

K. Recreation and Public Space

Setting

Citywide Recreational Resources

The San Francisco Recreation and Park Department maintains more than 200 parks, playgrounds, and open spaces throughout the City. The City's park system also includes 15 recreation centers, nine swimming pools, five golf courses as well as tennis courts, ball diamonds, athletic fields and basketball courts. The Recreation and Park Department manages the Marina Yacht Harbor, Candlestick Park, the San Francisco Zoo, and the Lake Merced complex. In total, the Department currently owns and manages roughly 3,400 acres of parkland and open space within the San Francisco city limits. Together with other city agencies and state and federal open space properties within the city, about 5,250 acres of recreational resources (a variety of parks, walkways, landscaped areas, recreational facilities, playing fields and unmaintained open areas) serve San Francisco.³⁰⁴

In addition to local resources, San Franciscans benefit from the Bay Area regional open spaces system. Regional resources include public open spaces managed by the East Bay Regional Park District in Alameda and Contra Costa counties; the National Park Service in Marin, San Francisco and San Mateo counties as well as state park and recreation areas throughout. In addition, thousands of acres of watershed and agricultural lands are preserved as open spaces by water and utility districts or in private ownership.

Within San Francisco, publicly accessible open spaces and recreational facilities are categorized according to their size and particular amenities as serving the city, district, neighborhood, or sub-neighborhood. Several larger open space areas, including Golden Gate Park (1,017 acres), the Lake Merced complex (700 acres; 368-acre lake) and John McLaren Park (317 acres) compose about one-half of the total city-owned acreage in recreational use. Unlike neighborhood facilities, these larger areas provide programs, activities or recreation opportunities that serve the city as a whole. These spaces, in addition to smaller areas with unique attributes such as water features or hilltop vista points, function as city-serving open spaces because they attract residents from the entire city.

In addition to the larger open spaces, Recreation and Park Department land comprises more than one hundred parks and recreational facilities (both outdoor and indoor), which function mainly for neighborhood use. These smaller facilities are primarily used by residents in the immediate surrounding area and are categorized by size and intended service area. District-serving parks are generally larger than 10 acres and have a service area consisting of a three-eighths-mile radius around the park, while neighborhood-serving parks are generally one to 10 acres and have a service area of one-quarter of a mile. Sub-neighborhood-serving open spaces, often referred to as mini parks, are too small to accommodate athletic facilities. These parks tend to include seating areas, small landscaped spaces, tot lots targeting

³⁰⁴ Recreational resource acreages taken from: City and County of San Francisco, *General Plan Draft Recreation and Open Space Element*, San Francisco Planning Department, May 2009.

pre-school age children, and playgrounds with amenities generally for elementary school age children. The service area for sub-neighborhood parks is one-eighth of a mile.

As applied by the San Francisco Recreation and Park Department, the San Francisco Sustainability Plan defines the need for open space capacity at 5.5 acres per 1,000 residents. The San Francisco Department of Public Health, in its Healthy Development Measurement Tool (HDMT) Development Checklist, includes a benchmark for publically accessible open space as 10 acres per 1,000 residents that is based on National Parks and Recreation Association (NPRA) guidelines.³⁰⁵ However, the HDMT recognizes that other indicators, such as accessibility, safety, park maintenance, and usability, are also appropriate measures for appraising open space.

Plan Area Recreational Resources

Although no publicly-managed facilities exist within the Plan area, several parks and open spaces are located within an approximately three-block radius of its boundary. Facilities under the jurisdiction of the Recreation and Park Department include the following:

- South Park – located between Bryant and Brannan Streets and between Second and Third Streets (approximately two blocks south of the Plan area’s southern boundary), the South Park contains a tree-lined oval garden with two play areas, which contain sand pits and climbing structures.
- Embarcadero Promenade – extending along the length of much of the City’s eastern waterfront, the Embarcadero Promenade is located about a block east of the Plan area’s eastern boundary. The paved pathway is used for active and passive recreation by joggers, bikers and urban hikers to enjoy unobstructed views of the bay and the Bay Bridge.
- Union Square – located at Post and Stockton Streets (about three blocks northwest of the Plan area’s northern boundary), the square takes up a full block and is elevated above the street level. It features a large performance stage, landscaped areas, seating around the perimeter, seasonal ice skating, a restaurant and an open air café. Special events are occasionally held here and the park is often used by shoppers and office workers as a place of mid-day rest and relaxation.
- Justin Herman/Embarcadero Plaza – located at the foot of the Embarcadero Center complex (about one block north of the Plan area’s northern boundary), the Justin Herman/Embarcadero Plaza features large-scale art sculptures, seating areas, limited landscaping, and seasonal ice skating.

The San Francisco Redevelopment Agency has jurisdiction over the following two facilities in the vicinity of the Plan area:

- Yerba Buena Gardens – located at Mission and Howard Streets, between Third and Fourth Streets (approximately one half block west of the Plan area’s western boundary), the gardens are part of the 87-acre redevelopment project, and contain extensive landscaping and seating areas, a child care center, an ice rink, a bowling center, an arts and technology center for youth, a carousel and a two-acre interactive play garden.
- Rincon Park – located along the Embarcadero and extending from just north of Howard to approximately Harrison Street (within one half block of the Plan area’s eastern boundary), this park

³⁰⁵ San Francisco Department of Public Health, Healthy Development Measurement Tool Development Checklist, Version 3.02, January, 2010.

contains landscaped areas for passive recreational activities and features a large-scale art installation, commonly known as “bow and arrow.” The park offers unobstructed views of the bay and the Bay Bridge and provides passive recreation areas.

In addition, the Plan area is interspersed with numerous privately owned publicly accessible open spaces, most of which are associated with adjacent office and mixed-use towers. A map of these “pocket parks” is provided in Figure 59, p. 467. These spaces typically contain seating areas and limited landscaping, and some also featuring art installations. They are typically used by office workers during weekdays.

As part of the Transit Center project being implemented by the TJPA (separate from this environmental review process), a new 5-acre “City Park” would also be sited atop the new Transit Center; this park is planned as part of the initial construction of the Transit Center and is not dependent on a potential future extension of Caltrain and high-speed rail service to the new terminal.

Transit Tower Project Site

The Transit Tower Project site would be located adjacent to the new Transit Center on the south side of Mission Street between Fremont and First Streets. As stated in the Project Description, the Transit Tower project site is approximately 50,000 square feet in size and was most recently used as the passenger waiting and loading and Muni drop-off/layover area for the old Transbay Terminal, which was demolished beginning in August 2010. No parks or recreation facilities are located at the site.

Impacts and Mitigation Measures

Approach to Analysis

The city, state and federal property permanently dedicated to open space uses total approximately 5,250 acres, which is about five acres per 1,000 San Francisco residents. This is about half the standard of the NPRA, which as stated above, called for 10 acres of open space per 1,000 residents in cities. However, the NPRA no longer recommends a single absolute “average” of park acreage per population. Other factors are now considered to be of greater importance, such as location and walking distance, and whether a facility provides needed services to the population it is intended to serve.

The *San Francisco General Plan* Recreation and Open Space Element recognizes that San Francisco is likely to provide less open space acreage than many communities, given land constraints, high population density, and existing urban development. The City does not have an established level of service standard related to population density in terms of district-, neighborhood- and sub-neighborhood-serving parks or provision of recreational facilities.

Significance Criteria

The proposed project would have a significant impact on the environment if it would:

- Increase the use of existing neighborhood and regional parks or other recreational facilities such that physical deterioration of the facilities would occur or be accelerated;

- Include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment; or,
- Physically degrade existing recreational resources.

Transit Center District Plan

Impact RE-1: The implementation of the draft Plan would result in an increased use of existing neighborhood parks and recreational facilities, but not to a degree that would lead to or accelerate their physical deterioration or require construction of new facilities. (Less than Significant)

As described in the Project Description, the draft Plan would rezone a number of sites within the Plan area, which would change height and bulk limits and floor-area ratio limits and, as a result, accommodate a more intensified development potential than is allowed under current allowable limits. The redevelopment of the 17 specifically identified “opportunity sites” would generate approximately 6.35 million sq. ft. of office space, 86,500 sq. ft. of retail space, 985 hotel rooms, and 1,298 housing units within the Plan area. Because the proposed draft Plan is a regulatory program, it would not directly physically degrade any existing recreational resources within the Plan area. However, additional daytime and permanent population would likely be generated as a result of the more intensified development under the Plan. The additional population would increase the use of parks and recreational facilities within the Plan area, but not to a level that would be considered **significant and unavoidable**, for reasons discussed below.

In terms of physical deterioration resulting from population increases and/or use attributable to the draft Plan’s rezoning program, this would also be considered less than significant. Any unmet demand for parks and recreational resources that currently exists within the Plan area is not, in and of itself, considered to be a significant impact on the environment. Based on the CEQA significance criteria, the proposed project would have an adverse environmental impact if it were to cause the deterioration of existing recreational resources through increased use or require the construction or expansion of recreational facilities that may have an adverse effect on the environment.

The draft Plan would noticeably increase the amount of office space within the Plan area. While office workers often use local open spaces as, for example, spots to take a lunch break, this type of use generates relatively little impact and does not tend to result in substantial deterioration of open spaces that could rise to the level of significance. Thus, while some increases in park uses could occur with Plan implementation, it is not expected that the increase in office space throughout the Plan area would lead to heavy use of local parks and recreational facilities in a way that would result in their deterioration. Moreover, the 1,298 housing units that could be developed under the draft Plan would also likely generate some increased demand in park use, but such demand would also not be considered substantial. While the combination of all potential park and recreational facility users that would be generated as a result of the draft Plan could result in proportionately greater use of such facilities in the Plan area, population increases are only one factor in determining whether parks and recreational facilities would deteriorate through increased use. Other variables include park design, age, infrastructure, how the park is being used, as well as whether adequate levels of upkeep are maintained.

As noted above, under Setting, one major new open spaces would be established within the Plan area as a result of separate planning efforts – the new 5-acre “City Park” atop the new Transit Center. In addition, the draft Plan proposes to create a new public space at the northeast corner of Second and Howard Streets that would include a vertical circulation feature connecting to the City Park and the Transit Center, which would facilitate public access from the south to both the new open space and transit service (November 2009 Draft Plan, Policy 3.15). These open spaces would alleviate some of the demand that would be generated by the increased population within the Plan area. In addition, new development under the draft Plan would be required to provide public and private open space in accordance with existing residential and non-residential open space *Planning Code* requirements. The draft Plan proposes several flexible strategies in meeting these requirements within the Plan area, particularly in the vicinity of the Transit Center’s City Park (November 2009 Draft Plan, Objective 3.13). One approach included in the Plan is for future projects adjacent to the City Park to provide direct pedestrian connections to the City Park rather than incorporating privately owned, publicly accessible open spaces into project designs, as is typically the case with downtown buildings, in fulfillment of the requirements of *Planning Code* Section 138 (November 2009 Draft Plan, Policies 3.17 and 3.20). Any such specific physical improvement would be subject to CEQA review at such time as it is proposed for consideration. A payment of in-lieu fees is another measure proposed in the Plan to allow for greater flexibility in meeting open space requirements for individual projects within the Plan area (November 2009 Draft Plan, Policy 3.19); the draft Plan specifically identifies the proposed Second and Howard Streets plaza as an improvement that would be funded with such fees. In addition to providing exterior open space adjacent to new developments, the draft Plan would also require that open space also be provided within the interior of new buildings (see Project Description for the various specifications that such interior open space would be subject to). The draft Plan also proposes new impact fees to create and/or improve open space.

Subsequent individual development proposals that include open space as part of the programming would be subject to project-level environmental review. Thus, to the extent that construction or expansion of recreational facilities or connections to the City Park that are associated with such projects result in any adverse physical impacts, such impacts would be studied further and mitigated to the extent feasible through project-specific environmental analysis. In general, however, the creation of privately-owned publicly-accessible open spaces within the Plan area is expected to result in beneficial effects as most would involve minor physical changes (introduction of landscaping, installation of pedestrian amenities, etc.) which are not expected to degrade the environment in any significant way.

The Planning Department, in conjunction with the Recreation and Park Department, the Mayor’s Office, and the Neighborhood Parks Council is currently evaluating the open space needs of the entire City over the next 100 years. As part of the Open Space 2100 project, a Draft Open Space Framework is being developed that includes two components: the draft Citywide Vision for Open Space, which provides a broad outline of the City’s ideal open space network over the next 100 years, and the draft update of the Recreation and Open Space Element (ROSE) of the City’s *General Plan*.

These documents were released for public review in May 2009 and comments were accepted through October 2009. During the summer of 2009, a series of community focus groups was conducted to discuss

specific comment areas for inclusion into a final draft for adoption. An Action Plan will also be drafted consisting of a set of five and ten year programs that describe how the City will implement the vision for open space as well as the objectives and policies of the ROSE.

Specific goals and objectives from these documents applicable to Transit Center District Plan area include the development of new open spaces in high need areas; promotion of higher quality experiences in existing open spaces; use of residual spaces in proximity to freeways as a system of linear green buffers; “green connector streets” designed to calm and/or divert vehicular traffic and prioritize pedestrian and bicycle travel with connections to larger open spaces; and “living streets” in which sidewalks are expanded on streets with excess right-of-way to accommodate open spaces or pocket parks.

Based on the above, the implementation of the draft Plan is not expected to result in any significant unavoidable impacts to parks and recreational facilities.

Mitigation: None required.

Transit Tower Impacts

Impact RE-2: The proposed Transit Tower would result in the increased use of existing neighborhood parks and recreational facilities, but not to such a degree that would lead to or accelerate their deterioration, nor require the construction of new facilities. (Less than Significant)

The Transit Tower would account for a portion of the growth described above in the discussion of Plan impacts. Therefore, all effects of the Transit Tower would be subsumed within the effects described in Impacts RE-1. Because all of those impacts were determined to be less than significant, effects related to the Transit Tower would likewise be less than significant.

Mitigation: None required.

L. Utilities and Service Systems

Setting

The project site is within an urban area that is served by utilities and service systems, including water, wastewater and storm water collection and treatment, solid waste collection and disposal, gas, and electricity.

Water

The San Francisco Public Utilities Commission (SFPUC) provides water services to approximately 2.5 million people in San Francisco, Santa Clara, Alameda, and San Mateo Counties; SFPUC also provides wastewater collection and treatment within the City. Eighty-five percent of the water delivered to SFPUC customers comes from Sierra Nevada snowmelt stored in the Hetch Hetchy Reservoir on the Tuolumne River in Yosemite National Park. The remaining 15 percent comes from runoff in the Alameda and Peninsula watersheds captured in reservoirs located in San Mateo and Alameda Counties. The entire regional system delivers approximately 265 million gallons of water per day (mgd) to its customers.³⁰⁶

The local water system provides distribution and storage for water and fire protection within the City. This system includes 10 reservoirs, 8 water tanks, 18 pump stations, and approximately 1,250 miles of transmission lines and water mains within the City.³⁰⁷ SFPUC manages distribution of potable water through two systems: a low-pressure water main system provides water for domestic and commercial uses at about 1,000 gallons per minutes (gpm), and a high-pressure system provides a dedicated water source for fire suppression at about 10,000 gpm. Citywide water use totaled approximately 71 mgd in 2010, a figure that was lower than previously projected, due to factors including cool weather, water use reductions due to earlier dry years, and the economic downturn that resulted in decreased non-residential consumption.³⁰⁸

In an effort to streamline the water supply planning process, the SFPUC adopted resolutions in 2002 and 2006 to allow for all development projects requiring a Water Supply Assessment (WSA) under Water Code Section 10910 et seq. to rely on the adopted Urban Water Management Plan (UWMP) as long as the anticipated growth was contained in the current UWMP. Likewise, in connection with the adoption of the 2010 UWMP in June 2011, the SFPUC adopted a similar resolution, finding that 2010 UWMP accounts for projected growth in the City through the year 2035 and thereby satisfies the water supply and demand assessment requirements for specified developments pursuant to the CEQA and the *California Water Code*.³⁰⁹ According to the 2010 UWMP, the SFPUC can meet the current and future demand in years of average or above average precipitation. However, during a multiple dry year event, the SFPUC would not be able to meet 100 percent of demand in 2030 and would therefore have to impose reductions on its

³⁰⁶ San Francisco Public Utilities Commission (SFPUC), *2010 Urban Water Management Plan (UWMP) for the City and County of San Francisco*, June 2011.

³⁰⁷ *2010 UWMP*, p. 10.

³⁰⁸ *2010 UWMP*, p. 34.

³⁰⁹ San Francisco Public Utilities Commission Resolution No. 11-0090, approved June 14, 2011.

supply to wholesale water users outside San Francisco. Accordingly, the SFPUC adopted a Water Shortage Allocation Plan, which outlines procedures for allocating water from the SFPUC regional system during system-wide shortages up to 20 percent.

The ability to meet the demand of the customers is in large part due to the anticipated development of 10 mgd of local supplies in the City through implementation of the Water Supply Improvement Program (WSIP). These additional sources of groundwater, recycled water, and conservation supplies are essential to provide the City with adequate supply in dry year periods, as well as improving supply reliability during years with normal precipitation. With the Water Shortage Allocation Plan in place, and the addition of local WSIP supplies, the SFPUC concluded that it has sufficient water available to serve existing customers and planned future uses in San Francisco.

Wastewater

Combined Sewer System

The San Francisco Public Utilities Commission (SFPUC) maintains and operates the existing Combined Sewer System. This system combines stormwater runoff and wastewater flows in the same network of pipes. It conveys flows to the City's three treatment plants, where wastewater is treated prior to discharge through outfalls into the Bay or Pacific Ocean. Wastewater from the Plan area is treated at the Southeast treatment plant, in the Bayview District, with additional wet-weather capacity provided by the North Point plant, on the northeast waterfront. Discharges into the system are regulated under two National Pollution Discharge Elimination System (NPDES) permits, which are described in Section IV.P, Hydrology and Water Quality.

Solid Waste

San Francisco generated 5,870 tons of solid waste per day in 2008, and an average of 1,535 tons of that went to a landfill.³¹⁰ According to the California Integrated Waste Management Act of 1989 (AB 939), San Francisco is required to adopt an integrated waste management plan, implement a program to reduce the amount of waste disposed, and have its waste diversion performance periodically reviewed by the California Department of Resources Recycling and Recovery (CalRecycle). The City achieved a 77 percent landfill diversion rate for 2008, up from 70 percent in 2006, and the highest of any city in the country. San Francisco diverted more than 1.6 million tons of waste material in 2008 through recycling, composting, and re-use. The City sent 560,000 tons of waste to the landfill in 2008, the lowest total recorded.³¹¹ The San Francisco Department of the Environment estimates that the City will generate 2.15 million tons of waste in 2010, 60 percent of which will be recycled and 20 percent of which will be composted.

³¹⁰ Dmitriew, Alex, Commercial Recycling Assistant Coordinator, San Francisco Department of the Environment, Response to Transit Center District Plan EIR SF Environment Questionnaire, August 4, 2010.

³¹¹ Office of the Mayor, City and County of San Francisco, Press Release, "Mayor Newsom Announces San Francisco's Waste Diversion Rate At 77 Percent, Shattering City Goal And National Recycling Records," August 27, 2010.

Solid waste generated in San Francisco is transported to the Altamont Landfill in Alameda County. The landfill has a permitted peak maximum daily disposal of 11,150 tons per day and accepted 1.29 million tons in 2007. The landfill has an estimated remaining capacity of approximately 46 million cubic yards or 74 percent of its permitted capacity. The estimated closure date of the landfill is 2025.³¹² However, the City's remaining contracted capacity at the landfill is anticipated to be reached as soon as 2015. In July 2011, upon the recommendation of the San Francisco Department of the Environment, the Board of Supervisors approved a 10-year contract with Recology to ship the City's solid waste to the Ostrom Road Landfill in Yuba County when the current agreement with the Altamont Landfill expires. The Ostrom Road Landfill has an estimated capacity of approximately 39 million tons (90 percent of permitted capacity) and an estimated closure date of 2066. The Ostrom Road landfill has a permitted capacity of 3,000 tons of solid waste per day.³¹³

Energy

Electrical and natural gas service in San Francisco is provided by Pacific Gas and Electric Company (PG&E). PG&E provides natural gas and electricity to approximately 13 million people throughout a 70,000 square mile service area in Northern and Central California. Under deregulation, other companies may also provide electricity, but PG&E delivers the service.

The California Energy Commission (CEC) indicates that San Francisco County consumed 5,550 gigawatt hours (GWh) of electricity in 2009, down from 5,694 GWh in 2008.³¹⁴ In the area served by PG&E, total consumption in 2009 was approximately 108,503 GWh, compared to 111,228 GWh in 2008; in 2018, total consumption is estimated to be 119,644 GWh with a peak of approximately 24,600 MW.³¹⁵ Currently, 12 kilovolt (kV) electric distribution lines and 2-inch and 3-inch diameter high-pressure gas mains serve the Transit Center District Plan area.^{316, 317}

The California Independent System Operator (California ISO) is charged with managing the flow of electricity along the State's open market wholesale power grid. The California ISO Energy Demand Forecast (2008–2018) estimates that residential, commercial, and industrial sectors represented 85 percent of statewide electricity demand in 2008, while the mining sector represented 2 percent. Statewide

³¹² California Department of Resources Recycling and Recovery (CalRecycle), "Active Landfills Profile for Altamont Landfill and Resource Recovery (01-AA-0009)." Accessed September 2, 2011. Available on the internet at: www.calrecycle.ca.gov/Profiles/Facility/Landfill/LFProfile1.asp?COID=1&FACID=01-AA-0009.

³¹³ California Department of Resources Recycling and Recovery (CalRecycle), "Active Landfills Profile for Recology (Norcal) Ostrom Road LF Inc. (58-AA-0011)." Accessed September 2, 2011. Available on the internet at: <http://www.calrecycle.ca.gov/Profiles/Facility/Landfill/LFProfile1.asp?COID=58&FACID=58-AA-0011>.

³¹⁴ California Energy Consumption Data Management System, <http://www.ecdms.energy.ca.gov/elecbyplan.aspx>

³¹⁵ The CEC defines the PG&E Planning Area to include PG&E bundled retail customers, customers served by energy service providers using the PG&E distribution system to deliver electricity to end users, and customers of publicly owned utilities and irrigation districts in PG&E transmission system (with the exception of the Sacramento Municipal Utility District).

³¹⁶ Lam, William, Supervisor, PG&E San Francisco Division Gas Planning Department, Response to Transit Center District Plan EIR PG&E Questionnaire, July 1, 2010.

³¹⁷ Cannon, Tom, Supervisor, PG&E San Francisco Division Electric Planning Department, Response to Transit Center District Plan EIR PG&E Questionnaire, July 1, 2010.

consumption is expected to increase 11.6 percent by 2018, due primarily to growth in the residential and commercial sectors.

Impacts

Significance Criteria

The proposed project would result in a significant impact with respect to utilities and service systems if it would:

- Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board;
- Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects;
- Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects;
- Have sufficient water supply available to serve the project from existing entitlements and resources, or require new or expanded water supply resources or entitlements;
- Result in a determination by the wastewater treatment provider that would serve the project that it has inadequate capacity to serve the project's projected demand in addition to the provider's existing commitments;
- Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs; or
- Comply with federal, state, and local statutes and regulations related to solid waste.

Plan Impacts

Water

Impact UT-1: The draft Plan and Transit Tower would not require or result in the construction or substantial new water treatment facilities, and SFPUC would have sufficient water supply available from existing entitlements. (Less than Significant)

The addition of 6,100 additional households with 9,500 residents, as well as 30,000 jobs would generate additional water demand in the Plan area. The Plan is estimated to generate 1.9 mgd of water demand, based on the land use program. Of this amount, as much as one-third could be for non-potable uses, including landscape irrigation, toilet flushing, and boilers and chillers, and could be supplied by non-potable water (recycled water, rain water, etc.) once a distribution system is in place.

