serra	72.7	72.8	0.1	No
Junipero Serra Blvd	So. of Font/Chumasero	69.9	70.1	0.2	No
John Daly Blvd	West of Junipero Serra	63.0	63.3	0.3	No
John Daly Blvd	West of Hwy 1 Ramps	62.7	63.3	0.6	No
19 th Avenue	So. of Sloat	68.0	68.0	0.0	No
19 th Avenue	So. of Ocean	68.4	68.5	0.0	No
19 th Avenue	So. of Eucalyptus	68.9	68.9	0.0	No
Winston Drive	West of 19 th Avenue	63.2	63.7	0.6	No
Holloway Avenue	West of 19 th Avenue	60.6	61.2	0.6	No
Crespi Drive	West of 19 th Avenue	53.3	53.4	0.0	No
Brotherhood Way	West of Chumasero	66.9	68.0	1.0	No
Brotherhood Way	East of Chumasero	69.7	70.8	1.2	No

Table V.F.8 (Continued)

Roadway	Segment	dBA (L _{dn})		Difference, dB	Significant Increase?
		Existing	Existing Plus Proposed Project		
Brotherhood Way	West of East Driveway	65.6	66.7	1.1	No
Brotherhood Way	West of West Driveway	64.2	65.3	1.1	No
Sunset Blvd	So..of Ocean	61.4	62.0	0.7	No
Lake Merced Blvd	So. of Sunset Blvd	64.9	65.5	0.6	No
Lake Merced Blvd	So..of Winston	70.1	71.2	1.1	No
Lake Merced Blvd	So. of Font	63.4	64.1	0.8	No
Lake Merced Blvd	So. of Higuera	64.0	64.8	0.8	No
Lake Merced Blvd	So. of Brotherhood	55.9	57.1	1.2	No
Lake Merced Blvd	So. of John Muir	60.5	62.0	1.5	No
John Daly Blvd	East of Lake Merced	61.9	62.7	0.8	No
Varela Avenue	So. of Holloway	58.3	58.3	0.0	No
Font Blvd	No. of Holloway	56.9	58.7	1.7	No
Font Blvd	So. of Holloway	53.5	54.5	1.0	No
Font Blvd	So. of Serrano Drive	53.1	55.9	2.8	No
Font Blvd	So. of Gonzalez Drive	54.9	57.3	2.4	No
Font Blvd	No. of Chumasero	55.2	56.1	0.9	No
Lake Merced Blvd	So. of Vidal Drive	63.5	64.2	0.7	No
Lake Merced Blvd	So. of Acevedo Avenue	63.5	64.2	0.6	No

Table V.F.8 (Continued)

Roadway	Segment	dBA (L _{dn})		Difference, dB	Significant Increase?
		Existing	Existing Plus Proposed Project		
Lake Merced Blvd	So. of Gonzalez Drive	62.9	64.3	1.4	No
Gonzalez Drive	East of Lake Merced	52.2	61.7	9.5	Yes

Notes:

Receptor distance was based upon the observed distance from the roadway centerline to the nearest buildings. Noise levels were determined using the FHWA Highway Traffic Noise Prediction Model (FHWA RD 77-108). The average speed on these segments was assumed to be the posted speed limit. The incremental increase is considered significant if the increase is more than or equal to 5 dB, 3 dB, or 1.5 dB in accordance with Table V.F.6.

Source: Brown-Buntin Associates, Inc.

interior of the Project Site would, however, be substantial, and the impact remains significant and unavoidable.

Impact NO-4: Increases in traffic from the project in combination with other development would result in cumulative noise increases. (Significant and Unavoidable) (Criteria F.c, F.d)

Based on baseline and future traffic projections developed as part of the transportation analysis for the Proposed Project, the Proposed Project would contribute to significant cumulative roadside noise levels. To assess the cumulative impact of project traffic on roadside noise levels, noise level projections for the cumulative condition were made using the FHWA Highway Traffic Noise Prediction Model and are shown below in Table V.F.9.

Similar to the project-only traffic impact, estimates associated with the cumulative scenario indicate that weekday traffic noise increases would exceed the incremental thresholds of Table V.F.6 only on the new segment of Gonzalez Drive connecting Lake Merced Boulevard to the project interior. The predicted substantial increase in traffic noise levels along the affected portion of Gonzalez Drive is associated with a significant change in land use: the introduction of a new roadway and ultimate replacement of existing low-density residences with high-density units. Since the new residential units would have no prior exposure to the existing noise environment, the increase in noise levels would be of little consequence there. At any existing residences that remain unchanged when the new road is placed into service, the changes in traffic noise levels could be significant until those units are replaced. Even in that case, the absolute traffic noise level predicted at the nearest buildings after the Proposed Project is implemented would remain within conditionally acceptable limits and be less than 65 dBA (L_{dn}). The cumulative impact of a substantial traffic noise increase at this on-site location would be significant and unavoidable.

Table V.F.9: Modeled Weekday Cumulative Traffic Noise Levels

Roadway	Segment	dBA (L _{dn})		Difference, dB	Significant Increase?
		Cumulative No Project	Cumulative Plus Proposed Project		
Alemanly Blvd	West of Brotherhood Way	70.0	70.4	0.4	No
Brotherhood Way	North of Alemany Blvd	65.1	65.6	0.5	No
Junipero Serra Blvd	So. of St. Francis	64.0	64.1	0.2	No
Junipero Serra Blvd	So. of Ocean	63.8	64.0	0.1	No
Junipero Serra Blvd	So. of Winston	63.6	63.7	0.1	No
Junipero Serra Blvd	So. of Holloway	66.6	66.6	-0.1	No
Junipero Serra Blvd	So. of 19 th Ave.	70.6	70.7	0.1	No
19 th Avenue	West of Junipero Serra	73.2	73.3	0.1	No
Junipero Serra Blvd	So. of Font/Chumasero	70.7	70.9	0.1	No
John Daly Blvd	West of Junipero Serra	63.9	64.2	0.2	No
John Daly Blvd	West of Hwy 1 Ramps	63.3	63.8	0.5	No
19 th Avenue	So. of Sloat	68.8	68.8	0.0	No
19 th Avenue	So. of Ocean	69.3	69.3	0.0	No
19 th Avenue	So. of Eucalyptus	69.7	69.7	0.0	No
Winston Drive	West of 19 th Avenue	64.9	65.3	0.4	No
Holloway Avenue	West of 19 th Avenue	62.1	62.6	0.5	No
Crespi Drive	West of 19 th Avenue	55.1	55.1	0.0	No
Brotherhood Way	West of Chumasero	68.5	69.3	0.8	No
Brotherhood Way	East of Chumasero	71.1	72.0	0.9	No
Brotherhood Way	West of East Driveway	67.4	68.1	0.7	No
Brotherhood Way	West of West Driveway	65.8	66.6	0.8	No

Table V.F.9 (Continued)

Roadway	Segment	dBA (L _{dn})		Difference, dB	Significant Increase?
		Cumulative No Project	Cumulative Plus Proposed Project		
Sunset Blvd	So. of Ocean	62.6	63.1	0.5	No
Lake Merced Blvd	So. of Sunset Blvd	66.8	67.2	0.4	No
Lake Merced Blvd	So. of Winston	71.1	72.0	0.9	No
Lake Merced Blvd	So. of Font	64.2	64.8	0.6	No
Lake Merced Blvd	So. of Higuera	64.8	65.5	0.7	No
Lake Merced Blvd	So. of Brotherhood	57.1	58.0	0.9	No
Lake Merced Blvd	So. of John Muir	63.4	64.3	0.8	No
John Daly Blvd	East of Lake Merced	62.7	63.4	0.7	No
Varela Avenue	So. of Holloway	58.3	59.6	1.3	No
Font Blvd	No. of Holloway	56.9	59.5	2.6	No
Font Blvd	So. of Holloway	53.5	57.1	3.6	No
Font Blvd	So. of Serrano Drive	53.1	55.9	2.8	No
Font Blvd	So. of Gonzalez Drive	54.9	59.3	4.4	No
Font Blvd	No. of Chumasero	55.2	59.2	4.0	No
Lake Merced Blvd	So. of Vidal Drive	64.4	64.9	0.6	No
Lake Merced Blvd	So. of Acevedo Avenue	64.4	64.9	0.5	No
Lake Merced Blvd	So. of Gonzalez Drive	63.4	64.7	1.2	No
Gonzalez Drive	East of Lake Merced	54.7	62.1	7.3	Yes

Notes:

Receptor distance was based upon the observed distance from the roadway centerline to the nearest buildings. Noise levels were determined using the FHWA Highway Traffic Noise Prediction Model (FHWA RD 77-108). The average speed on these segments was assumed to be the posted speed limit. The incremental increase is considered significant if the increase is more than or equal to 5 dB, 3 dB, or 1.5 dB in accordance with Table V.F.6.

Source: Brown-Buntin Associates, Inc.

Impact NO-5: Project-related light rail noise and vibration levels would increase above existing ambient conditions. (*Significant and Unavoidable*) (Criteria F.b, F.c, F.d)

The Proposed Project includes rerouting the current Muni light rail line (M Ocean View) from the center median of 19th Avenue into Parkmerced. The M Ocean View line serves the area with stops in each direction every 8.5 minutes during peak hours and every 10 minutes during the midday, resulting in up to 14 train pass-bys per peak hour.

The proposed realignment would introduce light rail train vehicle noise and vibration to the interior streets of the Project Site. The alignment would be from the entrance at the intersection of 19th Avenue and Holloway Avenue to the southwest and the intersection of Crespi and Gonzalez Drives, along the neighborhood core towards the intersection of Font Boulevard and Gonzalez Drive, along Felix Avenue, and to the layover station at the intersection of Font Boulevard and Chumasero Drive. Existing and new residential units would be adjacent to the proposed alignment, with existing and proposed building edges as close as 50 feet from the centerline of the rail.

Rail vehicles would introduce horn noise, signal noise, announcements, and noise from on-board mechanical systems. The Proposed Project alignment of the Muni M Ocean View line would carry the same light rail vehicles as described in the SFMTA Metro *Central Subway Supplemental EIS/EIR*.¹¹ Light rail train operations would result in both wayside noise from train pass-by and the use of onboard warning devices that are sounded as the vehicles enter the stations and at grade crossings. These on-board warning devices consist of a gong, bells, and horn that are used during various degrees of necessity. In general, either the gong or bells are used when the rail vehicles enter a station to alert passengers on the platforms of oncoming vehicles. The reference maximum noise levels for the different on-board warning devices are 75 dBA for the gong and 95 dBA for the bells at a distance of 10 feet. Assuming that the nearest residences would be within about 60 feet of the Muni trains, the predicted noise levels at those residences for the gong and bells would be reduced by about 15 dB to 60 dBA and 80 dBA, respectively.

Based upon the SFMTA Metro *Central Subway Supplemental EIS/EIR*,¹² the M line begins operations at about 5:35 a.m. and the last operation occurs at about 12:30 a.m. Early morning operations (7 a.m. to 9 a.m.) occur every 8.5 minutes on weekdays, and every 12–20 minutes on weekends. Evening and late night operations occur at intervals of 12 to 20 minutes on both

¹¹ U.S. DOT FTA and San Francisco Planning Department, *Central Subway Final Supplemental Environmental Impact Statement/Supplemental Environmental Impact Report*, certified September 2008, Case No. 96.281E, SCH No. 96102097. Available online at: <http://www.sfmta.com/cms/mcsp/csp.progress.htm>, in the Document Archives, accessed March 2010.

¹² *Ibid.*

weekdays and weekends. Applying these operational factors, there would be approximately 19 Muni operations during nighttime hours (10:00 p.m.-7:00 a.m.).

Interior noise levels resulting from the use of horns and gongs would be at least 20 dB lower than the noise levels outside the house, assuming that windows are closed. The resulting maximum interior noise levels would be 40 dBA for gongs and 60 dBA for bells. Either noise source could occur up to 19 times per day during the nighttime hours.

The potential for sleep disturbance due to single events such as aircraft overflights has been addressed by the Federal Interagency Committee on Aviation Noise (FICAN)¹³, and is relevant to the question of potential sleep disturbance due to the gongs and bells used in the Muni operations. The FICAN analysis employs the Sound Exposure Level (SEL), which is the integration of the acoustical energy of the entire noise event (in dBA) as though it occurred in one second. Assuming that the gongs and bells are sounded for about 6 seconds, the SEL for each event would be about 5 dB higher than the maximum noise level. Thus the SEL values of concern inside the nearest residences are about 45 dB for gongs and 65 dB for bells.

FICAN has evaluated the data and conclusions of three field studies to prepare the "FICAN 1997" curve, which predicts a conservative dose-response relationship for the combined field data. According to FICAN, the FICAN 1997 curve represents the upper limit of the observed field data, and should be interpreted as predicting the "maximum percent of the exposed population expected to be behaviorally awakened", or the "maximum % awakened" for a given residential population. The central tendency of the data was not chosen as the recommended curve because it could underestimate awakenings for some situations or communities.

Based on the FICAN 1997 curve, the predicted maximum percent of the exposed population expected to be awakened by an event having an interior SEL of 45 dB is 1.1 percent. The predicted maximum percent of the exposed population expected to be awakened by an event having interior SEL of 65 dB is 5.1 percent. The actual percentages of awakening may be somewhat higher for gongs and bells since they are intended to attract attention, whereas aircraft noise is not.

The effects of multiple noise events upon awakenings are not yet well defined. That is, it is not yet known whether each noise event has the same likelihood of causing an awakening, or whether the effect is cumulative. However, the sensitivity of people to awakening varies with the time of night and sleep stage, and the "background level" of spontaneous awakenings interferes with determinations of whether low levels of noise actually cause awakenings.

¹³ *Effects of Aviation Noise on Awakenings from Sleep*, Federal Interagency Committee on Aviation Noise, 1997.

The presence of the Muni station has the potential to result in awakenings at the nearest residences due to station public address systems and warning bells and gongs. To avoid the impact experienced by residences in a potentially incompatible noise environment (see Impact NO-6, pp. V.F.31-V.F.32) caused by exposure to noise from station activities, Mitigation Measure M-NO-6 requires that new residential uses would undergo appropriate noise analysis prior to approval and construction. Implementation of Mitigation Measure M-NO-6 would avoid potentially significant noise impacts to proposed residential uses and other sensitive development within the Project Site by ensuring appropriate noise analyses are carried out prior to final designs. Therefore, impacts would be mitigated to less-than-significant levels.

New stationary noise sources, needed to support the light rail vehicle operation along the realignment, could include a traction power substation that may be incorporated into the layover station design at Chumasero Drive. Because stationary mechanical or electrical equipment would be designed to meet and comply with the noise level limits of the San Francisco Noise Ordinance, no significant impacts are anticipated.

Locations along the proposed realignment would experience more than 70 train pass-bys per day, and the ground-borne vibration from each train could be intrusive for nearby existing and proposed residential uses. According to the FTA, generalized ground-borne vibration levels from light rail vehicles are approximately 75 VdB at 40 feet and less than 72 VdB for locations beyond 60 feet from the track centerline. This indicates that the FTA impact criterion of 72 VdB¹⁴ would be exceeded at residential buildings within 60 feet of the light rail track centerline. The Muni vibration levels measured at 19th Avenue were substantially higher than assumed for typical operations by the FTA, possibly because no vibration isolation is designed into the rail bed.

Proposed Project residential units along the Parkmerced neighborhood core, west of Gonzalez Drive, would experience this significant impact. Other buildings would be located farther away, making the vibration impact unlikely in these areas. The total number of units that would be located within 60 feet of the track centerline and would be adversely affected would depend on final site design. During final engineering design of the alignment, appropriate design features would have to be incorporated, and vibration propagation testing would have to be conducted to confirm the predicted impact and finalize appropriate mitigation, as described in Mitigation Measure M-NO-5 (Light Rail Noise and Vibration Reduction Plan).

Light rail noise and vibration would have the potential to result in a potentially significant increase in ambient noise and vibration conditions at the nearest sensitive receptor locations. However, implementation of Mitigation Measure M-NO-5 would ensure that the proposed realignment of the light rail line and its operations would be designed in a manner that would reduce the potentially significant noise and vibration impacts to a less-than-significant level.

¹⁴ U.S. DOT FTA, Transit Noise and Vibration (Figure 10-1).

Mitigation Measure M-NO-5, which would require discretionary approval actions by the SFMTA, is considered uncertain because public agencies subject to CEQA cannot commit to implementing any part of a proposed project, including proposed mitigation measures, until environmental review is complete. Thus, while the SFMTA has reviewed the feasibility of several mitigation measures proposed to address significant impacts, implementation of these measures cannot be assured until after certification of this EIR. Without certain implementation of Mitigation Measure M-NO-5, the noise and vibration impacts would be considered significant and unavoidable, requiring a finding and Statement of Overriding Consideration at the time of certifying this EIR.

Mitigation Measure M-NO-5: Light Rail Noise and Vibration Reduction Plan

The proposed realignment of the Muni M Ocean View light rail and its operations shall be designed with input from a qualified acoustical consultant so that light rail operation noise levels are attenuated at and in the vicinity of the final alignment so that the San Francisco Land Use Compatibility Guidelines for Community Noise standards are not exceeded. The Light Rail Noise and Vibration Reduction Plan shall be prepared by a qualified acoustical consultant and submitted to the City for review and approval prior to construction of the proposed realignment. The plan shall identify noise attenuation measures that would ensure compliance with the City's community noise guidelines, including, but not limited to, requiring light rail operators to reduce vehicle speeds when approaching and departing and operating within the Project Site. The following noise and vibration attenuation measures shall be included as part of the plan:

- **Rail Bed Design:** The light rail trackwork shall be designed to prevent the production of excessive vibration levels at the nearest sensitive structures. The design should include the installation of high-resilience direct fixation fasteners for embedded track, ballast mat for ballast and tie track, or other measures as determined by a qualified light rail vibration consultant.
- **Rail Grinding and Replacement:** As rails wear, both noise levels from light rail by-passes and vibration levels can increase. By grinding down or replacing worn rail, noise and vibration levels will remain at the initial operating levels. Rail grinding or replacement is normally performed every 3 to 5 years.
- **Wheel Truing and Replacement:** Wheel truing is a method of grinding down flat spots (commonly called "wheel flats") on the light rail's wheels. Flat spots occur primarily because of hard braking. When flat spots occur they can cause increases in both the noise and vibration levels produced by the light rail vehicles.
- **Vehicle Maintenance:** Vehicle maintenance includes performing scheduled and general maintenance on items such as air conditioning units, bearings, wheel skirts, and other mechanical units on the light rail vehicles. Keeping the mechanical system on the light rail vehicles in top condition will also help to control noise and vibration levels.
- **Operator Training:** Operators will be trained to maintain light rail travel speeds at those speeds given in the operation plan and to avoid "hard braking" whenever possible. As stated, hard braking can cause wheel flats and may also damage track. Furthermore,

by training operators to identify potential wheel flats and other mechanical problems with the trains, proper maintenance can be performed in a timely manner.

During final engineering design, vibration propagation testing shall be conducted at the final light rail alignment near Gonzalez Drive and Diaz Avenue to confirm the predicted impact and finalize the mitigation measures. Where vibration impacts are confirmed, they shall be reduced to meet the FTA criteria.

Impact NO-6: Proposed residences and other sensitive uses would be located in incompatible noise environments. (*Less than Significant with Mitigation*) (Criteria F.a, F.g)

Existing L_{dn} noise levels in the Project Site have been measured to range from approximately 55 to 67 dBA (L_{dn}) (see Table V.F.2, p. V.F.7). In addition, existing traffic noise levels have been modeled within the Project Site to range between 55 dBA (L_{dn}) and 58 dBA (L_{dn}) at the nearest buildings, and up to 73 dBA (L_{dn}) at the nearest buildings on the boundaries of the Project Site. Existing plus project traffic noise levels have been modeled within the Project Site to range between 55 dBA (L_{dn}) and 62 dBA (L_{dn}) at the nearest buildings (see Table V.F.8, pp. V.F.22-V.F.24).

The Land Use Compatibility Guidelines for Community Noise (see Figure V.F.2) indicate that any new residential construction or development in areas with noise levels above 60 dBA (L_{dn}) should be undertaken only after a detailed analysis of noise reduction requirements is made and needed noise insulation features are included in the design. In areas where noise levels exceed 65 dBA (L_{dn}), new residential construction or development is generally discouraged, but if it does proceed, a detailed analysis of noise reduction requirements must be undertaken and needed noise insulation features included in the design. Therefore, a detailed analysis of noise reduction requirements should be completed for all future residential uses proposed in areas subject to noise levels above 60 dBA (L_{dn}). Since the noise measurements and modeled traffic noise levels indicate that noise levels within the Project Site and on the boundaries of the Project Site exceed 60 dBA (L_{dn}), the proposed new residential development would experience potentially significant impacts due to noise compatibility, and detailed noise analyses would be required for residential development within the Project Site to reduce these impacts to levels that would be less than significant.

Because the new residential development planned for the Proposed Project would be attached (i.e., multi-family residential) units, the new residential development would be subject to Title 24 Noise Insulation requirements. This state regulation requires meeting an interior noise standard of 45 dBA (L_{dn}) in any habitable room and, where such units are proposed in areas subject to noise levels greater than 60 dBA (L_{dn}), demonstrating how dwelling units have been designed to meet this interior standard. Therefore, compliance with the state noise standards would ensure consistency with the *General Plan* noise standards for the new residential development within the

Project Site. The San Francisco Department of Building Inspection (DBI) enforces this requirement through the City's building permit process.

The Land Use Compatibility Guidelines for Community Noise indicate that analysis of noise reduction features should occur for other noise-sensitive land uses, including the proposed Pre K-5 school and day care facility, exposed to more than 65 dBA (L_{dn}). Since levels over 65 dBA (L_{dn}) would occur at locations within the Project Site, these uses would warrant additional analysis. School and day care facilities may be subject to particular design and construction standards to ensure consistency with the *General Plan* recommendations, depending on ultimate plans. However, without adequate design, such uses could be subject to potentially significant impacts due to traffic-generated noise. To avoid the potential significant impact of exposure of such uses to noise levels in excess of the *General Plan* Land Use Compatibility Guidelines threshold recommendations, Mitigation Measure M-NO-6 is identified to ensure that such uses would undergo appropriate noise analysis prior to approval and construction. Implementation of Mitigation Measure M-NO-6 would avoid potentially significant noise impacts to proposed residential uses and other sensitive development within the Project Site by ensuring appropriate noise analyses are carried out prior to final designs, so that noise levels would be consistent with the Land Use Compatibility Guidelines for Community Noise thresholds. Therefore, impacts would be mitigated to less-than-significant levels.

Mitigation Measure M-NO-6: Residential Use Plan Review by Qualified Acoustical Consultant

To ensure that interior noise levels induced by the light rail station, and by automobile, bus, and light rail traffic at noise sensitive uses do not result in excessive awakenings, or exceed an interior noise level standard of 45 dBA (L_{dn}), a qualified acoustical consultant shall review plans for all new residential uses, the new Pre K-5 school, and new day care facility, and provide recommendations to provide acoustical insulation or other equivalent measures to ensure that interior noise levels would not exceed acceptable limits and a cumulative noise level of 45 dBA (L_{dn}). These studies shall be presented to the Department of Building Inspection at the time that permits for individual buildings are submitted for review.

Impact NO-7: Operation of stationary noise sources (e.g., district energy system, wind turbines, fire station and police and fire substation(s), etc.) would increase existing noise levels, potentially exceeding noise level standards. (*Significant and Unavoidable*) (Criteria F.a, F.c, F.d)

The Proposed Project would result in the development of a district energy system, wind turbines, and other utility facilities and infrastructure. The details of these facilities are still in development, and final design would ultimately be presented in plans to be prepared in the future specifying the specific locations and performance requirements. The proposed distributed district energy system would generally be enclosed within boiler rooms, buildings, and structures

providing noise insulation, but since cooling or dehumidification equipment and heat pumps would need to be exposed to ambient conditions, these noise sources may be difficult to shield. The vertical axis wind turbines (VAWT) that would be installed along the western perimeter of the site, parallel to Lake Merced Boulevard, may be substantial stationary noise sources, depending on final design, power output capacity, wind and rotation speeds, mechanical upkeep, and maintenance, but detailed specifications of their noise levels and performance are not available at this time. Little data exists on the potential noise levels of the proposed VAWT or similar turbines because vertical axis designs are uncommon in current commercial applications.

The Proposed Project could also include a new police and fire substation(s) in the neighborhood core, and possibly a new fire station that could be constructed in the long-term buildout period. The police and fire substation(s) would be located in the vicinity of the neighborhood core, and, if ultimately determined, the fire station would be located in the southern portion of the Project Site, possibly north of the recreation center. Noise sources associated with operation of a substation and fire station include emergency warning buzzers or horns, and the sirens of departing emergency vehicles. Noise from these sources could occur at any time of the day or night, but would be relatively infrequent. Noise levels of emergency sirens are very high (90 to 100 dBA at 50 feet), and the sounds are designed to attract attention. As a result, their use at nighttime would be expected to result in sleep disturbance.

Although specific information regarding the proposed stationary noise sources is currently not available, many of them would be capable of generating noise levels in excess of applicable noise compatibility thresholds, depending on the types and location of nearby land uses. Operation of these noise sources would cause potentially significant impacts to the adjacent land uses including residences and other noise sensitive uses within the Project Site and near the Project Site boundaries. However, pursuant to Mitigation Measure M-NO-7, the Proposed Project stationary noise sources (e.g., district energy system, wind turbines, etc.) would either be designed with adequate noise attenuating features or sited in locations to achieve compliance with the noise level limits of the San Francisco Noise Ordinance and to achieve acceptable levels at the property lines of nearby residences or other noise sensitive uses, as determined by the San Francisco Land Use Compatibility Guidelines for Community Noise standards. To ensure that adequate performance of the attenuating features would be achieved, operational noise levels of the stationary noise sources would be monitored and if stationary noise sources were found to exceed the applicable noise standards, additional noise attenuation measures would be applied in order to meet the applicable noise standards. However, shielding the wind turbines and other stationary noise sources from noise sensitive land uses may diminish the utility or efficiency of the system, and the feasibility and effectiveness of the noise attenuation that could be featured with the final design are not known at this time. Therefore, mitigation of this impact to a less-than-significant level is not feasible, and the Proposed Project's impact would remain significant and unavoidable.

Mitigation Measure M-NO-7: Stationary Operational Noise Sources

All utility and industrial stationary noise sources (e.g., district energy system, wind turbines, etc.) shall be located away from noise sensitive receptors, be enclosed within structures with adequate setback and screening, be installed adjacent to noise reducing shields, or constructed with some other adequate noise attenuating features, to achieve compliance with the noise level limits of the San Francisco Noise Ordinance and to achieve acceptable levels at the property lines of nearby residences or other sensitive uses, as determined by the San Francisco Land Use Compatibility Guidelines for Community Noise standards. Once the stationary noise sources have been installed, the Project Sponsor shall retain a qualified acoustics specialist to monitor noise levels to ensure compliance with local noise standards. Initial noise monitoring shall occur within three months after the installation of the stationary noise source, and a report of the results shall be made available to on-site tenants. Subsequent noise monitoring shall be conducted by the Project Sponsor, within three months of on-site tenants reporting persistent intrusive noise. If project stationary noise sources exceed the applicable noise standards, a qualified acoustical consultant shall be retained by the Sponsor to install additional noise attenuation measures or acoustic insulation in order to meet the applicable noise standards.