All but the very northwest corner of the Plan area (northwest of the corner of Second and Mission Streets) is within the Eastside Reclaimed Water Use Area designated by Section 1029 of the Reclaimed Water use Ordinance (approved November 7, 1991), which added Article 22 to the *San Francisco Public Works Code*. In this area, non-residential projects over 40,000 square feet in floor area that require a site permit, building permit, or other authorization, must provide for the construction and operation of a reclaimed water system for the transmission of the reclaimed water within buildings and structures. That is, the building would

need to be designed with separate plumbing (typically purple pipes) to service uses that could employ reclaimed water (e.g., toilets). The ordinance also requires that owners, operators, or managers of all development projects register their projects with the San Francisco Public Utilities Commission (SFPUC). The SFPUC will issue a certificate of intention to use reclaimed water, and reclaimed water shall be used unless the SFPUC issues a certificate exempting compliance because reclaimed water is not available, an alternative water supply is to be used, or the sponsor has shown that the use of reclaimed water is not appropriate. (To date, no area-wide recycled water system has been developed.)

The draft Plan includes several policies that, if adhered to, would reduce overall water demand. Policies 6.14 through 6.20 would encourage developers and the City to install non-potable water delivery infrastructure and distribution pipes and to pursue a reliable supply of non-potable water to reduce potable water demand. In particular, Policy 6.18 encourages the City to identify a location for a treatment facility to increase recycled water generation near the Plan area. Policies 6.19 and 6.20 encourage the reduction of water demand through on-site measures at the level of individual developments.

According to the 2010 UWMP, which incorporated Planning Department 2009 growth projections inclusive of the draft Plan and the proposed Transit Tower project, the SFPUC would continue to meet the current and future demand in years of average or above average precipitation. However, during a multiple dry year event, the SFPUC would not be able to meet 100 percent of demand in 2030 and would therefore have to impose reductions on its supply. Accordingly, the SFPUC adopted the Water Shortage Allocation Plan, which outlines procedures for allocating water from the SFPUC regional system during system-wide shortages up to 20 percent. The SFPUC concluded that under the Water Shortage Allocation Plan, and with additional local Water System Improvement Program (WSIP) supplies, sufficient water is available to meet existing demand and planned future uses within San Francisco, although wholesale customers (outside the City) would experience shortfalls in both single dry years and multiple dry-year scenarios.³¹⁸ Therefore, implementation of projects pursuant to the Transit Center District Plan would not require major expansion of the SFPUC's water facilities; nor would it adversely affect the City's water supply. Therefore, the impact would be less than significant.

Mitigation: None required.

Wastewater

Impact UT-2: The draft Plan and Transit Tower would increase sanitary wastewater flows, but it would not require or result in the construction or substantial new wastewater treatment or stormwater facilities, or exceed the wastewater treatment requirements of the Regional Water Quality Control Board. (Less than Significant)

As stated in Section IV.P, Hydrology and Water Quality, the Transit Center District Plan area currently comprises primarily impervious surfaces. Therefore, construction of new buildings and paved areas

³¹⁸ SFPUC, 2010 UWMP, Sections 5.6 and 5.7.

would not result in a substantial increase in impervious surfaces or stormwater runoff. Buildout pursuant to the Plan Policies 6.19 and 6.20—including the implementation of on-site collection, treatment, storage and conveyance systems for rainwater, fog, greywater, stormwater, and diverted sump water and Low-Impact Development techniques for public spaces—would reduce storm water flow as compared to existing conditions.

As stated above, the draft Plan would result in up to 1.9 mgd of water demand. Conservatively assuming that 90 percent of water used would be expelled as sanitary wastewater, the draft Plan would result in an additional 1.7 mgd of sanitary flow. The Southeast Water Pollution Control Plant has an average dry weather flow (ADWF) capacity of 84.5 mgd, and it treats approximately 67 mgd during dry weather to a secondary treatment standard, with a total capacity to treat up to 150 mgd to that standard. The addition of 1.7 mgd generated by the proposed project would be accommodated within the dry-weather capacity of the Southeast Plant.

Regarding wet weather flow, the Transit Center District Plan would not result in an increase in stormwater flow due to compliance with the stormwater management requirements of the San Francisco Public Utilities Commission. Therefore, the only increase in wet weather flow would be from sanitary sewage generation. The up to 1.7 mgd of additional wastewater flow would be accommodated within the existing system during all but the most severe storm events, and it would not be so large as to exceed waste discharge requirements of the NPDES permit. The impact would be less than significant.

As noted, the Transit Center District Plan includes several policies that may lower anticipated flows to the combined system. These policies encourage reuse of greywater and cooling tower blow down, as well as installation of water-efficient water fixtures.³¹⁹

In light of the above, effects related to wastewater collection and treatment would be less than significant.

Mitigation: None required.

Energy

Impact UT-3: The draft Plan and Transit Tower would increase demand for electricity and natural gas, but not to an extent that would result in a significant impact. (Less than Significant)

Construction of projects pursuant to the Transit Center District Plan and Transit Tower would require temporary planned outages with customers notified prior to the outage. However, these outages would not be expected to significantly affect service for existing or future customers.

³¹⁹ Although plan policies encourage the city to locate a potential new treatment facility for creating a local non-potable water supply, such a facility would require a separate, project-level environmental review.

Operation of projects constructed pursuant to the Transit Center District Plan would increase demand for electric service within the Plan area, but not to levels that could not be met by PG&E.³²⁰ The PG&E Electric Planning Department monitors load growth at each substation in the city, and project projected loads are forecasted based on load trends and known projects—such as those projects planned pursuant to the Transit Center District Plan—to accommodate the system growth. PG&E also has adequate capacity and reliability within the gas system to service the Plan area.³²¹

In addition, the Transit Center District Plan includes several policies that, if implemented, would lower overall energy demand. Policies 6.1 through 6.7 call for the City and project developers to implement a Central Heat and Power (District Heating/Energy) system, through which waste and excess heat and energy would be shared among new and refurbished projects within the Plan area.³²² Policies 6.8 through 6.13 call for individual projects to be designed not only to meet LEED levels established in the San Francisco Green Building Ordinance, but also to take advantage of specific energy-saving measures, such as on-site renewable energy systems, natural ventilation, and passive solar heating and lighting. Adherence to such policies would lower overall energy demand. The Transit Center District Plan would result in less-than-significant impacts to energy generation and distribution systems.

Mitigation: None required.

Solid Waste

Impact UT-4: The draft Plan and Transit Tower would be served by a landfill with sufficient permitted capacity to accommodate solid waste generated by projects constructed pursuant to the plan. Individual building owners and tenants would comply with federal, state, and local statutes and regulations related to solid waste. (Less than Significant)

According to growth projections, the Plan area would comprise 6,100 additional households and 9,500 residents. In addition, a total of about 30,000 jobs would be generated in new developments, most of which would be Management, Information, and Professional Services jobs in commercial uses. Nonetheless, the San Francisco Department of the Environment predicts a flat rate of solid waste generation through 2030 based on current and projected economic conditions.³²³

Although the increased employee and visitor population and business activities would incrementally increase the total waste generated by the City, this waste would be accommodated within these projections. In addition, the increasing rate of waste diversion from landfills would ensure that the waste

³²⁰ Cannon, Tom, Supervisor, PG&E San Francisco Division Electric Planning Department, Response to Transit Center District Plan EIR PG&E Questionnaire, July 1, 2010.

³²¹ Lam, William, Supervisor, PG&E San Francisco Division Gas Planning Department, Response to Transit Center District Plan EIR PG&E Questionnaire, July 1, 2010.

³²² No design has been developed for such a system, and therefore its implementation would be subject to subsequent review under CEQA.

³²³ Dmitriew, Alex, Commercial Recycling Assistant Coordinator, San Francisco Department of the Environment, Response to Transit Center District Plan EIR SF Environment Questionnaire, August 4, 2010.

generated by the projects constructed pursuant to the Transit Center District Plan would not result in a significant impact to landfill capacity.

Projects built pursuant to the Transit Center District Plan would be required to comply with San Francisco Ordinance No. 27-06 regarding the recycling of construction and demolition (C&D) debris. This ordinance requires the diversion from landfills of a minimum 65 percent of C&D debris. Given this fact, and given the long-term capacity available at these landfills, the Transit Center District Plan and Transit Tower would not result in either landfill exceeding its permitted capacity; therefore, the impact would be less than significant.

Mitigation: None required.

Transit Tower Impacts

Impact UT-5: The proposed Transit Tower would not result in the need for new or physically altered facilities related to water or wastewater, energy, or solid waste. (Less than Significant)

The Transit Tower would account for a portion of the growth described above in the discussion of Plan impacts. Therefore, all effects of the Transit Tower would be subsumed within the effects described in Impacts UT-1 through UT-4. Because all of those impacts were determined to be less than significant, effects related to the Transit Tower would likewise be less than significant.

Mitigation: None required.

Cumulative Impacts

Impact C-UT: The draft Plan, including demand on public services from the proposed Transit Tower, would not result in a considerable contribution to any significant impacts related to provision of utilities and service systems. (Less than Significant)

The analysis above concludes that the development pursuant to the draft Plan, including the Transit Tower, would not adversely affect the provision of utilities and service systems in the Plan area. Because there is no shortfall identified in water supply or wastewater treatment capacity, and because there is no projected shortfall with respect to energy or solid waste, neither the Plan nor the Transit Tower project would result in significant cumulative effects with respect to utilities or service systems.

Mitigation: None required.

M. Public Services

Setting

Police Protection

The San Francisco Police Department (SFPD) provides police protection services in San Francisco and within the Plan area, including the Transit tower project site. SFPD's headquarters is located at the Hall of Justice at 850 Bryant Street. Southern Station is located on the first floor of the building; this district station provides police services to the area bounded by Market Street to the northwest, the Embarcadero to the east, Mission Creek, Berry Street, and 16th Street to the south, and Division Street/Duboce Avenue to the southwest, which includes the Plan area.³²⁴ Treasure Island and Yerba Buena Island are also served by the Southern District. The Station is staffed by approximately 115 officers.

The Transit Center District Plan is located in an area staffed by approximately 12 officers who provide coverage 24 hours per day. The crime rate in this area is average relative to the entire Southern Station service area. Due to the relatively high density, it requires more police services than other areas of the city. In the first five months of 2010, there were 100 violent crimes, 253 property crimes, and 354 other crimes in the area bounded by Market, Main, Folsom, and Third Streets.³²⁵

In 2007, Southern Station received 8,050 Priority A calls (life-threatening emergency); 18,297 Priority B calls (potential for harm to life and/or property); and 20,416 Priority C calls (crime committed with no threat to life or property).³²⁶ Southern Station received more calls for service and reported more crimes than any other district station. The Southern District accounts for approximately 19 percent of the crimes that occur citywide.

Fire Protection and Emergency Medical Services

The San Francisco Fire Department (SFFD), headquartered at 698 Second Street, provides fire suppression and emergency medical services to the City and County of San Francisco, including the Plan area and the Transit Tower site. The SFFD consists of 3 divisions, which are subdivided into 10 battalions and 42 active stations located throughout the City. Fire protection for the Transit Center District Plan area is provided primarily by the three closest fire stations. Station 1, at 676 Howard Street at Third Street, has one engine company, with one officer and three firefighters; one aerial (ladder) truck company, with one officer and four firefighters, and a Heavy Rescue Squad, with one officer and three firefighters. Station 1 is scheduled to be relocated to 935 Folsom Street, between Fifth Street and Sixth Street, in the next several years³²⁷; this move would occur in conjunction with the proposed expansion of the San Francisco Museum of Modern

³²⁴ Acting Captain Arthur J. Borges, Jr., San Francisco Police Department, Response to Transit Center District Plan EIR Police Services Questionnaire, June 9, 2010.

³²⁵ *Ibid.*

³²⁶ San Francisco Police Department, *2007 Annual Report*, 2008.

³²⁷ Doudiet, Thomas, Assistant Deputy Chief, Division of Support Services, San Francisco Fire Department, Response to Transit Center District Plan EIR Fire Protection Services Questionnaire, November 12, 2010.

Art, a separate project just outside the Plan area that is undergoing its own CEQA review (Case Nos. 2009.0291E and 2010.0275E). Station 8, at 36 Bluxome Street, at Fourth Street, has one engine company and one truck company, and a battalion chief. Station 35, at Pier 22½ on the Embarcadero at Harrison Street, currently has no firefighting vehicles or crews pending renovation of the facility, but is the docking location of the SFFD fireboats. Station 13, at Washington and Sansome Streets (one engine and one truck) is the next closest station to the Plan area. There is also a new station planned to be incorporated into the Public Safety Building at Third Street and Mission Rock in the Mission Bay neighborhood, the construction of which is slated to begin in early 2012. Other stations serve the Plan area on an as-needed basis. For example, in the absence of Engine Company 35, Engines 13, 36 (Oak and Franklin Streets), or 29 (Vermont Street in Showplace Square) can respond along with units from Station 1 and Station 8.

For the Plan area in 2009, there were a total of 857 alarms, 92 fire-related calls, 932 non-emergency medical calls, and 1,458 medical calls. For all calls except non-emergency calls, average response time was about 5 minutes 10 seconds.

The Auxiliary Water Supply System (AWSS), which provides a dedicated high-pressure water system for fire suppression, serves the entire Plan area. It includes five underground cisterns located at the following locations: Howard Street at Beale Street, First Street at Folsom Street, First Street at Harrison Street, First Street at Howard Street, and Second Street at Folsom Street. There are no currently existing water deficiencies in the Plan area related to firefighting concerns, and there are no Fire Department water supply improvements proposed or planned.

The SFFD provides emergency medical services (EMS) in the City, including basic life support (BLS) and advanced life support (ALS) ambulance services. In addition, several privately operated ambulance companies are authorized to provide BLS and ALS services. The City's emergency dispatch (911) center routes fire and medical emergency calls to the appropriate station and units best able to respond to the particular address and situation.

San Francisco Division of Emergency Services is currently planning a process to re-structure the contracts for EMS Service Providers, as the prior "exclusivity" exemption, under which City ambulances handles all EMS calls, has ended. A request for proposals will be released, likely in 2011, and eligible service providers will be considered for contracts. It is projected that the overall effect of this change will be to increase the "floor" number of ambulances available for dispatch at any given time in San Francisco from the current level. This increase will lead to an overall improvement in call response intervals.

SFFD ambulances are deployed to the City at large in order to be most flexible to changes in call volume and distribution changes throughout the day and week, and there are no subdivision of ambulance zones within the City. There were 82,678 calls for medical assistance in 2009, and the most common calls were for "breathing problems," "sick persons" "unconscious/fainting," and "falls."³²⁸ For Code 3 (life-

³²⁸ Mercer, Mary, Fellow, EMS & Disaster Management, UCSF-SFGH Department of Emergency Medicine, San Francisco EMS Agency, San Francisco Department of Emergency, Response to Transit Center District Plan EIR EMS Services Questionnaire, August 30, 2010.

threatening emergency) calls, average response time was 5 minutes, 12 seconds, and 90th percentile response time was 7 minutes 27 seconds. For Code 2 calls, average response time was 10 minutes 16 seconds, and 90th percentile response time was 18 minutes 26 seconds.

Schools

The San Francisco Unified School District (SFUSD) operates San Francisco's public schools. SFUSD managed 112 schools during the 2009 – 2010 academic year, including: 73 elementary schools, 13 middle schools, 19 high schools, and nine charter schools, with a total enrollment of 55,140.³²⁹ From 1995 to 2007, student enrollment within the SFUSD declined from 61,889 to 55,069, a drop of 11 percent. Enrollment has stabilized since 2007, and has actually increased slightly, by just over 0.1 percent, since then.³³⁰ Overall capacity exceeds current enrollment, but in some areas of the city the enrollment exceeds capacity for elementary, middle, and high schools.³³¹ SFUSD anticipates that elementary school enrollment will grow due to the large birth cohorts earlier in the decade. Middle school enrollment is anticipated to rise, as well, but remain below current enrollment through 2013. High school enrollment will experience a continuous decline through 2013 due to the declining birth rates of the 1990s.³³² SFUSD has held discussions to build additional school sites in Mission Bay, Treasure Island, and Bayview Hunter's Point, as well as building a campus for the Asawa School of the Arts in the Civic Center, but no final decisions have been made.

Bessie Carmichael Elementary School at 275 Seventh Street, John Yehall Chin Elementary School at 350 Broadway, and the Chinese Education Center at 657 Merchant Street are the nearest schools to the Transit Center District Plan area. In March 2009, the SFUSD Board of Education approved new guidelines for attendance boundaries around schools. Under this new policy, Bessie Carmichael will become a "city-wide" school with no attendance area beginning with the 2011-2012 academic year.³³³

Past enrollment figures at individual schools are not an indication of potential enrollment trends because SFUSD will implement a new student assignment plan for the 2011-12 school year. According to initial proposals for school attendance boundaries and elementary to middle school feeder patterns, students living at Mission and First Street would attend either John Yehall Chin Elementary School or Daniel Webster Elementary School (at 465 Missouri Street), depending on the side of the street on which they live. Most students that attend Chin Elementary School would go to Francisco Middle School (2190 Powell Street), and most students attending Webster would attend Mann Middle School (3351 23rd Street) based on the current recommendations, which are in draft form and are subject to approval by the Board of Education. Students would be able to apply for any high school across the city.

³²⁹ San Francisco Unified School District Overview, <http://www.sfusd.edu/en/about-sfusd/overview.html>; Education Data Partnership, Fiscal, Demographics, and Performance Data on California's K-12 Schools, www.ed-data.k12.ca.us; accessed May 12, 2011.

³³⁰ California Department of Education, Educational Demographics Office, <http://dq.cde.ca.gov/dataquest>, accessed May 12, 2011.

³³¹ Waymack, Nancy. San Francisco Unified School District, Director of Policy & Operations, Response to Transit Center District Plan EIR SFUSD Questionnaire, September 3, 2010.

³³² San Francisco Unified School District (SFUSD), *Capital Plan, FY 2010-2019*, September 2009.

³³³ SFUSD, *Student Assignment Redesign: Report on City-Wide Schools*, July 2010.

Parks and Recreational Facilities

Parks and recreational facilities are discussed in Section IV.K of this document.

Impacts

Significance Criteria

The proposed project would result in a significant impact with respect to public services if it would:

- Result in substantial adverse physical impacts associated with the provision of, or the need for, new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any public services such as fire protection, police protection, schools, parks, or other services.

Impact Analysis

The project would increase development on the site. Thus, the project would increase the demand for, and use of, public services, but not in excess of amounts expected and provided for in this area. As discussed in the previous section, no need for expansion of public services facilities is anticipated due to the proposed project. The draft Plan would increase demand for police and fire services, but not in excess of amounts provided for in the Plan area. The project would not be expected to have a substantial impact on police and fire services and would not necessitate the need for new or physically altered governmental facilities.

The incremental daytime residential population growth that would result from the draft Plan and the new office, hotel, and retail space that would be developed in the Plan area would not necessitate the need for new or physically altered parks or other governmental facilities.

Plan Impacts

Police Protection

Impact PS-1: The draft Plan and Transit Tower would not result in the need for new or physically altered police protection facilities. (Less than Significant)

According to growth projections, the Transit Center District Plan area, inclusive of the Transit Tower, would comprise 6,100 additional households with 9,500 residents by 2030. In addition, almost 30,000 jobs would be added to the Plan area.³³⁴ This increase in employment and residential population would increase demand for police protection services such that additional police protection services would be needed.³³⁵ SFPD

³³⁴ Hausrath Economics Group, *Transit Center District Plan Development Fee Nexus Study: Preliminary Draft Report*. Prepared for the San Francisco Planning Department, August 9, 2010.

³³⁵ Acting Captain Arthur J. Borges, Jr., San Francisco Police Department, Response to Transit Center District Plan EIR Police Services Questionnaire, June 9, 2010.

would assess the need not based just on population growth, but also on calls for service, types and times of traffic and pedestrian flow patterns, and operational hours of uses within the Plan area.

As part of the permit review process, building planners would work with the San Francisco Police Department and the Department of Emergency Management to ensure that emergency communication systems within new high-rise buildings are functional and appropriately designed. Such strategies may include police access to control systems, surveillance cameras and other technology, evacuation procedures and live drills, high-rise crime prevention through environmental design, disaster preparedness, access and egress points of identification, and private security offices, if appropriate. SFPD also recommends close-circuit monitoring, wireless and mesh networks, perimeter security systems, access control systems, weapons and explosion detection systems, and anti-terrorism and blast mitigation systems and designs. These systems would be incorporated into the new towers, including the Transit Tower, to the extent practicable based on consultation with SFPD.

According to SFPD, the existing police infrastructure would accommodate this additional growth through re-deployment of resources from other areas of the city, if needed. For example, the boundaries of the Southern District could be modified depending on demand for police protection services. Southern Station may also be relocated to an as-yet-to-be-determined site, which may necessitate redefining the district's boundaries. The Transit Center District Plan and Transit Tower's impact on police protection services would be less than significant.

Mitigation: None required.

Fire Protection and Emergency Medical Services

Impact PS-2: The draft Plan and Transit Tower would not result in the need for new or physically altered fire protection facilities, but may delay emergency medical response. (Less than Significant)

The addition of 6,100 additional households with 9,500 residents, as well as 30,000 jobs primarily located in high-rise buildings, would affect fire protection services in the Plan area. SFFD would require additional personnel, equipment, and facilities to maintain adequate levels of fire protection and emergency medical services. As the worker and employee population within the Transit Center District Plan area increases, additional revenues would be paid into the City's General Fund to support personnel growth at the SFFD. There are currently no plans to increase SFFD personnel beyond the new station at Third Street and Mission Rock.

Studies have shown that buildings greater than three stories in height increase the length of emergency medical service (EMS) response times up to twice as long as average response times for single occupancy residences or those three stories or less. Response times showed significant improvement when EMS responders were greeted on arrival or had access to an "emergency mode" of elevator transport (preventing

non-critical elevator stops). However, commercial and office space have relatively low utilization rates of the pre-hospital (emergency medical services) system, compared to residential spaces.³³⁶

Construction of high-rise buildings (taller than 75 feet), including the proposed Transit Tower and other tall buildings, both those with applications on file and other anticipated development, would be required to conform to the provisions of the *Building Code* and *Fire Code* which require additional life-safety protections for such structures.

Standard fire-fighting techniques applicable in high-rise buildings would apply to fire-fighting, and adherence to all applicable *Building Code* and *Fire Code* provisions would ensure that new high-rise buildings are constructed to allow for efficient emergency response, avoiding the majority of problems associated with emergency response.³³⁷ Nonetheless, the overall height of new high-rise buildings could delay fire and emergency medical response. However, commercial and office space have relatively low utilization rates of the pre-hospital system, compared to residential spaces.³³⁸ Although compliance with the existing *Fire Code* would address this effect,³³⁹ the overall height of the high-rises that may be developed on the opportunity sites pursuant to the Transit Center District Plan could delay emergency medical response.

The City's EMS Agency recommends that all new high-rise buildings have in place a system to assist entry of Fire Department and/or EMS personnel, including a protocol to greet paramedics at the door to the building or in the street, to assist in navigation to the patient, as well as to provide express elevator service when necessary. Methods for assisting EMS staff could include designation of qualified building staff (ideally with first-responder or first aid training) who are familiar with evacuation plans and can assist the entry of pre-hospital personnel; placement of first aid kits, automatic emergency defibrillators, and fire response equipment (hoses, air tanks, forcible entry tools, etc.) throughout buildings (every 10 floors or 500 occupants); and appointment of floor-based "safety wardens" to assist in first aid, single person medical evacuation, or evacuation for larger disasters. These measures would ensure that any potential delay by fire or emergency medical response due to building height would be minimized, and that care would be provided prior to their arrival. Combined with strict adherence to Fire Codes, fire and medical emergency response would not be significantly affected.

Mitigation: None required.

³³⁶ Mercer, Mary, Fellow, EMS & Disaster Management, UCSF-SFGH Department of Emergency Medicine, San Francisco EMS Agency, San Francisco Department of Emergency, Response to Transit Center District Plan EIR EMS Services Questionnaire, August 30, 2010.

³³⁷ Doudiet, Thomas, Assistant Deputy Chief, Division of Support Services, San Francisco Fire Department, Response to Transit Center District Plan EIR Fire Protection Services Questionnaire, November 12, 2010.

³³⁸ Mercer, Mary, Fellow, EMS & Disaster Management, UCSF-SFGH Department of Emergency Medicine, San Francisco EMS Agency, San Francisco Department of Emergency, Response to Transit Center District Plan EIR EMS Services Questionnaire, August 30, 2010.

³³⁹ Doudiet, Thomas, Assistant Deputy Chief, Division of Support Services, San Francisco Fire Department, Response to Transit Center District Plan EIR Fire Protection Services Questionnaire, November 12, 2010.

Schools

Impact PS-3: The draft Plan and Transit Tower would not result in the need for new or physically altered school facilities. (Less than Significant)

The addition of 6,100 households and 30,000 jobs would both directly and indirectly increase student population in the SFUSD. Based on student generation rates of 0.70 students for all-affordable building units, 0.25 students for inclusionary units, and 0.05 students for market rate units, the Transit Center District Plan area’s 6,100 new households could generate about 965 students for SFUSD. Of this, about 100 new students would result from development outside Zone 1 of the approved Transbay Redevelopment Area, including about 60 students that would result from taller residential buildings permitted by the draft Plan and proposed rezoning that would accompany the Plan. Because the draft Plan’s emphasis is on ensuring adequate space to accommodate office development, 90 percent of new student generation in the Plan would not be attributable to the Plan, but to projects in the existing redevelopment area.

In addition to growth in Plan area housing units, as described in Section IV.C, Population, Housing, Business Activity, and Employment, the increment of 8,000 jobs that would be accommodated by the draft Plan and rezoning would result in the need for about 2,800 housing units in San Francisco, generating an enrollment increase of an additional approximately 230 students. The total employment growth in the Plan area, about 29,300, would similarly generate enrollment of some 820 students. (To the extent the Plan area employees would live in the Plan area, some of these students would be the same as those generated by Plan-area housing.) Depending on the grade level distribution of the students and whether they are new to the district or already enrolled, it is likely SFUSD would need to expand capacity in the elementary and middle school levels.³⁴⁰

The Leroy F. Greene School Facilities Act of 1998, or Senate Bill 50 (SB 50), restricts the ability of local agencies such as the City and County of San Francisco to deny land use approvals on the basis that public school facilities are inadequate. SB 50 establishes the base amount of allowable developer fees at \$2.97 per square foot of residential construction and \$0.47 per square foot of commercial construction. These fees are intended to address local school facility needs resulting from new development. Public school districts can, however, impose higher fees provided they meet the conditions outlined in the act. Private schools are not eligible for fees collected pursuant to SB 50.

SFUSD has approval from the Board of Education to levy the following School Facilities Impact Fees to be collected for residential, commercial, and industrial developments as of Summer 2010. These rates are subject to change based on updated studies.

Residential Development:	\$2.24/sq. ft for new residential construction
Office:	\$0.27/sq. ft
Retail:	\$0.18/sq. ft

³⁴⁰ Waymack, Nancy. San Francisco Unified School District, Director of Policy & Operations, Response to Transit Center District Plan EIR SFUSD Questionnaire, September 3, 2010.

Industrial/Warehouse/Manufacturing:	\$0.21/sq. ft.
Lodging/Hotel/Motel:	\$0.09/sq. ft.
Hospitals:	\$0.22/sq. ft.
Research and Development:	\$0.24/sq. ft.

Local jurisdictions are precluded under state law (SB 50) from imposing school-enrollment-related mitigation beyond the school development fees. Therefore, potential effects associated with additional development that could result from construction, tenancing, and operation of the Transit Tower, would be considered less than significant.

Mitigation: None required.

Transit Tower Impacts

Impact PS-4: The proposed Transit Tower would not result in the need for new or physically altered facilities related to police, fire protection, or emergency medical services. (Less than Significant)

The Transit Tower would account for a portion of the growth described above in the discussion of Plan impacts. Therefore, all effects of the Transit Tower would be subsumed within the effects described in Impacts PS-1 through PS-3. Because all of those impacts were determined to be less than significant, effects related to the Transit Tower would likewise be less than significant.

Specific recommendations related to provision of fire and emergency medical services in high-rise buildings, described under Impact PS-2, would also apply to the Transit Tower.

Mitigation: None required.

Cumulative Impacts

Impact C-PS: The draft Plan, including demand on public services from the proposed Transit Tower, would not result in a considerable contribution to any significant impacts related to provision of public services. (Less than Significant)

The analysis above concludes that the development pursuant to the draft Plan, including the Transit Tower, would not adversely affect the provision of public services in the Plan area. Because neither the Police Department nor the Fire Department or Emergency Medical Services Agency has identified a citywide service gap, and because there is no projected shortfall with respect to school capacity citywide, neither the Plan nor the Transit Tower project would result in significant cumulative effects with respect to public services.

Concerning relocation of Fire Station No. 1, proposed in conjunction with the expansion of the Museum of Modern Art, the DEIR for that project (Case Nos. 2009.0291E and 2010.0275E) identifies no significant effect on Fire Department response times due to the proposed relocation.

Mitigation: None required.

N. Biological Resources

This section describes the biological resources that occur or have the potential to occur within or adjacent to the Transit Center District Plan area and the Transit Tower project site and evaluates the possible project-related impacts on these resources. Mitigation measures to reduce adverse impacts on biological resources to less than significant levels are identified.

Information on existing vegetation, wildlife, and special-status species was obtained from regional plans and reports, records from the California Natural Diversity Database, California Native Plant Society Electronic Inventory, the U.S. Fish and Wildlife Service (USFWS), aerial photo interpretation, and other biological literature.³⁴¹

Regional Setting

The Transit Center District Plan area and the Transit Tower project site are located in the Bay-Delta Bioregion³⁴². This bioregion consists of a variety of natural communities that range from the open waters of the Bay and Delta to salt and brackish marshes to grassland, chaparral and oak woodlands. The temperate climate is Mediterranean in nature, with relatively mild, wet winters and warm, dry summers. The high diversity of vegetation and wildlife found in the region is a result of soil, topographic, and micro-climate diversity that combine to promote relatively high levels of endemism.³⁴³ This, in combination with a long history of uses resulting in alteration of the natural environment, and the increasingly rapid pace of development in the region, has resulted in a relatively high degree of endangerment for local flora and fauna.

The San Francisco Bay-Delta is the second largest estuary in the United States and supports numerous aquatic habitats and biological communities. It encompasses 479 square miles, including shallow mudflats, tidal marshes, and open waters. The San Francisco Bay-Delta is an important wintering and migratory stop-over site for the Pacific Flyway. More than 300,000 wintering waterfowl use the region.

³⁴¹ CNDDDB. 2010. California Natural Diversity Data Base, Rarefind 3 computer application, Sacramento, CA; CNPS. 2010. Online Inventory of Rare and Endangered Plants. Version 7-08b (04/02/08), <http://cnps.web.aplus.net/cgi-bin/inv/inventory.cgi>, accessed 07/20/10; USFWS. 2010. Official List of Federal Endangered and Threatened Species that Occur in or may be Affected by Projects in San Francisco County and the San Francisco North USGS 7.5 Minute Quadrangle, Document Number: 100730110200, retrieved July 30, 2010.

³⁴² A bioregion is an area defined by a combination of ecological, geographic and social criteria, that consists of a system of related, interconnected ecosystems. The Bay-Delta bioregion is considered the immediate watershed of the Bay Area and the Delta, not including the major rivers that flow into the Delta. Bounded on the north by northern edge of Sonoma and Napa counties and the Delta and extending east to the edge of the valley floor. Bounded on the south by the southern edge of San Joaquin County, the eastern edge of the Diablo Range, and the southern edge of Santa Clara and San Mateo counties.

³⁴³ *Endemism* refers to the degree to which organisms or taxa are restricted to a geographical region or locality and are thus individually characterized as endemic to that area.

Project Setting

Transit Center District Planning Area

The CEQA baseline for biological resources analysis comprises an area of downtown San Francisco that is nearly fully developed with structures and roadways.³⁴⁴ Although the district is currently zoned for building heights ranging from 30 feet to 550 feet, the heart of the district (south of the old Transbay Terminal site) is largely occupied by buildings less than 10 stories tall, with the exception of two office towers near the intersection of Fremont and Howard Streets. Taller buildings are prevalent along Mission and Market Streets in the north, Main, Spear, and Steuart Streets to the east, and Hawthorne and Third Streets to the west. Many existing buildings in the center of the district are older, less than five stories in height, and have masonry exteriors and “punched” windows, without large continuous expanses of glass. There are no natural communities remaining within the Plan area and there are currently only small pockets of open space, such as Yerba Buena Gardens and a number of small privately owned, publicly accessible open spaces created in conjunction with various development projects.³⁴⁵

Vegetation Communities

There are no natural vegetation communities within the Plan area. Vegetation within the Plan area consists of street trees and landscaping, on the street and in occasional back yards or courtyards and POPOS throughout the area. These types of vegetated areas generally provide habitat only for species habituated to urban life and high disturbance levels. Typical urban wildlife are usually generalists,³⁴⁶ and often non-native species, that are tolerant of human presence and activities, such as house sparrow (*Passer domesticus*), European starling (*Sturnus vulgaris*), rock dove (*Columba livia*), house finch (*Carpodacus mexicanus*), Norway rat (*Rattus norvegicus*), house mouse (*Mus musculus*), and pocket gopher (*Thomomys bottae*).

Sensitive Natural Communities

Sensitive natural communities are designated as such by various resource agencies, such as the California Department of Fish and Game (CDFG), or in local policies and regulations, and are generally considered to have important functions or values for wildlife and/or are recognized as declining in extent or distribution and are considered threatened enough to warrant some sort of protection. For example, many local agencies in California consider protection of oak woodlands important and federal, state, and most local agencies also consider wetlands and riparian habitat as sensitive communities. The California

³⁴⁴ The primary exception is the land along the north side of Folsom Street and between Beale and Main Streets formerly occupied by the Terminal Separator Structure (Bay Bridge on- and off-ramps and Embarcadero Freeway ramps). Approved for mixed-use development as part of the Transbay Redevelopment Plan, many of these parcels were in use as staging areas for construction of the new Bay Bridge west approach and most remain unbuilt upon.

³⁴⁵ Not all of these spaces, referred to as POPOS, are planted; many are primarily hardscape, with limited vegetation.

³⁴⁶ Generalist species are able to use a variety of habitats and food sources, unlike many special-status species that are closely restricted to a specific habitat type or food source.

Natural Diversity Data Base (CNDDDB; administered by CDFG) tracks communities it believes to be of conservation concern and these communities are typically considered sensitive for the purposes of CEQA analysis. There are no sensitive communities within the Plan area, nor is there any riparian habitat.

Jurisdictional Waters and Wetlands

The Plan area is fully developed, with no waterways, lakes or other impoundments of water. There are no potentially jurisdictional waters or wetlands within the Plan area.

Special-Status Species

A number of species known to occur in the vicinity of the proposed Plan area are protected pursuant to federal and/or State endangered species laws, or have been designated Species of Special Concern by the CDFG. In addition, Section 15380(b) of the state CEQA Guidelines provides a definition of rare, endangered or threatened species that are not currently included in an agency listing but that whose “survival and reproduction in the wild are in immediate jeopardy” (endangered) or that “in such small numbers throughout all or a significant portion of its range that it may become endangered if its environment worsens” or “is likely to become endangered within the foreseeable future throughout all or a significant portion of its range and may be considered ‘threatened’ as that term is used in the Federal Endangered Species Act” (rare).³⁴⁷ Species recognized under these terms are collectively referred to as “special-status species.” For the purposes of this EIR, special-status species include:

- Plant and wildlife species listed as rare, threatened or endangered under the federal or State endangered species acts;
- Species that are candidates for listing under either federal or State law;
- Species formerly designated by the USFWS as Species of Concern or by CDFG as Species of Special Concern;
- Species designated as “special animals” by the state;³⁴⁸
- Species designated as “fully protected” by the state (of which there are about 35, most of which are also listed as either endangered or threatened);³⁴⁹

³⁴⁷ For example, CDFG interprets Lists 1A, 1B, and 2 of the California Native Plant Society’s *Inventory of Rare and Endangered Vascular Plants of California* to consist of plants that, in a majority of cases, would qualify for listing as rare, threatened, or endangered. However, the determination of whether an impact is significant is a function of the lead agency, absent the protection of other laws.

³⁴⁸ Species listed on the current CDFG Special Animals List (July 2009), which includes 883 species. This list includes species that CDFG considers “those of greatest conservation need.” The list is available at http://www.dfg.ca.gov/biogeodata/cnddb/plants_and_animals.asp; reviewed December 16, 2010.

³⁴⁹ The “fully protected” classification was “the State’s initial effort in the 1960s to identify and provide additional protection to those animals that were rare or faced possible extinction.” The designation exists in the state *Fish and Game Code*. (CDFG, Fully Protected Animals, http://www.dfg.ca.gov/wildlife/nongame/t_e_spp/fully_pro.html. Reviewed December 6, 2010.

- Raptors (birds of prey), which are specifically protected by the *California Fish and Game Code* Section 3503.5, which prohibits the take, possession, or killing of raptors and owls, their nests, and their eggs;³⁵⁰ and
- Species such as candidate species that may be considered rare or endangered pursuant to Section 15380(b) of the *CEQA Guidelines*.

Appendix F provides comprehensive lists of the special-status species that have been documented from, or have potential to occur in suitable habitat within San Francisco County. These lists were obtained from the California Natural Diversity Database, California Native Plant Society Electronic Inventory, and the U.S. Fish and Wildlife Service. Data requests were made for the San Francisco North USGS 7.5 minute topographic quadrangle (in which the Plan area is located). Based on ESA's review of the biological literature of the region, previous EIRs, and an evaluation of the habitat conditions of the Plan area, most of these species were eliminated from further evaluation because the Plan area does not provide suitable habitat for them.

Species Assessed in Detail

Potential impacts of the Project on special status species were assessed based on the literature review, professional judgment, and the following criteria:

- 1) A determination of susceptibility. This determination is a three-level process that evaluated for each species: a) potential occurrence in the Plan area (generally, the habitats of the Plan area, including the Transit Tower project site); b) potential occurrence within the footprint of one or more development projects that could occur in the Plan area; or, c) absence from either the Plan area or proposed development sites. If the species was determined unlikely to be found in the Plan area, (e.g., if no potential habitat exists for the species in the Plan area), then the species was given no further consideration.
- 2) If a species was determined to have the potential to occur in the Plan area, further analyses were made of life history and habitat requirements, as well as the suitability of habitat for the species found within the Plan area or its immediate vicinity.
- 3) If suitable habitat was determined present within the Plan area or vicinity and the species has been documented as observed within the Plan area or has some potential to occur, additional analysis considered whether the species would be adversely affected by the draft Plan or Transit Tower project. Both direct effects (e.g., displacement of habitat) and indirect effects (e.g. noise) were considered. In addition, life history and habitat requirements were evaluated to ascertain the likelihood and severity of impact.

³⁵⁰ The inclusion of birds protected by Fish & Game Code Section 3503.5 is in recognition of the fact that these birds are substantially less common in California than most other birds, having lost much of their habitat to development, and the recognition that the populations of these species are therefore substantially more vulnerable to further loss of habitat and to interference with nesting and breeding than are most other birds. It is noted that a number of raptors and owls are already specifically listed as threatened or endangered by state and federal wildlife authorities.

Of the special-status plants and animals presented in **Appendix F**, only the following six species, which were determined to have some potential to occur within the Plan area, were fully considered in the impact analysis:

- American peregrine falcon
- American kestrel
- Cooper's hawk
- Red-tailed hawk
- Western red bat
- Townsend's big-eared bat

These species are described in further detail below.

Special-Status Plants

No special-status plant species are expected to occur in the Plan area. Although a number of special-status plant species are identified in **Appendix F** as occurring within the Plan area vicinity, there are no intact natural communities remaining within the Plan area. Vegetation in the few scattered open space areas within the Plan area is dominated by landscaping, turf, or weeds. In addition, some of plant species presented in **Appendix F** are considered by CNPS (2010) to be extirpated from the Plan area vicinity due to a long-standing history of disturbance and lack of habitat.

Special-Status Animals

Birds

Peregrine falcon (*Falco peregrinus anatum*). Listed as Fully Protected³⁵¹ under the *California Fish and Game Code*, the peregrine falcon is known throughout California and is a year-around resident along the Pacific coast. The peregrine is a specialist, preying primarily on mid-sized birds, such as pigeons and doves, in flight. Occasionally these birds will take insects and bats. Although typical nesting sites for the species are tall cliffs, preferably over or near water, peregrines are also known to use urban sites, including the Bay Bridge and tall buildings in San Francisco and San Jose.³⁵² The San Francisco financial district has been considered a peregrine falcon territory since the late 1980s. The Santa Cruz Predatory Bird Research Group placed a nest box on the northwest corner of the PG&E building at 77 Beale Street when falcons were seen perching there often. Peregrine falcons first nested on the building in 2003 and have used PG&E and other nest structures, including the Bay Bridge, within their territory each year since then.³⁵³ The PG&E building lies within the Plan area, at Mission and Beale Streets.

American kestrel (*Falco sparverius*) is a relatively small member of the falcon family that preys on small birds and on mammals, lizards, and insects. The kestrel is most common in open habitats, such as grasslands or pastures. American kestrels nest in cavities, primarily in trees (Sibley, 2001), but may also

³⁵¹ A fully protected species cannot be taken at any time, except, under certain circumstances, in association with a species recovery plan.

³⁵² Peeters, H. and J. Peeters, *Raptors of California*, University of California Press, Berkeley, CA, 2005, [California Natural History Guides: 82].

³⁵³ Santa Cruz Predatory Bird Research Group, <http://www2.ucsc.edu/scpbrg/pefa.htm>, accessed July 28, 2010.

use buildings for nesting. Two breeding pairs were observed in San Francisco during data collection for the San Francisco Breeding Bird Atlas (SFBBA)³⁵⁴. While these were not located within the Plan area, both nests were located in cavities or crevices in buildings and the Breeding Bird Atlas indicates it is possible that the species could nest in and around downtown San Francisco. American kestrel is protected under Section 3503.5 of the *California Fish and Game Code*.

Cooper's hawk (*Accipiter cooperi*). Cooper's hawk ranges over most of North America and may be seen throughout California, most commonly as a winter migrant. Nesting pairs have declined throughout the lower-elevation, more populated parts of the state. Cooper's hawk generally forage in open woodlands and wooded margins and nests in tall trees, often in riparian areas. This species is known to nest locally in Bay Area urban neighborhoods but has not been documented as breeding in San Francisco.³⁵⁵ This species occasionally may forage in and around the Plan area; however, there is no suitable nesting habitat for this species there. Cooper's hawk is protected under Section 3503.5 of the *California Fish and Game Code*.

Red-tailed hawk (*Buteo jamaicensis*). Red-tailed hawks are commonly found in woodlands and open country with scattered trees. These large hawks feed primarily on small mammals, but will also prey on other small vertebrates, such as snakes and lizards, as well as on small birds and invertebrates. Red-tailed hawks nest in a variety of trees in urban, woodland, and agricultural habitats and has been observed throughout the City. Breeding for this species within San Francisco has only been confirmed in areas that included sufficient grassland habitat for foraging.³⁵⁶ This hawk may forage in and around the Plan area, however it is highly unlikely to nest there. Red-tailed hawk is protected under Section 3503.5 of the *California Fish and Game Code*.

Mammals

Special-status bat species. Surveys for bats have been conducted in San Francisco, focusing on natural areas and parks. Findings were that the three most commonly encountered species in the area are: Mexican free-tailed bat (*Tadarida brasiliensis*), Yuma myotis (*Myotis yumanensis*), and western red bat (*Lasiurus blossevillii*), a California species of concern. While Mexican free-tailed bat were widespread and abundant throughout the sampled natural areas, Yuma myotis and western red bat were much less abundant and generally restricted to parks with lakes.³⁵⁷ Knowing that these bats do occur in natural areas of the City, it is noted that the Plan area provides limited potential roosting habitat for two special-status bat species. However, foraging opportunities in such an urbanized area are relatively low, with few open or vegetated areas and no areas of standing water to host insect populations. The **western red bat** has a widespread distribution throughout California. These bats are generally solitary and roost in trees with dense foliage. They are tolerant of cold temperatures and are not known to hibernate, although

³⁵⁴ San Francisco Field Ornithologists, San Francisco Breeding Bird Atlas, 2001-2003, available: <http://www.sffo.org> accessed July 26, 2010.

³⁵⁵ *Ibid.*

³⁵⁶ *Ibid.*

³⁵⁷ Krauel, J.K. 2009. Foraging Ecology of Bats in San Francisco. M.S. Thesis, San Francisco State.

it is possible that they do in colder climates.³⁵⁸ This species may use larger trees within the Plan area for roosting but the potential for their presence is low, given the lack of water bodies in the area. **Townsend's big-eared bats** (*Corynorhinus townsendii townsendii*) occur in a variety of habitats and utilize caves, mines, tunnels, buildings, or other human-made structures for roosting. While the potential for their occurrence within the Plan area is low, it is possible that this species could be found in abandoned or underutilized buildings.

Other Breeding and Migratory Birds

The City of San Francisco and surrounding Bay waters provide habitat for well over 200 species of birds, with some species as year-round residents, other species as winter residents, and still others passing through along the Pacific Flyway during spring and fall migrations. Avian diversity in the City is highest in areas with relatively large sized, diverse patches of habitat remaining. Nonetheless, trees, shrubs, and buildings within the Plan area provide nesting habitat for a variety of birds as well as patches of habitat for potential use by migrants as stop-over sites. The most common species documented as nesting in the general Downtown area³⁵⁹ include Brewer's blackbird (*Euphagus cyanocephalus*), American robin (*Turdus migratorius*), mourning dove (*Zenaida macroura*), rock dove, house finch, house sparrow, European starling, and brown-headed cowbird (*Molothrus ater*). Less frequently found nesters include Anna's hummingbird (*Calypte anna*), common bushtit (*Psaltriparus minimus*), white-crowned sparrow (*Zonotrichia leucophrys*), chestnut backed chickadee (*Poecile rufescens*), and hooded oriole (*Icterus cucullatus*). As discussed below under Regulatory Setting, most migratory birds are protected from harm by the federal Migratory Bird Treaty Act.

Designated Critical Habitat

USFWS designates critical habitat for certain species that it has listed as threatened or endangered. 'Critical habitat' is defined in Section 3(5)(A) of the federal Endangered Species Act as those lands within a listed species' current range that contain the physical or biological features that are considered essential to the species' conservation, as well as areas outside the species' current range that are determined to be essential to its conservation. Critical Habitat has been designated for Central Coast steelhead trout (*Oncorhynchus mykiss*), winter-run chinook salmon (*Oncorhynchus tshawytscha*), and Steller sea-lion (*Eumetopias jubatus*) in the waters off San Francisco's shoreline. However, the Plan area is not located within designated critical habitat for any federally-listed species.

Transit Tower Project Site

The Transit Tower site consists of an urban parcel covered in asphalt and concrete, with some landscaped areas containing trees and shrubs. The 645-foot tall Millennium Tower is to the east, other tall buildings are located to the north and west, and the site of the former Transbay Terminal—demolished beginning in August 2010—is to the south.

³⁵⁸ Jameson, E.W., Jr., and H.J. Peeters, *Mammals of California: California Natural History Guides No. 66* (revised edition, 2004). Berkeley: University of California Press. 2004.