Impact NO-8: Garbage collection would occur at different locations and could increase associated noise levels at elevated receivers. (*Less than Significant with Mitigation*) (Criteria F.c, F.d)

The Proposed Project would result in the construction of high-rise residential buildings which could expose additional people to the noise from garbage collection at designated locations (loading docks). Regularly scheduled garbage collection service could occur in the early morning hours. In the Project condition, every residential building would have at least one garbage container, typically located at a designated loading dock. When the garbage is collected, the residences nearest and overlooking the container would experience higher noise levels than the more distant units. Some units would be shielded from the noise by other units.

It is not generally practical to limit the hours of garbage collection, as this task must be completed on an area-wide basis in the morning before traffic and parked vehicles become hindrances. Noise exposures at nearby residences can be reduced by enclosing or otherwise shielding the loading docks from view by the nearest residences. These features can be integrated into the project design to mitigate garbage collection noise impacts.

To avoid the potential significant impact of exposure of new residences to garbage collection noise levels, Mitigation Measure M-NO-8 is identified to ensure that the proposed building designs would undergo appropriate plan review prior to approval and construction. Implementation of Mitigation Measure M-NO-8 would avoid potentially significant noise impacts to proposed residential uses and other sensitive development within the Project Site by ensuring

appropriate plan reviews are carried out prior to final designs. Therefore, impacts would be mitigated to less-than-significant levels.

Mitigation Measure M-NO-8: Residential Building Plan Review by Qualified Acoustical Consultant

To ensure that noise produced during garbage collection is reduced to the maximum practicable extent, a qualified acoustical consultant shall review plans for all new residential buildings and associated garbage collection facilities, and provide recommendations to provide enclosures, acoustical shielding, or other equivalent measures. These studies shall be presented to the Department of Building Inspection at the time that permits for individual buildings are submitted for review.

G. AIR QUALITY

SETTING

CRITERIA AIR POLLUTANTS

As required by the 1970 Federal Clean Air Act, the United States Environmental Protection Agency (USEPA) initially identified six criteria air pollutants that are pervasive in urban environments and for which state and federal health-based ambient air quality standards have been established. USEPA calls these pollutants criteria air pollutants because the agency has regulated them by developing specific public health- and welfare-based criteria as the basis for setting permissible levels. Ozone, carbon monoxide (CO), particulate matter (PM), nitrogen dioxide (NO₂), sulfur dioxide (SO₂), and lead are the six criteria air pollutants originally identified by USEPA. Since that time, subsets of particulate matter have been identified for which permissible levels have been established. These include particulate matter of 10 microns in diameter or less (PM₁₀) and particulate matter of 2.5 microns in diameter or less (PM_{2.5}).

The region's air quality monitoring network provides information on ambient concentrations of criteria air pollutants at various locations in the San Francisco Bay Area. Table V.G.1 is a five-year summary of highest annual criteria air pollutant concentrations (2004 to 2008), collected at the air quality monitoring station maintained and operated by the Bay Area Air Quality Management District (BAAQMD) at 16th and Arkansas Streets, in San Francisco's lower Potrero Hill area, which is the closest monitoring station.¹ Table V.G.1 compares measured pollutant concentrations with the most stringent applicable ambient air quality standards (state or federal).

Section V.H, Greenhouse Gas Emissions, of this EIR evaluates Proposed Project greenhouse gas (GHG) and carbon dioxide (CO₂) emissions and their potential contribution to climate change. Section V.P, Hazards and Hazardous Materials, of this EIR discloses the potential impacts related to asbestos and lead abatement.

Ozone

Ozone is a secondary air pollutant produced in the atmosphere through a complex series of photochemical reactions involving reactive organic gases (ROG) and nitrogen oxides (NO_x). The main sources of ROG and NO_x, often referred to as ozone precursors, are combustion processes (including motor vehicle engines) and the evaporation of solvents, paints, and fuels. In the Bay

¹ Data from this single location does not describe pollutant levels throughout San Francisco, as these levels may vary depending on distance from key emissions sources and local meteorology. However, the BAAQMD monitoring network does provide a reliable picture of pollutant levels over time.

Table V.G.1: Summary of San Francisco Air Quality Monitoring Data (2004–2008)

Pollutant	Most Stringent Applicable Standard	Number of Days Standards Were Exceeded and Maximum Concentrations Measured				
		2004	2005	2006	2007	2008
Ozone						
- Days 1-hour Std. Exceeded	>9 pphm ^a	0	0	0	0	0
- Max. 1-hour Conc. (pphm)		9	6	5	6	8
- Days 8-hour Std. Exceeded	>7 pphm ^a	0	0	0	0	0
- Max. 8-hour Conc. (pphm)		6	5	5	5	7
Carbon Monoxide (CO)						
- Days 1-hour Std. Exceeded	>20 ppm ^a	0	0	0	0	0
- Max. 1-hour Conc. (ppm)		2.9	2.9	2.9	2.7	5.7
- Days 8-hour Std. Exceeded	>9 ppm ^a	0	0	0	0	0
- Max. 8-hour Conc. (ppm)		2.2	2.1	2.1	1.6	2.3
Suspended Particulates (PM ₁₀)						
- Days 24-hour Std. Exceeded ^c	>50 µg/m ³ ^a	1	0	3	2	0
- Max. 24-hour Conc. (µg/m ³)		52	46	61	70	41
Suspended Particulates (PM _{2.5})						
- Days 24-hour Std. Exceeded ^d	>35 µg/m ³	0	0	3	5	0
- Max. 24-hour Conc. (µg/m ³)		46	44	54	45	29
- Annual Average (µg/m ³)	>12 µg/m ³ ^a	9.9	9.5	9.7	8.7	9.8
Nitrogen Dioxide (NO ₂)						
- Days 1-hour Std. Exceeded	>100 ppb ^e	0	0	0	0	0
- Max. 1-hour Conc. (ppb)		63	66	107	69	62
Sulfur Dioxide (SO ₂)						
- Days 24-hour Std. Exceeded	>40 ppb ^a	0	0	0	0	0
- Max. 24-hour Conc. (ppb)		6	7	6	6	4

Notes:

Bold values are in excess of applicable standard. “NA” indicates that data is not available.

conc. = concentration; ppm = parts per million; pphm = parts per hundred million; ppb=parts per billion; µg/m³ = micrograms per cubic meter

^a State standard, not to be exceeded.

^b Federal standard, not to be exceeded.

^c Based on a sampling schedule of one out of every six days, for a total of approximately 60 samples per year.

^d Federal standard was reduced from 65 µg/m³ to 35 µg/m³ in 2006.

^e Federal standard introduced in 2010, based on a 3-year average of the 98th percentile of daily highest samples.

Source: BAAQMD, Bay Area Air Pollution Summary, 2004–2008. Available online at:

<http://www.baaqmd.gov/Divisions/Communications-and-Outreach/Air-Quality-in-the-Bay-Area/Air-Quality-Summaries.aspx> and <http://www.arb.ca.gov/adam/cgi-bin/db2www/adamtop4b.d2w/start>.

Area, automobiles are the single largest source of ozone precursors. Ozone is referred to as a regional air pollutant because its precursors are transported and diffused by wind concurrently with ozone production through the photochemical reaction process. Ozone causes eye irritation, airway constriction, and shortness of breath and can aggravate existing respiratory diseases such as asthma, bronchitis, and emphysema. Table V.G.1 shows that, according to published data, the most stringent applicable standards (the state 1-hour standard of 9 parts per hundred million [pphm] and the federal 8-hour standard of 7.5 pphm) were not exceeded in San Francisco between 2004 and 2008.

Carbon Monoxide

CO is an odorless, colorless gas usually formed as the result of the incomplete combustion of fuels. The single largest source of CO is motor vehicles; the highest emissions occur during low travel speeds, stop-and-go driving, cold starts, and hard acceleration. Exposure to high concentrations of CO reduces the oxygen-carrying capacity of the blood and can cause headaches, nausea, dizziness, and fatigue; impair central nervous system function; and induce angina (chest pain) in persons with serious heart disease. Very high levels of CO can be fatal. As shown in Table V.G.1, the more stringent state CO standards were not exceeded between 2004 and 2008. Measurements of CO indicate hourly maximums ranging between 15 to 25 percent of the state standard, and maximum 8-hour CO levels that are approximately 30 percent of the allowable 8-hour standard.

Particulate Matter

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

cardiovascular and respiratory disease and asthma-related emergency room visits, and avoid hundreds of thousands of episodes of respiratory illness in California.²

Among the criteria pollutants that are regulated, particulates appear to represent a serious ongoing health hazard. As long ago as 1999, the BAAQMD was reporting, in its *CEQA Guidelines*, that studies had shown that elevated particulate levels contribute to the death of approximately 200 to 500 people per year in the Bay Area. High levels of particulates have also been known to exacerbate chronic respiratory ailments, such as bronchitis and asthma, and have been associated with increased emergency room visits and hospital admissions.³

Table V.G.1 shows that exceedances of the state PM₁₀ standard have routinely occurred in San Francisco. It is estimated that the state 24-hour PM₁₀ standard was exceeded on up to 36 days per year between 2004 and 2008.⁴ The BAAQMD began monitoring PM_{2.5} concentrations in San Francisco in 2002. The federal 24-hour PM_{2.5} standard was not exceeded until 2006, when the standard was lowered from 65 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$) to 35 $\mu\text{g}/\text{m}^3$. The state annual average standard was not exceeded between 2004 and 2008.

PM_{2.5} is of particular concern because epidemiologic studies have demonstrated that people who live near freeways and high-traffic roadways have poorer health outcomes, including increased asthma symptoms and respiratory infections and decreased pulmonary function and lung development in children. As a result, the San Francisco Department of Public Health (DPH) has sponsored legislation now codified in the San Francisco *Health Code*, Article 38, to require that residential projects located near high-volume roadways be subject to air quality modeling conducted to determine if annual average concentrations of PM_{2.5} from roadway sources within 500 feet of a project site would exceed a concentration of 0.2 micrograms per cubic meter (annual average).⁵ According to DPH, this threshold or action level of 0.2 $\mu\text{g}/\text{m}^3$ represents about 8 percent to 10 percent of the range of ambient PM_{2.5} concentrations in San Francisco based on monitoring data, and is based on epidemiological research that indicates that such a concentration can result in an approximately 0.28 percent increase in non-injury mortality, or an increased

² California Air Resources Board, "Recent Research Findings: Health Effects of Particulate Matter and Ozone Air Pollution," November 2007. Available online at: http://www.arb.ca.gov/research/health/fs/pm_ozone-fs.pdf. Accessed February 1, 2010.

³ BAAQMD, *BAAQMD CEQA Guidelines, Assessing the Air Quality Impacts of Projects and Plans*. December 1999 (Hereinafter "*BAAQMD CEQA Guidelines, 1999*")., p. B-3. Available online at: http://www.baaqmd.gov/pln/ceqa/ceqa_guide.pdf. Accessed February 1, 2010.

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

⁵ For purposes of evaluation of potential effects of PM_{2.5} exposure, DPH also recommends analysis where there are more than 50,000 daily vehicles within 330 feet (100 meters) of the site, or more than 10,000 daily vehicles within 165 feet (50 meters). These latter two conditions are included to capture equivalent impacts from lesser concentrations of traffic in smaller areas than the ARB-recommended standard of 100,000 daily vehicles within 500 feet (150 meters) (CARB, *Air Quality and Land Use Handbook: A Community Health Perspective*, 2005).

mortality at a rate of approximately 20 “excess deaths” per year per one million population in San Francisco.^{6,7} If this standard is exceeded, the project applicant must install a filtered air supply system, with high-efficiency filters, to maintain all residential units under positive pressure when windows are closed.

The Proposed Project would allow construction of an additional 5,679 net new residential units that would be subject to the PM_{2.5} concentration modeling requirement specified by DPH. (Residences are considered more sensitive than commercial uses because people generally spend longer periods of time at their residences, with associated greater exposure to ambient air quality.)

Nitrogen Dioxide

NO₂ is a reddish brown gas that is a by-product of combustion processes. Automobiles and industrial operations are the main sources of NO₂. Aside from its contribution to ozone formation, NO₂ can increase the risk of acute and chronic respiratory disease and reduce visibility. NO₂ may be visible as a coloring component on high pollution days, especially in conjunction with high ozone levels. The federal 1-hour standard was recently made more stringent by the USEPA with a statistical form that allows some hours to exceed the standard before triggering a nonattainment designation. Table V.G.1 shows that the standard for NO₂ is being met in the Bay Area, and pollutant trends suggest that the air basin will continue to attain these standards for the foreseeable future.

Sulfur Dioxide

SO₂ is a colorless acidic gas with a strong odor. It is produced by the combustion of sulfur-containing fuels such as oil, coal, and diesel. SO₂ has the potential to damage materials and can cause health effects at high concentrations. It can irritate lung tissue and increase the risk of acute and chronic respiratory disease.^{8,9} Table V.G.1 shows that the standard for SO₂ is being met in the Bay Area, and pollutant trends suggest that the air basin will continue to meet these standards for the foreseeable future.

⁶ “Excess deaths” (also referred to as premature mortality) refers to deaths that occur sooner than otherwise expected, absent the specific condition under evaluation, in this case, exposure to PM_{2.5}.

⁷ San Francisco Department of Public Health, Occupational and Environmental Health Section, Program on Health, Equity, and Sustainability, “Assessment and Mitigation of Air Pollutant Health Effects from Intra-urban Roadways: Guidance for Land Use Planning and Environmental Review,” May 6, 2008. Twenty excess deaths per million based on non-injury, non-homicide, non-suicide mortality rate of approximately 714 per 100,000. Although San Francisco’s population is less than one million, the presentation of excess deaths is commonly given as a rate per million population.

⁸ BAAQMD, *CEQA Guidelines*, 1999, p. B-2.

⁹ BAAQMD, *Draft CEQA Air Quality Guidelines*, May 2010 (hereinafter cited as “BAAQMD Draft CEQA Guidelines, 2010”). Available online at: <http://www.baaqmd.gov/Divisions/Planning-and-Research/CEQA-GUIDELINES.aspx>. Accessed April 28, 2010.

Lead

Leaded gasoline (phased out in the United States beginning in 1973), paint (on older houses, cars), smelters (metal refineries), and manufacture of lead storage batteries have been the primary sources of lead released into the atmosphere. Lead has a range of adverse neurotoxic health effects, and children are at special risk. Some lead-containing chemicals cause cancer in animals. Lead levels in the air have decreased substantially since leaded gasoline was eliminated.

TOXIC AIR CONTAMINANTS

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

TACs do not have ambient air quality standards, but are regulated by the BAAQMD using a risk-based approach. This approach uses a health risk assessment to determine what sources and pollutants to control as well as the degree of control. A health risk assessment is an analysis of exposure to toxic substances, and human health risks from exposure to toxic substances is estimated, based on the potency of the toxic substances.¹⁰ Using standard factors, the BAAQMD reports that the estimated lifetime cancer risk (70-year lifespan) from all air toxics combined declined from 1,330 cases per million in 1990 to 405 cases per million people in 2008.¹¹

In addition to monitoring criteria pollutants, both BAAQMD and ARB operate TAC monitoring networks in the San Francisco Bay Area. These stations measure 10 to 15 TACs, depending on the specific station. The TACs selected for monitoring are those that have traditionally been found in the highest concentrations in ambient air, and therefore tend to produce the most significant risk. The nearest BAAQMD ambient TAC monitoring station to the Project Site is the station at 16th and Arkansas Streets in San Francisco. Table V.G.2 shows ambient concentrations of carcinogenic TACs measured at the Arkansas Street station, and the estimated cancer risks from lifetime (70 years) exposure to these substances is also reported in the table. When TAC measurements at this station are compared to ambient concentrations of various TACs for the Bay Area as a whole, the cancer risks associated with mean TAC concentrations in San Francisco are similar to those for the Bay Area as a whole. Therefore, the estimated average lifetime cancer

¹⁰ In general, a health risk assessment is required if the BAAQMD concludes that projected emissions of a specific air toxic compound from a proposed new or stationary modified source suggest a potential public health risk, then the applicant is subject to a health risk assessment for the source in question. Such an assessment evaluates the chronic and acute health effects and the potential increased risk of cancer stemming from exposure to a change in airborne TACs.

¹¹ BAAQMD. Draft 2010 Clean Air Plan.

risk resulting from exposure to TAC concentrations monitored at the San Francisco station do not appear to be any greater than that for the Bay Area as a region.

Diesel Particulate Matter

Diesel exhaust is a growing concern throughout California. The ARB identified diesel particulate matter (DPM) as a toxic air contaminant in 1998, primarily based on evidence demonstrating

Table V.G.2: Annual Average Ambient Concentrations of Carcinogenic TACs Measured at BAAQMD Monitoring Station, 10 Arkansas Street, San Francisco^a

Substance	Conc. (ppb) ^b	Cancer Risk per Million ^c
Gaseous TACs		
Acetaldehyde	0.39	2
Benzene	0.18	17
1,3-Butadiene	0.036	14
<i>para</i> -Dichlorobenzene	0.15	10
Carbon Tetrachloride	0.094	25
Ethylene Dibromide	0.01	6
Formaldehyde	2.69	20
Perchloroethylene	0.02	0.8
Methylene Chloride	0.12	0.4
MTBE	0.61	0.6
Chloroform	0.015	0.4
Trichloroethylene	0.01	0.1
Particulate TACs		
	(ng/m ³) ^b	
Chromium (Hexavalent)	0.059	9
Total Risk for All TACs		96.3

Notes:

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

^b ppb is parts per billion, and ng/m³ is nanograms per cubic meter.

^c Cancer risks were estimated by applying published unit risk values to the measured concentrations.

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

cancer effects in humans.¹² The exhaust from diesel engines includes hundreds of different gaseous and particulate components, many of which are toxic. Many of these toxic compounds adhere to diesel particles, which are very small and can penetrate deeply into the lungs. The toxic substances represented by diesel particulate matter are not included in the concentrations reported in Table V.G.2, but would be in addition to those when determining total cancer risk from TACs. Mobile sources such as trucks, buses, and, to a much lesser extent, automobiles are some of the primary sources of diesel emissions. Studies show that the estimated cancer risk from exposure to diesel exhaust is much higher than the risk associated with any other toxic air pollutant routinely measured in the region. ARB estimated the average Bay Area cancer risk from DPM, based on a population-weighted average ambient diesel particulate concentration, at about 480 in one million as of 2000. The risk from DPM has declined from 750 in one million in 1990 and 570 in one million in 1995. ARB estimated the average statewide cancer risk from DPM at 540 in one million in 2000.^{13,14} Other studies have shown that diesel exhaust and other cancer-causing chemicals emitted from cars and trucks are responsible for much of the cumulative cancer risk from airborne toxics in California. Diesel exhaust also contains pulmonary irritants and hazardous compounds that could affect non-cancer health effects in sensitive receptors such as young children, senior citizens, or those susceptible to chronic respiratory disease such as asthma, bronchitis, and emphysema. Recent air pollution studies have shown an association between respiratory and other non-cancer health effects and proximity to high traffic roadways. The ARB community health risk assessments and regulatory programs have produced air quality information about certain types of facilities for consideration by local authorities when siting new residences, schools and educational facilities, day care centers, parks and playgrounds, and medical facilities (i.e., sensitive land uses). Sensitive land uses deserve special attention because children, pregnant women, the elderly, and those with existing health problems are especially vulnerable to the non-cancer effects of air pollution. There is also substantial evidence that children are more sensitive to cancer-causing chemicals.¹⁵

In 2000, the ARB approved a comprehensive Diesel Risk Reduction Plan to reduce diesel emissions from both new and existing diesel-fueled vehicles and engines. The Plan aims to

¹² California Air Resources Board, Fact Sheet, "The Toxic Air Contaminant Identification Process: Toxic Air Contaminant Emissions from Diesel-fueled Engines," October 1998. Available online at: <http://www.arb.ca.gov/toxics/dieseltac/factsht1.pdf>. Accessed on March 29, 2010.

¹³ ARB, *California Almanac of Emissions and Air Quality - 2009 Edition*, Table 5-44 and Figure 5-12. Available on the internet at: <http://www.arb.ca.gov/aqd/almanac/almanac09/chap509.htm>. Accessed February 01, 2010.

¹⁴ The calculated cancer risk values from ambient air exposure in the Bay Area can be compared against the lifetime probability of being diagnosed with cancer in the United States, from all causes, which is more than 40 percent (based on a sampling of 17 regions nationwide), or greater than 400,000 in one million, according to the National Cancer Institute.

¹⁵ California Air Resources Board, *Air Quality and Land Use Handbook: A Community Health Perspective*, April 2005 (hereinafter referred to as "*Air Quality and Land Use Handbook*"). Available online at: <http://www.arb.ca.gov/ch/handbook.pdf>. Accessed April 21, 2010.

develop and implement specific statewide regulations designed to reduce DPM emissions and the associated health risk 75 percent by 2010 and 85 percent by 2020. In addition to implementing more stringent engine controls (diesel engines produced today have one-eighth the tailpipe exhausts of a truck or bus built in 1990), diesel fuel is required to have lower sulfur levels. As of June 1, 2006, at least 80 percent of on-road diesel fuel refined in the United States was required to be ultra-low sulfur diesel, which resulted in a reduction in sulfur emissions by 97 percent. All of the diesel fuel sold in California for use with on-road trucks is now ultra-low sulfur diesel. With new controls and fuel requirements, 60 trucks built in 2007 would have the same soot exhaust emissions as one truck built in 1988.¹⁶

Despite these dramatic reductions in emission rates, reducing DPM emissions will take time, since older trucks will need to be retrofitted or phased out as part of fleet turnover. While these efforts are reducing diesel particulate emissions on a statewide basis, they do not yet capture every site on which diesel vehicles and engines operate. As a result, the ARB recommends that proximity to sources of DPM emissions be considered in the siting of new developments. For example, ARB's guidance recommends that new sensitive land uses (e.g., residences, schools and educational facilities, day care centers, playgrounds, or medical facilities) not be located within 500 feet of a freeway or urban road carrying at least 100,000 vehicles per day.

The ARB notes that these recommendations are advisory and should not be interpreted as defined "buffer zones." ARB acknowledges that land use agencies must balance other considerations, including housing and transportation needs, the benefits of urban infill, community economic development priorities, and other quality-of-life issues. With careful evaluation of exposure, health risks, and affirmative steps to reduce risk where necessary, ARB's position is that infill development, mixed use, higher density, transit-oriented development, and other concepts that benefit regional air quality can be compatible with protecting the health of individuals at the neighborhood level.¹⁷

ODOR EMISSIONS

There are no significant odor sources within or near the Project Site. According to BAAQMD records, a gasoline dispensing service station at 1101 Junipero Serra Boulevard on the perimeter of the Project Site and a short-term containment activity at San Francisco State University have been the only nearby sources of odor complaints within the last five years.¹⁸

¹⁶ Pollution Engineering, *New Diesel Fuel Rules Start*. July 2, 2006. Available online at: http://www.pollutionengineering.com/Articles/Industry_News/00e6c4c1be03c010VgnVCM100000f932a8c0____. Accessed March 29, 2010.

¹⁷ *Air Quality and Land Use Handbook*; p. 7.

¹⁸ BAAQMD, Response to Public Records Request received via e-mail April 28, 2010.

REGIONAL AIR QUALITY

The Project Site is within the jurisdiction of the Bay Area Air Quality Management District, which oversees the region's efforts to achieve and maintain the ambient air quality standards. The BAAQMD maintains the regional emission inventory of sources, including stationary, mobile, and area-wide sources. The BAAQMD is also responsible for issuing permits to construct and operate stationary sources, and for implementing the programs to review the air quality impacts of new stationary sources. The regional prevailing winds, topography, and weather, including sunlight and high temperatures, also play a role in regional air quality problems. Warmer temperatures create the conditions in which ozone formation can increase. In addition, higher temperatures would likely result in increased electricity use to power air conditioners and refrigerators. Increased power usage has the potential to result in increased air pollutant emissions as more electrical generation is needed to meet the demand.

The Community Health Air Pollution Information System (CHAPIS) database of the ARB maps facilities and stationary sources that emit inventoried criteria air pollutants and toxic air contaminants throughout California.¹⁹ The CHAPIS database does not indicate any major stationary air toxic or criteria pollutant emitting facilities within a one mile radius of the center of the Project Site.

Existing local air quality is affected by permitted stationary sources that routinely emit TACs and criteria pollutants at levels less than those considered major under BAAQMD rules. Stationary sources related to San Francisco State University utilities, including heating and power, and campus maintenance are adjacent to the Project Site between Holloway Avenue and Serrano Drive. Additionally, other minor stationary sources of emissions within 1,000 feet of the Project Site include maintenance yards, gasoline dispensing facilities, auto repair shops, and food preparation establishments.

SENSITIVE RECEPTORS

Air quality does not affect every individual in the population in the same way, and some groups are more sensitive to adverse health effects than others. As noted above, population subgroups sensitive to the health effects of air pollutants include the elderly and the young, population subgroups with higher rates of respiratory disease such as asthma and chronic obstructive pulmonary disease, and populations with other environmental or occupational health exposures (e.g., indoor air quality) that affect cardiovascular or respiratory diseases. Land uses such as schools and educational facilities, children's day care centers, parks and playgrounds, hospitals, and nursing and convalescent homes are considered to be more sensitive than the general public to poor air quality because the population groups associated with these uses have increased

¹⁹ California Air Resources Board (ARB). Community Health Air Pollution System (CHAPIS) website. Available online at: <http://www.arb.ca.gov/ch/chapis1/chapis1.htm>. Accessed March 27, 2010.

susceptibility to respiratory distress. Persons engaged in strenuous work or exercise also have increased sensitivity to poor air quality. Residential areas are considered more sensitive to air quality conditions compared to commercial and industrial areas because people generally spend longer periods of time at their residences, with associated greater exposure to ambient air quality conditions.²⁰

Motor vehicles are responsible for a large share of air pollution, especially in San Francisco. Epidemiologic studies have consistently demonstrated that children and adults living in proximity to freeways or busy roadways have poorer health outcomes, including increased asthma symptoms and respiratory infections, and decreased pulmonary function and lung development in children. Vehicles also contribute to particulates by generating road dust and through tire wear.

The Project Site includes 3,221 residential units and a private school and day care center, and is surrounded by other residential and educational land uses. The Proposed Project would also introduce sensitive receptors by adding 5,679 net new residential units and a Pre K-5 school and day care facility. Adjacent to the Project Site is San Francisco State University (SFSU) to the north and Peace Park to the south. Residential land uses are along either side of 19th Avenue, and the 721-unit Lakewood Apartment complex is near the Project Site to the west. On the south side of Brotherhood Way are the St. Thomas More School, Brandeis Hillel Day School, and the KZV Armenian School. In addition, the Alma Via assisted living community, also on the south side of Brotherhood Way, is considered a sensitive receptor. East of the Project Site there are numerous parks and recreation facilities including Brooks Park, Brotherhood/Chester Mini-Park, Brotherhood/Head Mini-Park, Junipero Serra Playground, Lakeview/Ashton Mini-Park, Merced Heights Playground, Minnie and Lovie Ward Recreation Center, and Randolph/Bright Mini-Park. The users of these parks and recreation facilities are also considered to be sensitive receptors of the project. There are no hospitals found in the vicinity of the Project Site.

REGULATORY FRAMEWORK

Air Quality Regulations and Plans

National Ambient Air Quality Standards

The 1970 Clean Air Act (as amended in 1990) required that regional planning and air pollution control agencies prepare a regional air quality plan to outline the measures by which both stationary and mobile sources of pollutants will be controlled in order to achieve all standards by the deadlines specified in the Clean Air Act. These ambient air quality standards are intended to protect the public health and welfare, and they specify the concentration of pollutants (with an

²⁰ The factors responsible for variation in exposure are also often similar to factors associated with greater susceptibility to air quality health effects. For example, poorer residents may be more likely to live in crowded substandard housing and be more likely to live near industrial or roadway sources of air pollution.

adequate margin of safety) to which the public can be exposed without adverse health effects. They are designed to protect those segments of the public most susceptible to respiratory distress, including asthmatics, the very young, the elderly, people weak from other illness or disease, or persons engaged in strenuous work or exercise. Healthy adults can tolerate occasional exposure to air pollution levels that are somewhat above ambient air quality standards before adverse health effects are observed.

The current attainment status for the San Francisco Bay Area Air Basin, with respect to federal standards, is summarized in Table V.G.3. In general, the Bay Area Air Basin experiences low concentrations of most pollutants when compared to federal standards, except for ozone and particulate matter (PM₁₀ and PM_{2.5}), for which standards are exceeded periodically.

In June 2004, the Bay Area was designated as a marginal nonattainment area of the national 8-hour ozone standard. USEPA lowered the national 8-hour ozone standard from 0.80 to 0.75 parts per million (ppm) effective May 27, 2008, and on January 6, 2010, the USEPA proposed to reduce the federal 8-hour ozone standard to 0.06 to 0.07 ppm. In December 2009, the Bay Area became designated as a nonattainment area for the national 24-hour PM_{2.5} standard, and this triggered the beginning of a multi-year planning process to develop strategies and regulations to ensure PM_{2.5} reductions. The Bay Area Air Basin is in attainment for other criteria pollutants.

State Ambient Air Quality Standards

Although the federal Clean Air Act established national ambient air quality standards, individual states retained the option to adopt more stringent standards and to include other pollution sources. California had already established its own air quality standards when federal standards were established, and because of differing approaches in developing standards, there is considerable diversity between the state and national ambient air quality standards, as shown in Table V.G.3. California ambient standards tend to be at least as protective as national ambient air quality standards and are generally more stringent.

In 1988, California passed the California Clean Air Act (California Health and Safety Code Sections 39600 et seq.), which, like its federal counterpart, called for the designation of areas as attainment or nonattainment, but based on state ambient air quality standards rather than the federal standards. As indicated in Table V.G.3, the Bay Area Air Basin is designated as “nonattainment” for state ozone, PM₁₀, and PM_{2.5} standards. The Bay Area Air Basin is designated as “attainment” at the state level for other pollutants.

Table V.G.3: State and Federal Ambient Air Quality Standards

Pollutant	Averaging Time	(State) SAAQS ^a		(Federal) NAAQS ^b	
		Standard	Attainment Status	Standard	Attainment Status
Ozone	1 hour	0.09 ppm	N	NA	See Note c
	8 hour	0.07 ppm	U ^d	0.075 ppm	N/Marginal
Carbon Monoxide (CO)	1 hour	20 ppm	A	35 ppm	A
	8 hour	9 ppm	A	9 ppm	A
Nitrogen Dioxide (NO ₂)	1 hour	0.18 ppm	A	0.100 ppm	U
	Annual	NA	NA	0.053 ppm	A
Sulfur Dioxide (SO ₂)	1 hour	0.25 ppm	A	NA	NA
	24 hour	0.04 ppm	A	0.14 ppm	A
	Annual	NA	NA	0.03 ppm	A
Particulate Matter (PM ₁₀)	24 hour	50 µg/m ³	N	150 µg/m ³	U
	Annual ^e	20 µg/m ³ ^f	N	50 µg/m ³	A
Fine Particulate Matter (PM _{2.5})	24 hour	NA	NA	35 µg/m ³	N
	Annual	12 µg/m ³	N	15 µg/m ³	A
Sulfates	24 hour	25 µg/m ³	A	NA	NA
Lead	30 day	1.5 µg/m ³	A	NA	NA
	Cal. Quarter	NA	NA	1.5 µg/m ³	A
Hydrogen Sulfide	1 hour	0.03 ppm	U	NA	NA
Visibility-Reducing Particles	8 hour	See Note g	A	NA	NA

Notes:

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

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

^b NAAQS = national ambient air quality standards. NAAQS, other than ozone and particulates, and those based on annual averages or annual arithmetic means, are not to be exceeded more than once a year. The 8-hour ozone standard is attained when the three-year average of the fourth highest daily concentration is 0.08 ppm or less. The 24-hour PM₁₀ standard is attained when the three-year average of the 99th percentile of monitored concentrations is less than the standard. The 24-hour PM_{2.5} standard is attained when the three-year average of the 98th percentile is less than the standard.

^c The USEPA revoked the national 1-hour ozone standard on June 15, 2005.

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

^e State standard = annual geometric mean; national standard = annual arithmetic mean.

^f In June 2002, the California Air Resources Board (ARB) established new annual standards for PM_{2.5} and PM₁₀.

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

Source: Bay Area Air Quality Management District (BAAQMD), *Standards and Attainment Status*, May 2009.

Available online at: http://hank.baaqmd.gov/pln/air_quality/ambient_air_quality.htm.

Air Quality Planning Relative to State and Federal Standards

In January 2006, the BAAQMD, in cooperation with the Bay Area Metropolitan Transportation Commission (MTC) and the Association of Bay Area Governments (ABAG), adopted the *Bay Area 2005 Ozone Strategy*. The Ozone Strategy is a roadmap showing how the San Francisco Bay Area will achieve compliance with the state 1-hour ozone standard as expeditiously as practicable, and how the region will reduce transport of ozone and ozone precursors to neighboring air basins. The control strategy includes stationary-source control measures to be implemented through BAAQMD regulations; mobile-source control measures to be implemented through incentive programs and other activities; and transportation control measures to be implemented through transportation programs in cooperation with the MTC, local governments, transit agencies, and others. The *2005 Ozone Strategy* also represents the Bay Area's most recent triennial assessment of the region's strategy to attain the state 1-hour ozone standard. In this, the *2005 Ozone Strategy* replaces the *2000 Clean Air Plan (CAP)*. Currently, the BAAQMD is developing its *2010 Clean Air Plan*. The draft updated *Clean Air Plan*, scheduled for final adoption in mid-2010, includes draft transportation control measures to: improve transit services; encourage sustainable travel behavior, support focused growth, and implement pricing strategies.²¹

San Francisco General Plan Air Quality Element

The *San Francisco General Plan (General Plan)* includes the 1997 Air Quality Element.²² The objectives specified by the City include the following:

- Objective 1: Adhere to state and federal air quality standards and regional programs.
- Objective 2: Reduce mobile sources of air pollution through implementation of the Transportation Element of the *General Plan*.
- Objective 3: Decrease the air quality impacts of development by coordination of land use and transportation decisions.
- Objective 5: Minimize particulate matter emissions from road and construction sites.
- Objective 6: Link the positive effects of energy conservation and waste management to emission reductions.

²¹ BAAQMD. *2010 Clean Air Plan* status website. Accessed March 2010. Available online at: <http://www.baaqmd.gov/Divisions/Planning-and-Research/Plans/Clean-Air-Plans.aspx>. Accessed April 28, 2010.

²² City and County of San Francisco, Planning Department, Air Quality, An Element of the *General Plan* of the City and County of San Francisco, July 1997, updated in 2000.

San Francisco Construction Dust Control Ordinance

The San Francisco *Health Code* (Article 22b) Dust Control Ordinance was adopted in July 2008 and requires that all site preparation work, demolition, or other construction activities within the City and County of San Francisco comply with specific dust control measures.²³ For projects over one-half acre, the Dust Control Ordinance requires that the project sponsor submit a Dust Control Plan for approval by the San Francisco Health Department prior to issuance of a building permit by the Department of Building Inspection (DBI). Building permits will not be issued without written notification from the Director of Public Health that the applicant has a site-specific Dust Control Plan, unless the Director waives the requirement. The Construction Dust Control Ordinance requires project sponsors and contractors responsible for construction activities to control construction dust on the site or implement other practices that result in equivalent dust control that are acceptable to the Director. Dust suppression activities may include watering all active construction areas sufficiently to prevent dust from becoming airborne; increased watering frequency may be necessary whenever wind speeds exceed 15 miles per hour. Reclaimed water must be used if required by Article 21, Section 1100 et seq. of the *San Francisco Public Works Code*.

San Francisco Land Use Guidance for Roadway Proximity Health Effects

The San Francisco *Health Code* (Article 38) requires an air quality assessment to evaluate the concentration of PM_{2.5} from local roadway traffic that may impact a residential development site (as defined by DPH in the guideline for Assessment and Mitigation of Health Effects from Intra-urban Roadways). If the DPH air quality assessment indicates that the concentration of PM_{2.5} at the site would be greater than 0.2 µg/m³ (micrograms per cubic meter), *Health Code* Section 3807 requires development on the site to be designed or relocated to avoid exposure greater than 0.2 µg/m³, or a ventilation system to be installed that would be capable of removing 80 percent of ambient PM_{2.5} from habitable areas of the residential units.

Consistency with San Francisco *Health Code* Article 38

Existing and Proposed Project land uses would be exposed to PM_{2.5} emissions from diesel-fueled and non-diesel-fueled vehicles. Annual average PM_{2.5} concentrations from roadway traffic were modeled by DPH using the EPA-approved dispersion model CAL3QHCR. One year of meteorological data from the Fort Funston monitoring station was used, since it presents the general wind pattern expected at the Project Site.

While the existing average annual PM_{2.5} concentrations across most of the Project Site are estimated to be approximately 0.1 micrograms per cubic meter (µg/m³) or less, the highest modeled PM_{2.5} concentrations occur along 19th Avenue, Junipero Serra Boulevard, and

²³ City and County of San Francisco Municipal Code, Health Code Article 22b.

Brotherhood Way, where average annual levels would exceed $0.2 \mu\text{g}/\text{m}^3$. In these locations nearest the heavy traffic, concentrations exceed the Article 38 $\text{PM}_{2.5}$ action level of $0.2 \mu\text{g}/\text{m}^3$, resulting in exposure of proposed land uses to elevated concentrations. DPH accordingly specifies air filtration requirements for any new residential development within approximately 200 feet from the edge of the Project Site boundary along Junipero Serra Boulevard, including ramps on Brotherhood Way, and within approximately 100 feet from the edge of the Project Site boundary along 19th Avenue or Brotherhood Way. Therefore, in these areas identified in the analysis by DPH, proposed residential uses are required to incorporate mechanical ventilation systems with ambient air filtration to reduce exposure to particulates and other traffic-related pollutants of concern.²⁴ This ensures that the new residential units would comply with Article 38 requirements.

Toxic Air Contaminants

In 2005, the ARB approved a regulatory measure to reduce emissions of toxic and criteria pollutants by limiting the idling of new heavy-duty diesel vehicles. The regulations generally limit idling of commercial motor vehicles (including buses and trucks) within 100 feet of a school or residential area for more than five consecutive minutes or periods aggregating more than five minutes in any one hour.²⁵ Buses or vehicles also must turn off their engines upon stopping at a school and must not turn their engines on more than 30 seconds before beginning to depart from a school. Also, state law SB351 (adopted in 2003) prohibits locating public schools within 500 feet of a freeway or busy traffic corridor.

IMPACTS

SIGNIFICANCE CRITERIA

The City and County of San Francisco has not formally adopted significance standards for impacts related to air quality. The Planning Department's Initial Study Checklist provides a framework of topics to be considered in evaluating potential impacts under the California Environmental Quality Act (CEQA). Implementation of a project could have significant impacts related to air quality, if it were to:

- G.a Conflict with or obstruct implementation of the applicable air quality plan;
- G.b Violate any air quality standard or contribute substantially to an existing or projected air quality violation;

²⁴ City and County of San Francisco Department of Public Health (DPH). Program on Health Equity and Sustainability. Parkmerced Project Amended Results. March 15, 2010.

²⁵ There are 12 exceptions to this requirement (e.g., emergency situations, military, adverse weather conditions, etc.), including when a vehicle's power takeoff is being used to run pumps, blowers, or other equipment; when a vehicle is stuck in traffic, stopped at a light, or under direction of a police officer; when a vehicle is queuing beyond 100 feet from any restricted area; or when an engine is being tested, serviced, or repaired.

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

BAAQMD Significance Thresholds

The current *BAAQMD CEQA Guidelines 1999* include adopted thresholds of significance for air emissions. These thresholds are presented below under “Criteria for Project-Level Operational Impacts.” They are used in the impact analyses below as a basis for determining whether the Proposed Project would cause significant air quality impacts. The BAAQMD issued *Draft CEQA Air Quality Guidelines*²⁶ and Proposed Thresholds of Significance in December 2009 and May 2010, which also provide reference points for considering whether a project would have a significant impact. These Guidelines are published as recommended procedures for evaluating potential air quality impacts during the environmental review process. Implementation of these guidance documents and their associated thresholds is at the discretion of the lead agency. Because BAAQMD anticipates adoption of the updated thresholds midyear 2010, the Proposed Project could become subject to the new thresholds should they be adopted before certification of this EIR. Additional information regarding BAAQMD’s proposed thresholds of significance appears at the end of this section.

Criteria Related to Construction Impacts

The current *BAAQMD CEQA Guidelines 1999* do not have any adopted quantitative thresholds for construction emissions. Instead, the current guidelines recommend a series of control measures to reduce primarily particulate emissions during construction. The current guidelines also provide limited recommendations for limiting combustion-related emissions of TACs from construction equipment including DPM.

Criteria for Project-Level Operational Impacts

For project-level impact analysis, the BAAQMD recommends various thresholds and tests of significance. Current guidelines recommend using a level of 80 pounds per day for determining whether operational emissions of ROG, NO_x, or PM₁₀ would be significant. For CO emissions, a project would be considered to have a significant impact if it leads to or contributes to CO concentrations exceeding the State Ambient Air Quality Standard.

²⁶ BAAQMD, *Draft CEQA Guidelines*, 2010.

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

Criteria for Cumulative Impacts

Generally, if a project results in an increase in ROG, NO_x, or PM₁₀ of more than their respective daily mass thresholds, then it would also be considered to contribute considerably to a significant cumulative effect. For projects that would not lead to a significant increase of ROG, NO_x, or PM₁₀ emissions, the cumulative effect is evaluated based on a determination of the consistency of the project with the current regional Clean Air Plan, the *Bay Area 2005 Ozone Strategy*.

METHODOLOGY

Project-related air quality impacts fall into two categories: short-term impacts due to construction, and long-term impacts due to project operation. First, during project construction, the Proposed Project would affect local concentrations primarily due to fugitive dust sources, namely PM₁₀ and PM_{2.5}, as well as construction equipment exhaust. Over the long term, the Proposed Project would result in an increase in emissions primarily due to increased motor vehicle trips. On-site stationary sources (such as natural gas boilers for water and space heating and cogeneration of electricity) and other “area” sources (such as landscaping and use of consumer products) would result in lesser quantities of pollutant emissions. No fireplaces would be included in the Proposed Project residences.

For construction impacts, the adopted *BAAQMD CEQA Guidelines 1999* do not require quantification of construction emissions, favoring an approach that significance be based on a consideration of whether control practices or best management practices (BMPs) are implemented.²⁷ However, given the proposed duration of construction activities over 20 years and the proximity of sensitive receptors, construction emissions are quantified for informational purposes, and impacts are characterized qualitatively with regard to the applicable BAAQMD-recommended BMPs.

Construction and operational emissions of criteria air pollutants were estimated using the URBEMIS2007 model (version 9.2.4) and compared to BAAQMD significance thresholds as applicable. The model combines information on construction phasing and equipment, and on trip generation with vehicular and equipment emissions data specific to different vehicle types and activity assumptions (including trips from home-to-work, work-other, etc.). The URBEMIS2007 model incorporates emission factors from the ARB’s OFFROAD2007 model for construction equipment emissions and from the EMFAC2007 model to create an estimated daily emissions

²⁷ *BAAQMD CEQA Guidelines*, 1999, p. 12.

rate for project-related travel within the San Francisco Bay Area Air Basin. These models do not provide forecasts of toxic air contaminant emission rates.

Localized concentrations due to motor vehicle operations are assessed for three different categories of pollutants. Localized CO concentrations near the most congested and poorly performing intersections are not expected to result in violations of ambient air quality standards, primarily due to two state-wide programs: 1) the 1992 wintertime oxygenated gasoline program, and 2) Phase I and II of the reformulated gasoline program. Since the time of the adopted *BAAQMD CEQA Guidelines 1999*, new vehicles have contributed to reduced CO emissions and long-term maintenance of the CO ambient air quality standards. Concentrations of CO are therefore addressed qualitatively. Exposure to diesel particulate matter and other TACs is similarly described qualitatively. Impacts due to fine particulate matter (PM_{2.5}) exposure during operation are assessed quantitatively via a separate analysis performed by the DPH.

Last, cumulative impacts of the project were evaluated based on the *BAAQMD CEQA Guidelines 1999*, as discussed under the “BAAQMD Significance Thresholds”, above.

IMPACT EVALUATION

Construction

Impact AQ-1: The Proposed Project would result in localized construction dust-related air quality impacts. (*Less than Significant*) (Criteria G.b, G.d)

Demolition, grading, and new construction activities would temporarily affect local air quality during the project’s proposed 20-year construction schedule, causing temporary increases in particulate dust and other pollutants. Emissions generated from construction activities include dust (including PM₁₀ and PM_{2.5}), primarily from “fugitive” sources; combustion emissions of criteria air pollutants (ROG, NO_x, CO, SO_x, and PM₁₀ and PM_{2.5}, addressed under Impact AQ-2), primarily from operation of construction equipment and worker vehicles; and evaporative emissions (ROG) from architectural coating applications. The adopted *BAAQMD CEQA Guidelines* use the implementation of standard control measures or BMPs as a threshold of significance. However, the Proposed Project would include a substantial degree of earth and materials movement, for which specific details are known or can be estimated. Because of the substantial degree of construction involved with the Proposed Project, a quantified construction impact analysis was performed to the degree feasible given the preliminary construction details (see Impact AQ-2 and Table V.G.4).

Project-related demolition, excavation, grading, and other construction activities may cause wind-blown dust that would disperse particulate matter into the local atmosphere. California has found that particulate matter exposure can cause health effects at lower levels than those mandated by national standards. The current health burden of particulate matter demands that, where possible,

Table V.G.4: Maximum Daily Construction Emissions of Criteria Air Pollutants

	Maximum Estimated Daily Emissions (pounds per day)					
	ROG	NO _x	CO	SO _x	PM ₁₀	PM _{2.5}
Phase 1						
2011	88.36	706.91	456.59	0.17	30.41	27.48
2012	340.02	653.45	434.01	0.17	27.73	24.89
2013	100.71	793.68	415.08	0.57	460.52	113.32
2014	164.80	990.02	705.61	0.33	45.99	38.92
2015	501.63	892.25	675.92	0.33	39.38	35.24
Phase 2						
2016	49.58	375.46	222.69	0.53	429.53	97.88
2017	59.40	393.13	326.90	0.53	428.43	96.86
2018	149.05	638.74	560.90	0.26	30.20	23.89
2019	226.37	314.01	308.29	0.13	17.52	12.02
2020	250.95	290.80	320.14	0.14	11.48	10.15
Phase 3						
2021	39.50	199.30	186.09	0.53	423.91	92.70
2022	48.87	279.18	289.18	0.53	423.91	92.70
2023	99.16	396.90	407.88	0.19	31.79	16.23
2024	318.97	404.49	411.17	0.19	31.90	16.32
2025	285.71	290.72	309.39	0.17	11.72	10.27
Phase 4						
2026	40.49	183.84	188.81	0.53	423.33	92.17
2027	47.94	275.59	263.93	0.11	27.56	9.56
2028	83.34	275.59	263.93	0.11	27.48	9.56
2029	91.12	275.60	264.23	0.12	10.77	9.56
2030	11.78	62.44	85.60	0.01	1.88	1.70
Maximum Daily	501.63	990.02	705.61	0.57	460.52	113.32
<i>Proposed New BAAQMD Threshold^a</i>	54	54	None	None	82	54

Note:

- a. Current BAAQMD CEQA Air Quality Guidelines favor a qualitative approach to characterizing significance of construction impacts. Proposed new Draft BAAQMD CEQA Guidelines would establish thresholds based on average daily emissions.

public agencies take feasible available actions to reduce sources of particulate matter exposure. According to the ARB, reducing ambient particulate matter from 1998 or 2000 levels to natural background concentrations in San Francisco would prevent over 200 premature deaths.

Dust can be an irritant causing watering eyes or irritation to the lungs, nose, and throat. Depending on exposure, adverse health effects can occur due to this particulate matter in general and also due to trace constituents of demolition debris or naturally occurring asbestos, which is a constituent of soil in some parts of San Francisco but not at the Project Site.

In response to concerns about particulate matter, the San Francisco Board of Supervisors approved a series of amendments to the San Francisco Building and Health Codes, generally referred hereto as the Construction Dust Control Ordinance (Ordinance 176-08, effective July 30, 2008). Its intent is to reduce the quantity of dust generated during site preparation, demolition, and construction work in order to protect the health of the general public and of on-site workers, minimize public nuisance complaints, and to avoid orders to stop work by the San Francisco DBI.

The Ordinance requires that all site preparation work, demolition, or other construction activities within San Francisco that have the potential to create dust or to expose or disturb more than 10 cubic yards or 500 square feet of soil comply with specified dust control measures whether or not the activity requires a permit from DBI. The Director of DBI may waive this requirement for activities on sites less than one-half acre that are unlikely to result in any visible wind-blown dust.

The project applicant and the contractor responsible for construction activities within the Project Site shall use practices to control construction dust or other practices that result in equivalent dust control that are acceptable to the Director of DBI. Dust suppression measures may include watering all active construction areas sufficiently to prevent dust from becoming airborne; increased watering frequency may be necessary whenever wind speeds exceed 15 miles per hour.

Reclaimed water must be used for soil compaction or dust control activities if required by Article 21, Section 1100 et seq. of the *San Francisco Public Works Code*. This Article requires the use of reclaimed water for soil compaction or dust control activities unless the General Manager of Public Works determines in writing that either (1) reclaimed water is not available in sufficient quality and quantity from wastewater treatment facilities located within 10 miles of the construction site, or (2) well water or ground water is not available in sufficient quality and quantity from wells and groundwater sources located within 10 miles of the construction site.

If not required, reclaimed water should be used whenever possible. Contractors are required to provide as much water as necessary to control dust (without creating runoff in any area of land clearing and/or earth movement). During excavation and dirt-moving activities, contractors are required to wet sweep or vacuum the streets, sidewalks, paths, and intersections where work is in progress at the end of the workday. Inactive stockpiles (where no disturbance occurs for more

than seven days) greater than 10 cubic yards or 500 square feet of excavated materials, backfill material, import material, gravel, sand, road base, and soil are required to be covered with a 10-mil (0.01 inch) polyethylene plastic (or equivalent) tarp, braced down, or use other equivalent soil stabilization techniques.

The Ordinance requires that the applicant submit a Dust Control Plan for approval by the San Francisco Health Department. DBI will not issue a building permit without written notification from the Director of Public Health that the applicant has a site-specific Dust Control Plan, unless the Director waives the requirement. Site-specific Dust Control Plans require the project sponsor to submit a map to the Director of Public Health showing all sensitive receptors within 1,000 feet of the site; wet down areas of soil at least three times per day; provide an analysis of wind direction and install upwind and downwind particulate dust monitors; record particulate monitoring results; hire an independent third party to conduct inspections and keep a record of those inspections; establish shut-down conditions based on wind, soil migration, etc.; establish a hotline for surrounding community members who may be potentially affected by project-related dust; limit the area subject to construction activities at any one time; install dust curtains and windbreaks on the property lines, as necessary; limit the amount of soil in hauling trucks to the size of the truck bed and secure loads with a tarpaulin; enforce a 15-mph speed limit for vehicles entering and exiting construction areas; sweep affected streets with water sweepers at the end of the day; install and utilize wheel washers to clean truck tires; terminate construction activities when winds exceed 25 miles per hour; apply soil stabilizers to inactive areas; and sweep off adjacent streets to reduce particulate emissions. The project applicant would be required to designate an individual to monitor compliance with dust control requirements.

Current BAAQMD guidance for assessing construction dust impacts states that for a project to have a less than significant air quality impact from construction generated dust BAAQMD-identified dust control measures (*BAAQMD CEQA Guidelines 1999*) or BAAQMD-recommended BMPs for dust abatement (proposed *Draft BAAQMD CEQA Guidelines*) must be implemented. These measures include the following elements:

- Water all active construction areas at least twice daily;
- Cover all trucks hauling soil, sand, and other loose materials, or require such trucks to maintain at least 2 feet of freeboard;
- Pave, apply water at a minimum three times daily in dry weather, or apply non-toxic soil stabilizers to all unpaved access roads, parking areas, and staging areas;
- Sweep daily (with water sweepers) all paved access roads, parking areas, and staging areas;
- Sweep streets daily (with water sweepers) if visible soil material is carried onto adjacent public street areas;
- Hydroseed or apply non-toxic soil stabilizers to inactive construction areas (previously graded areas inactive for ten days or more);

- Enclose, cover, water twice daily or apply (non-toxic) soil binders to exposed stockpiles (dirt, sand, etc.);
- Limit traffic speeds on unpaved roads to 15 miles per hour;
- Install sandbags or other erosion control measures to prevent silt runoff to public roadways;
- Replant vegetation in disturbed areas as quickly as possible;
- Install wheel washers for all exiting trucks, or wash off the tires of all trucks and equipment prior to leaving the site;
- Install wind breaks, or plant trees/vegetative wind breaks at windward side(s) of construction areas;
- Suspend excavation and grading activity when winds (instantaneous gusts) exceed 25 mph; and
- Limit the area subject to excavation, grading, and other construction activity at any one time.

The regulations and procedures set forth in the Construction Dust Control Ordinance of the *San Francisco Health Code* contain the BAAQMD-recommended BMPs identified above and would be a City-mandated requirement for the Proposed Project. Consequently, the potential for dust-related air quality impacts would be reduced to a level of insignificance, and no mitigation measures are required.

Impact AQ-2: Construction of the Proposed Project could affect regional air quality. (*Less than Significant*) (Criteria G.b, G.d)

Construction of the Proposed Project is anticipated to occur over approximately 20 years. Construction activities would include site preparation, grading, placement of infrastructure, placement of foundations for structures, and fabrication of structures. Demolition, excavation and construction activities would require the use of heavy trucks, excavating and grading equipment, material loaders, cranes, and other mobile and stationary construction equipment. Emissions during construction would be caused by materials handling, traffic on unpaved or unimproved surfaces, demolition of structures, use of paving materials and architectural coatings, exhaust from construction worker vehicle trips, truck trips, and exhaust from construction equipment such as loaders, graders, and cranes. Although not required to be quantified under current *BAAQMD CEQA Guidelines*, given the duration of the construction period (2011 through 2030), the estimated daily project construction emissions are presented in Table V.G.4.