³⁵⁹ San Francisco Field Ornithologists. *Op. cit.*

Vegetation Communities

There are no natural vegetation communities within the project site. Existing vegetation within or immediately adjacent to the project site consists of landscaping that had been planted in front of the former Transbay Terminal, and that remained in front of the demolition site as of December 2010. Otherwise the site consists of concrete and asphalt.

Sensitive Natural Communities

As defined earlier in the Plan setting, there are no sensitive communities within the project site.

Jurisdictional Waters and Wetlands

The project site is fully developed in an urban setting and there are no water features of any kind at the site. There are no potentially jurisdictional waters or wetlands within the project site.

Special-status Species

The consideration process for special-status species for this EIR was discussed in detail earlier in the Plan setting.

Special-Status Plants

No special-status plant species are expected to occur at the project site. This is a fully developed site in an urban setting, with no vegetation present except for some landscape trees and shrubs.

Special-Status Animals

Of the special-status plants and animals presented in **Appendix F**, only the following four species, which were determined to have some potential to occur within the vicinity of project site, were fully considered in the project-level impact analysis:

- American peregrine falcon
- American kestrel
- Cooper's hawk
- Red-tailed hawk

These species were described in detail in the Plan setting (see p. 555). While there is no suitable breeding habitat available for these birds at the project site, there is marginally suitable foraging habitat as these species all are known to prey on other birds. These raptors may also use buildings adjacent to the project site for loafing and roosting.

Other Breeding and Migratory Birds

As was described in the Plan setting, it is possible some species may nest in or on buildings on, or adjacent to, the Transit Tower project site. The Plan setting provides further details on the species most likely to use such areas for breeding.

Designated Critical Habitat

As defined earlier in the Plan setting, project site is not located within designated critical habitat for any federally-listed species.

Bird Strikes and Their Effects on Bird Populations

It is estimated that, in North America alone, between 100 million and 1 billion birds are killed due to collisions with buildings and other structures each year.³⁶⁰ Collisions are currently recognized as one of the leading causes of bird population declines worldwide.³⁶¹ Daytime collisions occur most often when birds fail to recognize window glass as a barrier. Regardless of overall building height, the ground floor and first few stories of buildings present the greatest hazards to most birds; reflections of attractive ground-level features like vegetation draw birds toward glass surfaces and often result in collisions. Recent increases in glass surfaces used to better daylight buildings can be considered a “biologically significant” issue, potentially affecting the viability of local and regional bird populations.³⁶² Transparent features – especially buildings where birds can see through two glass surfaces to vegetation on the other side – also attract birds and cause collisions. Vegetated areas and bodies of water provide potentially valuable stopover habitat for migratory birds. Open space areas adjacent to developed areas create bird habitats in the vicinity of proposed buildings, potentially resulting in higher bird collision risks.

Many collisions are induced by artificial night lighting, particularly from large buildings, which can be especially problematic for migrating songbirds since many are nocturnal migrants.³⁶³ The tendency of birds to move towards lights at night when migrating, and their reluctance to leave the sphere of light influence for hours or days once encountered, has been well documented.³⁶⁴ It has been suggested that structures located at key points along migratory routes may present a greater hazard than those at other locations.³⁶⁵ Other research suggests that fatal bird collisions increase as light emissions increase, that weather often plays an important part in increasing the risk of collisions, and that nights with heavy cloud cover and/or precipitation present the conditions most likely to result in high numbers of collisions.³⁶⁶ The type of light used may affect its influence on the birds: for example, studies have indicated that blinking lights or strobe lights affect birds significantly less than non-blinking lights.³⁶⁷

³⁶⁰ San Francisco Planning Department, *Standards for Bird-Safe Buildings*, Adopted July 14, 2011. Reviewed August 18, 2011. Available on the internet at: http://www.sf-planning.org/ftp/files/publications_reports/bird_safe_bldgs/Standards_for_Bird-Safe_Buildings_8-11-11.pdf.

³⁶¹ Brown, H., Caputo, S., McAdams, E.J., Fowle, M., Phillips, G., Dewitt, C., Gelb, Y., *Bird-safe Building Guidelines*, New York Audubon, available online: <http://nycaudubon.org>, accessed 08/24/10.

³⁶² *Ibid.*

³⁶³ Ogden, L.E., *Collision Course: The Hazards of Lighted Structures and Windows to Migrating Birds*, Special Report for the World Wildlife Fund and the Fatal Light Awareness Program, September 1996, available online: www.flap.org, accessed 08/25/10.

³⁶⁴ *Ibid.*

³⁶⁵ *Ibid.*

³⁶⁶ Ogden, L.E., *Summary Report on the Bird Friendly Building Program: Effect of Light Reduction on Collision of Migratory Birds*, Special Report for the Fatal Light Awareness Program, available online: www.flap.org, January 2002, accessed 08/24/10.

³⁶⁷ Gauthreaux, S.A., Belser, C.G., *Effects of Artificial Night Lighting on Migrating Birds*, In: Rich, C. and Longcore, T., *Ecological Consequences of Night Lighting*, Island Press, Covelo, CA, pp. 67-93, 2006.

Power lines, communications towers, and wind turbines (“windmills”) have also been implicated in bird strikes.

As this Draft EIR went to press, the San Francisco Board of Supervisors had unanimously approved, on first reading, proposed *Planning Code* amendments to incorporate bird-safe building standards into the Code. The Commission also approved *Standards for Bird-Safe Buildings*.³⁶⁸ The amendments, reviewed and recommended by the Planning Commission, introduce a new *Planning Code* Section 139, Standards for Bird-Safe Buildings, that focuses on buildings, both public and private, that create location-specific hazards and building feature-related hazards. Location-specific hazards apply to buildings in, or within 300 feet of and having a direct line of sight to, an Urban Bird Refuge; such a Refuge includes “open spaces two acres and larger dominated by vegetation, including vegetated landscaping, forest, meadows, grassland, or wetlands, or open water.” Section 139 requires that 90 percent of glazing in the “Bird Collision Zone” (60 feet above grade, plus 60 feet above an adjacent vegetated roof two acres or larger) be treated (fritted, stenciled, frosted, or covered with netting, screens, grids, or bird-visible UV patterns). Lighting must also be minimized, and any wind generators must comply with Planning Department requirements, “including any monitoring of wildlife impacts that the Department may require.”

In addition to buildings in and near an Urban Bird Refuge, Section 139 applies similar standards to certain building features citywide, including “free-standing glass walls, wind barriers, skywalks, balconies, and greenhouses on rooftops that have unbroken glazed segments 24 square feet and larger in size.”

The *Standards for Bird-Safe Buildings* include guidelines for use and types of glass and façade treatments, wind generators and grates, and lighting treatments. The standards impose requirements for both location-related hazards and feature-related hazards, which are the same hazards identified in *Planning Code* Section 139.³⁶⁹ Required treatments are generally as specified in Section 139:

For location-related hazards involving new buildings or additions to existing buildings (and replacement of 50 percent or more of the existing glazing within the Bird Collision Zone on façade(s) facing the Urban Bird Refuge), the following requirements apply:

- **Façade Treatments:** Bird-Safe Glazing Treatment is required such that the Bird Collision Zone consists of no more than 10 percent untreated glazing. Building owners are encouraged to concentrate permitted transparent glazing on the ground floor and lobby entrances to enhance visual interest for pedestrians.
- **Lighting Design:** Minimal lighting shall be used. Lighting shall be shielded. No uplighting shall be used. No event searchlights should be permitted for the property.

³⁶⁸ San Francisco Planning Department, *Standards for Bird-Safe Buildings*, Adopted July 14, 2011. Available on the internet at: [http://www.sf-planning.org/ftp/files/publications/reports/bird safe bldgs/Standards for Bird-Safe Buildings 8-11-11.pdf](http://www.sf-planning.org/ftp/files/publications/reports/bird_safe_bldgs/Standards_for_Bird-Safe_Buildings_8-11-11.pdf). Reviewed August 18, 2011.

³⁶⁹ Legislation to codify Section 139 was unanimously approved by the Board of Supervisors (first reading) on September 20, 2011 (Board File No. 110785), with final approval scheduled as this DEIR went to press.

- **Wind Generators:** Sites must not feature horizontal access windmills or vertical access wind generators that do not appear solid.

For building feature-related hazards involving new buildings and new additions to existing buildings, the entirety of the hazard must be made bird-safe through such treatments as fritting, netting, permanent stencils, frosted glass, exterior screens, physical grids placed on the exterior of glazing or ultraviolet patterns visible to birds. Vertical elements of the window patterns should be at least 1/4 inch wide at a minimum spacing of 4 inches, or have horizontal elements at least 1/8 inch wide at a maximum spacing of 2 inches, according to the Standards.

The Standards prescribe the use of a checklist to educate project sponsors and their future tenants on potential hazards and applicable treatments. They also provide that treatments for designated historic buildings meet the *Secretary of the Interior's Standards for Rehabilitation*, and they exempt residential buildings less than 45 feet in height with limited glass facades. The Standards also recommend educational guidelines and voluntary programs.

Regulatory Setting

This section briefly describes federal, state, and local regulations, permits, and policies pertaining to biological resources and wetlands as they apply to the proposed project.

Special-Status Species

Federal Endangered Species Act

The USFWS, which has jurisdiction over plants, wildlife, and most freshwater fish, and the National Marine Fisheries Service (NMFS), which has jurisdiction over anadromous fish, marine fish, and mammals, oversee implementation of the federal Endangered Species Act. Section 7 of the Act mandates that all federal agencies consult with the USFWS and NMFS to ensure that federal agencies actions do not jeopardize the continued existence of a listed species or destroy or adversely modify critical habitat for listed species. A federal agency is required to consult with USFWS and NMFS if it determines a “may effect” situation will occur in association with the proposed project. The federal Endangered Species Act prohibits the “take”³⁷⁰ of any fish or wildlife species listed as threatened or endangered, including the destruction of habitat that could hinder species recovery.

³⁷⁰ “Take,” as defined in Section 9 of the Act, is broadly defined to include intentional or accidental “harassment” or “harm” to wildlife. “Harass” is further defined by the U.S. Fish and Wildlife Service as an intentional or negligent act or omission which creates the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding, and sheltering. “Harm” is defined as an act which actually kills or injures wildlife. This may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding or sheltering.

California Endangered Species Act

Under the California Endangered Species Act, CDFG has the responsibility for maintaining a list of threatened and endangered species (*California Fish and Game Code Sec. 2070*). CDFG also maintains a list of “candidate species,” which are species formally noticed as being under review for addition to either the list of endangered species or the list of threatened species. In addition, CDFG maintains lists of “species of special concern,” which serve as “watch lists.” Pursuant to the requirements of the Act, an agency reviewing a proposed project within its jurisdiction must determine whether any state-listed endangered or threatened species could be present on the project site and determine whether the proposed project could have a potentially significant impact on such species. In addition, CDFG encourages informal consultation on any proposed project that may impact a candidate species.

California Native Plant Protection Act

State listing of plant species began in 1977 with the passage of the California Native Plant Protection Act (NPPA), which directed CDFG to carry out the legislature’s intent to “preserve, protect, and enhance endangered plants in this state.” The NPPA gave the California Fish and Game Commission the power to designate native plants as endangered or rare and to require permits for collecting, transporting, or selling such plants. The California Endangered Species Act expanded upon the original NPPA and enhanced legal protection for plants. The California Endangered Species Act established threatened and endangered species categories, and grandfathered all rare animals—but not rare plants—into the act as threatened species. Thus, there are three listing categories for plants in California: rare, threatened, and endangered.

Special-Status Natural Communities

Special-status natural communities are identified as such by CDFG’s Natural Heritage Division and include those that are naturally rare and those whose extent has been greatly diminished through changes in land use. The California Natural Diversity Database (CNDDDB) tracks 135 such natural communities in the same way that it tracks occurrences of special-status species: information is maintained on each site in terms of its location, extent, habitat quality, level of disturbance, and current protection measures. CDFG is mandated to seek the long-term perpetuation of the areas in which these communities occur. While there is no statewide law that requires protection of all special-status natural communities, CEQA requires consideration of the potential impacts of a project to biological resources of statewide or regional significance.

Federal Migratory Bird Treaty Act

The federal Migratory Bird Treaty Act (16 USC, Section 703, Supplement I, 1989) prohibits killing, possessing, or trading in migratory birds, except in accordance with regulations prescribed by the Secretary of the Interior. This act encompasses whole birds, parts of birds, and bird nests and eggs.

California Fish and Game Code

Under Section 3503 of the *California Fish and Game Code*, it is unlawful to take, possess, or needlessly destroy the nest or eggs of any bird, except as otherwise provided by this code or any regulation made pursuant thereto. Section 3503.3 of the *Code* prohibits take, possession, or destruction of any birds in the orders Falconiformes (hawks) or Strigiformes (owls), or of their nests and eggs. *Code* Sections 3511 (birds), 4700 (mammals), 5050 (reptiles and amphibians), and 5515 (fish) allow the designation of a species as Fully Protected. This is a greater level of protection than is afforded by the California Endangered Species Act, since such a designation means the listed species cannot be taken at any time, except, under certain circumstances, in association with a species recovery plan.

Waters of the United States and the State (Wetlands)

The Plan area is fully developed, with no waterways, lakes or other impoundments of water. There are no potentially jurisdictional waters or wetlands within the Plan area. Therefore, federal and state regulations concerning wetlands are not discussed.

San Francisco's Urban Forestry Ordinance

The City and County of San Francisco's Urban Forestry Ordinance (Article 16 of the Public Works Code) protects San Francisco's street trees, significant trees and landmark trees regardless of species. The three categories of trees protected by the ordinance are defined as follows:

Street trees are "any tree growing within the public right-of-way, including unimproved public streets and sidewalks, and any tree growing on land under the jurisdiction of the Department [of Public Works]" as defined in Section 802 of the Ordinance. The removal of street trees by persons other than the Department of Public Works is restricted by Section 806b, whereby a permit is required for removal.

Significant trees are defined in Section 810A of the Ordinance as trees (1) on property under the jurisdiction of the Department of Public Works or on privately owned-property with any portion of its trunk within 10 feet of the public right-of-way, and (2) that satisfies at least one of the following criteria: (a) a diameter at breast height (DBH) in excess of 12 inches, (b) a height in excess of 20 feet, or (c) a canopy in excess of 15 feet. The removal of significant trees by persons other than the Department of Public works requires a permit from the Department, according to the process described in Section 806b.

Landmark trees are trees that have been nominated as landmark trees by a member of the public, the landowner, the Planning Commission, the Board of Supervisors, or the Historic Preservation Commission, and that have been subsequently recommended as a landmark tree by the Urban Forestry Council (within the Department of the Environment), and then must be designated a landmark tree by ordinance approved by the Board of Supervisors. Trees that have been nominated and are undergoing review are protected according to the same standards as designated landmark trees while going through the review process, according to Section 810 of the Ordinance. There are no Landmark trees in the Plan area.

San Francisco's Bird-Safe Building Ordinance

The City's newly adopted *Planning Code* provisions regarding bird-safe building design and *Standards for Bird-Safe Buildings* are discussed above, on p. 560.

Impact Analysis

Significance Criteria

The proposed project would have a potentially significant impact related to biological resources if they were to:

- Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations or by the CDFG, the USFWS, or NOAA Fisheries;
- Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the CDFG or USFWS;
- Have a substantial adverse effect on Federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) or "navigable waters" as defined in Section 10 of the Rivers and Harbors Appropriation Act, through direct removal, filling, hydrological interruption, or other means;
- Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites;
- Conflict with any applicable local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance;
- Conflict with the provisions of an adopted habitat conservation plan, natural community conservation plan, or other approved local, regional, or State habitat conservation plan; or
- Substantially reduce the habitat of a fish and wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or wildlife community, substantially reduce the number or restrict the range of an endangered, rare or threatened species (consistent with CEQA Guidelines Sections 15065(a)(1) and (c)).

Project Impacts

As noted in the Setting, there is no riparian habitat in the Plan area, nor are there any wetlands. None of the Plan area is within the jurisdiction of an adopted habitat conservation plan, natural community conservation plan, or other approved local, regional, or State habitat conservation plan. Neither the draft Plan nor the proposed Transit Tower would conflict with the City's Urban Forestry Ordinance. Policy conflicts, if any, are addressed in Chapter III, Plans and Policies. Therefore, these issues are not discussed below.

Transit Center District Plan

Impact BI-1: Development under the draft Plan has the potential to adversely impact species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service. (Less than Significant with Mitigation)

The Plan area and surrounding environs are developed and covered with structures and other largely impermeable surfaces. Because the Plan area is in a developed urban area with no natural vegetation communities remaining, development under the draft Plan would not affect any special-status plants.

As discussed in the Setting there are several special-status animals that may potentially use habitat in the Plan area, including the American peregrine falcon, red-tailed hawk, American kestrel, western red bat, and Townsend's big-eared bat. In addition there are a number of native resident and migratory bird species with potential to use trees, shrubs, and buildings within the Plan area for nesting.

Moreover, disruption of nesting native birds is not permitted under the federal Migratory Bird Treaty Act or the *California Fish and Game Code*. The loss of any active nest (i.e., removing a tree or shrub or demolishing a building containing a nest) must thus be avoided under federal and state law.

The loss of an active nest also would be considered a significant impact under CEQA if that nest were being occupied by a special-status bird species. The mortality of special-status bats through tree removal or building demolition would also be considered potentially significant. However, implementation of Mitigation Measures M-BI-1a and M-BI-1b, which would require pre-construction surveys for nesting birds and bats, would reduce potential impacts to a less-than-significant level. Additionally, through implementation of these measures, compliance would be achieved with the federal Migratory Bird Treaty Act and the *California Fish and Game Code*.

Mitigation Measure

M-BI-1a: Pre-Construction Bird Surveys: Conditions of approval for building permits issued for construction within the Plan area shall include a requirement for pre-construction breeding bird surveys when trees or vegetation would be removed or buildings demolished as part of an individual project. Pre-construction nesting bird surveys shall be conducted by a qualified biologist between February 1st and August 15th if vegetation (trees or shrubs) removal or building demolition is scheduled to take place during that period. If special-status bird species are found to be nesting in or near any work area or, for compliance with federal and state law concerning migratory birds, if birds protected under the federal Migratory Bird Treaty Act or the *California Fish and Game Code* are found to be nesting in or near any work area, an appropriate no-work buffer zone (e.g., 100 feet for songbirds) shall be designated by the biologist. Depending on the species involved, input from the California Department of Fish and Game (CDFG) and/or the U.S. Fish and Wildlife Service (USFWS) Division of Migratory Bird Management may be warranted. As recommended by the biologist, no activities shall be conducted within the

no-work buffer zone that could disrupt bird breeding. Outside of the breeding season (August 16 – January 31), or after young birds have fledged, as determined by the biologist, work activities may proceed. Birds that establish nests during the construction period are considered habituated to such activity and no buffer shall be required, except as needed to avoid direct destruction of the nest, which would still be prohibited.

M-BI-1b: Pre-Construction Bat Surveys: Conditions of approval for building permits issued for construction within the Plan area shall include a requirement for pre-construction special-status bat surveys when large trees are to be removed or underutilized or vacant buildings are to be demolished. If active day or night roosts are found, the bat biologist shall take actions to make such roosts unsuitable habitat prior to tree removal or building demolition. A no disturbance buffer shall be created around active bat roosts being used for maternity or hibernation purposes at a distance to be determined in consultation with CDFG. Bat roosts initiated during construction are presumed to be unaffected, and no buffer would necessary.

Level of Significance after Mitigation

With implementation of Mitigation Measures M-BI-1a and M-BI-1b, requiring pre-construction surveys for special-status nesting birds and bats prior to construction of individual buildings or projects under the Plan, the impacts on special-status species resulting from development under the draft Plan would be less than significant.

Impact BI-2: Implementation of the draft Plan could interfere substantially with the movement of native resident wildlife species and with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites. (Less than Significant)

As stated in the Setting, bird strikes result in millions of bird deaths annually and are a leading cause of worldwide declines in bird populations. Direct effects from bird strikes include death or injury as the birds collide with lighted structures and other birds that are attracted to the light, as well as collisions with glass during the daytime, while indirect effects include delayed arrival at breeding or wintering grounds, and reduced energy stores necessary for migration, winter survival, or subsequent reproduction.³⁷¹ Avian collisions are a potentially significant impact, inasmuch as they may affect special-status bird species. Moreover, as more research is undertaken with respect to bird collisions, the findings raise the potential that these collisions could be implicated in, and contribute to, the decline of some bird populations below self-sustaining levels or the substantial elimination of some bird communities in certain locales.

The existing environment is one of high ambient disturbance due to human activity and noise generated by City and freeway traffic. Therefore, nesting by raptors such as peregrine falcon, hawks, and kestrels is

³⁷¹ Gauthreaux and Belser. *Op. cit.*

not expected to be common within the Plan area (although, as noted above, peregrine falcons do nest atop the PG&E building in the Plan area); however, raptors may use the area for foraging purposes. Because the draft Plan calls for increasing open space within the Plan area, foraging opportunities may increase for these birds due to increased planting of trees and other vegetation, which could be a beneficial effect. However, changes in building heights and density, as well as construction of new buildings in the current prevailing architectural style, which are often characterized by large glazed expanses, could have a potentially adverse effect on raptors, as well as resident and migratory passerines, by increasing the risk for avian collisions with buildings. These effects could be exacerbated by increasing areas of open space in proximity to buildings, as called for under the draft Plan. These potentially adverse impacts are discussed in detail under Impact BI-4.

The Plan area currently contains street lights, parking lot lights, and building lights and is located in a generally urban setting, surrounded by other light sources. Therefore, existing lighting sources already provide a substantial source of illumination throughout the Plan area. Overall, development under the draft Plan is not expected to significantly increase the amount of light generated from the Plan area over baseline levels (see Section IV.B, Aesthetics, for a discussion of lighting impacts). However, new lighting sources in the form of tall buildings, combined with the fact that most night-traveling migratory birds fly at heights lower than 1,640 feet,³⁷² has the potential to significantly heighten the risk of avian collisions over existing levels, particularly because the Plan would allow for substantially taller buildings than currently exist.

The Plan area is surrounded by other urban development and is not proximate to, nor does it contain, large expanses of open space or water representing potentially attractive migratory bird stopovers. Specific avian flight routes in and out of the area are not known, and there is little local data available on bird kills due to building collisions. However, both resident and migratory birds are known to use the area for breeding and foraging. Increases in building heights and density throughout the Plan area, as well as construction of new buildings, especially those with glass facades, or other large areas of glazing, could heighten the risk for avian collisions with buildings. These effects could be exacerbated by increasing areas of vegetated open space in proximity to buildings, as called for under the draft Plan. The potential for development under the draft Plan to increase the risk of avian collisions over the existing baseline is considered a significant impact.

San Francisco has a policy encouraging the installation of on-site renewable energy systems, such as wind generators, and Policy 6.11 of the draft Plan calls for use of “on-site renewable energy systems” to reduce fossil-fuel consumption. Wind generators can result in additional bird and bat mortality, including that of special-status species—a significant impact—and birds protected by the federal Migratory Bird Treaty Act and the *California Fish and Game Code*.³⁷³

³⁷² Brown et al. *Op. cit.*

³⁷³ This discussion is specific to the potential impact of wind generators; other policies and laws concerning biological resources are discussed in the Setting.

As stated in the Setting, the Board of Supervisors in September 2011 approved *Planning Code* amendments to incorporate bird-safe building standards into the Code, and adopted *Standards for Bird-Safe Buildings*.³⁷⁴ The new *Planning Code* Section 139, Standards for Bird-Safe Buildings, focuses on buildings that create location-specific hazards and building feature-related hazards. Location-specific hazards apply to buildings within 300 feet of and having a direct line of sight to, an Urban Bird Refuge, including open spaces two acres and larger dominated by vegetation, wetlands, or open water. In such areas, 90 percent of glazing in the 60 feet above grade or above a vegetated roof two acres or larger be treated (fritted, stenciled, frosted, or covered with netting, screens, grids, or bird-visible UV patterns). Lighting must be minimized, and wind generators must be vertical, with a solid-blade appearance. Similar controls apply to certain building features citywide, including glass walls, wind barriers, skywalks, balconies, and rooftop greenhouses with 24 square feet of continuous glazing.

The *Standards for Bird-Safe Buildings* include guidelines for use and types of glass and façade treatments, wind generators and grates, and lighting treatments, for both location-related hazards and feature-related hazards, which are the same hazards identified in *Planning Code* Section 139. Required treatments are generally as specified in Section 139.

In the Plan area, because the City Park atop the new Transit Center will be considered an Urban Bird Refuge, buildings that would be subject to Section 139 and the *Standards for Bird-Safe Buildings* would likely include, in addition to the proposed Transit Tower, proposed buildings at 181 Fremont Street, 50 First Street (Mission Street tower and possibly First Street tower), on the Golden Gate University site, on TJPA Parcel F, and at 524 Howard Street. An approved but unbuilt project at 535 Mission Street could also be subject to Section 139 and the *Standards*, should it require re-authorization by the Planning Commission.

Compliance with *Planning Code* Section 139 and the adopted *Standards for Bird-Safe Buildings* would ensure that potential impacts related to bird hazards would be less than significant.

Mitigation Measures

Because no significant impacts were identified, no mitigation is required. However, the following improvement measure is identified to reduce potential effects on birds from night lighting at the site. Implementation of this measure would further reduce the draft Plan's less-than-significant impacts on resident and migratory birds.

I-BI-2: Night Lighting Minimization. In compliance with the voluntary San Francisco Lights Out Program, the Planning Department could encourage buildings developed pursuant to the draft Plan to implement bird-safe building operations to prevent and minimize bird strike impacts, including but not limited to the following measures:

- Reduce building lighting from exterior sources by:

³⁷⁴ San Francisco Planning Department, *Standards for Bird-Safe Buildings*; see footnote 360, p. 561.

- Minimizing amount and visual impact of perimeter lighting and façade up-lighting and avoid up-lighting of rooftop antennae and other tall equipment, as well as of any decorative features;
- Installing motion-sensor lighting;
- Utilizing minimum wattage fixtures to achieve required lighting levels.
- Reduce building lighting from interior sources by:
 - Dimming lights in lobbies, perimeter circulation areas, and atria;
 - Turning off all unnecessary lighting by 11:00 p.m. through sunrise, especially during peak migration periods (mid-March to early June and late August through late October);
 - Utilizing automatic controls (motion sensors, photo-sensors, etc.) to shut off lights in the evening when no one is present;
 - Encouraging the use of localized task lighting to reduce the need for more extensive overhead lighting;
 - Scheduling nightly maintenance to conclude by 11:00 p.m.;
 - Educating building users about the dangers of night lighting to birds.

Level of Significance after Mitigation

Less than significant.

Transit Tower

Impact BI-3: Development of the Transit Tower has the potential to adversely impact species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service. (Less than Significant with Mitigation)

The Transit Tower project site is an urban parcel covered in asphalt and concrete, with some small landscaped areas containing trees and shrubs. As noted in the discussion of Plan effects in Impact BI-1, the surrounding environs are developed and covered with structures and other impermeable surfaces. As with Plan effects, because the project site is in a developed urban area with no natural vegetation communities remaining, development of the Transit Tower would not affect any special-status plants.

As with Plan effects described in Impact BI-1, construction of the Transit Tower project could likewise result in adverse impacts on special-status birds. Development of the Transit Tower could disturb nesting birds, including special-status birds and those protected by the federal Migratory Bird Treaty Act and the *California Fish and Game Code*. The loss of any active nest (i.e., removing a tree or shrub or demolishing a building containing a nest) would be potentially significant. However, there is no habitat for special-status bats at the Transit Tower project site.

Mitigation Measure

M-BI-3: Implement Mitigation Measure M-BI-1a, **Pre-Construction Bird Surveys**, for construction of the Transit Tower project.

Level of Significance after Mitigation

With implementation of Mitigation Measure M-BI-1a, to conduct pre-construction surveys for special-status nesting birds prior to construction of the Transit Tower, the impacts on special-status species from the Transit Tower would be less than significant.

Impact BI-4: Implementation of the Transit Tower Project could interfere substantially with the movement of native resident wildlife species and with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites. (Less than Significant)

As stated in the Setting, bird strikes result in millions of bird deaths annually and are a leading cause of worldwide declines in bird populations. Direct effects from bird strikes include death or injury as the birds collide with lighted structures at night and/or with glass during the daytime, while indirect effects include delayed arrival at breeding or wintering grounds, and reduced energy stores necessary for migration, winter survival, or subsequent reproduction. Avian collisions are a potentially significant impact, inasmuch as they may affect special-status bird species. Moreover, as more research is undertaken with respect to bird collisions, the findings raise the potential that these collisions could be implicated in, and contribute to, the decline of some bird populations below self-sustaining levels or the substantial elimination of some bird communities in certain locales.

As with the remainder of the Plan area, the Transit Tower project site and vicinity is well lit by street lights and building lights and is located in a developed urban setting, and thus existing lighting sources already provide substantial nighttime illumination. Overall, development of the proposed Transit Tower would not change the fact that the area is well-lit at night. However, the proposed Transit Tower would be the tallest building in San Francisco, and would be taller than the current tallest structure in the City, which is Sutro Tower (although Sutro Tower's elevation of 834 feet means that the top of this communications tower would remain the highest built point in San Francisco). Because the Tower would be substantially taller than other structures, new lighting from a tall building has the potential to substantially increase the risk of avian collisions over existing baseline levels, which could affect both resident and migratory birds. The largely glass façade of the Transit Tower would mean that interior light from the building would be readily apparent to nearby birds and, as noted in the Setting, the glazing itself would likely result in bird collisions. Moreover, the proposed Transit Tower would be constructed adjacent to the planned City Park, a 5-acre open space atop the Transit Center that would include extensive landscaping.

As noted previously, the Planning Commission in July 2011 adopted *Standards for Bird-Safe Buildings*. The Standards impose requirements for both location-related hazards and feature-related hazards, as described above under Impact BI-2. In addition, the Planning Commission recommended approval of *Planning Code* amendments to incorporate Standards for Bird-Safe Buildings as a new Section 139 of the *Code*, and those amendments were approved by the Board of Supervisors in September 2011. That section

would require treatment, as in the Standards, for both location-specific hazards and building feature-related hazards, as described above under Impact BI-2.

Compliance with *Planning Code* Section 139 and the adopted *Standards for Bird-Safe Buildings* would ensure that potential impacts related to bird hazards would be less than significant.

Mitigation Measures

Because no significant impacts were identified, no mitigation is required.

Additionally, although it is not part of the project analyzed in this EIR, the planned City Park atop the new Transit Center could create adjacent open space that increases the potential for bird collisions at the Transit Tower. As noted above, bird collisions with glass tend to occur in proximity to planted spaces. Accordingly, Improvement Measure I-BI-4 is identified to further reduce potential effects of bird collisions.

Improvement Measures

I-BI-4a: Bird-Safe Standards for City Park. The Transbay Joint Powers Authority, as sponsor of the Transit Center and City Park, could incorporate, as feasible, into the design of City Park bird-safe standards that are applicable to parks and open spaces, as described in the newly adopted *Standards for Bird-Safe Buildings*.

I-BI-4b: Night Lighting Minimization. The Transbay Joint Powers Authority, as sponsor of the Transit Center and City Park and the owner of the Transit Tower site, could incorporate, as feasible, into the design of City Park, and could require incorporation, as feasible, in the design of the proposed Transit Tower, the light minimization features identified in Improvement Measure I-BI-2.

Cumulative Impacts

Impact C-BI: Implementation of the Transit Center District Plan and the Transit Tower project would not make a considerable contribution to adverse effects on biological resources. (Less than Significant)

Past projects, including the development of civic facilities, residences, commercial and industrial areas, and infrastructure have already caused substantial adverse cumulative changes to biological resources in the Plan area. The Plan area is a nearly fully developed urban district with no remaining natural communities, wetlands, riparian areas, or other sensitive habitat. In short, the biological environment of the Plan area has been substantially degraded since at least the mass arrival of Euro-Americans in mid-19th century. The same can be said for the Transit Tower project site.

Environmentally protective laws and regulations have been applied with increasing rigor since the early 1970s. These include the California Endangered Species Act, Federal Endangered Species Act, and the

Clean Water Act, as described in the Regulatory Setting section, above. The draft Plan, the Transit Tower project, and other likely future projects within the vicinity of the Plan area would be required to comply with local, state, and federal laws and policies and all applicable permitting requirements of the regulatory and oversight agencies intended to address potential impacts on biological resources. Additionally, future projects would be required to demonstrate that they would not have significant effects on these biological resources, although it is possible that some projects may be approved even though they would have significant, unavoidable impacts on biological resources.

The current impact analysis has shown that the draft Plan and the Transit Tower Project, after mitigation, would result in relatively minor, less-than-significant impacts on biological resources. When considered relative to the existing state of biological resources in the Plan area, the draft Plan and the Transit Tower Project would add only a minor, incremental contribution. Development of the planned 5-acre City Park atop the new Transit Center will create an Urban Bird Refuge within the meaning of the City's *Standards for Bird-Safe Buildings* and *Planning Code* Section 139, because City Park will be both a vegetation-dominated open space two acres or larger and a green roof of the same size. The new park will potentially contribute to cumulative effects with respect to bird-strike impacts, with respect to existing and future buildings. However, compliance by new buildings, including the Transit Tower and other buildings adjacent to City Park, with *Planning Code* Section 139 and the adopted *Standards for Bird-Safe Buildings* would ensure that potential cumulative impacts related to bird hazards would be less than significant.

In the context of the urbanized and developed Plan area, the draft Plan and the Transit Tower Project's contribution would not make a considerable contribution to impacts on biological resources, and therefore the cumulative effect of the draft Plan and the Transit Tower Project on biological resources would be less than significant, with mitigation measures identified in this section.

Mitigation: None required.

O. Geology, Soils, and Seismicity

This section addresses the geology and soils impacts that would result from implementation of the Transit Center District Plan and Transit Tower project. Construction-related impacts include potential erosion, excavation instability, settlement from excavation dewatering, and heave from pile installation. Potential seismic impacts related to the draft Plan include seismically induced groundshaking and ground failure. Evaluation of these impacts is based on and published geologic maps and reports cited in this section and an analysis of site geology and seismicity prepared in support of the proposed plan which included review of available subsurface data from previous investigations within the Transit Center District Plan area.³⁷⁵

Environmental Setting

Regional Physiography

The Plan area is in the northeast portion of the San Francisco Peninsula, within the California Coast Ranges geomorphic province which is characterized by a series of northwest trending ridges and valleys. San Francisco Bay and the San Francisco Peninsula result from tectonic forces developed along the margin between the Pacific Plate and the North American Plate where the Pacific Plate slowly creeps northward past the North American Plate on the San Andreas, Hayward, and subsidiary faults. The Bay and northern portion of the San Francisco Peninsula are within a structural down-dropped block between the Northern Santa Cruz Mountains to the west and Diablo Mountain Range to the east.

Site Geology

The Plan area is relatively flat, with ground slopes that are typically less than 2-percent grade.³⁷⁶ The street with the steepest ground slope is the section of Second Street between Howard and Folsom Streets with a slope of approximately 4.5 percent. The location with the highest ground surface is at Folsom and Second Street with an approximate elevation 45 feet, San Francisco City Datum (SFD).³⁷⁷ The area with the lowest ground surface is bound by Market, Spear, Howard, and Beale Streets, at an approximate elevation of 1 foot.

The Plan area is underlain by up to approximately 280 feet of Quaternary age sediments deposited in the last 1.8 million years, including (from youngest to oldest) Dune Sand, Bay Mud, Marsh Deposit, Marine Sand, the Colma formation, Old Bay Clay (also referred to as the Yerba Buena Mud or the San Antonio Formation), and the Alameda Formation. Bedrock beneath San Francisco consists of sedimentary and volcanic rocks of the Jurassic and Cretaceous age (approximately 65 to 213 million years old) Franciscan

³⁷⁵ Treadwell & Rollo. Geotechnical Consultation, EIR Preparation, Downtown San Francisco Developments, San Francisco, California. October 17, 2008.

³⁷⁶ *Ibid*

³⁷⁷ San Francisco City Datum establishes the City's zero point for surveying purposes at approximately 8.6 feet above the mean sea level established by 1929 U.S. Geological Survey datum, and approximately 11.3 feet above the current 1988 North American Vertical Datum. Because tides are measured from mean lower low water, which is about 3.1 feet below mean sea level (MSL), an elevation of 0, SFD, is approximately 8.2 feet above MSL.

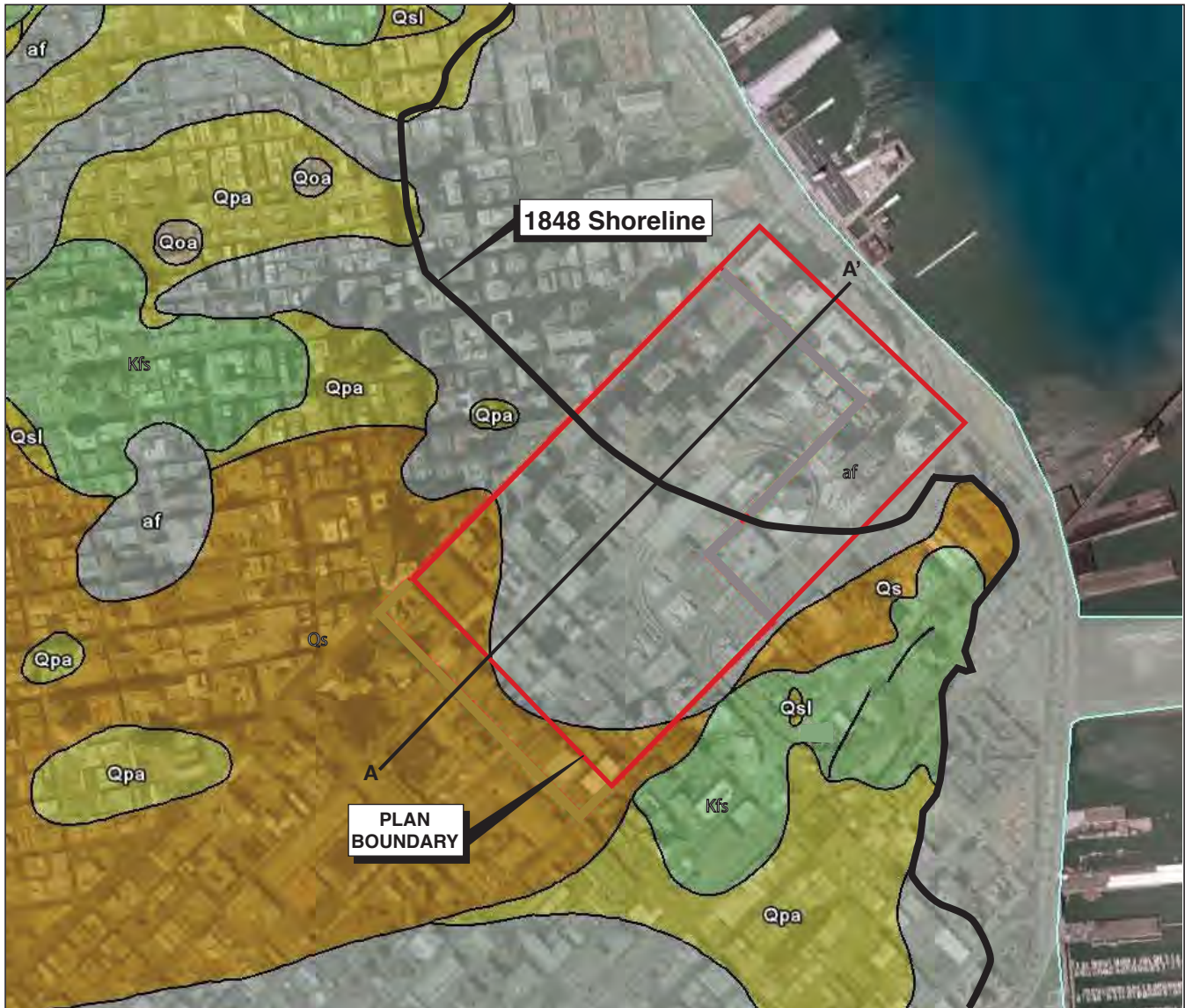
complex. The bedrock outcrops on the hills and mountains surrounding the west side of the bay, including some locations in San Francisco such as Rincon Hill to the southeast of the Plan area. Since the mid-19th century, substantial amounts of fill have been placed around the bay margin to reclaim land.

As shown on **Figure 70** (Geologic Map), the entire Plan area is immediately underlain by artificial fill and Dune Sand, the youngest geologic units within the Plan area. These units are underlain by varying thickness of Quaternary age sediments and Franciscan Complex bedrock as shown in the cross section provided in **Figure 71**. The geologic units underlying the Plan area are described as follows:

- **Artificial Fill** – along Market Street and to the south the artificial fill comprises Dune Sand that was dumped randomly to fill Yerba Buena Cove and San Francisco Bay in the 19th century.³⁷⁸ The fill varies in thickness between 0 and about 25 feet, and consists of loose to dense sand with varying amounts of silt and building debris.
- **Dune Sand** – primarily consists of yellow-brown to gray, fine- to medium-grained and relatively clean sand that is medium dense to dense. The Dune Sand generally underlies the artificial fill and is present beneath the western three-quarters of the Plan area, but is generally absent east of Fremont Street. The Dune Sand is approximately 10 to 20 feet thick at the western portion of the Plan area and become thinner toward the east.
- **Bay Mud** – is a highly compressible and weak clay, containing varying amounts of shells and organic matter (peat) as well as localized sand lenses. In the Plan area, Bay Mud was formed by marine deposition in the shallow waters of Yerba Buena Cove and subjected to consolidation by the presence of Dune Sand and fill. The Bay Mud is present beneath the eastern three-quarters of the Plan area and is highly variable in thickness and bottom elevation. Within the Plan area, the Bay Mud layer is up to approximately 80 feet thick; it is under to normally consolidated.³⁷⁹ The Bay Mud overlies the Marine Sand layer, and to a limited extent the Colma formation, where the Marine Sand has been eroded away.
- **Marsh Deposit** – is an interbedded soft to stiff and loose to medium dense soil, consisting of high plasticity clay, sandy clay, sandy silt, and clayey sand with high organic content. Within the Plan area, the Marsh Deposit is up to about 10 feet thick and underlies the Dune Sand in the western one quarter of the Plan area.
- **Marine Sand** – is a gray or gray-green, loose to very dense sand, deposited under marine conditions. The Marine Sand underlies the Bay Mud. It is generally not present west of New Montgomery Street and thickens toward the east. Within the Plan area, the Marine Sand is up to approximately 40 feet thick.

³⁷⁸ Yerba Buena Cove was located in the area at the foot of the present Market Street, northeast of the 1848 shoreline. At the time the City of San Francisco (then known as Yerba Buena) was founded, the cover extended from approximately the present-day intersection of First and Market Streets, inland to approximately Montgomery Street, between California and Clay Streets, and north to approximately the present-day intersection of Broadway and Battery Street.

³⁷⁹ Under-consolidated clay has not yet achieved equilibrium under the current overburden load. Normally consolidated clay has achieved equilibrium under the current overburden load. Over-consolidated clay has experienced a pressure greater than its current overburden load.



Base: Graymer, et al; 2006; Geologic Map of the San Francisco Bay Region.
 Source: David Rumsey Historical Map Collection "Official Map of San Francisco 1849".

EXPLANATION

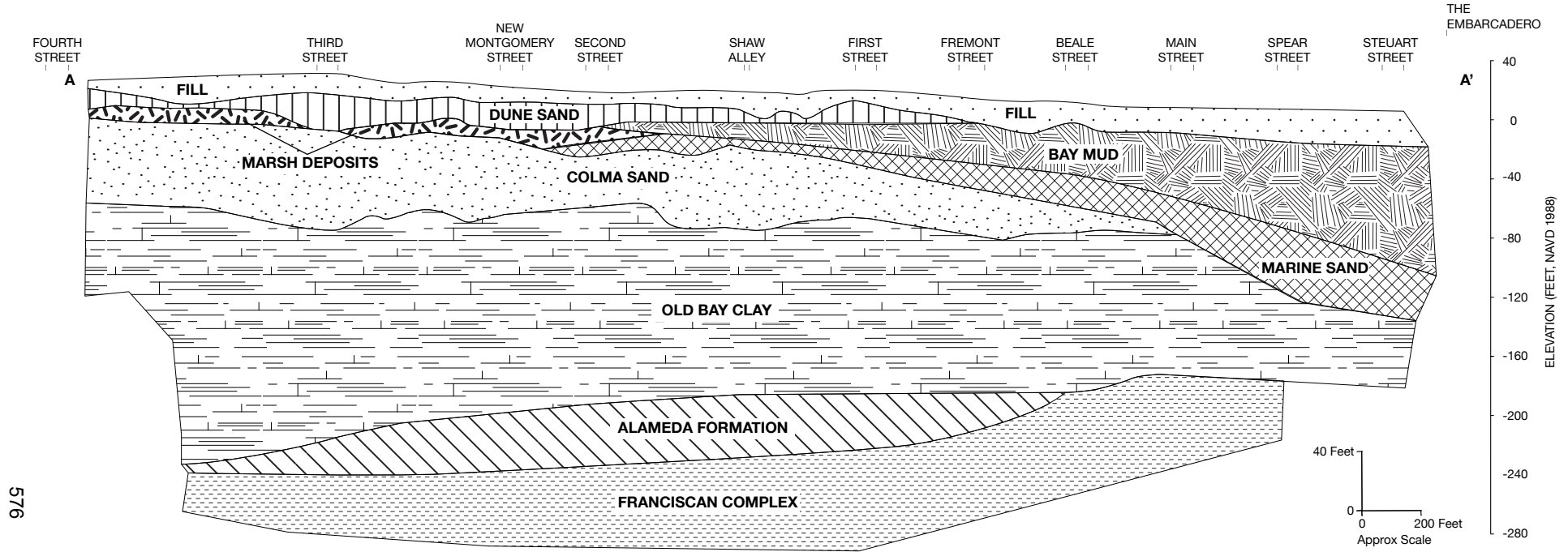
- af - Artificial Fill
- Qs - Beach and Dune Sand (Holocene)
- Qsl - Hillslope Deposits (Holocene)
- Qpa - Alluvium (Pleistocene)
- Qoa - Alluvium (early Pleistocene)
- Kfs - Franciscan Complex sedimentary rocks (Jurassic/Cretaceous)

— Geologic contact

A — A' Location of geologic cross-section shown on Figure N-2



Not to scale



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FILL
SAND/SILTY SAND/GRAVEL (SP/SM/GP)
 loose to dense, with brick, concrete and gravel fragments

DUNE SAND
SAND/SILTY SAND (SP/SM)
 medium dense to dense

BAY MUD
CLAY/SANDY CLAY/SANDY SILT (CH/CL/ML)
 soft to stiff

MARSH DEPOSIT
 mixture of SILT, CLAY, and SAND with organics (ML/CL/SC/SM/OL/OH/PT)
 soft to stiff/medium dense

MARINE SAND
CLAYEY SAND/SILTY SAND/SAND (SC/SM/SP)
 loose to very dense

COLMA SAND
SAND/SILTY SAND/CLAYEY SAND (SP/SM/SC)
 dense to very dense

OLD BAY CLAY
CLAY (CH/CL) with SAND layers
 stiff to hard

ALAMEDA FORMATION
SAND/CLAY and Weathered Rock (SM/SC/CL)
 very dense and hard

FRANCISCAN ROCK
SANDSTONE, SHALE, SERPENTINE
 deeply to moderately weathered

SOURCE: Treadwell & Rollo; ESA

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Figure 71
 Generalized Geologic Cross-Section

- **Colma formation** – is typically brown and orange, dense to very dense sand, underlying the Marsh Deposit, Marine Sand, and Bay Mud, where present. Generally, the Colma formation is not present east of Main Street and thickens toward the west. It is approximately 60 feet thick in the western portion of the Plan area.
- **Old Bay Clay** –generally consists of over-consolidated, stiff to hard clay with layers of dense, alluvial sand. This moderately compressible clay layer underlies the Colma formation and Marine Sand, where present. It is relatively thick, and within the Plan area the thickness ranges from approximately 60 to 170 feet.
- **Alameda Formation** – is a very stiff gravelly clay or dense gravelly sand. The gravel-size particles are angular and are remnants of the parent bedrock. This formation is of colluvial (gravity deposited) origin. Within the Plan area, this formation is up to approximately 40 feet thick.
- **Franciscan Complex** – consists primarily of highly fractured and sheared sandstone and shale, usually at depths of over 200 feet below the existing ground surface. The bedrock surface dips toward the northwest, forming a trough approximately paralleling Mission Street, bounded by Rincon Hill to the southeast and Telegraph Hill/Russian Hill to the northwest. The borings reviewed for the analysis of site geology and seismicity prepared in support of the proposed plan encountered bedrock at elevations of -139 to -250 feet.