Criteria pollutant emissions of ROG and NOx from construction equipment would incrementally add to the regional atmospheric loading of ozone precursors during project construction. The currently adopted *BAAQMD CEQA Guidelines*²⁸ recognize that construction equipment emits

²⁸ *BAAQMD CEQA Guidelines*, 1999.

ozone precursors, but for the purposes of CEQA analyses, the guidelines indicate that such emissions are included in the emissions inventory that is the basis for regional air quality plans. Therefore, the construction equipment emissions would be consistent with emission inventory estimates and would not be expected to impede attainment or maintenance of ozone standards in the Bay Area. Therefore, under current BAAQMD CEQA Guidelines, the impact of the construction activities on regional air quality would be presumed to be a less-than-significant impact.

Impact AQ-3: Construction of the Proposed Project could expose persons to substantial levels of toxic air contaminants, which may lead to adverse health effects. (Significant and Unavoidable) (Criteria G.b, G.d)

The Proposed Project could increase cancer risk from exposure to emissions of DPM and other TACs associated with off-road construction equipment and on-road haul trucks used during construction of the Proposed Project. The BAAQMD's existing CEQA significance thresholds for individuals exposed to new TAC sources are an increased incremental cancer risk of 10 in one million or greater or non-cancer risk hazard indices greater than or equal to one. Emissions rates for construction of the Proposed Project were derived from construction activity forecasts as described under Impact AQ-2 with quantification using the URBEMIS2007 model. To be conservative, all off-road PM_{2.5} exhaust emissions can be assumed to be DPM. Construction emissions estimates were developed for four distinct construction phases (see Chapter III. Project Description, for a full description of construction phasing assumptions), as shown in Table V.G.4.

Receptors within approximately 1,000 feet of construction activity within the Project Site would be most affected by construction-related TAC emissions. This includes all on-site residences, residences near the Brotherhood Chester Mini-Park, San Francisco State University (SFSU), and residential development on either side of 19th Avenue and Junipero Serra Boulevard.

The persons who would be most exposed to the construction-related impacts include:

- Existing residents in 1,683 units to be retained, who would remain through all phases over 20 years of Proposed Project construction;
- Existing residents from 327 units who would be relocated into newly constructed units early during Proposed Project construction and be present for the remainder of the 20-year construction schedule;
- Existing residents in units scheduled to be demolished, who would remain until they are relocated;
- Any new residents who would move in before completion of construction, forecast to occur in 2030, who would be exposed throughout the remainder of construction;
- Existing residents living near the Project Site boundaries, especially those along Font Boulevard, Holloway Avenue, and Cambon Drive, which would be immediately adjacent to certain phases of Proposed Project construction; and
- Workers located throughout the Project Site during all phases of construction.

Concentrations of DPM and TAC emissions from individual construction equipment exhaust typically disperse quickly over distance. Dispersion models and methodologies for estimating TAC concentrations and conducting health risk assessments are generally associated with long-term exposure periods of 9, 40, and 70 years, which do not correlate well with the relatively short-term and highly variable nature of construction activities. This results in difficulties with producing accurate estimates of health risk especially for construction activities.

The exposure duration for each construction phase would be five years, and the four phases would occur on different areas within the Project Site over the 20 years of construction. This limits the potential for high levels of incremental cancer risks to occur near any one construction phase because a 70-year exposure duration is typically used for assessing cancer risks. All construction activities must implement any applicable state-wide air toxics control measures (ATCM) that address and require DPM controls. Despite the regulatory programs in place to reduce DPM emissions from construction equipment, and despite the limited exposure of most persons to the construction-phase emissions, both of which would limit potential health effects, there would be some uncertainty in concluding the impact is less than significant. The worst-case health effects would be experienced by any residents in the roughly 2,000 units who remain either on-site or remain relocated within the site for the entire 20 years of construction. The phased nature of the Proposed Project and the potential for residents to remain and relocate within the site make precise quantification of health risks for an individual or group of individuals impossible. For these residents, the incremental cancer risk could possibly exceed 10 in one million. Similarly, the overall chronic and acute non-cancer hazard indices associated with construction related TAC exposure could approach or exceed the BAAQMD recommended threshold of 1.0 for the on-site residents closest to the construction emissions. Implementation of construction emission control measures (Mitigation Measure M-AQ-3) would reduce DPM exhaust emissions by implementing feasible controls and requiring up-to-date equipment, but the potential remains for receptors closest to the construction to be impacted. Therefore, impacts associated with construction-related incremental cancer risk and non-cancer health impacts are considered significant and unavoidable.

Mitigation Measure M-AQ-3: Construction Exhaust Emissions. The applicant shall implement feasible combustion emission reduction strategies, during construction activities, including the following measures:

- The project applicant shall keep all off-road equipment well-tuned and regularly serviced to minimize exhaust emissions, and shall establish a regular and frequent check-up and service/maintenance program for equipment.

- Off-road diesel equipment operators shall be required to shut down their engines rather than idle for more than five minutes, unless such idling is necessary for proper operation of the equipment.²⁹
- Clear signage shall be provided for construction workers at all access points.

The applicant shall require construction contracts to specify implementation of the following combustion emission reduction strategies, during construction activities:

- The project should use equipment with engines compliant with USEPA Tier 3 engine standards or better for all off-road equipment, or utilize Retrofit Emission Control Devices which consist of diesel oxidation catalysts, diesel particulate filters or similar retrofit equipment control technology verified by the California Air Resources Board (CARB) (<http://www.arb.ca.gov/diesel/verdev/verdev.htm>), where feasible.
- The project shall use equipment with engines compliant with USEPA Tier 4 engine standards or better for 50 percent of the fleet by 2015, increasing to 100 percent by 2020.
- The project should use 2007 or newer model year haul trucks, where feasible.

Operations

Impact AQ-4: The Proposed Project's operations could affect regional air quality. (Significant and Unavoidable) (Criteria G.b, G.d)

The Proposed Project consists of high-density, compact residential and commercial development located within walking distance of an intermodal transit hub to maximize walking, bicycling, and use of public transportation, and to minimize the use and impacts of private automobiles.

The Proposed Project would include numerous elements that would reduce motor vehicle trips compared to a similar development in a non-urban or suburban setting without trip reduction elements (sometimes termed "business as usual" or BAU). The Proposed Project would include the following trip-reduction elements:

- Low-emissions vehicle shuttle to the Daly City BART station;
- Shopper shuttles to the nearby Stonestown Galleria and the Westlake Shopping Center in Daly City;
- Bicycle path and free bicycle rental program for residents;
- Pedestrian pathways;
- A real-time transportation website;
- Carpool/vanpool services; and
- Parking management programs.

²⁹ CARB Heavy-Duty Vehicle Idling Emission Reduction Program, <http://www.arb.ca.gov/msprog/truck-idling/factsheet.pdf> California Code of Regulations Title 13, Section 2485.

Operational emissions for vehicle trips and some area sources were calculated using the URBEMIS2007 (version 9.2.4) computer model. Trip generation rates of the model were adjusted to reflect the project-specific vehicle trip generation of the Transportation Impact Analysis.³⁰ The model default vehicle trip lengths specific to the San Francisco Bay Area Air Basin were used.

The Proposed Project would result in a net increase of approximately 37,000 vehicle trips per day over existing conditions. The delays caused to transit service from traffic generated by the Proposed Project would trigger a need for approximately five additional bus vehicles to certain lines. Bus emissions were included in the mobile source fleet mix default within URBEMIS2007, with emission factors for diesel buses being generated by the ARB's EMFAC2007 model.

Area sources that consist of landscape maintenance equipment exhaust, use of consumer products that emit ROG, maintenance application of architectural coatings, and on-site natural gas combustion were calculated using URBEMIS default values for each land use type. The capacities, locations, and fuel use requirements of the proposed boilers and cogeneration system are still under consideration at this preliminary stage. The proposed distributed district energy system would serve the same function as numerous small space heaters and water heaters within individual units, with likely fewer emissions per residential unit. The proposed boilers and cogeneration system would either be exempt from permitting requirements or would need to comply with BAAQMD permit conditions. Cogeneration would be exclusively fueled by pipeline-quality natural gas. Any notable or non-exempt³¹ additional emissions or use of fuel other than natural gas would be subject to additional environmental review including BAAQMD New Source Review requirements, which requires sources to install the best available control technology and be subject to health risk screening for toxic air contaminants. This assessment quantifies the on-site natural gas use here for heat and hot water, and additional assessment could be required for cogeneration production of electricity, if additional natural gas firing is specified by the final designs (e.g., in a combustion engine or turbine). The Proposed Project would not include stationary diesel-fueled sources, such as backup generators for emergency electricity production.

Table V.G.5 shows that the Proposed Project would result in an increase in criteria pollutant emissions that would be considered significant under BAAQMD significance thresholds.

³⁰ Fehr & Peers, *Final Transportation Impact Analysis*, May 2010

³¹ An Authority to Construct (ATC) is required by BAAQMD Regulation 2, Rule 1 for any non-exempt source. Natural gas-fired heaters with a heat input rate of less than 10 million British thermal units (Btu) per hour are exempt, and stationary internal combustion engines and gas-fired combustion turbines with an output rating of less than 50 horsepower (hp) are exempt.

Table V.G.5: Estimated Daily Emissions for the Proposed Project

Emission Source	Estimated Daily Emissions (pounds per day)					
	ROG	NOx	CO	SOx	PM ₁₀	PM _{2.5}
Proposed Project (2030)						
Natural Gas Use (on-site)	5.8	75.1	33.5	< 0.1	0.14	0.14
Landscaping Equipment	1.2	0.2	15.5	< 0.1	0.06	0.06
Consumer Products	277.8	---	---	---	---	---
Architectural Coatings	40.5	---	---	---	---	---
Operational Motor Vehicles	94.1	97.2	906.0	1.9	388.6	73.7
Total	419.5	172.6	954.9	1.9	388.8	73.9
Proposed Project (2030)						
<i>Existing BAAQMD Threshold</i>	80	80	550 ^a	None	80	None
Significant?	Yes	Yes	---	---	Yes	---
<i>Proposed New BAAQMD Threshold</i>	54	54	None	None	82	54

Note:

a. Current guidelines recommend this level as a threshold for conducting additional-more detailed analysis (shown in Impact AQ-5).

Because the project incorporates feasible emission reduction measures within an extensive transportation demand management (TDM) program and a Sustainability Plan that would minimize energy use for transportation and the proposed land uses, no additional mitigation is available, and the impacts would remain significant and unavoidable.

Impact AQ-5: Operation of the Proposed Project would not result in a substantial amount of vehicle trips that could cause or contribute to an exceedance of the CO ambient air quality standards. (Less than Significant) (Criterion G.d)

Emissions from traffic at congested intersections can, under certain circumstances, cause a localized build-up of CO concentrations. Regional ambient air quality monitoring data demonstrate that CO concentrations are well below the applicable standards, despite long-term upward trends in vehicle miles traveled. This confirms that the potential for localized increases in CO concentrations from increased traffic has been greatly reduced in recent years. Improvements in motor vehicle exhaust controls since the early 1990s and the use of oxygenated fuels have drastically reduced vehicle CO emissions. Current guidelines provide steps, including dispersion modeling, for determining whether the most congested locations would create excessive CO concentrations. The transportation impact analysis for the Proposed Project indicates that the study intersections with the highest volumes would experience approximately 20,000 vehicles per peak hour with the project and cumulative scenarios, which is a level of traffic that is not anticipated to lead to localized CO concentrations in excess of the ambient air quality standards.

Therefore, the Proposed Project would have a less than significant impact on local CO concentrations.

Impact AQ-6: Operation of the Proposed Project could expose sensitive receptors to substantial pollutant concentrations of toxic air contaminants. (*Less than Significant*) (Criterion G.d)

The Proposed Project operation would cause increases in traffic emitting DPM and TACs and would increase the density of residential uses where existing health risks from exposure to DPM and TAC emissions occur. The Proposed Project would increase regional DPM and TACs emissions associated with motor vehicles, including additional bus trips generated by the project operations, and with natural gas combustion on site, which results in low levels of TACs. The BAAQMD's existing CEQA significance threshold for individuals exposed to new TAC sources is 10 in one million or greater for any increased incremental cancer risk per any new source and/or non-cancer risk hazard indices greater than or equal to one.

Aside from mobile source activity generated by the Proposed Project land uses, no major sources of DPM or TACs exist on the Project Site, and the Proposed Project does not include any new major stationary sources of DPM or TACs. Any notable or non-exempt emissions from stationary sources such as the proposed boilers and cogeneration system would be subject to additional review including BAAQMD New Source Review requirements, which requires sources to install the best available control technology and be subject to health risk screening for toxic air contaminants (see Impact AQ-4). Approximately five additional bus vehicles would be needed by transit agencies serving the Proposed Project. As discussed in the Setting section on pp. V.G.6 – V.G.9, other nearby existing stationary sources of DPM and TACs are not major, and new project-related sources of DPM and TACs would be typical of urban environments. The resulting health risks would not be substantially different from those experienced throughout San Francisco and the remainder of the Bay Area region.

Motor vehicle and diesel bus emission rates have generally been substantially reduced in recent years due to increasingly stringent emissions standards and improvements in fuels, and an array of programs in California and San Francisco that specifically target DPM reductions from on-road vehicles. Total emissions generated by buses within San Francisco vary substantially depending on the year in which the engine was manufactured. As with other similar non-industrial development within San Francisco lacking notable stationary sources of DPM or other TACs, no further analysis would be necessary to conclude that the maximum incremental cancer risk and non-cancer hazard indices from exposure to operation-related DPM and TACs would be considered less than significant under the current BAAQMD guidelines.

Impact AQ-7: The Proposed Project would not generate significant odors. (*Less than Significant*) (Criterion G.e)

There are no significant odor sources identified as part of the Proposed Project. There may be some potential for small-scale, localized odor issues to emerge around Proposed Project activities and sources common to residential and commercial use, such as solid waste collection, food preparation, and the proposed community garden, organic farm, and off-leash dog area, etc. However, substantial odor sources and consequent effects to on-site and off-site sensitive receptors would be unlikely, and resolution options would be identified by interventions after receipt of any complaints. Currently, stormwater and wastewater are carried by the local combined sewer system, and the Proposed Project would provide an on-site stormwater system that includes channels and retention ponds. These improvements would reduce the likelihood of occasional sewer overflows, which can be an existing source of odors. With no notable odor sources, odor impacts would be less than significant.

Impact AQ-8: The Proposed Project would not conflict with adopted plans related to air quality. (*Less than Significant*) (Criterion G.a)

The most recently adopted air quality plan in the San Francisco Bay Area Air Basin is the *Bay Area 2005 Ozone Strategy*. The Ozone Strategy is a roadmap showing how the San Francisco Bay Area will achieve compliance with the state 1-hour ozone standard as expeditiously as practicable, and how the region will reduce transport of ozone and ozone precursors to neighboring air basins. The control strategy includes stationary-source control measures to be implemented through BAAQMD regulations; mobile-source control measures to be implemented through incentive programs and other activities; and transportation control measures to be implemented through transportation programs in cooperation with the MTC, local governments, transit agencies, and others. The *2005 Ozone Strategy* also represents the Bay Area's most recent triennial assessment of the region's strategy to attain the state 1-hour ozone standard. In this, the *2005 Ozone Strategy* replaces the *2000 Clean Air Plan (CAP)*. Currently, the BAAQMD is developing its *2010 Clean Air Plan*.

Under BAAQMD's existing thresholds, a determination of consistency with the most recently adopted Clean Air Plan, currently the *Bay Area 2005 Ozone Strategy*, must show that a plan or project does not exceed the population or vehicle miles traveled (VMT) assumptions contained in the CAP and that the project or plan implements transportation control measures (TCMs) as applicable.

Criterion 1: Population Growth and VMT Consistency

The projected increase in VMT associated with the Proposed Project would be less than the projected population increase. As discussed in Section V.C, Population and Housing, development of the full buildout of the Proposed Project would result in a population increase of

approximately 12,950 persons. This represents a population increase of 0.18 percent to the Bay Area Air Basin from approximately 7,341,700 persons in 2010. The region's population travels approximately 170,505,000 vehicle-miles daily (*ARB Almanac* – 2009 Edition). Although approximately 37,000 net new vehicle trips per day would be generated, resulting in 226,500 new VMT per day, the fraction of trips via transit or bicycle would increase from existing conditions because of the proposed Transit and Street Improvements Plan, Bicycle and Pedestrian Plan, and other transportation demand management measures that encourage walking, bicycling, and ride-sharing. As a result, no substantial change in average trip lengths is anticipated. The Proposed Project would add 0.13 percent to the region's VMT, which is less than the project's rate of increase in population.

Criterion 2: Plan consistency with TCMs contained in the CAP

The 1988 California Clean Air Act, Section 40919(d) requires regions to implement “transportation control measures to substantially reduce the rate of increase in passenger vehicle trips and miles traveled.” Consistent with this requirement, one of the goals of the *Bay Area 2005*

Ozone Strategy is to reduce the number of automobile trips and vehicle miles traveled through the implementation of various TCMs. Table V.G.6 shows those TCMs that local governments should implement through local plans to be considered in conformance with the *2005 Ozone Strategy*. The Proposed Project would contain elements consistent with the applicable TCMs in the *2005 Ozone Strategy*. This table identifies each TCM applicable to the Proposed Project and correlates it to a specific element or elements of the project that address the TCM. Although the Proposed Project is not subject to plan level analysis, the Proposed Project would be consistent with the Clean Air Plan for the San Francisco Bay Area Air Basin.

CUMULATIVE IMPACTS

**Impact AQ-9: The Proposed Project could result in cumulative air quality impacts.
(Significant and Unavoidable) (Criteria G.b, G.c, G.d)**

The discussion of thresholds of significance in the current BAAQMD guidelines states that if a project exceeds the identified significance thresholds, its emissions would be cumulatively considerable, resulting in significant adverse air quality impacts to the region's existing air quality conditions. As a result, additional analysis to assess cumulative impacts is deemed unnecessary by BAAQMD.

As indicated in Table V.G.5, p. V.G.28, the Proposed Project would exceed BAAQMD significance thresholds for ROG, NO_x, and PM₁₀. Consequently, the Proposed Project would result in a significant and unavoidable cumulative impact with regard to emissions of these criteria pollutants.

Table V.G.6: Clean Air Plan TCMs to be Implemented by Local Governments

<i>TCM in the 2005 Ozone Strategy</i>	<i>Elements of the Proposed Project Consistent with the TCM</i>
Support Voluntary Employer-Based Trip Reduction Programs (TCM #1)	An on-site Transportation Coordinator (TC) would provide residents, employers, employees and visitors with information regarding available transportation alternatives. The Proposed Project would not include major employers.
Improve Area-wide Transit Service (TCM #3)	The Proposed Project would provide low-emissions vehicle shuttle to the Daly City BART station and a shopper shuttle to the nearby Stonestown Galleria and the Westlake Shopping Center in Daly City. A real-time transportation website would also promote the use of public transportation.
Improve Regional Rail Service (TCM #4)	Rerouting the existing MUNI Metro M-Ocean View line from its current alignment along 19 th Avenue would provide safer and more direct transit access for Parkmerced visitors, residents, and neighbors.
Improve Access to Rail & Ferries (TCM #5)	Shuttles to the Daly City BART station would improve accessibility to the rail and rerouting the existing MUNI Metro M-Ocean View line from its current alignment along 19 th Avenue would provide safer and more direct transit access for Parkmerced visitors, residents, and neighbors.
Improve Bicycle Access and Facilities (TCM #9)	The proposed <i>Transit and Street Improvements Plan</i> and the proposed <i>Bicycle and Pedestrian Plan</i> are intended to encourage the use of walking and bicycling as primary travel modes for the residents of the Parkmerced. The Proposed Project includes implementation of bicycle paths and would offer free bicycle rental program for residents of the Parkmerced. A smart card would be introduced, allowing residents to pay for parking or borrow bike station bicycles using one card.
Improve Arterial Traffic Management (TCM #12)	A comprehensive set of roadway access improvements has been identified to meet the Proposed Project's increase in travel demand, see the <i>Final Intersection and Roadway Modifications</i> booklet prepared by AECOM (November 4, 2009).
Transit Use Incentives (TCM #13)	An on-site Transportation Coordinator (TC) would provide residents, employers, employees and visitors with information regarding available transportation alternatives. A real-time transportation website would promote the use of public transportation.
Improve Rideshare/Vanpool Services and Incentives (TCM #14)	As a part of the Transportation Demand Management (TDM) program, carpool/vanpool services would be provided to promote car sharing.
Local Clean Air Plans, Policies and Programs (TCM #15)	As a part of the Transportation Demand Management (TDM) program, carpool/vanpool services would be provided to promote car sharing. The proposed <i>Parking Plan</i> would discourage automobile use with parking pricing policies requiring that free or discounted parking be available for rideshare vehicles and establishment of parking fees that encourage use of transit or encourage short-term parking while strongly discouraging long-term parking or employee parking.
Implement Transportation Pricing Reform (TCM #18)	Proposed TDM measures designed to discourage automobile use include parking pricing policies requiring that free or discounted parking be available for rideshare vehicles and establishment of parking fees that encourage use of transit or encourage short-term parking while strongly discouraging long-term parking or employee parking.

Table V.G.6: Clean Air Plan TCMs to be Implemented by Local Governments

<i>TCM in the 2005 Ozone Strategy</i>	<i>Elements of the Proposed Project Consistent with the TCM</i>
Improve Pedestrian Access and Facilities (TCM #19)	The proposed <i>Bicycle and Pedestrian Plan</i> is intended to encourage the use of walking as a primary travel mode for the residents of the Parkmerced. The Proposed Project is designed for better integration of residential areas and neighborhood serving retail and offices uses to maximize the use of pedestrian pathways.
Promote Traffic Calming Measures (TCM #20)	The proposed <i>Transit and Street Improvements Plan</i> and the proposed <i>Bicycle and Pedestrian Plan</i> are intended to encourage the use of walking and bicycling as primary travel modes for the residents of the Parkmerced.

DRAFT BAAQMD CEQA AIR QUALITY GUIDELINES AND PROPOSED THRESHOLDS

BAAQMD is currently in the process of updating its CEQA Air Quality Guidelines, which will include revised thresholds of significance for criteria air pollutants and precursors, community risk and hazards related to TACs, and greenhouse gases (GHGs) (see Section V.H, Greenhouse Gas Emissions of this EIR for a discussion of proposed thresholds for GHGs). BAAQMD is considering two sets of thresholds, one that would apply to specific development projects, such as the Proposed Project, and another threshold that would apply to plan-level CEQA analyses. Should the BAAQMD CEQA thresholds be adopted before this EIR is certified, the new thresholds could apply to the Proposed Project. The draft guidelines have yet to be formally adopted by BAAQMD and therefore cannot yet be formally adopted by the City and County of San Francisco should it choose to do so.

Criteria Related to Construction Impacts

Quantification of construction emissions is appropriate for analysis under the proposed Draft BAAQMD CEQA Air Quality Guidelines. A project would have a significant air quality impact if it would result in total construction-related emissions of ROG, NO_x, or PM_{2.5} (non-inclusive of fugitive dust) of 10 tons per year or greater or 54 pounds (25 kilograms) per day or greater. The draft guidelines have a separate emission threshold for PM₁₀ (non-inclusive of fugitive dust) of 15 tons per year or greater or 82 pounds (37 kilograms) per day.

Under the proposed BAAQMD guidance, a Plan or project would also have a significant air quality impact if construction activities would result in an incremental increase in localized annual average concentrations of PM_{2.5} exceeding 0.3 micrograms per cubic meter.

Additionally, construction associated with a Plan or project would have a significant air quality impact if it would result expose persons to substantial levels of TACs, such that the probability of contracting cancer for the Maximally Exposed Individual (MEI) exceeds 10 in one million or if it would expose persons to TAC's such that a non-cancer Hazard Index of 1.0 would be exceeded.

Criteria for Project-Level Operational Impacts

The Draft BAAQMD CEQA Guidelines recommend lower threshold levels for determining significance of operational emissions of ROG, NO_x, or PM₁₀ including PM_{2.5}. For ROG, NO_x and PM_{2.5}, a net increase of 54 pounds per day is considered significant, while for PM₁₀ a net increase of 82 pounds per day is considered significant.

The proposed guidance expands on the existing health risk thresholds by adding thresholds related to the incremental ambient PM_{2.5} increases associated with a project and by requiring a determination of consistency with a Qualified Risk Reduction Plan, if applicable. A project would also have a significant air quality impact if it would result in an incremental increase in or exposure of receptors to localized annual average concentrations of PM_{2.5} exceeding 0.3 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$) from project operations.

Criteria for Cumulative Impacts

Cumulative impacts are based on the a project's emissions and the potential for the project to expose sensitive receptors to health risks. As with the existing BAAQMD guidance, if a project results in an increase in ROG, NO_x, PM₁₀, or PM_{2.5} of more than their respective daily mass thresholds, then it would also be considered to contribute considerably to a significant cumulative effect.

Characterizing cumulative air quality impacts relative to emissions of PM_{2.5} and TAC relies on cumulative assessment methodologies that are still in development by BAAQMD. Establishing a consistent methodology for cumulative health risk assessment will affect decisions on what sources to consider in a cumulative analysis and how to obtain emission data for sources that are beyond the bounds of a project.

With regard to cumulative impacts from PM_{2.5}, the proposed guidance indicates that a significant cumulative air quality impact would occur if localized annual average concentrations of PM_{2.5} would exceed 0.8 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$) from project operations in addition to existing emission sources and cumulative emissions sources within 1,000 feet of the project. However, background annual average concentrations of PM_{2.5} currently exceed ten times this level for all previous years, as shown in Table V.G.1.

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

PROPOSED BAAQMD CEQA THRESHOLDS, IMPACT EVALUATION

Impact AQ-10: The Proposed Project could result in localized construction dust-related air quality impacts under proposed guidelines. (*Less than Significant*) (Criteria G.b, G.d)

Under the Draft BAAQMD CEQA Guidelines, implementation of Best Management Practices for fugitive dust would reduce the impact of construction dust to a less-than-significant level, as required by the San Francisco Construction Dust Control Ordinance (see Impact AQ-1 above).

Impact AQ-11: The Proposed Project could result in construction-related impacts to regional air quality under proposed guidelines. (*Significant and Unavoidable*) (Criteria G.b, G.d)

Criteria pollutant emissions from maximum daily use of construction equipment are quantified above (see Table V.G.4). The Draft BAAQMD CEQA Guidelines specifies that average daily construction emissions greater than 54 pounds per day of ROG, NO_x, and PM_{2.5}, or 82 pounds per day PM₁₀, would be a significant increase. To be conservative, this analysis shows maximum daily construction-phase emissions in Table V.G.4. Because of the considerable levels of construction activities, the construction emissions under the Draft BAAQMD CEQA Guidelines would be significant. Mitigation Measure M-AQ-3 that is identified above would reduce construction exhaust emissions.

Given current technologies, Mitigation Measure M-AQ-3 would achieve a feasible level of NO_x and ROG reductions, but this measure is unlikely to achieve a sufficient reduction in emissions to bring construction activities to a level below the daily thresholds for ROG, NO_x, PM₁₀, and PM_{2.5}. Construction emissions of PM₁₀ and PM_{2.5} would be significant according to the draft guidelines, after incorporating dust control strategies (see Impact AQ-1) and feasible strategies to reduce emissions in construction equipment exhaust (Mitigation Measure M-AQ-3). Therefore, the potential impacts of the Proposed Project with respect to the Draft BAAQMD CEQA Guidelines would be significant and unavoidable, even with implementation of mitigation.