As indicated on Figure 70, the historic (1848) shoreline of San Francisco bisects the Plan area along a line located between First and Fremont Streets. The filling of Yerba Buena Cove, to the east of the historic shoreline, began in the late 1840s and was completed by 1900.³⁸⁰ The depth to groundwater is expected to be 8 to 20 feet below ground surface.

Soils

Problematic soils, such as those that are expansive, can damage structures and buried utilities and increase maintenance requirements. Expansive soils are characterized by their ability to undergo significant volume change (i.e., to shrink and swell) due to variations in moisture content. Changes in soil moisture can result from rainfall, landscape irrigation, utility leakage, roof drainage, and/or perched groundwater.³⁸¹ Expansive soils are typically very fine grained and have a high to very high percentage of clay. Expansion and contraction of expansive soils in response to changes in moisture content can lead to differential and cyclical movements that can cause damage and/or distress to structures and equipment.

The U.S. Department of Agriculture, Natural Resources Conservation Service (NRCS) has mapped the surface and near-surface subsurface soils in the Plan area, and characterizes key properties for each soil type, including the shrink/swell potential. Based on the NRCS web soil survey, soils in the Plan area are

³⁸⁰ Treadwell & Rollo. Geotechnical Consultation, EIR Preparation, Downtown San Francisco Developments, San Francisco, California. October 17, 2008.

³⁸¹ Perched groundwater is a local saturated zone above the water table that typically exists above an impervious layer (such as clay) of limited extent.

mapped as Urbanland-Orthents, reclaimed complex, 0 to 2 percent slopes, Unit ID 134.³⁸² This soil unit forms on reclaimed land and generally exhibits a low shrink/swell potential. However, soil conditions in the Plan area may have been altered by ground-disturbing activities, including construction of the existing buildings and infrastructure.

Regional Faulting and Seismic Hazards

Seismicity

The San Francisco Bay Area is situated near the boundary between two major tectonic plates, the Pacific Plate to the southwest and the North American Plate to the northeast. Since the Miocene epoch (approximately 23 million years ago), about 200 miles of right-lateral movement³⁸³ has occurred along the San Andreas Fault Zone to accommodate the relative movement between these two plates. The movement between the Pacific Plate and the North American Plate generally occurs across a 50-mile zone extending from the San Gregorio fault in the southwest to the Great Valley Thrust Belt to the northeast. In addition to the right-lateral slip movement between the two tectonic plates, portions of the North American Plate have moved towards each other during the last 3.5 million years, resulting in compressional forces at the latitude of San Francisco Bay.³⁸⁴

Figure 72 shows the locations of active³⁸⁵ and potentially active³⁸⁶ faults in the San Francisco Bay region. The San Andreas, San Gregorio, Hayward, Rodgers Creek, Calaveras, and Greenville strike-slip faults³⁸⁷ are active faults of the San Andreas system that predominantly accommodate lateral movement between the North American and Pacific tectonic plates. Active blind- and reverse-thrust faults³⁸⁸ in the San Francisco Bay region that accommodate compressional movement include the Monte Vista–Shannon and Mount Diablo faults. The closest faults to the Plan area are the San Andreas, Hayward, San Gregorio, and Calaveras faults.

³⁸² Natural Resources Conservation Service, Web Soil Survey. Accessed at <http://websoilsurvey.nrcs.usda.gov> on January 17, 2010.

³⁸³ The Pacific Plate and the North American Plate are moving past each other along the San Andreas Fault Zone, “right-lateral movement” means that they are moving to the right relative to each other.

³⁸⁴ Fenton, C.H. and C.S. Hitchcock, Recent geomorphic and paleoseismic investigations of thrust faults in Santa Clara Valley, California, in H. Ferriz and R. Anderson (eds.), *Engineering Geology Practice in Northern California: California Division of Mines and Geology Bulletin 210*, 2001.

³⁸⁵ An active fault is one that shows geologic evidence of movement within Holocene time (approximately the last 11,000 years).

³⁸⁶ A potentially active fault is one that shows geologic evidence of movement during the Quaternary (approximately the last 1.6 million years).

³⁸⁷ Strike-slip faults involve the two blocks moving parallel to each other without a vertical component of movement.

³⁸⁸ A reverse fault is one with predominantly vertical movement in which the upper block moves upward in relation to the lower block; a thrust fault is a low-angle reverse fault. Blind-thrust faults are low-angled subterranean faults that have no surface expression.

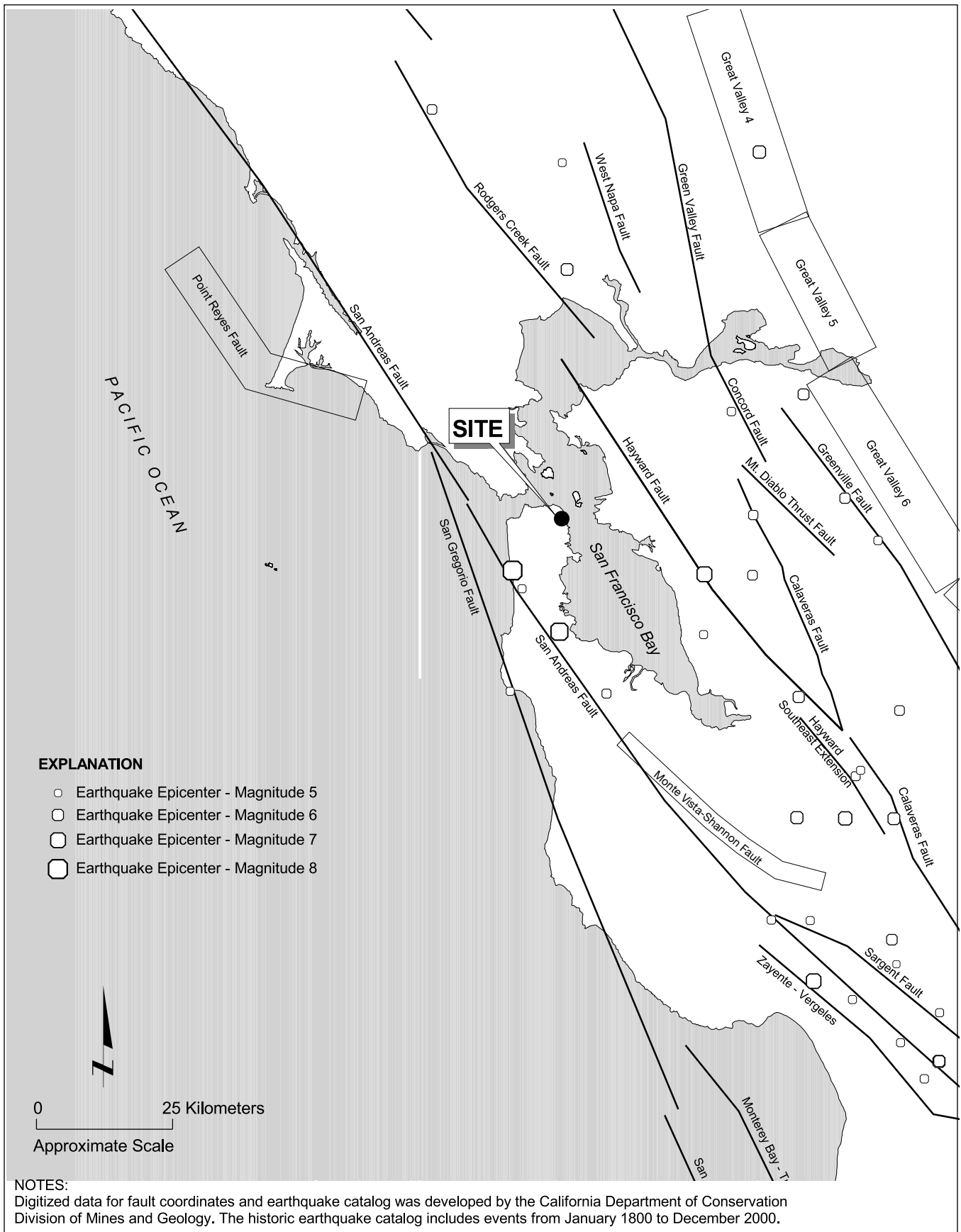


Table 43 summarizes the distance from the Plan area, direction to fault, and the estimated mean characteristic Moment magnitude (M_w)³⁸⁹ for each fault located within approximately 30 miles (50 kilometers) of the Plan area. Figure 72 also shows the earthquake epicenters for events with magnitude greater than 5.0 on these faults from January 1800 through January 2000. Since 1800, four major earthquakes have been recorded on the San Andreas Fault. In 1836 an earthquake with an estimated M_w of 6.25 occurred east of Monterey Bay on the San Andreas Fault.³⁹⁰ In 1838, an earthquake with an M_w of about 7.5 occurred.

**TABLE 43
REGIONAL FAULTS AND SEISMICITY**

Fault Name	Approximate Distance (miles)	Direction from Site	Mean Characteristic Moment Magnitude
San Andreas – 1906 Rupture	8	West	7.90
San Andreas – Peninsula	8	West	7.15
San Andreas – North Coast South	9	West	7.45
North Hayward	9	East	6.49
Total Hayward	9	East	6.91
Total Hayward-Rodgers Creek	9	East	7.26
South Hayward	10	East	6.67
Northern San Gregorio	11	West	7.23
Total San Gregorio	11	West	7.44
Rodgers Creek	21	North	6.98
Mt Diablo	21	East	6.65
Total Calaveras	21	East	6.93
Concord/Green Valley	23	East	6.71
Monte Vista-Shannon	25	Southeast	6.80
Point Reyes	26	West	6.80
West Napa	27	Northeast	6.50
Greenville	31	East	6.94

SOURCE: Treadwell & Rollo. Geotechnical Consultation, EIR Preparation, Downtown San Francisco Developments, San Francisco, California. October 17, 2008.

The San Francisco Earthquake of 1906 caused the most significant damage in the history of the Bay Area in terms of loss of lives and property damage. This earthquake created a surface rupture along the San Andreas Fault from Shelter Cove to San Juan Bautista, approximately 290 miles in length. It had a M_w of about 7.9, and was felt 350 miles away in Oregon, Nevada, and Los Angeles. The most recent large

³⁸⁹ An earthquake is classified by the amount of energy released, expressed as the magnitude of the earthquake. Traditionally, magnitudes have been quantified using the Richter scale. However, seismologists now use a moment magnitude (M_w) scale because it provides a more accurate measurement of the size of major and great earthquakes. Moment magnitude is directly related to the average slip and fault rupture area.

³⁹⁰ Treadwell & Rollo. Geotechnical Consultation, EIR Preparation, Downtown San Francisco Developments, San Francisco, California. October 17, 2008.

earthquake to affect the Bay Area was the Loma Prieta Earthquake on October 17, 1989, approximately 60 miles from the Plan area in the Santa Cruz Mountains, with an M_w of 6.9.

On the Hayward fault, an earthquake with an estimated M_w of 7.0 occurred in 1868 on the southern segment (between San Leandro and Fremont). In 1861, an earthquake of unknown magnitude (probably an M_w of about 6.5) was reported on the Calaveras Fault. The most recent significant earthquake on this fault was the 1984 Morgan Hill earthquake with an M_w of 6.2.

The United States Geological Survey (USGS) estimates that there is a 63 percent probability of a strong earthquake (M_w 6.7 or higher) occurring on one of the regional faults in the 30-year period between 2007 and 2036.³⁹¹ More specific estimates of the probabilities for different faults in the Bay Area are presented in **Table 44**.

TABLE 44
ESTIMATES OF THE 30-YEAR PROBABILITY OF A
MAGNITUDE 6.7 OR GREATER EARTHQUAKE

Fault Name	Mean Characteristic Moment Magnitude
Hayward-Rodgers Creek	31
San Andreas	21
Calaveras	7
San Gregorio	6
Concord-Green Valley	3

SOURCE: U.S. Geologic Survey (USGS), The Uniform California Earthquake Rupture Forecast, Version 2 (UCERF 2), by the Working Group on California Earthquake Probabilities, Open File Report 2007-1437, 2008.

Fault Rupture

Fault rupture almost always follows pre-existing faults, which are zones of weakness, and surface rupture occurs when movement on a fault deep within the earth breaks through to the surface. Surface ruptures associated with the 1906 San Francisco earthquake extended for more than 290 miles, with displacements of up to 21 feet. There is a low potential for fault rupture within the Plan area because no active faults cross the Plan area.

Groundshaking

The intensity of the seismic shaking, or strong ground motion, in the Plan area during an earthquake is dependent on the distance between the Plan area and the epicenter of the earthquake, the magnitude of the earthquake, and the geologic conditions underlying and surrounding the Plan area. Earthquakes occurring on faults closest to the Plan area would most likely generate the largest ground motions.

³⁹¹ U.S. Geologic Survey (USGS), The Uniform California Earthquake Rupture Forecast, Version 2 (UCERF 2), by the Working Group on California Earthquake Probabilities, Open File Report 2007-1437, 2008.

The intensity of earthquake-induced ground motions and the potential forces affecting structures within the Plan area can be described in terms of “peak ground acceleration,” which is represented as a fraction of the acceleration of gravity (g).³⁹² The California Geological Survey (CGS) estimates the peak ground accelerations for the 10 percent probability of exceedance in 50 years (475-year return period) at 0.47 to 0.49g.³⁹³ However, these estimates of peak ground accelerations are used primarily for formulating building codes and for designing buildings, and are not intended for site-specific hazard analysis. Therefore, it would be necessary to conduct a site-specific evaluation to estimate peak ground accelerations at a level suitable for project design.

Based on shaking hazard mapping done by the Association of Bay Area Governments (ABAG), it is expected that the Plan area would experience very strong to violent ground shaking due to an earthquake along the peninsula segment of the San Andreas fault, and strong to very strong ground shaking due to an earthquake along the northern Hayward fault, which are the faults closest to the Plan area.³⁹⁴

Liquefaction

Liquefaction is a phenomenon in which saturated granular sediments temporarily lose their shear strength during periods of earthquake-induced, strong groundshaking. The susceptibility of a site to liquefaction is a function of the depth, density, and water content of the granular sediments and the magnitude of earthquakes likely to affect the site. Saturated, unconsolidated silts, sands, silty sands, and gravels within 50 feet of the ground surface are most susceptible to liquefaction. Liquefaction-related phenomena include vertical settlement from densification, lateral spreading, ground oscillation, flow failures, loss of bearing strength, subsidence, and buoyancy effects.

As shown on **Figure 73**, most of the Plan area is located within a potential liquefaction hazard zone identified by the CGS.³⁹⁵ The analysis of site geology and seismicity prepared in support of the proposed plan concludes that the loose to medium dense sand present in the artificial fill, Dune Sand, Marsh Deposit, and Marine Sand beneath much of the Plan area could be subject to liquefaction in the event of a major earthquake on one of the nearby faults.³⁹⁶ Within the western three quarters of the Plan area, between Third and Beale Streets, the settlement resulting from earthquake induced settlement (described below) and liquefaction could be up to about 6 inches. In the eastern one quarter of the Plan area,

³⁹² Acceleration of gravity (g) = 980 centimeters per second squared. 1.0 g of acceleration is a rate of increase in speed equivalent to a car traveling 328 feet from rest in 4.5 seconds.

³⁹³ California Geologic Survey. Seismic Shaking Hazards in California, Based on the USGS/CGS Probabilistic Seismic Hazards Assessment (PSHA) Model, 2002 (revised April 2003). Accessed at <http://redirect.conservation.ca.gov/cgs/rghm/pshamap/pshamap.asp>, on January 17, 2010.

³⁹⁴ Association of Bay Area Governments, Hazard Maps, Shaking Maps, 2003, www.abag.ca.gov, accessed July 6, 2010.

³⁹⁵ California Geological Survey, State of California Seismic Hazard Zones, City and County of San Francisco, Official Map, November 17, 2000.

³⁹⁶ Treadwell & Rollo. Geotechnical Consultation, EIR Preparation, Downtown San Francisco Developments, San Francisco, California. October 17, 2008.



EXPLANATION



Liquefaction Zone of
Required Investigation

0 1,000 2,000 Feet



Approximate scale



between Beale and Spear Street, the settlement could be up to about 12 inches, absent measures taken to improve soil stability and/or adequately support individual structures.³⁹⁷

Lateral Spreading

Of the liquefaction hazards, lateral spreading generally causes the most damage. This is a phenomenon in which large blocks of intact, non-liquefied soil move downslope on a liquefied substrate of large aerial extent.³⁹⁸ The mass moves toward an unconfined area, such as a descending slope or stream-cut bluff, and this movement can occur on slope gradients as gentle as 1 degree. The analysis of site geology and seismicity prepared in support of the proposed plan concludes, based on previous studies, that the area within the old Yerba Buena Cove could experience lateral spreading during a major earthquake on the San Andreas fault. Lateral displacements within the area between Third and Beale Street would be small. However, between Beale and Spear Streets, lateral displacements may be up to 6 inches.³⁹⁹ (It is noted that this eastern portion of the Plan area is largely built out and no new development is currently anticipated there.)

Earthquake-Induced Settlement

Settlement of the ground surface can be accelerated and accentuated by earthquakes. During an earthquake, settlement can occur as a result of the relatively rapid rearrangement, compaction, and settling of subsurface materials (particularly loose, non-compacted, and variable sandy sediments). Settlement can occur both uniformly and differentially (i.e., where adjoining areas settle at different rates). Areas are susceptible to differential settlement if underlain by compressible sediments, such as poorly engineered artificial fill or bay mud. The analysis of site geology and seismicity prepared in support of the proposed plan concludes that the loose to medium dense sand present in the artificial fill, Dune Sand, Marsh Deposit, and Marine Sand beneath much of the Plan area could be subject to earthquake-induced settlement in the event of a major earthquake on one of the nearby faults.⁴⁰⁰ The degree of settlement would be the same as described above under Liquefaction.

Regulatory Framework

Alquist-Priolo Earthquake Fault Zoning Act

The Alquist-Priolo Earthquake Fault Zoning Act was passed in 1972 to mitigate the hazard of surface faulting to structures for human occupancy. In accordance with this act, the state geologist established regulatory zones, called "earthquake fault zones," around the surface traces of active faults and has published maps showing these zones. Within these zones, buildings for human occupancy cannot be constructed across the surface trace of active faults. Each earthquake fault zone extends approximately

³⁹⁷ Typical construction techniques in areas of liquefiable soils include supporting new buildings on pile foundations or excavating below the level of the liquefiable soils.

³⁹⁸ Youd, T.L. and D.M. Perkins, "Mapping Liquefaction Induced Ground Failure Potential," Proceedings of the American Society of Civil Engineers, Journal of the Geotechnical Engineering Division, 1978.

³⁹⁹ Treadwell & Rollo. Geotechnical Consultation, EIR Preparation, Downtown San Francisco Developments, San Francisco, California. October 17, 2008.

⁴⁰⁰ *Ibid*

200 to 500 feet on either side of the mapped fault trace because many active faults are complex and consist of more than one branch that may experience ground surface rupture. This act does not apply to the proposed project because no active faults cross the Plan area, or anywhere else in San Francisco.⁴⁰¹

Seismic Hazards Mapping Act

The Seismic Hazards Mapping Act was passed in 1990 following the Loma Prieta earthquake to reduce threats to public health and safety and to minimize property damage caused by earthquakes. The act directs the California Geological Survey to identify and map areas prone to the earthquake hazards of liquefaction and earthquake-induced landslides. For structures intended for human occupancy,⁴⁰² the act requires that project sponsors perform site-specific geotechnical investigations to identify potential seismic hazards and formulate mitigation measures prior to permitting most developments designed for human occupancy within the zones of required investigation. Projects proposed under the draft Plan would be subject to this act if they are located within a zone of required investigation. There are no earthquake-induced landslide zones of required investigation mapped within the Plan area, but as described above, much of the Plan area is located within a liquefaction zone of required investigation.⁴⁰³

California Building Code

The California Building Code (CBC), which is codified in Title 24, Part 2, of the California Code of Regulations, was promulgated to safeguard the public health, safety, and general welfare by establishing minimum standards related to structural strength, egress facilities, and general building stability. The purpose of the CBC is to regulate and control the design, construction, quality of materials, use/occupancy, location, and maintenance of all building and structures within its jurisdiction. Title 24 is administered by the California Building Standards Commission, which, by law, is responsible for coordinating all building standards. Under state law, all building standards must be centralized in Title 24 or they are not enforceable.

The CBC is based on the International Building Code. The 2011 CBC is based on the 2009 International Building Code published by the International Code Conference. In addition, the CBC contains necessary California amendments that are based on the American Society of Civil Engineers (ASCE) Minimum Design Standards 7-05. ASCE 7-05 provides requirements for general structural design and includes means for determining earthquake loads as well as other loads (flood, snow, wind, etc.) for inclusion in building codes. The provisions of the CBC apply to the construction, alteration, movement, replacement, and demolition of every building or structure or any appurtenances connected or attached to such buildings or structures throughout California.

⁴⁰¹ California Geological Survey, Table 4, Cities and Counties Affected by Alquist-Priolo Earthquake Fault Zones as of May 1, 1999, from <http://www.conservation.ca.gov/cgs/rghm/ap/affected.htm>, accessed July 24, 2006.

⁴⁰² Title 14 of the California Code of Regulations, Section 3601(e), defines buildings intended for human occupancy as those that would be inhabited for more than 2,000 hours per year.

⁴⁰³ California Geological Survey, State of California Seismic Hazard Zones, City and County of San Francisco, Official Map, November 17, 2000.

The earthquake design requirements take into account the occupancy category of the structure, site class, soil classifications, and various seismic coefficients, all of which are used to determine a Seismic Design Category (SDC) for a project. The SDC is a classification system that combines the occupancy categories with the level of expected ground motions at the site and ranges from SDC A (very small seismic vulnerability) to SDC E/F (very high seismic vulnerability and near a major fault). Design specifications are then determined according to the SDC.

San Francisco Building Code

The San Francisco Building Code is an amendment to the CBC. It includes seismic safety performance standards that apply to all new construction in the City. In accordance with this code, the San Francisco Department of Building Inspection (DBI) could, in its review of building permit applications, require the project sponsor to prepare a geotechnical report pursuant to the State Seismic Hazards Mapping Act. The report would assess the nature and severity of the ground shaking hazard(s) on the site and recommend project design and construction features that would reduce the hazard(s). All new construction within the Plan area would be subject to the permitting requirements of DBI to ensure compliance with applicable laws and regulations.