Impact AQ-12: The Proposed Project could result in construction-related impacts of toxic air contaminants and adverse health effects under proposed guidelines. (*Significant and Unavoidable*) (Criteria G.b, G.d)

The Proposed Project could increase cancer risk from exposure to emissions of DPM and other TACs associated with off-road construction equipment and on-road haul trucks used during construction of the Proposed Project, as these emissions would occur within 1,000 feet of existing residential units and educational facilities within and adjacent to the Project Site. The Draft BAAQMD CEQA Guidelines thresholds for TACs are similar to the current recommendations, with the addition of PM_{2.5} as a pollutant of health risk concern.

Emissions of PM_{2.5} from construction activities would occur at regionally significant levels, as described above. Additionally, health risks due to PM_{2.5} emissions would be considered significant under Draft BAAQMD CEQA Guidelines for construction activities causing concentrations of PM_{2.5} over an annualized threshold of 0.3 micrograms per cubic meter (µg/m³). This annualized threshold is applicable during any single year of construction activity, as opposed to the cancer risk threshold, which is based on lifetime exposure. Construction-related exhaust emissions and fugitive dust emissions would contribute to total PM_{2.5} concentrations at nearby receptors. With construction-related annual total PM_{2.5} emissions exceeding the BAAQMD threshold of 10 tons per year, local PM_{2.5} concentrations would likely be above the BAAQMD proposed threshold of 0.3 µg/m³ on an annualized basis during some years of construction, depending on the intensity of activity and proximity of receptors. Existing residential units and educational facilities within 1,000 feet of construction activities would be most likely to experience this impact.

The Draft BAAQMD CEQA Guidelines of May 2010 include a “Draft Construction Health Risk Screening Table” that provides an approximate minimum offset distance for typical construction projects of various sizes.³² For the phased and high-density development of the Proposed Project, up to about 40 acres could be under construction at any one time (given four major phases across the 152-acre Project Site). According to the draft screening tables, the minimum offset distance (buffer distance) to ensure that a sensitive receptor would have a less than significant impact would be 300 meters (984 feet). Existing and planned residential units and educational facilities within this distance would experience a potentially significant impact due to construction-related TAC and PM_{2.5}.

Reducing this impact could involve reducing construction equipment emissions or providing sufficient offset distances between construction and occupied land uses. Although implementation of the construction emission control measures (including Mitigation Measure M-AQ-3) would reduce TAC, including DPM, exhaust emissions by implementing feasible controls and requiring up-to-date equipment, adverse TAC and PM_{2.5} health effects during construction would remain. Due to the high-density surroundings, individuals would occasionally be essentially adjacent to construction activity. It would be practically impossible to phase construction or restrict public access in such a manner to eliminate the potential risks to individuals occupying and visiting areas within 1,000 feet of the proposed construction activities. Due to uncertainty in quantifying the construction-related incremental cancer risk and non-cancer health impacts, the impact is considered significant and unavoidable under the Draft BAAQMD Guidelines for existing residential units and educational facilities within the Project Site and within 1,000 feet of the Proposed Project.

³² BAAQMD, *Draft CEQA Guidelines, Screening Tables for Air Toxics Evaluation During Construction, Version 1.0*, May 2010.

Impact AQ-13: The Proposed Project could result in operation-related impacts to regional air quality under proposed guidelines. (*Significant and Unavoidable*) (Criteria G.b, G.d)

Table V.G.5 shows that the Proposed Project would result in an increase in criteria pollutant emissions that would be considered significant according to the proposed BAAQMD significance thresholds of ROG, NO_x, or PM_{2.5} greater than 54 pounds per day or PM₁₀ greater than 82 pounds per day. This impact would occur with the project incorporating feasible emission reduction measures within its extensive TDM program and Sustainability Plan. As such, this impact would be significant and unavoidable.

Impact AQ-14: The Proposed Project could result in operation-related impacts to CO ambient air quality standards under proposed guidelines. (*Less than Significant*) (Criterion G.d)

The significance of localized CO emissions from mobile sources is determined via a screening assessment methodology from the proposed Draft BAAMQD CEQA Guidelines. According to the proposed approach, a project would result in a less-than-significant impact to localized CO concentrations if the following three criteria are met:

- The project is 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. The Draft II Transportation Impact Analysis for the Proposed Project indicates that the proposed Parkmerced Transportation Demand Management (TDM) Plan would be consistent with City and County of San Francisco agency policies (Fehr & Peers, February 2010).
- The project traffic would not increase traffic volumes at affected intersections to more than 44,000 vehicles per hour. The Draft II Transportation Impact Analysis for the Proposed Project indicates that the study intersections with the highest volumes would experience approximately 20,000 vehicles per peak hour under the Proposed Project and cumulative scenarios (Fehr & Peers, February 2010).
- The project traffic would not increase traffic volumes at affected intersections to 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). The Proposed Project would not introduce or increase traffic to these levels for any of the proposed underground parking garages.

This discussion of the screening criteria analysis indicates that violations of the state and federal one-hour and eight-hour standards for CO would not be expected at any study intersections during worst-case atmospheric conditions (wintertime conditions when CO concentrations are typically greatest). Therefore, the Proposed Project would continue to have a less than significant impact on local CO concentrations.

Impact AQ-15: The Proposed Project could result in operation-related impacts to sensitive receptors and substantial pollutant concentrations of toxic air contaminants under proposed guidelines. (*Significant and Unavoidable*) (*Criterion G.d*)

Local community risk and hazard impacts are a focus of the Draft BAAQMD Guidelines. The proposed guidelines emphasize a focus on “impacted communities” including Eastern San Francisco, which is not within or adjacent to the Project Site. Existing local air quality is affected by numerous sources of DPM, other TACs, and criteria pollutants, including traffic on roadways and some stationary sources within 1,000 feet that are permitted but not considered major under BAAQMD rules (see Setting). The primary major roadway within 1,000 feet of the Project Site is Highway 1 (Junipero Serra Boulevard and 19th Avenue).

Operation of the Proposed Project operation would cause increases in traffic emitting DPM, other TACs, and PM_{2.5} and would increase the density of residential uses in an area exposed to these emissions. The May 2010 Draft BAAQMD Thresholds include screening tables identifying potential cancer risk and non-cancer health hazards experienced by sensitive receptors along Highway 1 (Junipero Serra Boulevard and 19th Avenue).³³ According to the new BAAQMD screening tables, sensitive receptors are exposed to potentially significant concentrations of TAC and PM_{2.5} (exceeding 0.3 µg/m³) within 200 feet east or west of Highway 1. The new BAAQMD screening tables also indicate that the estimated incremental lifetime cancer risk (70-year lifespan) due to traffic on Highway 1 is greater than 10 cases per million people for locations within 400 feet east or west of the roadway. Health risks from all roadways are dominated by the effects of DPM, a TAC, and PM_{2.5}.

The Proposed Project would include new residential uses within 1,000 feet of existing stationary sources of TACs and within 400 feet of Highway 1, which could expose new sensitive receptors to concentrations of DPM, other TACs, and PM_{2.5} considered potentially significant under the proposed guidelines. To address this issue, potential mitigation could be provided in the form of air filtration for the impacted new residential development near traffic causing elevated DPM and PM_{2.5}. This would reduce the impact of exposing new receptors to elevated concentrations near roadways, but it would not avoid the impact of placing new receptors near Highway 1 and other existing sources of TACs typical of urban environments. Because of uncertain effectiveness and feasibility of implementing this measure, the impact under the Draft BAAQMD CEQA Guidelines would remain significant and unavoidable.

Potential Mitigation Under Proposed Guidelines for Health Effects from Roadways: New residential uses within 400 feet from the edge of the Project Site boundary along Junipero Serra Boulevard, including ramps on Brotherhood Way, 19th Avenue, or Brotherhood Way shall incorporate mechanical ventilation systems. If the project anticipates operable windows or other

³³ BAAQMD, *Draft CEQA Guidelines, San Francisco County Screening Tables for Roadways*, May 2010.

sources of infiltration of ambient air, the residences shall be provided with a central HVAC (heating, ventilation and air conditioning) system that includes high efficiency filters for particulates (MERV-13 or higher). The system should operate to maintain positive pressure within the building interior to prevent entrainment of outdoor air indoors. Alternatively, if the development limits infiltration through non-operable windows and other techniques, the residences shall be provided with a ventilation and filtration system that meets the following specifications: (1) ASHRAE MERV-13 supply air filters; (2) ≥ 1 air exchanges per hour of fresh outside filtered air; (3) ≥ 4 air exchanges / hour recirculation; and (4) ≤ 0.25 air exchanges per hour in unfiltered infiltration.

Impact AQ-16: The Proposed Project could result in impacts related to odors under proposed guidelines. (*Less than Significant*) (*Criterion G.e*)

The proposed BAAQMD thresholds for odor impacts would not alter this discussion or the conclusion illustrated above that the Proposed Project would result in a less-than-significant impact related to odors.

Impact AQ-17: The Proposed Project could result in conflicts with adopted plans related to air quality under proposed guidelines. (*Less than Significant*) (*Criterion G.a*)

The proposed BAAQMD thresholds of analysis for determining consistency with the most recently adopted Clean Air Plan would not alter this discussion or the conclusion illustrated above that the Proposed Project would not exceed the population or VMT assumptions contained in the CAP and that the project would implement applicable TCMs, resulting in a less-than-significant impact related potential conflicts with regional air quality management plans.

Cumulative air quality impacts under proposed guidelines. (*Criteria G.b, G.c, G.d*)

Impact AQ-18: The Proposed Project could result in cumulative construction impacts under proposed guidelines. (*Significant and Unavoidable*)

Impact AQ-2 identifies the emission increases attributable to construction of the Proposed Project. As indicated in Table V.G.4, p. V.G.20, the Proposed Project would exceed the BAAQMD's proposed significance thresholds for construction-related ROG, NO_x, PM₁₀, and PM_{2.5}. Consequently, under the Draft BAAQMD CEQA Guidelines, the project construction would result in a significant cumulative impact with regard to these emissions.

Impact AQ-19: The Proposed Project could result in cumulative criteria pollutant impacts under proposed guidelines. (*Significant and Unavoidable*)

Table V.G.5, p. V.G.28. identifies increases in the regional emission inventory that would be caused by the Proposed Project, with levels exceeding the proposed BAAQMD significance thresholds. According to the Draft BAAQMD CEQA Guidelines, the Proposed Project

operational emissions would be cumulatively considerable, resulting in significant adverse air quality impacts to the region's existing air quality conditions. Additional analysis to assess cumulative impacts is deemed unnecessary by BAAQMD, and the Proposed Project would result in a significant cumulative impact with regard to ROG, NO_x, PM₁₀, and PM_{2.5} emissions.

Impact AQ-20: The Proposed Project could result in cumulative DPM, PM_{2.5}, and TAC impacts under proposed guidelines. (*Significant and Unavoidable*)

The Proposed Project would cause DPM, PM_{2.5}, and TAC impacts having adverse health effects due to mobile source activity generated by the existing and proposed land uses, but the Proposed Project does not include any new major stationary sources of DPM, PM_{2.5}, or TACs. Any notable or non-exempt emissions from stationary sources such as the proposed boilers and cogeneration system would be subject to additional review including BAAQMD New Source Review requirements, which requires sources to install the best available control technology and be subject to health risk screening for toxic air contaminants (see Impact AQ-4).

Impact AQ-6 shows that, according to the Draft BAAQMD CEQA Guidelines, the operational impacts due to exposure of receptors to DPM and TACs would be significant and unavoidable because the Proposed Project would expose planned receptors to substantial concentrations of DPM or other TACs. With no additional foreseeable sources of DPM or TACs identified for the cumulative conditions, the cumulative impact would be similar to that described for the Proposed Project. Roadside PM_{2.5} exposure levels found by the analysis performed by the DPH would not exceed the proposed BAAQMD significance threshold for a cumulatively considerable contribution of PM_{2.5} at 0.8 µg/m³. No additional PM_{2.5} impacts are identified for the cumulative conditions. Cumulative projects in the area are not anticipated to contribute considerable emissions in addition to the project. However, due to health risks caused by existing sources of TACs including nearby major roadways (Highway 1), the project-related DPM, PM_{2.5}, and TAC exposures would result in a significant and unavoidable cumulative impact.

H. GREENHOUSE GAS EMISSIONS

This section discloses the effects related to global climate change and greenhouse gas emissions that would be caused by implementation of the Proposed Project. The State CEQA Guidelines require lead agencies to address greenhouse gas (GHG) emissions caused by a project and the effects of these emissions on climate change. The guidelines became effective on March 18, 2010, and these recent amendments are incorporated into this analysis accordingly.

The study area for global climate change and the analysis of GHG emissions is broad because climate change is influenced by world-wide emissions. However the study area is also limited by the CEQA Guidelines [Section 15064(d)], which directs lead agencies to consider an “indirect physical change” only if that change is a reasonably foreseeable impact which may be caused by the project. This analysis limits discussion to those physical changes to the environment that are not speculative and are reasonably foreseeable.

The baseline against which to compare potential impacts of the Proposed Project includes the natural and anthropogenic drivers of global climate change, including world-wide GHG emissions from human activities that have grown more than 70 percent between 1970 and 2004.¹ The State of California leads the nation in managing GHG emissions. Accordingly, the impact analysis for this Proposed Project relies on laws and guidelines, analyses, policies, and plans for reducing GHG emissions established by state agencies, namely the California Air Resources Board (ARB), as well as those of the City and County of San Francisco.

SETTING

GREENHOUSE GASES

Gases that trap heat in the atmosphere are referred to as greenhouse gases (GHGs) because they capture heat radiated from the sun as it is reflected back into the atmosphere, much like a greenhouse does. The accumulation of GHGs has been implicated as the driving force for global climate change. The primary GHGs are carbon dioxide, methane, nitrous oxide, ozone, and water vapor.

While the presence of the primary GHGs in the atmosphere are naturally occurring, carbon dioxide (CO₂), methane (CH₄), and nitrous oxide (N₂O) are largely emitted from human activities, accelerating the rate at which these compounds occur within earth’s atmosphere. Emissions of carbon dioxide are largely by-products of fossil fuel combustion, whereas methane results from off-gassing associated with agricultural practices and landfills. Methane occurs at lower emission rates than CO₂, but the heat absorption or “global warming potential” of CH₄ is

¹ IPCC (Intergovernmental Panel on Climate Change). 2007. Climate Change 2007: Synthesis Report, the Fourth IPCC Assessment Report. May.

about 21 times that of CO₂. High global warming potential GHGs include hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride, that are emitted due to certain industrial or manufacturing processes. When quantifying GHG emissions, the different global warming potentials of GHG pollutants are usually taken into account by normalizing their rates to a “CO₂ equivalent” emission rate (CO₂E).

OVERVIEW OF GLOBAL CLIMATE CHANGE

There is international scientific consensus that human-caused increases in GHGs have and will continue to contribute to global warming. Potential global warming impacts in California may include, but are not limited to, loss in snow pack, sea level rise, more extreme heat days per year, more high ozone days, more large forest fires, and more drought years. Secondary effects are likely to include a global rise in sea level, impacts to agriculture, changes in disease vectors, and changes in habitat and biodiversity.²

GREENHOUSE GAS EMISSION INVENTORIES

The California Air Resources Board (ARB) estimated that in 2006 California produced about 484 million gross metric tonnes of CO₂E (MMTCO₂E) or about 535 million tons.³ The ARB found that transportation is the source of 38 percent of the State’s GHG emissions, followed by electricity generation (both in-state and out-of-state) at 22 percent and industrial sources at 20 percent. Commercial and residential fuel use (primarily for heating) accounted for 9 percent of GHG emissions.⁴ In the Bay Area, fossil fuel consumption in the transportation sector (on-road motor vehicles, off-highway mobile sources, and aircraft) and the industrial and commercial sectors are the two largest sources of GHG emissions, each accounting for approximately 36 percent of the Bay Area’s 95.8 MMTCO₂E emitted in 2007.⁵ Electricity generation accounts for approximately 16 percent of the Bay Area’s GHG emissions followed by residential fuel usage at 7 percent, off-road equipment at 3 percent and agriculture at 1 percent.⁶

² California Climate Change Portal. Frequently Asked Questions About Global Climate Change. Available online at: <http://www.climatechange.ca.gov/publications/faqs.html>. Accessed March 2, 2010.

³ California Air Resources Board (ARB), “*California Greenhouse Gas Inventory for 2000-2006— by Category as Defined in the Scoping Plan.*” http://www.arb.ca.gov/cc/inventory/data/tables/ghg_inventory_scopingplan_2009-03-13.pdf. Accessed March 2, 2010.

⁴ Ibid.

⁵ Bay Area Air Quality Management District, *Source Inventory of Bay Area Greenhouse Gas Emissions: Base Year 2007*, Updated: February 2010. Available online at: http://www.baaqmd.gov/~media/Files/Planning_and_Research/Emission_Inventory/regionalinventory2007_2_10.ashx. Accessed March 2, 2010.

⁶ Ibid.

The most common GHGs resulting from human activity are CO₂, CH₄, and N₂O.⁷ State law defines GHGs to also include hydrofluorocarbons, perfluorocarbons and sulfur hexafluoride. These latter GHG compounds are usually emitted in industrial processes, and therefore not applicable to the Proposed Project. The GHG emission inventory presented in this analysis includes an estimate of emissions from CO₂, CH₄, and N₂O. Individual projects contribute to the cumulative effects of climate change by emitting GHGs during construction and operational phases. Both direct and indirect GHG emissions are generated by project operations. Operational emissions include GHG emissions from new vehicle trips and area sources (natural gas combustion). Indirect emissions include emissions from electricity providers, energy required to pump, treat, and convey water, and emissions associated with landfill operations.

REGULATORY FRAMEWORK

Federal

Currently, there is no federal legislation that requires reducing GHG emissions. Rather, the United States Environmental Protection Agency (USEPA) administers programs and voluntary partnerships with GHG emitters, especially in industries producing and utilizing synthetic GHGs to reduce emissions of high global warming potential GHGs. Federal actions currently focus on reducing energy use, for example by increasing motor vehicle efficiency, and requiring large sources of GHG emissions to report their emissions to the USEPA.

USEPA Mandatory Reporting Rule

This rule requires mandatory reporting of GHG emissions for industrial facilities and power plants that emit more than 25,000 MTCO₂E emissions per year. Preliminary estimates indicate that the capacity of the Proposed Project district energy system would cause emissions below this threshold. However, depending on final designs, the proposed on-site stationary sources (such as natural gas boilers for water and space heating and cogeneration of electricity) could be subject to the federal reporting requirements.

State

Assembly Bill 32 (California Global Warming Solutions Act of 2006)

The *California Global Warming Solutions Act of 2006* (California Health and Safety Code Division 25.5, Sections 38500, et seq., or AB 32) requires ARB to design and implement emission limits, regulations, and other measures, such that feasible and cost-effective statewide

⁷ Governor's Office of Planning and Research. Technical Advisory- CEQA and Climate Change: Addressing Climate Change through California Environmental Quality Act (CEQA) Review. June 19, 2008. Available at the Office of Planning and Research's website at: <http://www.opr.ca.gov/ceqa/pdfs/june08-ceqa.pdf>. Accessed March 3, 2010.

GHG emissions are reduced to 1990 levels by 2020 (representing a 25 percent reduction in emissions).

Pursuant to AB 32, ARB adopted a Scoping Plan in December 2008, outlining measures to meet the 2020 GHG target. In order to meet these goals, California must reduce its GHG emissions by 30 percent below projected 2020 business as usual emissions levels, or about 15 percent from today's levels.⁸ The AB 32 Scoping Plan estimates a reduction of 174 million metric tonnes of CO₂E (MMTCO₂E) (about 191 million tons) from the transportation, energy, agriculture, forestry, and high global warming potential sectors, see Table V.H.1.⁹ ARB has identified an implementation timeline for the GHG reduction strategies in the AB 32 Scoping Plan.¹⁰ Some measures may require new legislation to implement, some will require subsidies, some have already been developed, and some will require additional effort to evaluate and quantify. Additionally, some emissions reductions strategies may require agencies to implement individual projects that trigger separate environmental review under CEQA or the National Environmental Policy Act (NEPA).

AB 32 also anticipates that local government actions will result in reduced GHG emissions. ARB has identified a GHG reduction target of 15 percent from current levels for local governments themselves and notes that successful implementation of the plan relies on local governments' land use planning and urban growth decisions because local governments have primary authority to plan, zone, approve, and permit land development to accommodate population growth and the changing needs of their jurisdictions.

The AB 32 Scoping Plan relies on the requirements of Senate Bill 375 of 2008 (SB 375) to implement the carbon emission reductions anticipated from land use decisions. SB 375 was enacted to align local land use and transportation planning to further achieve the State's GHG reduction goals. SB 375 requires regional transportation plans, developed by Metropolitan Planning Organizations (MPOs), to incorporate a "sustainable communities strategy" in their regional transportation plans (RTPs) that would achieve GHG emission reduction targets set by ARB. SB 375 also includes provisions for streamlined CEQA review for some infill projects such as transit-oriented development. SB 375 would be implemented over the next several years and the Metropolitan Transportation Commission's 2013 RTP would be its first plan subject to SB 375.

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

⁹ California Air Resources Board, California's Climate Plan: Fact Sheet. Op cit.

¹⁰ California Air Resources Board. *AB 32 Scoping Plan*. Available Online at: http://www.arb.ca.gov/cc/scopingplan/sp_measures_implementation_timeline.pdf. Accessed March 2, 2010.

Table V.H.1: GHG Reductions Recommended by the AB 32 Scoping Plan

GHG Reduction Measures By Sector	Estimated Annual GHG Reductions (MMTCO₂E)
Transportation Sector	62.3
Electricity and Natural Gas	49.7
Industry	1.4
Landfill Methane Control Measure (Discrete Early Action)	1
Forestry	5
High Global Warming Potential GHGs	20.2
Additional Reductions Needed to Achieve the GHG Cap	34.4
Total Reductions Counted Towards 2020 Target	174
Other Recommended Measures	
Government Operations	1-2
Agriculture- Methane Capture at Large Dairies	1
Methane Capture at Large Dairies	1
Additional GHG Reduction Measures	
Water Supply and Recycling Systems	4.8
Green Buildings	26
High Recycling/ Zero Waste	
Commercial Recycling	
Composting	9
Anaerobic Digestion	
Extended Producer Responsibility	
Environmentally Preferable Purchasing	
Total Reductions from Other Measures	42.8-43.8

Source: California Air Resources Board, California's Climate Plan: Fact Sheet. Available online at: http://www.arb.ca.gov/cc/facts/scoping_plan_fs.pdf. Accessed April 22, 2010.

Energy Conservation Standards

Energy Conservation Standards for new residential and non-residential buildings were first adopted by California Energy Resources Conservation and Development Commission (Energy Commission) in June 1977 and most recently revised in 2008 (Title 24, Part 6 of the California Code of Regulations [CCR]). In general, Title 24 standards require the design of building shells and building components to conserve energy. The standards are updated periodically to allow for consideration and possible incorporation of new energy efficiency technologies and methods. Although California Building Standards and other standards for appliances and other consumer products apply throughout California, they exceed the standards imposed by any other state, and these standards limit GHG emissions in California by reducing energy demand.

Regional

Bay Area Air Quality Management District

The Bay Area Air Quality Management District (BAAQMD) is the primary agency responsible for comprehensive management of air resources in the San Francisco Bay Area. The BAAQMD implements the federal Clean Air Act in the region, and USEPA has indicated that certain stationary sources may be required to obtain permits for GHG emissions under the Clean Air Act after 2010. Until such rules are finalized, there are no BAAQMD regulations applicable to the Proposed Project for GHG emissions under the Clean Air Act.

The BAAQMD maintains a host of recommendations for lead agencies to follow in protecting air quality through implementing the CEQA process. Currently, BAAQMD does not have an adopted or recommended threshold of significance for GHG emissions. However, BAAQMD is in the process of updating its CEQA Guidelines, and by midyear 2010, BAAQMD aims to adopt GHG thresholds of significance in three tiers or forms: 1) quantitative, based on individual project direct emissions; 2) a threshold of GHG emissions efficiency per population served; or 3) an approach that determines significance based on compliance with a qualified climate action plan.¹¹

Local, City and County of San Francisco GHG Reduction Strategy

The City and County of San Francisco has developed its own strategy to address greenhouse gas emissions on a local level, which is implemented alongside of the State's GHG reduction strategy guided by AB 32. The vision of the strategy is expressed in the City's Climate Action Plan, however implementation of the strategy is appropriately articulated within other citywide plans (*General Plan, Sustainability Plan, etc.*), policies (Transit-First Policy, Precautionary Principle Policy, etc.), and regulations (Green Building Ordinance, etc.). The following plans, policies and regulations highlight some of the main components of San Francisco's GHG reduction strategy.

Overall GHG Reductions

San Francisco Sustainability Plan

In July 1997 the Board of Supervisors endorsed the Sustainability Plan for the City of San Francisco establishing sustainable development as a fundamental goal of municipal public policy.

¹¹ BAAQMD, *Draft CEQA Air Quality Guidelines*, December 2009, Available online at: <http://www.baaqmd.gov/Divisions/Planning-and-Research/CEQA-GUIDELINES.aspx>.

The Climate Action Plan for San Francisco

In February 2002, the San Francisco Board of Supervisors passed the Greenhouse Gas Emissions Reduction Resolution (Number 158-02) setting a goal for the City and County of San Francisco to reduce GHG emissions to 20 percent below 1990 levels by the year 2012. In September 2004, the San Francisco Department of the Environment and the Public Utilities Commission published the Climate Action Plan for San Francisco: Local Actions to Reduce Greenhouse Emissions.¹² The Climate Action Plan provides the context of climate change in San Francisco and examines strategies to meet the 20 percent GHG reduction target. Although the Board of Supervisors has not formally committed the City to perform the actions addressed in the Plan, and many of the actions require further development and commitment of resources, the Plan serves as a blueprint for GHG emission reductions, and several actions have been implemented or are now in progress.

Greenhouse Gas Reduction Ordinance

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

Determine 1990 City GHG emissions by 2008, the baseline level with reference to which target reductions are set;

- Reduce GHG emissions by 25 percent below 1990 levels by 2017;
- Reduce GHG emissions by 40 percent below 1990 levels by 2025; and
- Reduce GHG emissions by 80 percent below 1990 levels by 2050.

The ordinance also specifies requirements for City departments to prepare departmental Climate Action Plans that assess, and report to the Department of the Environment, GHG emissions associated with their department's activities and activities regulated by them, and prepare recommendations to reduce emissions. As part of this, the San Francisco Planning Department is required to: (1) update and amend the City's applicable *General Plan* elements to include the emissions reduction limits set forth in this ordinance and policies to achieve those targets; (2) consider a project's impact on the City's GHG reduction limits specified in this ordinance as part of its review under CEQA; and (3) work with other City departments to enhance the "transit first" policy to encourage a shift to sustainable modes of transportation thereby reducing emissions and helping to achieve the targets set forth by this ordinance.

¹² San Francisco Department of the Environment and San Francisco Public Utilities Commission, Climate Action Plan for San Francisco, Local Actions to Reduce Greenhouse Emissions, September 2004.