As part of this permitting process, the final building plans would be reviewed by DBI. In reviewing building plans, DBI refers to a variety of information sources to determine existing hazards and assess requirements for reducing or avoiding those hazards. Sources reviewed include maps of Special Geologic Study areas and known landslide areas in San Francisco, as well as the building inspectors' working knowledge of areas of special geologic concern. If the need were indicated by available information, DBI would require that additional site-specific soils reports be prepared by a California-licensed geotechnical engineer prior to construction, and may require additional consultation with the project sponsor and peer review of the proposed design of the proposed project to ensure that it meets the seismic safety requirements of the *San Francisco Building Code*.

Project applicants can comply with *Building Code* requirements either prescriptively (by following exactly the requirements of the code), or non-prescriptively (designing buildings to perform to the standards specified in the code). A non-prescriptive design may specify alternative materials and/or methods of construction to meet the requirements of the *Building Code*, but cannot use an alternative method for establishing the seismic forces on the building or the distribution of those forces unless the corresponding internal forces and deformations in the building members are determined using a model that is consistent with adopted procedures. If a non-prescriptive design is used, then substantiating evidence is required to demonstrate that the proposed design and materials will be at least equivalent to what is prescribed in the *Building Code* regarding suitability, strength, effectiveness, fire resistance, durability, safety, and sanitation.

Administrative Bulletin 083 (AB-083), Requirements and Guidelines for the Seismic Design of New Tall Buildings using Non-Prescriptive Seismic-Design Procedures, implemented by DBI, specifies the requirements and guidelines for the non-prescriptive design of new tall buildings that are over 160 feet

high to ensure that the design meets the standards of the *San Francisco Building Code*. AB-083 requires a three-step process to demonstrate that a non-prescriptive building design provides for a seismic performance of the building that is equivalent to the code-specific seismic performance. The first step of this process includes a code-level evaluation to identify any exceptions taken to the prescriptive requirements of the *Building Code* and to define the minimum required strength and stiffness for earthquake resistance. The second step is a service-level evaluation to demonstrate acceptable performance for moderate earthquakes, and the third step is an evaluation to verify that the structure has an acceptably low probability of collapse under severe earthquake ground motions. The design must be reviewed and approved by the Structural Design Reviewer and director of DBI, and the Structural Design Reviewer must provide a written statement that, in their professional opinion, the building elements under their review are equivalent in strength, durability, and seismic resistance of the building to those of a building designed according to the prescriptive provisions of the *Building Code*. DBI may also require a peer review of the proposed design to ensure adequacy of the non-prescriptive design. The details of any action granting approval of the non-prescriptive design are recorded and entered into the records of DBI. In the event of an earthquake, buildings designed to the requirements and guidelines of AB-083 would demonstrate a seismic performance at least equivalent to that of a building designed according to the code-prescriptive seismic standards of the San Francisco Building Code.

Impact Analysis

Significance Criteria

The proposed project would have a significant geology and soils impact if it were to:

- Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:
 - Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? (Refer to Division of Mines and Geology Special Publication 42.)
 - Strong seismic ground shaking?
 - Seismic-related ground failure, including liquefaction?
 - Landslides?
- Result in substantial soil erosion or the loss of topsoil?
- Be located on geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse?
- Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code, creating substantial risks to life or property?
- Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?
- Change substantially the topography or any unique geologic or physical features of the site?

Project Impacts

Neither the draft Plan nor the proposed Transit Tower would result in any adverse effect with respect to earthquake-induced landslides because the Plan area is located in a flat area that is not an area of mapped landslide susceptibility identified by the California Department of Conservation under the Seismic Hazards Mapping Act of 1990. Therefore, landslide risk is not discussed further below. Likewise, the presence of expansive soils is not an issue because the artificial fill and Dune Sand beneath the Plan area is sandy and would not be expansive, and because the Bay Mud and Marsh Deposits beneath the Plan area are generally below the groundwater table, and thus are permanently saturated. Therefore, impacts related to expansive soils are not discussed further below. Finally, because the Plan area is generally flat, with no unique topographic, geologic, or physical features, construction of individual development projects that could be proposed and approved pursuant to the proposed Plan, including the proposed Transit Tower, would not alter the topography of the Plan area. Therefore, the draft Plan would have no impact with respect to changes in topography or any unique geologic or physical features, and this issue is not discussed in more detail below.

Impact Analysis: Transit Center District Plan

Impact GE-1: The proposed Transit Center District Plan would not expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving rupture of a known earthquake fault, seismic groundshaking, seismically induced ground failure, or landslides. (Less than Significant)

Fault Rupture

As discussed in the Setting, the Plan area is not located within an Alquist-Priolo Earthquake Fault Zone (defined in the Setting), and no active or potentially active faults exist on or in the immediate vicinity of the site. Therefore, the potential for surface fault rupture is low, and this impact is considered less than significant.

Groundshaking

As discussed in the Setting, the USGS concluded that there is a 63 percent probability of a strong earthquake (Mw 6.7 or higher) occurring in the San Francisco Bay region in the 30-year period between 2007 and 2036. The faults nearest the Plan area are the San Andreas fault, located within 8 miles; the Hayward fault, located within 9 miles; the San Gregorio fault, located within 11 miles; and the Calaveras, Mt. Diablo and Rodgers Creek faults, located within 21 miles. Based on shaking hazard mapping done by ABAG, the Plan area would experience very strong to violent ground shaking due to an earthquake along the peninsula segment of the San Andreas fault, and strong to very strong ground shaking due to an earthquake along the northern Hayward fault, which are the faults closest to the Plan area. Further, the CGS estimates that peak ground accelerations within the Plan area would range from 0.47 to 0.49g.

Although the Plan area would be subject to strong to violent ground shaking in the event of a major earthquake, the project would not expose people or structures to substantial adverse effects related to

ground shaking. Development projects built within the Plan area would be designed and constructed in accordance with the most current *San Francisco Building Code*, which incorporates *California Building Code* requirements. The *Building Code* specifies definitions of seismic sources and the procedure used to calculate seismic forces on structures during groundshaking. During its review the Department of Building Inspection (DBI), in consultation with the project sponsor, would determine necessary engineering and design features for a structure to reduce potential damage to structures from groundshaking and to ensure compliance with all *San Francisco Building Code* provisions regarding structural safety. The proposed design could also be subject to compliance with AB-083 for non-prescriptive design and peer review. Incorporation of these features would ensure that the structure would not suffer substantial damage, substantial debris such as building exterior finishes or windows would not separate from the building, and that building occupants would be able to safely vacate the building following an earthquake, and that pedestrians and other bystanders would not be injured. While some damage could occur, building occupants could reoccupy the building after an earthquake and the completion of any necessary repairs. Therefore, impacts related to ground shaking are considered less than significant.

Liquefaction, Lateral Spreading, and Earthquake-Induced Settlement

Strong shaking during an earthquake can result in ground failure associated with soil liquefaction, lateral spreading, and seismically induced densification. As discussed in the Setting and shown on Figure 73, most of the Plan area is located in an area of liquefaction potential identified by the California Department of Conservation under the Seismic Hazards Mapping Act of 1990. The Plan area is primarily underlain by artificial fill containing loose and medium dense sand, as well as Dune Sand, Marsh Deposit, and Marine Sand. The western three quarters of the Plan area (between Third and Beale Streets) could be subject to up to about 6 inches of settlement due to earthquake-induced settlement and liquefaction. In the eastern one quarter of the Plan area (between Beale and Spear Streets), the settlement could be up to 12 inches. Further, the area of the former Yerba Buena Cove could experience up to about 6 inches of lateral displacement.

Soils that could liquefy or experience earthquake-induced settlement or lateral displacement would be removed during construction of the basement levels of Plan-area buildings, which would be supported on mat foundations or driven piles supported in the stiff clays, dense sands, and bedrock that underlie the site, as determined appropriate by site-specific geotechnical investigations that would be required by DBI. Removal of potentially liquefiable materials and appropriate foundation design would reduce the potential for settlement within the building footprints, even if shallow groundwater levels were to rise as a result of global warming. However, adjacent streets and unimproved properties may experience settlements and lateral displacements which would affect utilities and surface improvements such as sidewalks.

To address the potential for liquefaction, earthquake-induced settlement, and lateral displacement, DBI would, in its review of the building permit application, refer to a variety of information sources to determine existing hazards and assess requirements for mitigation. Sources reviewed include maps of

Special Geologic Study Areas and known liquefaction areas in San Francisco as well as the building inspectors' working knowledge of areas of special geologic concern. If a subsequently proposed development project is located in an area of potential liquefaction, DBI would require the project sponsor to prepare a geotechnical report pursuant to the State Seismic Hazards Mapping Act. The report would assess the nature and severity of the hazard(s) on the site and recommend project design and construction features that would reduce the hazard(s). The building plans and geotechnical report would be reviewed by DBI to determine that the necessary engineering and design features are included in the project to reduce potential damage to structures from liquefaction, earthquake-induced settlement, and lateral displacement, and to ensure compliance with all *San Francisco Building Code* provisions regarding structural safety. The proposed design could also be subject to compliance with AB-083 for non-prescriptive design and peer review. Therefore, impacts related to liquefaction, earthquake-induced settlement, and lateral spreading are considered less than significant.

Mitigation: None required.

Impact GE-2: The proposed Transit Center District Plan would not result in substantial erosion or loss of top soil. (Less than Significant)

The Plan area is primarily built out and covered with impervious surfaces, including buildings, streets, and sidewalks that would have involved removal of any top soil during construction. Soil movement for foundation excavation could create the potential for wind- and water-borne soil erosion. However, the Plan area is relatively flat; therefore, substantial erosion and loss of soil would not be expected to occur during site preparation and construction. Furthermore, the project sponsors would be required to implement an erosion and sediment control plan for construction activities in accordance with Article 4.1 of the San Francisco Public Works Code (discussed in Section O, Hydrology and Water Quality) to reduce the impact of runoff from the construction site. The City must review and approve the erosion and sediment control plan prior to implementation, and would conduct periodic inspections to ensure compliance with the plan. Therefore, impacts related to soil erosion and the loss of top soil are considered less than significant.

Mitigation: None required.

Impact GE-3: Development sites within the proposed Transit Center District Plan area would not be located on a geologic unit or soil that is unstable, or that could become unstable as a result of the project. (Less than Significant)

Ground settlement could result from excavation for construction of subsurface parking or basement levels, from construction dewatering, from heave during installation of piles, and from long-term

dewatering. These potential effects are described below, followed by Department of Building Inspection (DBI) procedures in place to ensure that unstable conditions do not result.

Excavation

As described in Chapter II, project description, excavation for the Transit Tower would be to a depth of approximately 60 feet below grade, consistent with the depth of the Transit Center. Some 72,000 cubic yards of soil would be removed to allow construction of subsurface parking and basement levels beneath the Transit Tower. During excavation, the artificial fill, Dune Sand, Marsh Deposit, and Marine Sand (described in Impact GE-1), could become unstable, potentially causing settlement of adjacent structures, including buildings, sidewalks, streets, and utilities. Shoring, such as rigid and water-tight internally braced secant walling,⁴⁰⁴ would be required to prevent this soil from becoming unstable. Further, a monitoring program utilizing an inclinometer would be required to monitor for movement at the face of the excavation. The monitoring program would include a baseline survey and frequent surveying of the excavation as construction progresses to evaluate the effects of construction and ensure that the soil does not become unstable.

Construction-Related Dewatering

Groundwater is relatively shallow throughout the Plan area (encountered at a depth of 8 to 20 feet), which is near San Francisco Bay. Therefore, there is the potential for substantial water inflow into the excavations during construction of individual development projects that could be proposed and approved pursuant to the proposed zoning controls. Dewatering could potentially result in settlement of adjacent structures, including buildings, sidewalks, streets, and utilities. Although a water tight shoring system could be used during excavation of structures, dewatering of excavations for installation of utilities and compaction of soil could be required. For each development project in the Plan area, a site-specific dewatering plan could be necessary.

Heave as a Result of Pile Driving

Driving of displacement piles may cause the ground to heave up to several inches, and the heave could adversely affect adjacent structures. A preconstruction survey and monitoring during pile driving should be used to monitor these effects. The final building plans would be reviewed by DBI, which would determine if a preconstruction survey and subsequent monitoring would be required.

Permanent Dewatering

Groundwater could exert hydrostatic pressure on subsurface parking or basement levels constructed as part of the individual development projects that could be proposed and approved pursuant to the proposed Plan, and permanent dewatering could be required to relieve this pressure. Dewatering could

⁴⁰⁴ A secant wall, in simplified form, is built by drilling a series of holes and filling them with concrete, resulting in a continuous series of concrete cylinders that form a water-tight barrier that retains soil behind it.

potentially result in settlement of adjacent structures, including buildings, sidewalks, streets, and utilities. For each development project, a site-specific dewatering plan could be necessary.⁴⁰⁵

DBI Requirements

DBI would require that the detailed geotechnical report address the potential settlement and subsidence impacts of excavation, dewatering, and pile driving. DBI would also require that the report include a determination as to whether a lateral movement and settlement survey should be done to monitor any movement or settlement of surrounding buildings and adjacent streets during construction. If a monitoring survey were recommended, the Department of Public Works would require that a Special Inspector be retained by the project sponsor to perform this monitoring. Groundwater observation wells could be required to monitor potential settlement and subsidence during dewatering. If, in the judgment of the Special Inspector, unacceptable movement were to occur during construction, corrective actions would be used to halt this settlement. Groundwater recharge could be used to halt settlement due to dewatering. Costs for the survey and any necessary repairs to service lines under the street would be borne by the project sponsor. Further, the final building plans would be reviewed by DBI, which would determine if additional site-specific reports would be required.

With implementation of the recommendations of the detailed geotechnical study, subject to review and approval by DBI, and monitoring by a DBI Special Inspector (if required), impacts related to the potential for settlement and subsidence due to construction on soil that is unstable, or could become unstable as a result of the project, are less than significant.

Mitigation: None required.

Impact GE-4: The proposed Transit Center District Plan would not be located on soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems. (Less than Significant)

Development projects that could be proposed and approved pursuant to the proposed zoning controls would connect to the combined sewer system which is the wastewater conveyance system for San Francisco, and would not use septic tanks or other on-site land disposal systems for sanitary sewage. However, stormwater controls implemented in accordance with the San Francisco Stormwater Design Guidelines (described in Section P, Hydrology and Water Quality) could include stormwater best management practices (BMPs) that would promote infiltration of stormwater that would otherwise be discharged to the combined sewer system. The design and performance of these BMPs would be subject to approval and inspection by the San Francisco Public Utilities Commission (SFPUC) to ensure that adverse effects do not occur. Some wastewater would also be reused for non-potable purposes, as

⁴⁰⁵ As discussed in Section O, Hydrology and Water Quality, the draft Plan proposes that water pumped from permanent dewatering systems that are necessary be reused for non-potable uses such as irrigation and toilet flushing.

discussed in Impact HY-1 in Section O, Hydrology and Water Quality. However, this water would not be disposed of on-site, but would rather be reused. Therefore, impacts related to the presence of soils capable of supporting the use of septic tanks or alternative waste disposal systems are considered less than significant.

Mitigation: None required.

Impact Analysis: Transit Tower

Impact GE-5: The proposed Transit Tower would not expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving rupture of a known earthquake fault, seismic groundshaking, seismically induced ground failure, or landslides. (Less than Significant)

Seismic impacts associated with construction of the Transit Tower are similar to those described above for development projects that could be proposed and approved pursuant to the draft Plan. The potential for fault rupture at the Transit Tower site would be low because no active faults cross the project site. The project site would be subject to strong to violent groundshaking in the event of an earthquake on one of the regional faults, and could also be subject to liquefaction, earthquake-induced settlement, or lateral displacement because it is located in an area of liquefaction potential identified by the California Department of Conservation under the Seismic Hazards Mapping Act of 1990. However, impacts related to these phenomena would be less than significant with compliance with the Seismic Hazards Mapping Act of 1990, the California Building Code, and the *San Francisco Building Code* as enforced by DBI through its permit review and approval process, which can include consultation with the project sponsor, compliance with AB-083 for non-prescriptive design, and peer review of the proposed design. Therefore, effects related to earthquake fault rupture, seismic groundshaking, seismically induced ground failure, and landslides would be less than significant.

Mitigation: None required.

Impact GE-6: The proposed Transit Tower would not result in substantial erosion or loss of top soil. (Less than Significant)

Similar to the development projects that could be proposed and approved pursuant to the proposed zoning controls, the Transit Tower would be constructed on a previously developed site that does not have a substantial top soil layer. Although construction-related erosion could occur, impacts related to soil erosion would be less than significant with implementation of an erosion and sediment control plan for construction activities in accordance with Article 4.1 of the San Francisco Public Works Code. Therefore, any erosion would result in a less-than-significant impact.

Mitigation: None required.

Impact GE-7: The proposed Transit Tower site would not be located on a geologic unit or soil that is unstable, or that could become unstable as a result of the project. (Less than Significant)

Similar to development projects that could be proposed and approved pursuant to the proposed zoning controls, ground settlement at the Transit Tower site could result from excavation for construction of subsurface parking or basement levels, from construction dewatering, from heave during installation of piles, and from long-term dewatering. However, these potential effects would be less than significant with implementation of DBI procedures described above, including preparation of a detailed geotechnical report and site specific reports as needed to address the potential settlement and subsidence impacts of excavation, dewatering, and pile driving; implementation of a lateral movement and settlement survey to monitor any movement or settlement of surrounding buildings and adjacent streets during construction and monitoring by a Special Inspector, if needed; and implementation of corrective actions, as necessary. Thus, the proposed Transit Tower would result in less-than-significant impacts with respect to soil stability.

Mitigation: None required.

Impact GE-8: The draft Plan would not result in development located on soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems. (Less than Significant)

Similar to development projects that could be proposed and approved pursuant to the proposed Plan, the Transit Tower would connect to the combined sewer system and would not use septic tanks or other on-site land disposal systems for sanitary sewage. The design and performance of stormwater BMPs that would promote infiltration of stormwater would be subject to approval and inspection by the SFPUC to ensure that adverse effects do not occur, and wastewater captured for reuse would not be disposed of. Therefore, impacts related to having soils capable of supporting the use of septic tanks or alternative waste disposal systems are considered less than significant for the Transit Tower.

Mitigation: None required.

Cumulative Impacts

Impact C-GE: The proposed Transit Tower, in combination with past, present, and reasonably foreseeable future projects in the site vicinity, would result in less-than-significant impacts related to geology and soils. (Less than Significant)

As discussed previously, implementation of the Transit Tower project and development projects that could be proposed and approved pursuant to the draft Plan could result in ground settlement from excavation for construction of subsurface parking or basement levels, from construction dewatering, from heave during installation of piles, and from long-term dewatering. However, these potential effects would be less than significant with implementation of DBI procedures described above, including preparation of a detailed geotechnical report and site specific reports as needed to address the potential settlement and subsidence impacts of excavation, dewatering, and pile driving; implementation of a lateral movement and settlement survey to monitor any movement or settlement of surrounding buildings and adjacent streets during construction and monitoring by a Special Inspector, if needed; and implementation of corrective actions, as necessary. With implementation of these requirements, the draft Plan would not contribute to cumulative impacts related to ground settlement.

With regard to seismically induced groundshaking and other earthquake hazards, development pursuant to the draft Plan, including development of the proposed Transit Tower, would contribute to an increase in the number of persons potentially exposed to seismic risks in the Plan area and in greater downtown San Francisco, compared to existing conditions. As noted above, the Plan area is not subject to fault rupture, as there are no known earthquake faults in the Plan area. The Plan area and the Transit Tower would be subject to strong to violent groundshaking in the event of an earthquake on a nearby fault. However, new buildings that would be permitted pursuant to the Plan, including the Transit Tower, would be developed in accordance with the most current building code requirements for seismic safety, providing for increased life-safety protection of residents and workers, compared to those in older buildings.

Mitigation: None required.

P. Hydrology and Water Quality

This section describes the existing hydrology and water quality conditions of the Plan area and evaluates potential physical environmental effects related to combined sewer overflows, flooding, drainage, and groundwater and surface water quality. This section also presents applicable water quality regulations and regulatory agencies.

Setting

Water Features and Uses

There are no natural surface water bodies or streams in the Plan area. San Francisco Bay, approximately one block to the northeast of the Plan area, is the only major water feature in the vicinity. Historically, there were small creeks flowing from the east side of the City to the Bay, but nearly all of these creeks were filled during development of the City; none of these creeks were in the Plan area (the nearest ran through what is now Hayes Valley, the Civic Center, and the South of Market, and emptied into Mission Bay near Fourth and Brannan Streets). The area of San Francisco Bay northeast of the Plan area is referred to as the Central Bay.

Freshwater flows into the Central Bay (including areas adjacent to the Plan area and portions of San Francisco to the north) from the Sacramento-San Joaquin Delta result in constant mixing of freshwater and ocean water. In contrast, areas generally south of San Francisco experience much less freshwater inflow and the limited circulation and mixing of waters here is governed mainly by tidal influence.

Average annual precipitation in the San Francisco Bay Area is about 21 inches, which primarily occurs from November through April.

Drainage and Combined Sewer System

Freshwater flow to the Bay from the City has been almost entirely diverted to the City's combined sewer and stormwater system, a system that collects and transports both sanitary sewage and stormwater runoff in the same set of pipes. San Francisco is roughly divided into two major drainages: the eastern and the western basins. Within the eastern basin, including the entire Plan area, combined stormwater and sewage flows are transported to the Southeast Water Pollution Control Plant (Southeast plant), located in the Bayview District. This plant treats up to 150 million gallons per day (mgd) of wastewater to a secondary level.⁴⁰⁶ During dry weather, wastewater flows consist mainly of municipal and industrial sanitary sewage and wastewater and the annual average wastewater flow during dry weather is 65 to 70 mgd; therefore all dry weather wastewater flow is treated to a secondary level at the Southeast plant. The

⁴⁰⁶ Secondary treatment involves removal of organic matter using biological and chemical processes. This is a higher level of treatment than primary treatment, which is removal of floating and settleable solids using physical operations such as screening and sedimentation. Secondary treatment is less intensive than tertiary treatment, in which additional chemical and biological treatment processes are used to remove additional compounds that may be required for discharge or reuse purposes.

treated wastewater is then discharged to the Bay through the deep water outfall at Pier 80, located immediately to the north of the Islais Creek Channel.

During wet weather, the combined sewer and stormwater system collects large volumes of stormwater runoff in addition municipal and industrial sanitary sewage and wastewater, and the combined wastewater and stormwater flow is conveyed to treatment facilities before eventual discharge to the Bay. Depending on the amount of rainfall, wet weather flows are treated to varying levels before discharge. Up to 150 mgd of wet weather flows receive secondary treatment at the Southeast plant. The Southeast plant can also treat up to an additional 100 mgd to a primary treatment standard plus disinfection. Treated wet weather discharges of up to 250 mgd from the Southeast plant occur through the Pier 80 outfall directly to the Bay or through the Quint Street outfall to Islais Creek Channel, and thence to the Bay. Only wastewater treated to a secondary level is discharged at the Quint Street outfall.

Up to an additional 100 mgd of wet weather flows receive primary treatment plus disinfection at the North Point Wet Weather Facility, located on the north side of the City at Bay and Kearny Streets, which operates only during wet weather. Treated effluent from this facility is discharged through four outfalls approximately 800 feet out into the Bay.

The combined sewer system includes storage and transport boxes that, during wet weather, retain the combined stormwater and sewage flows that exceed the capacities of the Southeast and North Point treatment plants for later treatment. When rainfall intensity results in combined flows that exceed the total capacity of these facilities and the storage and transport structures themselves, the excess flows are discharged through 29 combined sewer overflow (CSO) structures located along the Bayside waterfront from Fisherman's Wharf to Candlestick Point. Discharges from the CSO structures, consisting of about 6 percent sewage and 94 percent stormwater, receive "flow-through treatment," which is similar to primary treatment, to remove settleable solids and floatable materials. Wet weather flows are intermittent throughout the rainy season, and combined sewer overflow events vary in nature and duration depending largely on the intensity of individual rainstorms.