Transportation Sector GHG Reductions

Transit First Policy

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

San Francisco Municipal Transportation Agency's Zero Emissions 2020 Plan

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

San Francisco Municipal Transportation Agency's Climate Action Plan

In November 2007 voters passed Proposition A, requiring the SFMTA to develop a plan to reach a 20 percent GHG reduction below 1990 levels by 2012 for the City's entire transportation sector, not merely in the SFMTA's internal operations. SFMTA has prepared a Draft Climate Action Plan outlining measures needed to achieve these targets.

Commuter Benefit Ordinance

The Commuter Benefit Ordinance (Environment Code, Section 421), effective January 19, 2009, requires all employers in San Francisco that have 20 or more employees to offer one of the following benefits: (1) A Pre-tax Transit Benefit, (2) Employer Paid Transit Benefits, or (3) Employer Provided Transit.

The City's *Planning Code* reflects the latest smart growth policies and includes: electric vehicle refueling stations in city parking garages, bicycle storage facilities for commercial and office buildings, and zoning that is supportive of high density mixed-use infill development. The City's more recent area plans, such as Rincon Hill and the Market and Octavia Area Plan, provide transit-oriented development policies that allow for neighborhood-oriented retail and services and where off-street parking is limited to accessory parking spaces.¹³ At the same time there is also a community-wide focus on ensuring San Francisco's neighborhoods as "livable" neighborhoods,

¹³ See *Planning Code* Sections 206.4 and 155.1.

including the Better Streets Plan that would improve San Francisco's streetscape, the Transit Effectiveness Plan, that aims to improve transit service, and the Bicycle Plan, all of which promote alternative transportation options.

Renewable Energy

The Electricity Resource Plan

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

Go Solar SF

On July 1, 2008, the San Francisco Public Utilities Commission (SFPUC) launched their "GoSolarSF" program to San Francisco's businesses and residents, offering incentives in the form of a rebate program that could pay for approximately half the cost of installation of a solar power system, and more to those qualifying as low-income residents. The San Francisco Planning Department and Department of Building Inspection have also developed a streamlining process for Solar Photovoltaic (PV) Permits and priority permitting mechanisms for projects pursuing Gold Certification, as defined by the standard for Leadership in Energy and Environmental Design, New Construction (LEED®).

Green Building

LEED® Silver for Municipal Buildings

In 2004, the City amended Chapter 7 of the Environment code, requiring all new municipal construction and major renovation projects to achieve LEED® Silver Certification from the US Green Building Council.

City of San Francisco's Green Building Ordinance

On August 4, 2008, Mayor Gavin Newsom signed into law San Francisco's Green Building Ordinance for newly constructed residential and commercial buildings and renovations to existing buildings. The ordinance specifically requires newly constructed commercial buildings over 5,000 square feet (sq. ft.), residential buildings over 75 feet in height, and renovations on buildings over 25,000 sq. ft. to be subject to an unprecedented level of LEED® and green building certifications, which makes San Francisco the city with the most stringent green building requirements in the nation. Cumulative benefits of this ordinance includes reducing CO2 emissions by 60,000 tons, saving 220,000 megawatt hours of power, saving 100 million gallons of drinking water, reducing waste and stormwater by 90 million gallons of water,

reducing construction and demolition waste by 700 million pounds, increasing the valuations of recycled materials by \$200 million, reducing automobile trips by 540,000, and increasing green power generation by 37,000 megawatt hours.¹⁴

Waste Reduction

Zero Waste

In 2004, the City of San Francisco committed to a goal of diverting 75 percent of its' waste from landfills by 2010, with the ultimate goal of zero waste by 2020. San Francisco currently recovers 72 percent of discarded material.

Construction and Demolition Debris Recovery Ordinance

In 2006 the City of San Francisco adopted Ordinance No. 27-06, requiring all construction and demolition debris to be transported to a registered facility that can divert a minimum of 65 percent of the material from landfills. This ordinance applies to all construction, demolition and remodeling projects within the City.

Universal Recycling and Composting Ordinance

Signed into law on June 23, 2009, this ordinance requires all residential and commercial building owners to sign up for recycling and composting services. Any property owner or manager who fails to maintain and pay for adequate trash, recycling, and composting service is subject to liens, fines, and other fees.

The City has also passed ordinances to reduce waste from retail and commercial operations. Ordinance 295-06, the Food Waste Reduction Ordinance, prohibits the use of polystyrene foam disposable food service ware and requires biodegradable/compostable or recyclable food service ware by restaurants, retail food vendors, City Departments and City contractors. Ordinance 81-07, the Plastic Bag Reduction Ordinance, requires many stores located within the City and County of San Francisco to use compostable plastic, recyclable paper and/or reusable checkout bags.

PROPOSED PROJECT GHG EMISSIONS INVENTORY

Methodology of Inventory

Construction Phase (Short-Term) Emissions

Short-term or one-time emissions from the development of the Proposed Project are associated with vegetation removal and re-vegetation of the site and construction-related activities. While

¹⁴ These findings are contained within the final Green Building Ordinance, signed by the Mayor August 4, 2008.

construction activities also result in life-cycle emissions of GHGs associated with the manufacture and transport of building materials and infrastructure, life-cycle emissions are not included in the inventory for the CEQA process as these emissions are anticipated to be managed under AB 32 programs in California.

Life-Cycle Analysis

Life-cycle analysis (i.e., assessing economy-wide GHG emissions from the processes in manufacturing and transporting all raw materials used in the project development and infrastructure) depends on emission factors or econometric factors that are not well established for all of the manufacturing and transportation processes needed to enable the Proposed Project. Conducting life-cycle analysis involves some speculation on how manufacturing and transportation could occur, and what effects those activities may have, typically far removed in time and place from the site development. Instead, the analysis here is conducted in manner consistent with CEQA to identify the physical changes to the environment that are not speculative and are reasonably foreseeable.

Construction-Related Activities

Construction emissions and annual operational emissions are not intended to be additive as they occur at different points in the project's lifecycle. Construction emissions are one-time emissions that occur prior to building occupancy. Annual operational emissions occur only after construction of the proposed project and are expected to repeat annually for the life of the project.

The inventory for construction activities quantifies the GHG emissions based on the most recent ARB-approved version of the Mobile Vehicle Emission Inventory model incorporated in the URBEMIS2007 model (version 9.2.4), which is based on the ARB's OFFROAD2007 and EMFAC2007 models. The URBEMIS model is populated with assumptions regarding construction timing and the number, type, and operating hours of equipment are based on the number and type of equipment as specified by the Project Sponsor for phased construction of the Proposed Project over 20 years (2011 to 2030). The model returns the CO₂ emission rates for all equipment, deliveries, and worker activity involving on-road and off-road gasoline and diesel fuel use. For other GHGs such as CH₄ and N₂O, the CO₂ rates are assumed to comprise of 95 percent of total CO₂E emissions based on USEPA findings.¹⁵ URBEMIS does not forecast emissions from construction-related electricity or natural gas consumption. Construction-related electricity and natural gas emissions vary based on the amount of electric power used during construction and other unknown factors that make them too speculative to quantify. In addition, this analysis assumes that all heavy duty construction equipment is diesel or gasoline powered and no

¹⁵ USEPA, Emission Facts: Greenhouse Gas Emissions from a Typical Passenger Vehicle. Office of Transportation and Air Quality. 2005.

substantial electrically-powered pieces of construction equipment are envisioned as necessary, based on the project description.

The results indicate that construction-related activity would emit about 235,000 MTCO₂E over the course of the expected construction period of 20 years. If these one-time emissions are annualized assuming a 40-year development life (which is likely low), these one-time emissions are equivalent to a rate of approximately 5,864 MTCO₂E per year.

Vegetation Sequestration of Carbon

The Project Site includes over 1,500 trees, many mature, that would be removed but replaced as part of a future landscape design plan. Because the project would not result in substantial conversion of land use type involving vegetation, and would provide approximately the same acreage of open space as presently exists on the site, no notable change in vegetation sequestration of carbon would be expected for the Parkmerced Project.

Operational (Long-Term) Emissions

Long-term operational or annual emissions from the development of the Proposed Project include the following source categories of direct and indirect GHG emissions: motor vehicle trips generated by the proposed land uses, including new urban bus mass transit vehicle trips; electricity use in residential and non-residential buildings; solid waste disposal; water use and conveyance; on-site natural gas combustion used for hot water, heating, and cooking in residential and non-residential buildings, including a proposed district energy system; and other area sources including landscaping activities.

Direct Emissions due to Motor Vehicle Trips

Estimated CO₂ emissions from motor vehicle trips are based on trip generation rates developed as part of the Transportation Impact Analysis for the Parkmerced Project and modeled through use of URBEMIS2007. Trip generation rates are from vehicular emissions data specific to different vehicle types and activity assumptions (including trips from home-to-work, work-other, etc.). The URBEMIS2007 model incorporates emission factors from the ARB's EMFAC2007 model for project-related travel within the San Francisco Bay Area Air Basin. For other GHGs such as CH₄ and N₂O, the CO₂ rates are assumed to comprise of 95 percent of total CO₂E emissions based on USEPA findings.¹⁶

The results indicate that the Proposed Project would lead to approximately 36,720 MTCO₂E per year of net new motor vehicle emissions due to the proposed changes in land use. Additional

¹⁶ USEPA, Emission Facts: Greenhouse Gas Emissions from a Typical Passenger Vehicle. Office of Transportation and Air Quality. 2005.

calculations are used to estimate diesel-powered urban bus emissions based on average activity per municipal bus in San Francisco County from the EMFAC2007 activity database. This information indicates that approximately 120 miles per day is traveled per each bus, which would result in approximately 550 MTCO₂E per year for up to five additional buses that could be triggered by the Proposed Project.

Indirect Emissions for Electricity Generation

The proposed land uses require electricity for space and water heating, air conditioning, lighting, and other purposes. GHGs are indirectly emitted as a result of the production of electricity because GHGs are emitted by fossil fuel combustion commonly used for electricity generation. For the project-related increase in electricity use at the site of approximately 19 gigawatt-hours (GWh) annually, the retailer of the electricity (Pacific Gas and Electric Company, PG&E) would provide power from a mix of renewable energy, nuclear, hydro-electric, and fossil fuel-fired resources. PG&E maintains records annually on the percentage of electricity from renewable and non-renewable resources and, using this data, calculates an annual CO₂E emissions rate per unit of electricity delivered to its customers. The rate varies from year to year depending largely on the availability of hydro-electric resources. For this analysis, GHG emission factors for electricity delivered to PG&E's customers is assumed to be approximately 579 pounds CO₂E per megawatt-hour, as derived using the General Reporting Protocol (version 3.1), published by the Climate Action Reserve.¹⁷ The results indicate that the Proposed Project would emit approximately 4,990 MTCO₂E per year through electricity use. This rate should decline over time as PG&E must deliver electricity from more renewable resources to meet Renewable Portfolio Standard (RPS) and AB 32 requirements.

Solid Waste Disposal Emissions

Indirect emissions from companies providing solid waste transport and disposal services are estimated based on the Proposed Project creating between 8,000 and 9,000 tons of solid waste annually¹⁸ with emission factors from USEPA findings.¹⁹ This is a conservative forecast that does not reflect all local requirements for waste diversion, which should result in a much lower rate, see Section V.K, Utilities and Services Systems, of this EIR. The results indicate that the Proposed Project would emit approximately 430 MTCO₂E per year due to solid waste disposal.

¹⁷ PG&E Carbon Intensity Factor is derived from a review of: <https://www.climateregistry.org/CARROT/public/Reports.aspx>.

¹⁸ Solid waste disposal rates derived from: <http://www.calrecycle.ca.gov/Wastechar/ResDisp.htm>, and <http://www.calrecycle.ca.gov/Wastechar/WasteGenRates/Commercial.htm>.

¹⁹ Landfill Waste Emission Factor is from: Greenhouse Gas Emission Factors for Municipal Waste Combustion and Other Practices: <http://www.epa.gov/climatechange/wycd/waste/downloads/canada.pdf>.

Water and Wastewater Treatment and Conveyance

Municipal utilities would create GHG emissions for providing water supply and wastewater treatment. In general, the majority of municipal sector GHG emissions are related to the energy used to convey, treat, and distribute water and wastewater. The amount of electricity required to treat and supply water depends on the volume of water involved and the location and nature of the water source. Indirect emissions from utilities providing water supply and wastewater treatment services are calculated based on the Proposed Project using 97.46 million gallons per year with general electricity demand²⁰ and electricity production emission factors²¹ derived from BAAQMD guidance. The results indicate that the Proposed Project would emit about 110 MTCO₂E per year due to water use.

Direct Emissions due to Area Sources, Including Natural Gas Use

Area sources cause emissions from landscaping activity and natural gas use at the project site. Estimated emissions for landscaping activity are based on the land use projections and use of URBEMIS. On-site natural gas combustion rates for hot water and space heating in the proposed residential and non-residential buildings, including the proposed district energy system, are from URBEMIS with additional use factors applicable for gas cooking. The results indicate that approximately 17,000 MTCO₂E would be emitted due to the area sources including on-site natural gas use.

Proposed Project Design Features

The Proposed Project would include features that reduce GHGs from the direct and indirect sources. Including a mix of land uses, transit features, pedestrian-oriented features, water savings, and energy savings avoids GHG emissions that would otherwise be created by motor vehicle use, electricity consumption, and use of other resources like water. The effects of these features are included in the GHG emission inventory described above.

Transportation Demand Management and Project Bicycle and Pedestrian Plan

The Proposed Project includes an extensive transportation demand management (TDM) program, and a biking and pedestrian plan intended to reduce the overall number of per capita auto trips and single-occupant vehicle trips and to encourage the use of bicycling and walking as primary travel modes, respectively. These attributes would minimize the motor vehicle activity and associated GHG emissions.

²⁰ Energy use per water supply used is from BAAQMD, CEQA Draft Air Quality Guidelines, December 2009.

²¹ Electricity GHG intensity for the California portion of the Western United States (WECC California) emission factors: California Climate Action Registry General Reporting Protocol January 2009, Version 3.1, Table C.2.

Proposed Sustainability Plan

The Proposed Sustainability Plan would guide the Proposed Project's land use plan, with goals: to reduce automobile use through integrated residential and neighborhood-serving retail and office uses; to maximize opportunities to use pedestrian and bicycle pathways; to establish pedestrian-oriented nodes for the location of neighborhood services and amenities, open space, and community services; and to incorporate environmental factors such as sun, shade, and wind into the design and housing materials throughout the Project Site. These attributes would minimize the motor vehicle activity and associated GHG emissions and could reduce the need for electricity use for lighting and other purposes. Water use would also be minimized, which would reduce indirect GHG emissions related to providing the water supply.

Electricity, Natural Gas, and Water Conservation

The Proposed Project would include energy-efficient appliances, energy-efficiency lighting, and "smart meters" (energy monitoring devices installed in the home to enable residents to monitor and manage their electricity consumption and utility bills). Heat and hot water would be provided by a centralized generation plant (a "district" energy system) that would provide greater efficiency than installing utilities in each building. This district energy system would likely also produce electricity on site in a "cogeneration" system to generate electricity and steam for heating water for domestic heating and hot water supply. To the extent feasible, the Proposed Project would also involve installation of renewable energy systems such as wind turbines and photovoltaic cells to meet a portion of the Proposed Project's electricity demand. These features would each minimize electricity and natural gas used on-site, which would avoid GHG emissions related to energy use.

IMPACTS

SIGNIFICANCE CRITERIA

The City and County of San Francisco has not formally adopted significance standards for impacts related to greenhouse gas emissions or climate change. The Planning Department follows the recommendations under the 2010 revisions to the California Environmental Quality Act (CEQA) that implementation of a project could have significant impacts related to greenhouse gas emissions, if it were to:

- H.a Generate greenhouse gas (GHG) emissions, either directly or indirectly, that may have a significant impact on the environment; or
- H.b Conflict with any applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of GHGs.

IMPACT EVALUATION

Impact GC-1: The Project would not result in a substantial contribution to global climate change by increasing GHG emissions in a manner that conflicts with the state goal of reducing GHG emissions in California to 1990 levels by 2020 (e.g., a substantial contribution to global climate change). (*Less than Significant*) (Criterion H.a)

The Proposed Project would increase the activity onsite with construction activities spanning potentially twenty years and by increasing residential density, providing new commercial and retail services, modifying transit facilities, and improving existing utilities. An additional 5,679 net new residential units would be added to the Project Site, increasing the existing on-site residential population from about 7,340 people to about 20,290 people in 2030. With the increased activity and population, the proposed project would contribute to annual long-term increases in GHG emissions. Increased GHG emissions occur as a result of increased vehicle trips (mobile sources) and increased energy use, water use, wastewater treatment, and solid waste disposal due to residential, commercial, and retail operations. Construction of the Proposed Project would emit about 235,000 MTCO₂E.²² Direct annual operational emissions of include about 37,300 MTCO₂E/yr from transportation and about 22,600 MTCO₂E/yr from other direct and indirect activity and energy use, for a total of 59,900 MTCO₂E/yr of project-emitted GHGs. The indirect GHG emissions would be those from utilities including off-site electricity generation at power plants, energy required to convey, pump and treat water and wastewater, and anaerobic decomposition of solid waste disposal at landfills, which results in the release of methane. The recurring annual operational emissions of the Proposed Project would represent approximately 0.06 percent of total Bay Area GHG emitted in 2007.²³ These emissions are summarized in Table V.H.2: Estimated GHG Emissions for the Proposed Project.

The GHG estimate for this analysis reflects the quantifiable effects of reduced motor vehicle trips and increased mass transit service that would be caused by the mixed-use and pedestrian-oriented nature of the Proposed Project. The GHG emissions inventory does not quantify all emission reductions that may result from compliance with the City's regulations that aim to further reduce

²² Construction emissions and annual operational emissions are not intended to be additive as they occur at different points in the project's lifecycle. Construction emissions are one-time emissions that occur prior to building occupancy. Annual operational emissions occur only after construction of the proposed project and are expected to repeat annually for the life of the project.

²³ Bay Area Air Quality Management District. Source Inventory of Bay Area Greenhouse Gas Emissions. Updated: February 2010. 939 Ellis Street, San Francisco, CA 94109. The Bay Area Air Quality Management District reported regional Bay Area GHGs emissions in 2007 at approximately 95.8 MMTCO₂E. A comparison with Bay Area 2007 GHG emissions is included as this is the most recent emissions inventory for the region.

Table V.H.2: Estimated GHG Emissions for the Proposed Project

Greenhouse Gas Emissions Inventory	
Emission Source	GHG Emissions (MTCO₂E/yr)
Proposed Project (2030)	
Electricity Use	4,990
Waste Generation, Residential	272
Waste Generation, Retail	153
Water Use	107
Natural Gas Combustion (District Energy)	1,208
Area Sources (Including: Landscaping Equipment, Water and Space Heating)	15,867
Operational Motor Vehicles	36,720
Operational Mass Transit, Additional Urban Buses	551
Total Construction-Phase Emissions, Amortized over 40-year Project Life	5,864
Total Proposed Project (2030) with Construction	65,734

Source: Aspen Environmental Group, 2010.

GHG. Specifically, the Proposed Project would be required to incorporate various project design features as required by city regulations, identified in Table V.H.3: City Regulations Applicable to the Proposed Project.

In addition to complying with the above City regulations, the proposed project would also include the proposed Sustainability Plan and electricity, natural gas, and water conservation features to avoid GHG emissions that would otherwise be created by motor vehicle use, electricity consumption, and use of other resources including water.

San Francisco has been actively pursuing cleaner energy, alternative transportation, and solid waste policies, many of which have been codified into regulations (described in Setting). In an independent review of San Francisco's communitywide emissions it was reported that San Francisco has achieved a five percent reduction in communitywide GHG emissions below the Kyoto Protocol 1990 baseline levels. The 1997 Kyoto Protocol sets a greenhouse gas reduction target of seven percent below 1990 levels by 2012. The "community-wide inventory" includes greenhouse gas emissions generated by San Francisco by residents, businesses, and commuters, as well as municipal operations. The inventory also includes emissions from both transportation and building energy sources.²⁴

²⁴ *City and County of San Francisco: Community GHG Inventory Review.* August 1, 2008. IFC International, 394 Pacific Avenue, 2nd Floor, San Francisco, CA 94111. Prepared for City and County of San Francisco, Department of the Environment.

Table V.H.3: City Regulations Applicable to the Proposed Project

City Regulation	Project Requirement
Commuter Benefits Ordinance (Environment Code, Section 421)	The Proposed Project would include new employment, and all employers with 20 or more employees must provide at least one of the following benefit programs: 1. A Pre-Tax Election consistent with 26 U.S.C. § 132(f), allowing employees to elect to exclude from taxable wages and compensation, employee commuting costs incurred for transit passes or vanpool charges, or (2) Employer Paid Benefit whereby the employer supplies a transit pass for the public transit system requested by each Covered Employee or reimbursement for equivalent vanpool charges at least equal in value to the purchase price of the appropriate benefit, or (3) Employer Provided Transit furnished by the employer at no cost to the employee in a vanpool or bus, or similar multi-passenger vehicle operated by or for the employer.
Transit Impact Development Fee (Administrative Code, Chapter 38)	Establishes the fee requirements for all commercial developments. Fees are paid to the San Francisco Municipal Transportation Agency (SFMTA) to improve local transit services.
Bicycle Parking (Planning Code, Sections 155.2, 155.4, and 155.5)	The Proposed Project would include secure bicycle parking within each commercial parking facility, residential garage, or residential building. On-street bicycle parking racks would be provided at major destinations, and automated bicycle stations at seven locations throughout Parkmerced would have rental bikes and secure bike parking.
Car Sharing Requirements (Planning Code, Section 166)	The Proposed Project would include free or discounted parking available for rideshare/vanpool vehicles and the provision of hubs for carshare vehicles.
San Francisco Green Building Requirements for Energy Efficiency (SF Building Code, Chapter 13C)	The Proposed Project would be required to determine the energy-related requirements of each building for compliance with the Green Building Ordinance. Commercial buildings greater than 5,000 sf will be required to be a minimum of 14 percent more energy efficient than Title 24 (2005) energy efficiency requirements. Under the Green Point Rated system, all new residential buildings will be required to be at a minimum 15 percent more energy efficient than Title 24 energy efficiency requirements. The Proposed Project would also incorporate green building technologies, with the goal of obtaining LEED® “gold” certification for neighborhood development (ND) or an equivalent standard.
San Francisco Green Building Requirements for Stormwater Management (SF Building Code, Chapter 13C)	Projects in San Francisco are required to comply with the SFPUC’s stormwater design guidelines, which emphasize low impact development using a variety of Best Management Practices for managing stormwater runoff and reducing impervious surfaces, thereby reducing the volume of combined stormwater and sanitary sewage requiring treatment.

Table V.H.3 (continued)

City Regulation	Project Requirement
San Francisco Green Building Requirements for water reduction (SF Building Code, Chapter 13C)	The Proposed Project would include new residential and commercial buildings greater than 5,000 sf that are required to reduce the amount of potable water used for landscaping by 50 percent and reduce the amount of potable water used for the building by 20 percent.
San Francisco Green Building Requirements for renewable energy (SF Building Code, Chapter 13C)	The Proposed Project would incorporate renewable energy sources to help meet a portion of the Proposed Project's energy demand.
Commercial and Residential Water Conservation Ordinances (SF Building Code, Chapters 13A and Housing Code, Chapter 12A)	The Proposed Project would be required to meet the following minimum standards: 1. All showerheads have a maximum flow of 2.5 gallons per minute (gpm); 2. All showers have no more than one showerhead per valve; 3. All faucets and faucet aerators have a maximum flow rate of 2.2 gpm; 4. All Water Closets (toilets) have a maximum rated water consumption of 1.6 gallons per flush (gpf); 5. All urinals have a maximum flow rate of 1.0 gpf; and 6. All water leaks have been repaired.
San Francisco Green Building Requirements for solid waste (SF Building Code, Chapter 13C)	Pursuant to Section 1304C.0.4 of the Green Building Ordinance, all new construction, renovation and alterations subject to the ordinance are required to provide recycling, composting and trash storage, collection, and loading that is convenient for all users of the building.
San Francisco Green Building Requirements for construction and demolition debris recycling (SF Building Code, Chapter 13C)	Portions of the Proposed Project involving demolition would be required to divert at least 75 percent of the project's construction and demolition debris to recycling. The Proposed Project would also use construction techniques intended to reduce carbon emissions and minimize the waste of materials.
Street Tree Planting Requirements for New Construction (Planning Code Section 143)	The Proposed Project would include a tree replacement plan, as part of a future landscape design plan. Proposed tree species would likely be native species and/or species closely adapted to the climate conditions of the Project Site.

As infill development, the proposed project would be constructed in an urban area with high levels of transit access, which reduces regional vehicle trips and vehicle miles traveled. Additionally, compliance with the City's regulations, as discussed above, would reduce the project's overall GHG emissions. Given that San Francisco has implemented binding and enforceable programs to reduce GHG emissions applicable to the proposed project and that San Francisco's sustainable policies have resulted in the measured success of reduced GHG emissions levels, the proposed project's GHG emissions would result in a less than significant impact.

Impact GC-2: The Project would not conflict with San Francisco's Climate Action Plan or impede implementation of the local GHG reduction goals established by the San Francisco 2008 Greenhouse Gas Reduction Ordinance. (*Less than Significant*) (Criterion H.b)

The state-wide approach for GHG reductions outlined in the AB 32 Scoping Plan requires local governments to play the role of an "essential partner" and to use local planning and permitting processes to achieve GHG reductions. San Francisco's Climate Action Plan and the 2008 Greenhouse Gas Reduction Ordinance, among other requirements identified above, seek and achieve reductions where the City has authority to act on activities that cause GHG emissions. The Proposed Project would be required to comply with all San Francisco regulations and ordinances that drive local GHG reductions (see Table V.H.3).

AB 32 contains a comprehensive approach for developing regulations to reduce statewide GHG emissions. ARB acknowledges that decisions on how land is used will have large effects on the GHG emissions that will result from the transportation, housing, industry, forestry, water, agriculture, electricity, and natural gas sectors. Many of the measures in the AB 32 Scoping Plan—such as implementation of increased fuel efficiency for motor vehicles, increased efficiency in utility operations, and development of more renewable energy sources—require statewide action by government, industry, or both.

Some of the AB 32 Scoping Plan measures are at least partially applicable to development like the Proposed Project, such as increasing energy efficiency in new construction, installation of solar panels on individual building roofs, and a "green building" strategy. As evidenced above, the City has already implemented several of these measures that require local government action, such as a Green Building Ordinance, a Zero Waste strategy, a Construction and Demolition Debris Recovery Ordinance, and a solar energy generation subsidy program, to realize meaningful reductions in GHG emissions. These programs (and including others not listed) collectively comprise San Francisco's GHG reduction strategy and continue San Francisco's efforts to reduce the City's greenhouse gas emissions to 20 percent below 1990 levels by the year 2012, a goal outlined in the City's 2004 Climate Action Plan. The City's GHG reduction strategy also furthers the State's efforts to reduce statewide GHG emissions as mandated by AB 32.

The proposed project would be required to comply with GHG reduction regulations as discussed above, as well as applicable AB 32 Scoping Plan measures that are ultimately adopted and become effective during implementation of proposed project. Given that the City has adopted numerous GHG reduction strategies recommended in the AB 32 Scoping Plan, that the City's GHG reduction strategy includes binding, enforceable measures to be applied to development projects, such as the proposed project, and that the City's GHG reduction strategy has produced measurable reductions in GHG emissions, the proposed project would not conflict with either the state or local GHG reduction strategies. In addition the proposed project would not conflict with any plans, policies, or regulations adopted for the purpose of reducing GHG emissions. Therefore, the proposed project would have a less than significant impact with respect to GHG emissions. No mitigation is required.

BAAQMD DRAFT GHG THRESHOLDS

As discussed above, BAAQMD is considering the future adoption of quantitative CEQA thresholds of significance for operational-related GHG emission impacts.²⁵ At present, three options relevant to the Proposed Project are under consideration for operational GHG emission thresholds: Option 1 is based on an individual land use development project having total operational GHG emissions less than 1,100 MTCO₂E per year; Option 2, which would apply to mixed-use projects, such as the Proposed Project, is based on the relative efficiency of a project to serve a given population housed or employed by the project, set at 4.6 MTCO₂E per service population per year; and Option 3 is a qualitative threshold for plan-level analysis that requires determining compliance with Qualified Climate Action Plan (or similar criteria included in a community General Plan).

In anticipation of proposed new BAAQMD CEQA thresholds of significance for GHG emissions, this EIR provides an analysis of the Proposed Project operational GHG emissions under the proposed efficiency-based threshold of significance identified above. The BAAQMD thresholds stated above are still in draft form and may undergo additional changes before being finalized.

The BAAQMD also suggested some guidance on how to prepare a GHG emission inventory. For operational emissions, the BAAQMD suggests quantifying residential, non-residential, mobile, water, and area sources. The guidance recommends generalized values for energy use for various land use types and generalized emission factors that do not account for local electricity emission factors or newer vehicle efficiency regulations. The GHG emissions inventory prepared for the Proposed Project includes additional source categories not included in the BAAQMD proposed methodology for quantifying GHG operational emissions. These additional source categories include solid waste disposal and transit services.

²⁵ BAAQMD, *Draft CEQA Air Quality Guidelines*, December 2009, Available online at: <http://www.baaqmd.gov/Divisions/Planning-and-Research/CEQA-GUIDELINES.aspx>.

The exclusion of the source categories from the project inventory would lower the operational emissions per service population. The emissions inventory presented for the Proposed Project utilizes different emission factors and methodologies than those that might be part of the final BAAQMD guidance. Categories where San Francisco requires project-specific factors include the estimates of building energy use and mass transit vehicle emissions. The GHG emission inventory presented in this EIR for operational emissions uses data sources that are generally more refined for San Francisco and the Proposed Project than those indicated in the BAAQMD guidance. Therefore, this analysis provides a project-specific result that would differ from a result using default BAAQMD guidance.

The Proposed Project-related operational emissions plus amortized construction emissions result in total annual equivalent GHG emissions of 65,734 MTCO₂E/yr, or 4.5 MTCO₂E per service population per year based on the project-related increase in service population of 12,950 residents and 1,595 employees. Because the Proposed Project-related operational emissions would be less than the BAAQMD draft guideline level of 4.6 MTCO₂E per service population per year, project-related GHG emissions would result in a less-than-significant impact on climate change. No mitigation is required.

I. WIND AND SHADOW

This section describes the Proposed Project's wind and shadow impacts.

WIND

This subsection describes the Proposed Project's impacts on ground-level wind currents at various locations on the Project Site and in the vicinity. The Setting discussion includes a general description of the wind environment in San Francisco and a discussion of regulations related to the review of wind impacts from proposed development projects. The Impacts discussion describes significance thresholds for determining if wind impacts are significant under the California Environmental Quality Act (CEQA); existing wind conditions on the Project Site; the wind impacts of the Proposed Project and cumulative development projects; and improvement measures. Background materials supporting the discussion of wind impacts in this subsection are included in Appendix C: Wind. Appendix C.a is a wind tunnel analysis report prepared by Rowan Williams Davies & Irwin, Inc. Appendix C.b is a November 19, 2009 memorandum, from Donald Ballanti, a Certified Consulting Meteorologist. Appendix C.c is a November 9, 2009, memorandum from Donald Ballanti.

SETTING

EXISTING CLIMATE AND WIND CONDITIONS

Meteorological data from the United States Weather Bureau and the Bay Area Air Quality Management District (BAAQMD) show that westerly (from the west) to northwesterly winds, reflecting the persistence of sea breezes, are the most frequent wind directions in San Francisco. Wind direction is most variable in the winter, when strong southerly winds, which are frequent during the approach of a winter storm, occur. Average wind speeds are highest during the summer and lowest during the winter. Typically, the highest wind speeds occur during the mid-afternoon, and the lowest wind speeds occur during the early morning.

Historic wind records for San Francisco can be obtained from one of three locations: the Federal Building, San Francisco International Airport, or Fort Funston. The Federal Building is 5.6 miles northeast of the Project Site. Wind data from the Federal Building cover a limited period of time (1945 through 1950). San Francisco International Airport is 9 miles southeast of the Project Site. Although wind data are available for an extensive period of time (nearly 50 years), the airport is an inland-facing location where wind patterns can be affected by topographical features including the San Bruno Mountain and the hills on the San Francisco Peninsula.

The Project Site is in the southwest corner of San Francisco, approximately 1 mile from the Pacific Ocean. Since Fort Funston is a coastal location that is 1 mile west of the Project Site, the

wind patterns at Fort Funston are similar to the wind patterns at the Project Site. The BAAQMD has operated a weather monitoring station at Fort Funston since 1990. Wind data are available for a total of 12 years, with 2005 being the most recent year, and the wind data meet the quality control standards for meteorological data established by the United States Environmental Protection Agency.¹ For the purpose of analyzing wind impacts on the Project Site, the wind data from Fort Funston are the most useful.

The Fort Funston wind database shows more variability in wind direction than the wind databases for the Federal Building or San Francisco International Airport, both of which indicate that winds blow from four directions with the greatest frequency. Of the 16 primary wind directions measured at Fort Funston, eight account for almost all of the strong winds that occur. These eight wind directions are the northwest, west-northwest, west, west-southwest, southwest, south-southwest, south, and south-southeast.²

BUILDINGS AND WIND SPEED

The difference in atmospheric pressure between two points on the earth causes air masses to move from the area of higher pressure to the area of lower pressure. This movement of air masses results in wind currents. The direction and speed of wind currents can be altered by natural features of the land or by buildings and structures.

Groups of buildings clustered together tend to act as obstacles that reduce wind speeds, but the heights, orientations, profiles, and spacing of the buildings are some of the factors that can affect wind speeds.

When a building is much taller than those around it, rather than a similar height, the taller building can intercept and redirect winds downward that might otherwise flow overhead. The winds can be directed down the vertical face of the building to ground level, and these redirected winds can be relatively strong and relatively turbulent.

The orientation or profile of a building can affect wind speeds. When the wide face of a building, as opposed to its narrow face, is oriented toward the prevailing wind direction, the building has more surface area to intercept and redirect winds down to ground level, thus increasing the probability of strong and turbulent winds at ground level.

¹ Wind data are available for a total of 12 years. The data from 1990 did not meet quality control standards and were not used.

² Rowan Williams Davies & Irwin, Inc., *Pedestrian Wind Study, Parkmerced Project EIR* (hereinafter referred to as “Pedestrian Wind Study”), November 18, 2009, pp. 9 and 34, attached as Appendix C.a.

WIND SPEED AND PEDESTRIAN COMFORT

The comfort of pedestrians varies under different conditions of sun exposure, temperature, clothing, and wind speed. Winds up to 4 miles per hour (mph) have no noticeable effect on pedestrian comfort. With winds from 4 to 8 mph, wind is felt on the face. Winds from 8 to 13 mph will disturb hair, cause clothing to flap, and extend a light flag mounted on a pole. Winds from 13 to 19 mph will raise loose paper, dust, and dry soil, and will disarrange hair. With winds from 19 to 26 mph, the force of the wind will be felt on the body. With 26- to 34-mph winds, umbrellas are used with difficulty, hair is blown straight, walking steadily is difficult, and wind noise is unpleasant. Winds over 34 mph increase difficulty with balance, and gusts can blow people over.

SAN FRANCISCO PLANNING CODE AND WIND STUDY PROTOCOL FOR THE PROPOSED PROJECT

Section 148 of the Planning Code establishes wind comfort and wind hazard criteria for certain zoning districts: the Downtown (C-3) Districts, the Downtown Residential (DTR) Districts, the Folsom and Main Residential/Commercial Special Use District, the Van Ness Special Use District, and certain zoning districts in the South of Market neighborhood.³ Any proposed development project in a C-3 District in San Francisco that requires a wind tunnel analysis must follow the standard methodology established by the Planning Department. Under the standard methodology, the wind tunnel analysis relies on wind data collected from the United States Weather Bureau weather station atop the Federal Building at 50 United Nations Plaza. Wind data from 7:00 a.m. to 6:00 p.m. are used, because this time period represents peak pedestrian activity in a downtown setting. A scale model of the project and its surroundings is placed in a wind tunnel and tested for four directions (northwest, west-northwest, west, and west-southwest).

The Project Site is not in a zoning district that is subject to the provisions of Section 148, and it is a coastal location with higher base wind speeds than those found in downtown San Francisco. For these reasons, a different methodology for analyzing the wind impacts of the Proposed Project was developed under the guidance of the Planning Department.⁴ Since the Proposed Project is primarily residential in nature, wind data from 6:00 a.m. to midnight were used. This time period is more indicative of when pedestrian and outdoor activity would be likely to occur. A scale model of the Proposed Project and its surroundings was placed in a wind tunnel and

³ Section 148 of the *Planning Code*, which was adopted by the San Francisco Board of Supervisors in 1985, established the wind comfort and wind hazard criteria for the C-3 Districts. The wind comfort and wind hazard criteria for the other zoning districts are the same as those established for the C-3 Districts by Section 148.

⁴ Donald Ballanti, Memorandum to Rick Cooper of the San Francisco Planning Department, "Proposed Protocol for Parkmerced Project Wind Studies," August 10, 2009. A copy is available for review at the Planning Department, 1650 Mission Street, Suite 400, in the files for Case No. 2008.0021E.

tested for eight directions. Common metrics (measurements) of wind in San Francisco (11 mph pedestrian comfort criterion and 26 mph wind hazard criterion) were used, but impacts were based on whether the Proposed Project would substantially change wind speeds for the worse rather than whether these metrics would be exceeded for a certain amount of time (10 percent of the time for the comfort criterion and a single full hour per year for the hazard criterion). The wind tunnel data are presented as the percentage of time that winds would exceed 11 mph (hourly averaged) and the number of hours per year that winds would exceed 26 mph (hourly averaged).

IMPACTS

SIGNIFICANCE CRITERION

For projects located in zoning districts that are subject to the provisions of Section 148, the CEQA threshold for significant wind impacts is the 26 mph wind hazard criterion set forth in Section 148. The Project Site is not in a zoning district that is subject to the provisions of Section 148. In the absence of an adopted significance threshold, the Planning Department has established the following significance criterion for evaluating the Proposed Project's wind impacts:

- I.a A significant wind impact would be a substantial increase in the number of hours that the 26 mph wind hazard criterion is exceeded or a substantial increase in the area subjected to winds greater than 26 mph.

METHODOLOGY

Rowan Williams Davies & Irwin, Inc. conducted a wind tunnel analysis of the Proposed Project using a 1:400 scale model. Given the extent of the area to be studied, two overlapping models of the Project Site and vicinity were constructed to account for the aerodynamic effects of upwind buildings and terrain.⁵ The building configurations, heights, and locations used in the wind tunnel analysis are shown on Figure III.10: Proposed Representative Building Heights Plan, in Chapter III, Project Description, p. III.27, and are representative building envelopes as opposed to actual building designs.⁶ The scale models, which were equipped with permanently mounted wind speed sensors, were placed inside an atmospheric boundary layer wind tunnel. Using eight wind directions, wind tunnel tests were then conducted for the Project Site and vicinity using three different scenarios: (1) Existing Conditions Configuration; (2) Proposed Representative Project Configuration; and (3) Cumulative Conditions Configuration.

⁵ Pedestrian Wind Study p. 4.

⁶ The scale model tested in the wind tunnel showed a proposed 145-foot-high tower on the west side of Chumasero Drive in the southeast corner of the Project Site. After the wind tunnel testing was completed, this proposed tower was relocated to the east side of Chumasero Drive. The wind impacts of this relocated proposed tower were analyzed qualitatively in a November 9, 2009, memorandum from Donald Ballanti. This analysis is discussed in the "Impacts of the proposed Special Use District" subsection.

The Existing Conditions Configuration includes all existing configurations of buildings on the Project Site and in the vicinity. The Proposed Representative Project Configuration consists of the existing 13-story buildings on the Project Site that would be retained as part of the Proposed Project, the proposed representative building configurations identified as part of the Proposed Project, and existing buildings in the vicinity of the Project Site. The Cumulative Conditions Configuration is the same as the Proposed Representative Project Configuration, but it also includes anticipated proposed development projects adjacent to the Project Site on the south (800 Brotherhood Way), the east (77-111 Cambon Drive), and the north (San Francisco State University).

Wind speed measurements were taken at 216 locations for the Existing Conditions Configuration and at 220 locations for the Proposed Representative Project Configuration and the Cumulative Conditions Configuration.⁷ Under the Existing Conditions Configuration, 4 locations (Test Points 160, 161, 163, and 169) are occupied by existing buildings, so only 216 locations were tested. These existing buildings would be demolished as part of the Proposed Project. Under the Proposed Representative Project Configuration and the Cumulative Conditions Configuration, Test Points 160, 161, 163, and 169 were added with the removal of the buildings.⁸

One sensor (Test Point 213) malfunctioned during the wind tunnel testing and did not provide usable data.⁹ For the Existing Conditions Configuration, 215 test points provided usable data. For the Proposed Representative Project Configuration and the Cumulative Conditions Configuration, 219 test points provided usable data.

Wind Tunnel Analysis for Existing Conditions Configuration

Under the Existing Conditions Configuration as tested in the wind tunnel, the average measured 90th percentile equivalent wind speed¹⁰ at the 215 test points is approximately 9.1 mph, with wind speeds ranging from 4 to 14 mph.¹¹

Of the 215 test points, 179 meet the pedestrian comfort criterion of 11 mph, and 36 (16.7 percent) do not. Locations that do not meet the pedestrian comfort criterion include the northwest corner

⁷ R Pedestrian Wind Study, Tables 1 and 2, pp. 15-30.

⁸ Pedestrian Wind Study, p. 10.

⁹ Pedestrian Wind Study, p. 10.

¹⁰ 90th percentile wind speeds are wind speeds that would be exceeded 10 percent of the time each year. Wind speeds would be lower 90 percent of the time. Equivalent wind speed accounts for gustiness or turbulence in the wind.

¹¹ Pedestrian Wind Study, Table 1: Comfort Results, pp. 14-21.

of the Project Site, the area west of Juan Bautista Circle, and the area east of Cambon Drive (see Figure V.I.1: Wind Tunnel Test Point Locations - West Side Existing Conditions Configuration, and Figure V.I.2: Wind Tunnel Test Point Locations - East Side Existing Conditions Configuration).

Of the 215 test points, 189 meet the wind hazard criterion, and 26 (12.1 percent) do not. At the 26 locations that do not meet the wind hazard criterion, wind speeds exceed 26 mph for a total of 99 hours per year. Locations that currently do not meet the wind hazard criterion include the northwest corner of the Project Site, the area west of Juan Bautista Circle, and the area east of Cambon Drive.¹²

IMPACT EVALUATION

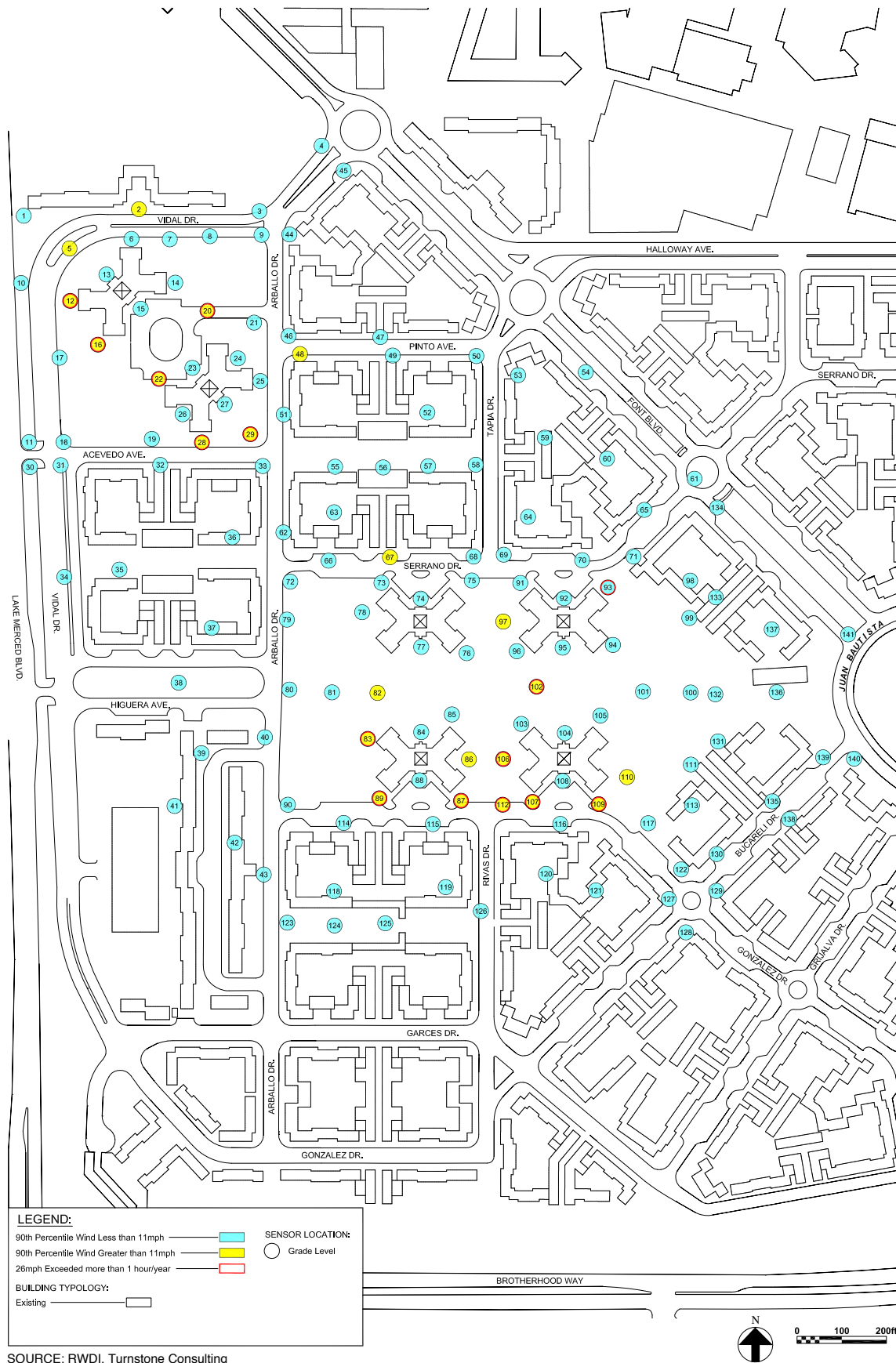
This subsection discusses the wind impacts of the Proposed Project and the proposed Special Use District. The wind impacts of the Proposed Project are based on the results from the wind tunnel analysis that was performed on the representative scale model, while the wind impacts of the proposed Special Use District are based on a qualitative analysis of potential changes to building heights, footprints, locations, and massing represented in the scale model. These potential changes would be permitted under the proposed Special Use District.

Impact WS-1: The phased construction of the Proposed Project could result in a temporary increase in the number of hours that the 26-mph wind hazard criterion is exceeded or an increase in the area that is subjected to winds greater than 26 mph. (Potentially Significant and Unavoidable) (Criterion I.a)

Construction of the Proposed Project is expected to take approximately 20 years. Although the Proposed Project, in its entirety, would not result in significant wind impacts but would improve wind conditions on the Project Site, some potentially significant interim wind impacts may occur prior to the completion of construction. For example, Phase 1 would include the construction of two new towers near the intersection of Arballo Drive and Higuera Avenue that could be 130 feet tall. The existing two-story buildings to the north and south of these two new towers would not be demolished and replaced with taller buildings until Phase 4. Based on the results of the wind tunnel analysis, during the intervening years, these two new towers could result in potentially significant wind impacts.

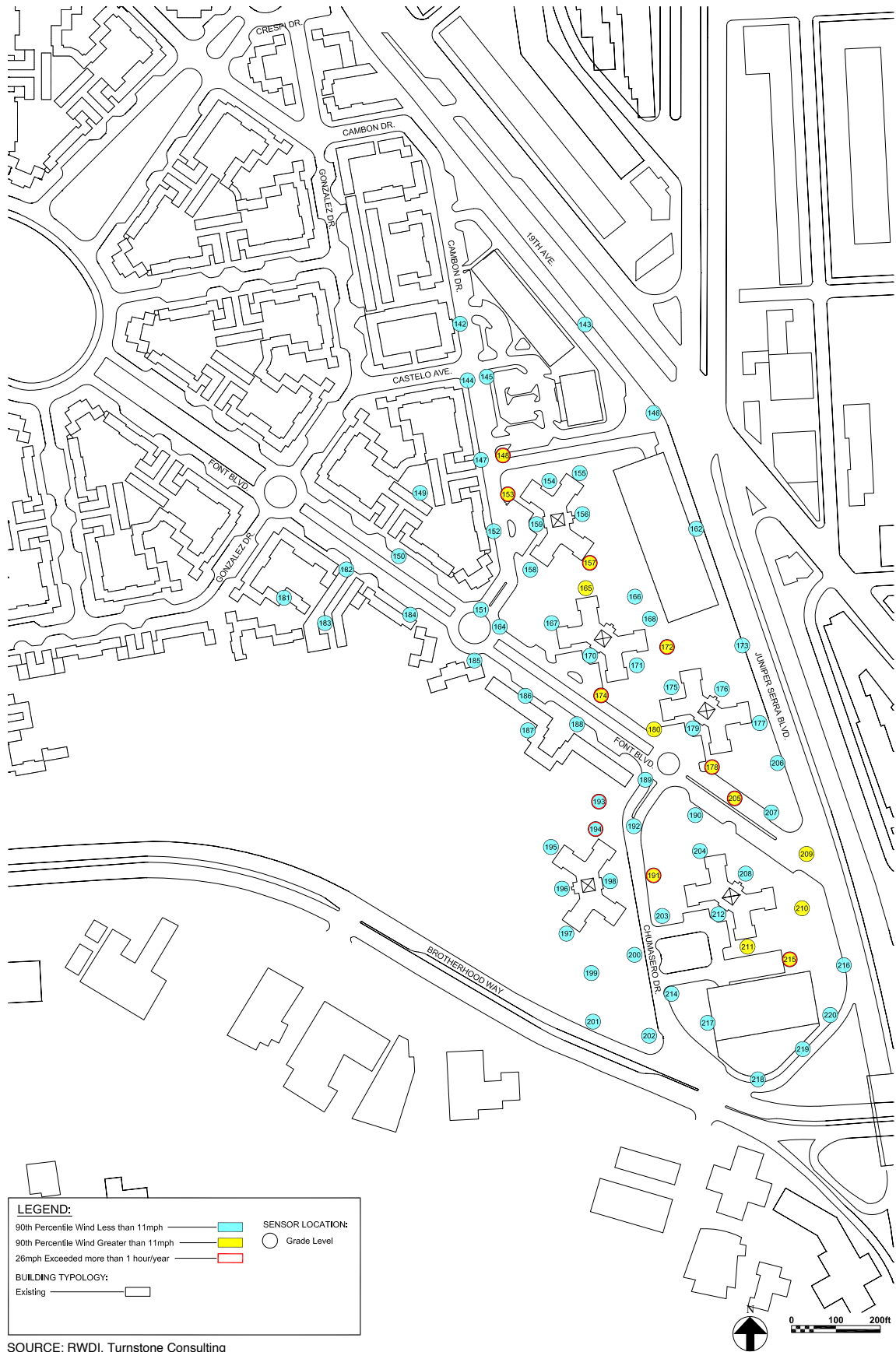
Mitigation Measure M-WS-1a requires a wind impact analysis for any proposed building exceeding a height of 100 feet, and Mitigation Measure M-WS-1b requires a wind impact analysis for any proposed building exceeding a height of 50 feet that is within 200 feet of one of

¹² Pedestrian Wind Study, Table 1: Comfort Results, pp. 14-21.



PARKMERCED PROJECT

FIGURE V.I.1: WIND TUNNEL TEST POINT LOCATIONS – WEST SIDE EXISTING CONDITIONS CONFIGURATION



PARKMERCED PROJECT

FIGURE V.I.2: WIND TUNNEL TEST POINT LOCATIONS – EAST SIDE EXISTING CONDITIONS CONFIGURATION

the existing 13-story towers on the Project Site. Implementation of Mitigation Measures M-WS-1a and M-WS-1b, which would require additional wind impact analysis for proposed buildings exceeding a certain height and would require that design changes be made to certain buildings on an as-needed basis, would reduce some, but possibly not all, potentially significant wind impacts to less-than-significant levels. In addition, implementation of Improvement Measures I-WS-A (incorporating certain design features into the buildings) and I-WS-B (installing landscaping and other wind-sheltering elements), where necessary, would help create a more comfortable wind environment for pedestrians.

Mitigation Measure M-WS-1a: A wind impact analysis shall be required for any proposed building over 100 feet in height. Wind tunnel testing shall be required for each building unless, upon review by a qualified wind consultant, it is determined that the exposure, massing, and/or orientation of the building are such that adverse wind impacts would not occur. The analysis shall assess wind conditions for the building in conjunction with the anticipated pattern of development on surrounding blocks. All feasible means (such as relocating or reorienting certain buildings, sculpting buildings to include podiums and roof terraces, or installing landscaping) to eliminate hazardous winds, if predicted, shall be implemented. A significant wind impact would be a substantial increase in the number of hours that the 26 mph wind hazard criterion is exceeded or a substantial increase in the area subjected to winds greater than 26 mph.

Mitigation Measure M-WS-1b: Wind tunnel testing shall be required for any proposed building over 50 feet in height that is within 200 feet of any of the existing 13-story buildings on the Project Site. The analysis shall assess wind conditions for the building in conjunction with the anticipated pattern of development one surrounding blocks. All feasible means (such as relocating or reorienting certain buildings, sculpting buildings to include podiums and roof terraces, or installing landscaping) to eliminate hazardous winds, if predicted, shall be implemented. A significant wind impact would be a substantial increase in the number of hours that the 26 mph wind hazard criterion is exceeded or a substantial increase in the area subjected to winds greater than 26 mph.

Improvement Measure I-WS-A: Building massing can affect wind flow. Podiums or terraced roofs create horizontal “shelves” that can deflect downward wind flow away from streets and sidewalks. These types of design features should be considered for the proposed buildings at the intersection of Chumasero Drive and Brotherhood Way and the intersection of Junipero Serra Boulevard and Brotherhood Way. Like podiums and terraced roofs, canopies can deflect downward wind flow from streets and sidewalks.

Improvement Measure I-WS-B: Landscaping can be effective at reducing wind speeds. Porous materials (latticework, screens, vegetation, etc.) offer more effective wind shelter than solid surfaces. Landscaping should be installed in appropriate locations throughout the Project Site to

reduce wind speeds. Wind-sheltering elements should be located west of the area being protected and should be of sufficient height.

Impact WS-2: The Proposed Project would not result in an increase in the number of hours that the 26-mph wind hazard criterion is exceeded or an increase in the area that is subjected to winds greater than 26 mph. (*Less than Significant*) (Criterion I.a)

Compared to the existing wind environment, at full buildout, the Proposed Project would generally improve wind conditions on the Project Site. Currently, the tallest buildings (13 stories) on the Project Site are much taller than the shortest buildings (2 stories) on the Project Site. As explained in the Setting discussion, a building that is substantially taller than those around it can intercept and redirect winds down to ground level, resulting in strong and turbulent winds at ground level. The Proposed Project would increase the number of buildings of varying intermediate heights. With more buildings of varying intermediate heights, the tallest buildings on the Project Site would be less likely to intercept and redirect winds down to ground level. The results of the wind tunnel analysis are summarized below.

Under the Proposed Representative Project Configuration as tested in the wind tunnel, the average measured 90th percentile equivalent wind speed at the 219 test points would be approximately 8.9 mph, with wind speeds ranging from 5 to 14 mph.¹³ Compared to the Existing Conditions Configuration, wind speeds would increase in the area southwest of Juan Bautista Circle, in the area along Font Boulevard between Gonzalez Drive and Chumasero Drive, and in the area around Chumasero Drive in the southeast corner of the Project Site. For all other areas throughout the Project Site, wind speeds would either decrease or remain the same as the wind speeds under the Existing Conditions Configuration.¹⁴

Of the 219 test points, 190 would meet the pedestrian comfort criterion of 11 mph, while 29 (13.2 percent) would not. Locations that would not meet the pedestrian comfort criterion would include the northwest corner of the Project Site, the area west and southwest of Juan Bautista Circle, the area near Font Boulevard between Gonzalez Drive and Chumasero Drive, and the area near Chumasero Drive in the southeast corner of the Project Site (see Figure V.I.3: Wind Tunnel Test Point Locations - West Side Proposed Representative Project Configuration, and Figure V.I.4: Wind Tunnel Test Point Locations - East Side Proposed Representative Project Configuration). Compared to the Existing Conditions Configuration, the percentage of test points under the Proposed Representative Project Configuration that would not meet the pedestrian comfort criterion would decrease by 3.5 percent (from 16.7 percent to 13.2 percent).

¹³ Pedestrian Wind Study Table 1: Comfort Results, pp. 14-21.

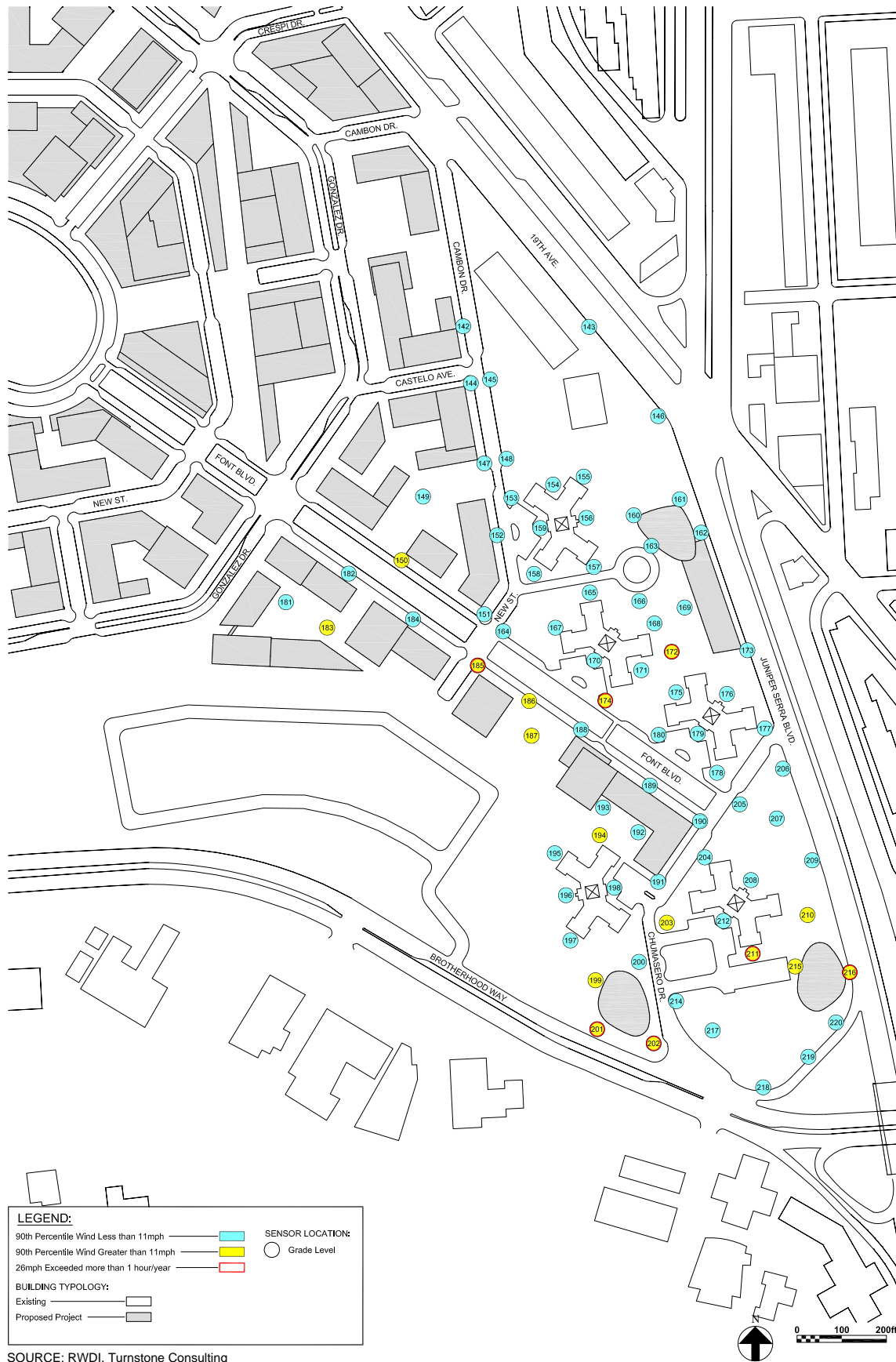
¹⁴ Pedestrian Wind Study pp. 10-11.



SOURCE: RWDI, Turnstone Consulting

PARKMERCED PROJECT

FIGURE V.I.3: WIND TUNNEL TEST POINT LOCATIONS – WEST SIDE PROPOSED REPRESENTATIVE PROJECT CONFIGURATION



PARKMERCED PROJECT

FIGURE V.I.4: WIND TUNNEL TEST POINT LOCATIONS – EAST SIDE PROPOSED REPRESENTATIVE PROJECT CONFIGURATION

Under the Proposed Representative Project Configuration, 209 of the 219 test points would meet the wind hazard criterion, while 10 (4.6 percent) would not. At the 10 locations that would not meet the wind hazard criterion, wind speeds would exceed 26 mph for a total of 45 hours per year. Locations that would not meet the wind hazard criterion would include the northwest corner of the Project Site, the area southwest of Juan Bautista Circle, the area near Font Boulevard between Gonzalez Drive and Chumasero Drive, and the area near Chumasero Drive in the southeast corner of the Project Site (see Figures V.I.3 and V.I.4). Compared to the Existing Conditions Configuration, the percentage of test points under the Proposed Representative Project Configuration that would not meet the wind hazard criterion would decrease from 12.1 percent to 4.6 percent, and the number of hours per year of hazardous winds would decrease by 54 hours (from 99 hours to 45 hours).

Based on the results of the wind tunnel analysis, the Proposed Project would improve the existing wind environment. There would be a net decrease in the number of test locations that exceed the wind hazard criterion of 26 mph for more than a single full hour of the year, and there would be a net decrease in the number of hours per year of hazardous winds. For these reasons, the wind impacts of the Proposed Project would be less than significant. No mitigation measures are required.

Impact WS-3: The proposed Special Use District could result in increases in the number of hours that the 26-mph wind hazard criterion is exceeded or increases in the area that is subjected to winds greater than 26 mph. (Potentially Significant and Unavoidable) (Criterion Ia)

The Proposed Project is represented by the information shown on Figure III.10: Proposed Representative Building Heights Plan, in Chapter III, Project Description, p. III.27. These building configurations, heights, and locations shown on this plan are representative as opposed to actual building designs. The Proposed Project includes an amendment to the Planning Code and the *General Plan* to adopt a proposed Special Use District that would apply to the Project Site. The Special Use District, shown on Figure III.9: Proposed Zoning Height Limit Plan, p. III.25, provides an overlay that would accommodate a plan that would increase height limits and/or change building footprints in certain locations on the Project Site. This overlay would designate specific areas for new buildings taller than six stories. Rather than designate the exact location of all proposed buildings less than six stories in height, the proposed overlay would impose a base height limit within certain districts and then permit a certain percentage of the land area within that district to be improved with buildings that exceed the base height limit. At these locations, there is the potential to construct buildings that are slightly taller or shorter, bulkier or less bulky, in different locations, or oriented differently than the buildings and locations currently proposed under the Proposed Project and analyzed in the wind tunnel.

As explained in the Setting discussion, on p. VI.2, building height, orientation, profile, and spacing are some of the factors that can alter the flow of wind currents. If the proposed buildings were constructed to be taller or shorter, bulkier or less bulky, or if they are relocated or reoriented, these design changes could affect the flow of wind currents, thereby altering the ground-level wind impacts on pedestrians. As a result, these wind impacts could be different from the wind impacts of the Proposed Project that were studied in the wind tunnel, and this could be a potentially significant impact.

Changes to Building Height and Building Footprint

Locations where building heights and building footprints would be maximized would have the greatest potential to produce changes to the wind impacts compared to those in the wind tunnel. This scenario could occur in two locations: the northwest corner of the Project Site¹⁵ and the block on the south side of Serrano Drive between Arballo Drive and Tapia Drive.¹⁶

On Block 01, the existing height limit of 130 feet would not change. As shown on Figure III.9, the Proposed Representative Project Configuration includes two new buildings: one L-shaped building at a height of 45 feet in the southwest corner of the block and one rectangular building at a height of 85 feet in the northeast corner of the block. Under the proposed Special Use District, each of these buildings could have a maximum height of 130 feet, and each building footprint could be enlarged or reconfigured to cover a larger area compared to the Proposed Representative Project Configuration.

On Block 06, the existing height limit of 130 feet would not change. As shown on Figure III.9, the Proposed Project includes two new 115-foot-high buildings along Arballo Drive and near the center of the block. Under the proposed Special Use District, each of these buildings could have a maximum height of 130 feet, and each building footprint could be enlarged or reconfigured to cover a larger area.

These proposed changes could produce substantial changes to the wind impacts compared to those in the wind tunnel and create potentially significant wind impacts. However, any proposed building exceeding a height of 100 feet would be subject to further wind impact analysis under a wind mitigation measure.

¹⁵ This area is identified as Block 01 in Figures C.c.1 and C.c.2 of Appendix C.c: Memorandum from Donald Ballanti to Nancy Clark, "Revised Building Heights/Footprints for the Parkmerced Project," November 9, 2009.

¹⁶ This area is identified as Block 06 in Figures C.c.1 and C.c.2 of Appendix C.c.

Changes to Building Height, No Changes to Building Footprint

In locations where the building heights would change but the building footprints would not, there would be a lesser potential for changes to the wind impacts than were predicted by the wind tunnel. This scenario could occur in four locations: the proposed recreation building near the southern edge of the Project Site and on three blocks to the west and southwest of Juan Bautista Circle.¹⁷ At these locations, building heights could increase between 10 feet and 20 feet, but only minor changes to the wind impacts would occur, compared to those predicted by the wind tunnel. Thus, significant wind impacts are not expected.

Changes to Building Footprint, No Changes to Building Height

In locations where the building footprints would change but the building heights would not, there would be an even lesser potential for changes to the wind impacts than were predicted by the wind tunnel. This scenario could occur in two locations: the southwest corner of the Project Site¹⁸ and the block on the south side of Serrano Drive between Tapia Drive and a proposed new street.¹⁹ At these locations, building footprints could be enlarged or reconfigured, but only minor changes to the wind impacts that were predicted by the wind tunnel would occur, and significant wind impacts are not expected.

Relocated Building²⁰

Moving a proposed building from one location to another has little potential to affect wind impacts unless the change in location would change the building's exposure or place it in a location where it would interact with other buildings. In the southeast corner of the Project Site, a proposed 145-foot-high tower would move from the west side of Chumasero Drive to the east side of Chumasero Drive.²¹ This proposed relocation could produce substantial changes to the wind impacts that were predicted by the wind tunnel. This would create potentially significant wind impacts. However, since this proposed building would exceed a height of 100 feet, it would be subject to further wind impact analysis under a wind mitigation measure.

In summary, maximizing building heights and/or building footprints in certain locations on the Project Site would have the potential to change the wind impacts that were predicted by the wind tunnel. Implementation of Mitigation Measures M-WS-1a and M-WS-1b, which would require

¹⁷ These blocks are identified as Blocks 11, 12, and 13 in Figures C.c.1 and C.c.2 of Appendix C.c.

¹⁸ This area is identified as Block 03 in Figures C.c.1 and C.c.2 of Appendix C.c.

¹⁹ This area is identified as Block 10 in Figures C.c.1 and C.c.2 of Appendix C.c.

²⁰ The scale model tested in the wind tunnel showed a proposed 145-foot-high tower on the west side of Chumasero Drive in the southeast corner of the Project Site. After the wind tunnel testing was completed, this proposed tower was relocated to the east side of Chumasero Drive.

²¹ The proposed building would move from Block 21 to Block 22 as shown on Figures C.c.1 and C.c.2 of Appendix C.c.

additional wind impact analysis for proposed buildings exceeding a certain height and would require that design changes be made to certain buildings on an as-needed basis, would reduce some, but possibly not all, potentially significant wind impacts to less-than-significant levels.²² In addition, implementation of Improvement Measures I-WS-A (incorporating certain design features into the buildings) and I-WS-B (installing landscaping and other wind-sheltering elements), where necessary, would help create a more comfortable wind environment for pedestrians.

Impact WS-4: The Proposed Project, when combined with other cumulative projects, would not result in an increase in the number of hours that the 26-mph wind hazard criterion is exceeded or an increase in the area that is subjected to winds greater than 26 mph. (*Less than Significant*) (*Criterion I.a*)

For the analysis of cumulative wind impacts, the following proposed development projects adjacent to the Project Site were considered: 800 Brotherhood Way, 77-111 Cambon Drive, and the 2007-2020 San Francisco State University Campus Master Plan (SFSUCMP). These adjacent cumulative projects have the potential to combine with the Proposed Project to produce cumulatively considerable wind impacts on the Project Site.

The project at 800 Brotherhood Way, which is adjacent to and south of the Project Site, comprises the subdivision of the lot and the construction of 60 single-family homes and 61 two-unit buildings.

The proposed project at 77-111 Cambon Drive, which is adjacent to and northeast of the Project Site, involves the demolition of two existing one-story commercial buildings and the construction of a mixed-use project ranging in height from two to four stories and containing approximately 200 dwelling units, 15,000 square feet of retail space, a fitness center and a club room, and underground parking for 248 vehicles and 61 bicycles. Although the application for this project has been withdrawn, it serves as a reasonable description of potential cumulative development on the site.

San Francisco State University is adjacent to and north of the Project Site. In late 2007, the California State University Board of Trustees approved a proposal to increase enrollment. The 2007-2020 SFSUCMP proposes physical changes and improvements to the campus to address the increased enrollment. Some existing buildings and facilities would be upgraded and expanded, while others would be demolished and replaced. Some new buildings and facilities would be constructed. In total, these proposed physical improvements would result in the net addition of

²² Donald Ballanti, Memorandum to Nancy Clark, "Revised Building Heights/Footprints for the Parkmerced Project," November 9, 2009.

approximately 972,400 square feet and approximately 660 dwelling units to the campus. There would be approximately 30 new buildings ranging in height from 50 to 100 feet.²³

As explained in the Setting discussion on p. V.I.2, groups of buildings clustered together tend to act as obstacles to reduce wind speeds. When considered with the cumulative projects, the Proposed Project would result in an increased number of buildings that would collectively act as obstacles that would reduce wind speeds in the Project Site vicinity. The results of the wind tunnel analysis are summarized below.

Under the Cumulative Conditions Configuration as tested in the wind tunnel, the average measured 90th percentile equivalent wind speed at the 219 test points would be approximately 8.6 mph, with wind speeds ranging from 5 to 14 mph.²⁴

Of the 219 test points, 196 would meet the pedestrian comfort criterion of 11 mph, while 23 (10.5 percent) would not. Locations that would not meet the pedestrian comfort criterion would include the northwest corner of the Project Site, the area west and southwest of Juan Bautista Circle, the area near the intersection of Font Boulevard and Gonzalez Drive, and the area near Chumasero Drive in the southeast corner of the Project Site (see Figure V.I.5: Wind Tunnel Test Point Locations - West Side Cumulative Conditions Configuration, and Figure V.I.6: Wind Tunnel Test Point Locations - East Side Cumulative Conditions Configuration). Compared to the Existing Conditions Configuration, the percentage of test points under the Cumulative Conditions Configuration that would not meet the pedestrian comfort criterion would decrease from 16.7 percent to 10.5 percent. Compared to the Proposed Representative Project Configuration, the percentage of test points under the Cumulative Conditions Configuration that would not meet the pedestrian comfort criterion would decrease from 13.2 percent to 10.5 percent.

Of the 219 test points, 210 would meet the wind hazard criterion, while 9 (4.1 percent) would not. At the 9 locations that would not meet the wind hazard criterion, wind speeds would exceed 26 mph for a total of 39 hours per year. Locations that would not meet the wind hazard criterion would include the northwest corner of the Project Site and the area near Chumasero Drive in the southeast corner of the Project Site (see Figures V.I.5 and V.I.6). Compared to the Existing Conditions Configuration, the percentage of test points under the Cumulative Conditions Configuration that would not meet the wind hazard criterion would decrease from 12.1 percent to 4.1 percent, and the number of hours per year of hazardous winds would decrease by 60 hours (from 99 hours to 39 hours). Compared to the Proposed Representative Project Configuration, the percentage of test points under the Cumulative Conditions Configuration that would not meet

²³ *San Francisco State University 2007-2020 Campus Master Plan*, Chapter 7. San Francisco State University Campus Master Plan website, http://www.sfsu.com/masterplan.org/masterplan_toc.html, accessed April 21, 2010.

²⁴ *Pedestrian Wind Study*, Table 1: Comfort Results, pp. 14-21.

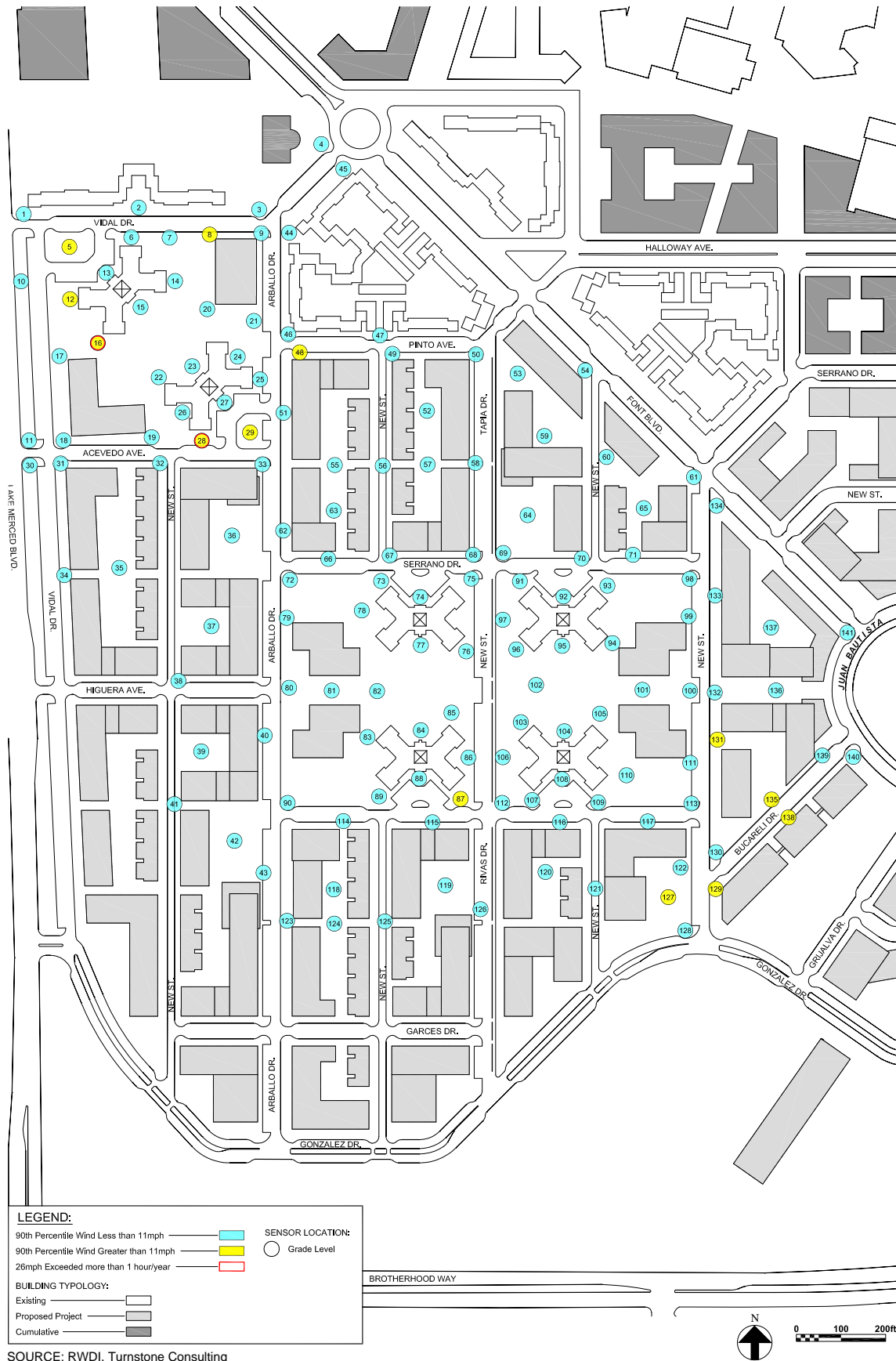
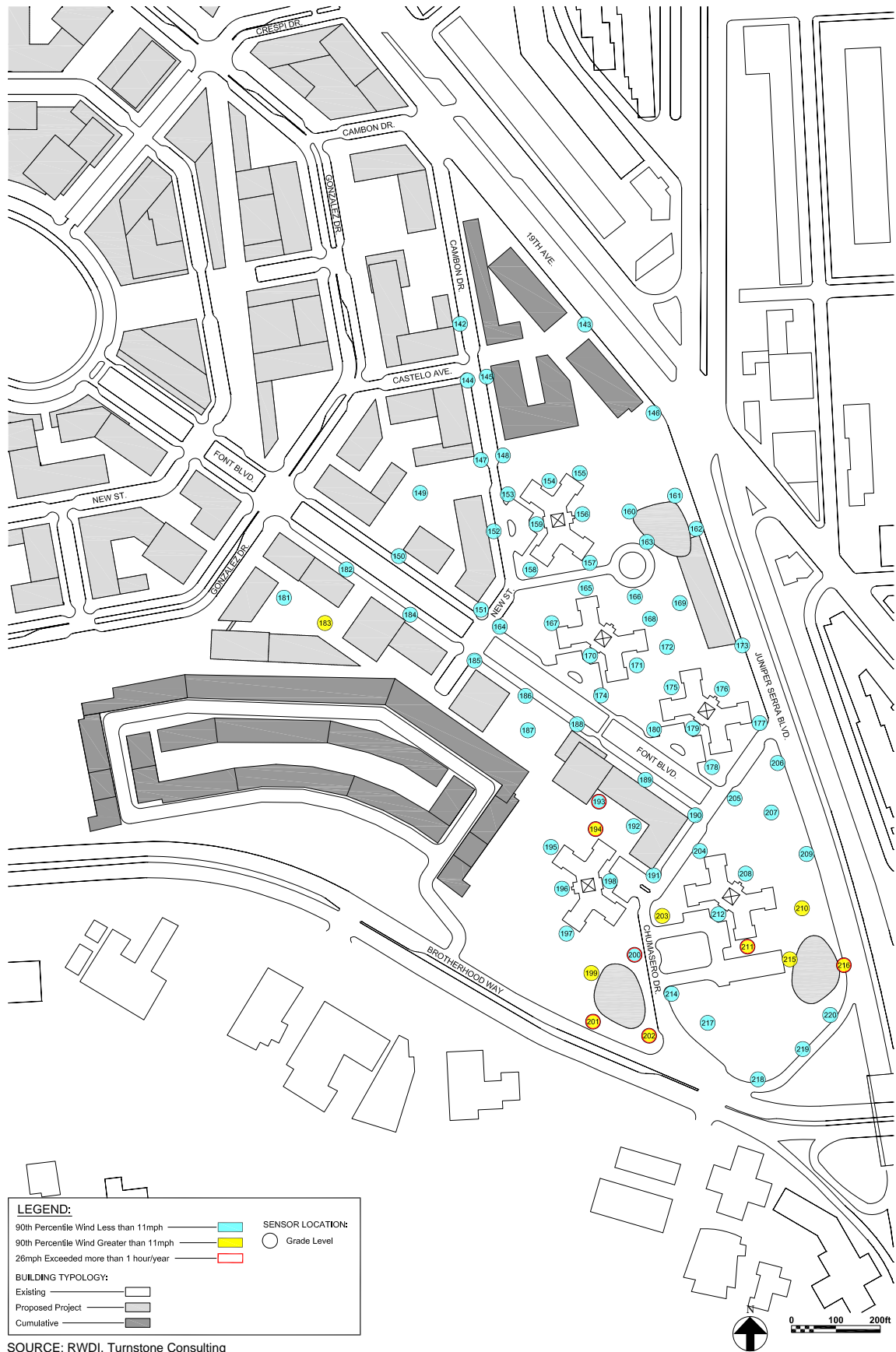


FIGURE V.I.5: WIND TUNNEL TEST POINT LOCATIONS – WEST SIDE CUMULATIVE CONDITIONS CONFIGURATION



PARKMERCED PROJECT

FIGURE V.I.6: WIND TUNNEL TEST POINT LOCATIONS – EAST SIDE CUMULATIVE CONDITIONS CONFIGURATION

V. Environmental Setting and Impacts
I. Wind and Shadow

the wind hazard criterion would decrease from 4.6 percent to 4.1 percent, and the number of hours per year of hazardous winds would decrease by 6 hours (from 45 hours to 39 hours).

Based on the results of the wind tunnel analysis, the Cumulative Conditions Configuration would improve the wind environment over the Existing Conditions Configuration and the Proposed Representative Project Configuration. There would be a net decrease in the number of test locations that exceed the wind hazard criterion of 26 mph for more than a single full hour of the year, and there would be a net decrease in the number of hours per year of hazardous winds. For these reasons, the Proposed Project would not combine with other cumulative projects to create cumulatively considerable wind impacts.