The majority of the Plan area is located within Channel sub-basin of the eastern drainage, and a small portion of the Plan area along Mission Street and Second Street is located within the North Shore sub-basin. Nine CSO structures on the Bay shore discharge overflows from the Channel sub-basin. Two of these structures are located at Howard and at Brannan Streets, and seven discharge to Mission Creek. These structures are permitted for a total of 10 overflow events per year. Six CSO structures located along the northern Bay shore discharge overflows from the North Shore sub-basin. These structures are located at Baker, Pierce, Laguna, Beach, Sansome, and Jackson Streets. They are permitted for a total of four overflow events per year. All discharges from the combined sewer system to the Bay, through either the outfalls or the CSO structures, are operated in compliance with the federal Clean Water Act and the State's Porter-Cologne Water Quality Control Act through permits issued by the California Regional Water Quality Control Board, San Francisco Bay Region (RWQCB).

The San Francisco Public Utilities Commission (SFPUC) Wastewater Enterprise manages the City's wastewater collection, treatment, and discharge system, and since 2005, has been conducting master planning efforts for the San Francisco sewer system and preparing a Sewer System Master Plan to update the 1974 master plan. The purpose of the master plan is to provide an assessment of the current conditions and a framework for future actions through 2030. Prepared with extensive input from the public, the Sewer System Master Plan focuses on providing reliable, efficient, sustainable and environmentally acceptable operation and management of the sewer system through addressing both critical near-term needs and long-term issues. It incorporates an integrated urban watershed management approach to guide the future operations and maintenance of the sewer system.

Recycled Water

To supplement primary water supplies and ensure reliable, high-quality drinking water in the event of a major earthquake, drought, or decline in the snow pack, the SFPUC is planning to diversify San Francisco's supplies and increase the use of available local water sources, such as recycled water. Developing recycled water in San Francisco will provide a drought-resistant and sustainable water source for non-potable uses such as irrigation of parks, golf courses, and other green spaces, toilet/urinal flushing, and other uses.

As part of its Recycled Water Program, the SFPUC is proposing to implement three projects within the City—the Westside Recycled Water Project, the Eastside Recycled Water Project, and the Harding Park Recycled Water Project:

- The Westside Recycled Water Project will produce and deliver highly treated recycled water to customers that include Golden Gate Park, the California Academy of Sciences, Lincoln Park and Golf Course, and potentially the Presidio Golf Course;
- The Eastside Recycled Water Project will produce and deliver recycled water to customers on the eastern side of the City, including existing and future buildings, parks and green spaces, and potentially some industrial/commercial customers; and
- The Harding Park Recycled Water Project is being implemented in partnership with the North San Mateo County Sanitation District. This project will irrigate the Harding Park Golf Course.

Surface Water Quality

Ambient offshore Bay water quality is not regularly monitored in the immediate vicinity of the Plan area. However, in 1993, the RWQCB initiated the Regional Monitoring Program for the San Francisco estuary for the general purposes of assessing regional water quality conditions and characterizing patterns and trends of contaminant concentrations and distribution in the water column, as well as identifying general sources of contamination to the Bay. The program has established a database of water quality and sediment quality in the estuary, particularly with regard to toxic and potentially toxic trace elements and organic contaminants. The most recent water quality data for the Central Bay, the monitoring locations

closest to the Plan area, was collected in 2008.⁴⁰⁷ The conditions monitored include conventional water quality parameters (ammonia, conductivity, dissolved oxygen, dissolved organic carbon, particulate organic carbon, silica, hardness, nitrate, nitrite, pH, phosphate, salinity, temperature, suspended sediments, pheophytin, and chlorophyll); trace elements (arsenic, cadmium, cobalt, copper, iron, lead, manganese, mercury, methylmercury, nickel, selenium, silver, and zinc); trace organics including polynuclear aromatic hydrocarbons, polychlorinated biphenyls (PCBs), and pesticides; polybrominated diphenylethers (PBDEs, a class of chemicals used as a flame retardant); pyrethroids (synthetic chemical compounds similar to the natural chemical pyrethins produced by the flowers of pyrethums; these compounds now constitute a major proportion of the synthetic insecticide market and are common in commercial products such as household insecticides); and toxicity.

Mission Creek was identified by the RWQCB as a toxic hot spot in 1999 based on the presence of chromium, copper, mercury, lead, silver, zinc, chlordane, chlorpyrifos, dieldrin, mirex, PCBs, PAHs, and anthropogenically enriched hydrogen sulfide and ammonia.⁴⁰⁸ The RWQCB concluded CSO discharges from the combined sewer system were the primary source of pollutants. These discharges were untreated and more frequent prior to construction of the transport and storage structures in 1982.

Flooding

The Federal Emergency Management Agency (FEMA) is preparing Flood Insurance Rate Maps (FIRMs) for the City and County of San Francisco for the first time. FIRMs identify areas that are subject to inundation during a flood having a one percent chance of occurrence in a given year (also known as a “base flood” or “100-year flood”). FEMA refers to the flood plain that is at risk from a flood of this magnitude as a special flood hazard area.

In September 2007, FEMA issued a preliminary FIRM of San Francisco for review and comment by the City. The City submitted comments that year, and FEMA anticipates publishing a revised preliminary FIRM by 2012, after completing a more detailed analysis of flood hazards associated with San Francisco Bay as requested by Port and City staff. FEMA will finalize the FIRM and publish it for flood insurance and floodplain management purposes after reviewing comments and appeals related to the revised preliminary FIRM.

As proposed, the FIRM would designate portions of waterfront piers, Mission Bay, Bayview Hunters Point, Hunters Point Shipyard, Candlestick Point, and Treasure Island as Zone A (areas subject to inundation by tidal surge) or Zone V (areas of coastal flooding subject to wave hazards).⁴⁰⁹ The Plan area is not located within Zone A or Zone V or a Special Flood Hazard Area identified on San Francisco’s

⁴⁰⁷ San Francisco Estuary Institute, 2008 RMP Annual Monitoring Results, March, 2010.

⁴⁰⁸ Regional Water Quality Control Board, San Francisco Bay Region, Final Regional Toxic Hot Spot Cleanup Plan, March, 1999.

⁴⁰⁹ City and County of San Francisco, Office of the City Administrator, San Francisco Floodplain Management Program Fact Sheet, January 25, 2001, at: <http://sfgsa.org/Modules/ShowDocument.aspx?documentid=7520>. Accessed March 8, 2011.

Interim Floodplain Map.^{410,411} Furthermore, the Plan area is not located within an area identified by the SFPUC as prone to flooding due to combined sewer backups or flooding, which can affect locations—such as parts of the South of Market neighborhood west of the Plan area—where properties are developed at elevations below the water level in the combined sewer lines.⁴¹² In these areas—generally between Fourth and Tenth Streets—SFPUC reviews potential projects to determine whether the project would result in ground-level flooding during storms.

The Mayor and the Board of Supervisors approved a Floodplain Management Ordinance in 2008 (and amended the Ordinance in 2010).⁴¹³ The Ordinance governs new construction and major improvements to existing buildings in flood-prone areas and designates the City Administrator's Office as the City's Floodplain Administrator. In general, the Ordinance requires the first floor of structures in designated flood hazard zones to be constructed above the floodplain or to be flood-proofed by improvements that reduce or eliminate the potential for flood damage.

Pending completion of the federal FIRM for San Francisco, the City has created an Interim Floodplain Map that identifies areas of flooding within the City. FEMA approved San Francisco's application for participation in the National Flood Insurance Program in April 2010, meaning that homeowners, renters, and business owners in the City are now eligible to purchase federally subsidized flood insurance to protect their property. The City Administrator's Office and the San Francisco Department of Emergency Management are also working to identify potential hazard mitigation projects for that may be eligible for grants from FEMA.

Future Flooding Risks

Globally, sea level has been rising for the past 10,000 years and, over the past 5,000 years, has averaged roughly 0.0039 feet per year.⁴¹⁴ However, there is evidence that the rate of sea level rise is accelerating on both a global and local scale due to ocean warming (thermal expansion), continental ice melt, increases in temperature, and land elevation changes.⁴¹⁵ From 1961 to 2003, the global rate of sea level rise was about 0.0059 feet per year.⁴¹⁶ Based on the San Francisco NOAA tide gage monthly mean sea level data from

⁴¹⁰ Federal Emergency Management Agency, Preliminary Flood Insurance Rate Map, City and County of San Francisco, California, Panel 120 of 260, Map Number 06075C0120A, September 21, 2007, <http://sfgsa.org/Modules/ShowImage.aspx?imageid=2672>. accessed June 22, 2010.

⁴¹¹ City and County of San Francisco, Office of the City Administrator, Final Draft San Francisco Interim Floodplain Map, Northeast, July, 2008, <http://www.sfgsa.org/Modules/ShowDocument.aspx?documentid=1785>, accessed June 22, 2010.

⁴¹² San Francisco Planning Department, Review of Projects in Identified Areas Prone to Flooding, April 1, 2007.

⁴¹³ Ordinance 56-10, approved March 25, 2010. Available at: <http://www.sfbos.org/ftp/uploadedfiles/bdsupvrs/ordinances10/o0056-10.pdf>.

⁴¹⁴ Association of Bay Area Governments (ABAG), *Status and Trends Report on Land Use and Population. The Geomorphology, Climate, Land Use and Population Patterns in the San Francisco Bay, Delta and Central Valley Drainage Basins*, February 1991.

⁴¹⁵ Intergovernmental Panel on Climate Change (IPCC), *Fourth Assessment Report, Climate Change 2007: Synthesis Report*, available online at www.ipcc.ch/pdf/assessment-report/ar4/syr/ar4_syr.pdf, 2007.

⁴¹⁶ Intergovernmental Panel on Climate Change (IPCC), *Fourth Assessment Report, Climate Change 2007: Synthesis Report*, available online at: www.ipcc.ch/pdf/assessment-report/ar4/syr/ar4_syr.pdf, 2007

1887 to 2006, the current average rate of sea level rise in the Bay Area is 0.0066 feet per year at the San Francisco tide station.⁴¹⁷

California Executive Order S-13-08, issued in 2008, is implemented by the California Resources Agency and calls for the completion of a Sea Level Rise Assessment Report, the consideration of sea level rise scenarios for the years 2050 and 2100 by state agencies, and development of a Climate Adaptation Strategy. A Sea Level Rise Assessment Report is expected to be completed by 2012.⁴¹⁸ The report will advise how California should plan future sea level rise, and will provide estimated values or a range of values for sea level rise along the West Coast for the years 2030, 2050, and 2100. A state task force has published an interim guidance document to inform and assist state agencies as they develop approaches for incorporating sea level rise into their planning processes prior to publication of the Sea Level Rise Assessment Report.⁴¹⁹ The guidance document relies upon the ranges of sea level rise presented in the December 2009 Proceedings of the National Academy of Sciences as a starting place, using the year 2000 as a baseline. Until 2050 there is generally good agreement in the amount of projected sea level rise among the various climate models assessed, but after 2050, projections of sea level rise become less certain because modeling results diverge and there are differences in estimations of the degree that the international community will decrease greenhouse gas emissions. Further, the guidelines recommend that analysis of sea level rise should consider the future mean sea level combined with the effects of tides and storm surge.

In 2006, the Bay Conservation and Development Commission (BCDC) released a series of maps depicting the lands vulnerable to a sea level rise of 16 inches by mid-century and 55 inches by the end of the century.⁴²⁰ BCDC mapping, and maps of projected sea level rise produced by the Pacific Institute, an Oakland-based non-profit research organization, indicate that the eastern portion of the Plan area—essentially the area east of Beale Street—is located within the area of potential inundation from the 100-year flood a 55-inch increase in sea level.⁴²¹ BCDC notes that its mapping is not intended to provide a block-by-block evaluation of the potential inundation risk due to sea level rise; rather, analysis to date has been intended to provide a forecast of potential regional effects of sea level rise around San Francisco Bay. BCDC is currently involved in a more detailed planning and mapping process through the Adapting to Rising Tides (ART) program, in cooperation with the National Oceanic and Atmospheric

⁴¹⁷ National Oceanic and Atmospheric Administration (NOAA), NOAA Tides and Currents. *Mean Sea Level Trend 9414290 San Francisco, California*, tidesandcurrents.noaa.gov/sltrends/sltrends_station.shtml?stnid=9414290, accessed March 25, 2011.

⁴¹⁸ Department of Water Resources, California (DWR), *Climate Change Characterization and Analysis in California Water Resources Planning Studies*, www.water.ca.gov/climatechange/docs/DWR_CCCStudy_FinalReport_Dec23.pdf, December 2010.

⁴¹⁹ Sea-Level Rise Task Force of the Coastal and Ocean Working Group of the California Climate Action Team, *State of California Sea-Level Rise Interim Guidance Document*, October, 2010. http://www.slc.ca.gov/Sea_Level_Rise/SLR_Guidance_Document_SAT_Responses.pdf.

⁴²⁰ San Francisco Bay Conservation and Development Commission, *Shoreline Areas Vulnerable to Sea Level Rise: Central Bay*, 2006.

⁴²¹ Pacific Institute, "California Flood Risk: Sea Level Rise; San Francisco North Quadrangle," 2009. Funded by the California Energy Commission's Public Interest Energy Research Program, CalTrans, and the California Ocean Protection Council. Available on the internet at: http://www.pacinst.org/reports/sea_level_rise/index.htm. Reviewed November 30, 2010.

Administration.⁴²² Nevertheless, low-lying areas, such as the Plan area, or at least its lowest-elevation parts, are at least potentially susceptible to increased flooding as a result of anticipated increases in sea level and the level of San Francisco Bay. Under current conditions, for example, waves can overtop the seawall along the Embarcadero when storm conditions coincide with high tides.

The Port of San Francisco conducted a detailed study of potential flooding of Port properties north of Pier 64 in 2011. The report used a base year of 2010, and evaluated potential flooding with a sea level rise of 15 inches by the year 2050 and 55 inches by the year 2100.⁴²³ Areas that would be inundated by flooding associated with a 55-inch sea level rise by 2100 are generally consistent with the BCDC maps referred to above; that is, the portion of the Plan area generally east of Beale Street would be inundated in a 100-year flood. When wave runup is added, total water levels would be as much as 5 feet higher, at least at the shoreline. In the nearer term, with a 15-inch sea level rise by 2050, flooding during a 100-year storm would affect limited areas, primarily along the Embarcadero.

Groundwater

The Plan area is underlain by the downtown San Francisco Groundwater Basin, one of five groundwater basins in the eastern part of San Francisco.⁴²⁴ This basin is separated from the surrounding groundwater basins by bedrock ridges. The groundwater basin is made up of shallow unconsolidated sediments underlain by less permeable bedrock. Bedrock outcrops form much of the northeastern and southern basin boundaries. In general, groundwater flow is towards the northeast, following the topography. Groundwater within the Downtown San Francisco Groundwater Basin is known to contain elevated concentrations of nitrates, chloride, boron, and total dissolved solids.

Tsunamis and Seiches

Tsunamis (seismic sea waves) are long period waves that are typically caused by underwater seismic disturbances, volcanic eruptions, or submerged landslides. Tsunamis, which travel at speeds up to 700 miles per hour, are typically only 1 to 3 feet high in open ocean water but may increase in height to up to 90 feet as they reach coastal areas, causing potentially large amounts of damage when they reach land.⁴²⁵ Low-lying coastal areas such as tidal flats, marshlands, and former bay margins that have been artificially filled but are still at or near sea level are generally the most susceptible to tsunami inundation.

A seiche is caused by oscillation of the surface of an enclosed body of water, such as San Francisco Bay, during an earthquake. Inside the Bay, the area of potential inundation from a seiche extends from the

⁴²² Steve Goldbeck, BCDC, personal communication, November 30, 2010.

⁴²³ URS Corporation, *Sea Level Rise and Adaptation Study Coastal Inundation Report*, prepared for Port of San Francisco, May 11, 2011. This report is available at the Planning Department, 1650 Mission Street, Suite 400, in Case File No. 2007.0558E.

⁴²⁴ California Department of Water Resources. *California's Groundwater*, Bulletin 118. February 27, 2004.

⁴²⁵ URS Corporation, *City and County of San Francisco Hazard Mitigation Plan*, December, 2008.

Palace of Fine Arts south to the Central Basin.⁴²⁶ The easternmost portion of the Plan area is within an area that could be subjected to an approximately 8-foot seiche.

Since 1850, 51 tsunamis have been recorded or observed in San Francisco Bay. Nine of these tsunamis originated in Alaska and were caused by an earthquake, earthquake and landslide, or volcano and earthquake. Only one tsunami has been recorded as originating along the central California Coast: a 4-inch runup that was recorded at the Presidio gauge station shortly after the 1906 earthquake.

The National Oceanic and Atmospheric Administration (NOAA) operates the Tsunami Warning System with centers located in Hawaii and Alaska. The National Warning System provides warnings to the West Coast (including California) and Alaska. These warning centers are linked to the Advanced National Seismic System that monitors earthquakes in the United States, to the international seismic monitoring systems, and to a system of tide gauges and buoys. The California Integrated Seismic Network also provides information regarding the magnitude and location of California earthquakes and a quick link to the West Coast/Alaska Tsunami Warning Center.

Based on the level of threat, a Tsunami Advisory, Watch, or Warning would be issued. In San Francisco, occupants would be notified of the Advisory, Watch, or Warning via the Outdoor Public Warning System, notification of the local media, Public Address Systems, and the Alert SF public notification system. The notification would include instructions for walking to higher ground or evacuating and for obtaining basic services such as shelter, food, water, and medical services. Once the area is deemed safe for reentry, an all clear public safety message would be broadcast.

The Tsunami Warning System takes an average of 7 to 10 minutes to identify a tsunami threat and communicate it to the media and state warning systems. The initial notification is based on seismic data. However, distant source events may provide up to 3 hours of warning, while local-source events have less than 60 minutes lead time. During this time, the initial notification is normally updated once additional information is available, at least every 30 minutes. The status of an Advisory, Watch, or Warning can be upgraded, downgraded, or the impact area expanded based on the new information.

Regulatory Framework

Water Quality Regulations

The federal Clean Water Act and subsequent amendments, under the enforcement authority of the U.S. Environmental Protection Agency (EPA), was established “to restore and maintain the chemical, physical, and biological integrity of the Nation’s waters.” The Act established the basic structure for regulating discharges of pollutants into the waters of the United States. It gave the EPA the authority to implement pollution control programs such as setting wastewater standards for industry. The Clean Water Act also set water quality standards for all contaminants in surface waters and made it unlawful for any person to

⁴²⁶ City and County of San Francisco, Emergency Response Plan, Tsunami Response Annex, September, 2008.

discharge any pollutant from a point source into navigable waters, unless a permit was obtained under its provisions.

The federal Clean Water Act established the National Pollutant Discharge Elimination System (NPDES) program to protect water quality of receiving waters. Under the Clean Water Act, Section 402, discharge of pollutants to receiving waters is prohibited unless the discharge is in compliance with an NPDES permit. In California, the EPA has determined that the State's water pollution control program had sufficient authority to manage the NPDES program under California law in a manner consistent with the Clean Water Act. Therefore, implementation and enforcement of the NPDES program is conducted through the California State Water Resources Control Board (SWRCB) and the nine RWQCBs.

The Porter-Cologne Water Quality Control Act (Division 7 of the California Water Code) regulates water quality within California and established the authority of the SWRCB and the nine regional water boards. The San Francisco Bay waters are under the jurisdiction of the RWQCB (San Francisco Bay Region). The RWQCB established regulatory standards and objectives for water quality in the Bay in the *San Francisco Bay Basin (Region 2) Water Quality Control Plan (Basin Plan)*, most recently updated in 2007 and commonly referred to as the "Basin Plan."⁴²⁷ The Basin Plan identifies existing and potential beneficial uses and provides numerical and narrative water quality objectives designed to protect those uses.

Water Quality Criteria

The Clean Water Act established ambient water quality criteria for the protection of aquatic life and human health that serve as guidance for states to use in adopting water quality standards. In 1980, the EPA published water quality criteria for 64 pollutants and pollutant classes and considered non-cancer, cancer, and taste and odor effects. Additional criteria were adopted under the 1992 National Toxics Rule, and criteria specific to California were adopted under the 2000 California Toxics Rule. In 2002, the EPA revised its recommended water quality criteria for 83 chemicals based on a revised methodology adopted in 2000 in order to protect human health, and in 2003 the EPA published an additional 15 revised human health criteria.⁴²⁸ Human health criteria are based on the assumption that a person could eat fish and drink water from a water body, or only eat fish from a water body. The 2002 revisions incorporate new toxicity information on compounds and other changes in the calculation method.

Statewide measures to implement water quality criteria, specified by the National Toxics Rule, the California Toxics Rule, and the Basin Plan are addressed in the SWRCB *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California* (referred to as the State Implementation Plan), most recently updated by the SWRCB in 2005. The State Implementation Plan provides a basis for establishing water quality-based effluent limitations for discharges to inland waters and methods for demonstrating compliance with these effluent limitations. In accordance with the State

⁴²⁷ California Regional Water Quality Control Board, San Francisco Bay Region, San Francisco Bay Basin (Region 2) Water Quality Control Plan (Basin Plan), incorporating all amendments approved by the Office of Administrative Law as of January 18, 2007.

⁴²⁸ United States Environmental Protection Agency. National Recommended Water Quality Criteria Table, Fact Sheet, May 2005

Implementation Plan, the effluent limitations are enforced through NPDES permits, issuance or waiver of waste discharge requirements, or other relevant regulatory approaches. During the permit application or renewal process, the State Implementation Plan is used to determine if (1) water quality-based effluent limits are required, and (2) if an effluent limit is required, the maximum allowable discharge concentration. The State Implementation Plan does not apply to wet weather discharges from the combined sewer system, including combined sewer overflows, but does apply to dry weather discharges from the Pier 80 outfall.

Beneficial Uses

Applicable water quality criteria for a specific water body, specified by the National Toxics Rule or the California Toxics Rule, are determined on the basis of the beneficial use(s) of the water. The Basin Plan identifies the following existing beneficial uses for the Central Bay portion of San Francisco Bay: ocean, commercial and sport fishing; estuarine habitat; industrial service supply; industrial process supply; fish migration; navigation; preservation of rare and endangered species; fish spawning; water contact recreation; non-contact water recreation; shellfish harvesting; and wildlife habitat. No “potential” beneficial uses are identified for this portion of the Bay.

The Basin Plan identifies municipal and domestic supply as well as agricultural supply as existing beneficial uses for the Downtown San Francisco Groundwater Basin. Industrial service supply and industrial process supply are listed as “potential” beneficial uses.

Impaired Water Bodies and Total Maximum Daily Loads

In accordance with Section 303(d) of the Clean Water Act, states must present the EPA with a list of “impaired water bodies,” defined as those water bodies that do not meet water quality standards. The RWQCB has listed Central Bay portion of the San Francisco Bay as well as Mission Creek as impaired water bodies.⁴²⁹ The Central Bay is listed as an impaired water body for chlordane, dichlorodiphenyltrichloroethane (DDT), dieldrin, dioxin compounds, furan compounds, mercury (water and sediment), polynuclear aromatic hydrocarbons (PAHs), PCBs, dioxin-like PCBs, selenium, and exotic species. Mission Creek is listed as an impaired water body for ammonia, chlordane (sediments), dieldrin (sediments), hydrogen sulfide, lead (sediments), mercury (sediments), silver (sediments), zinc (sediments), PAHs, and PCBs (sediments).

The law requires the development of actions, known as total maximum daily loads (TMDLs), to improve water quality of impaired water bodies. The first step of the TMDL process is development of a TMDL report describing the water quality problem addressed, detailing the pollutant sources, and outlining the solutions. An implementation plan, included in the TMDL report, describes how and when pollution prevention, control, or restoration activities will be accomplished and who will be responsible for these actions. The final step of the TMDL process is adopting and amending the Basin Plan to legally establish

⁴²⁹ San Francisco Regional Water Quality Control Board, 2006 CWA 303(d) List of Water Quality Segments Requiring TMDLs. Approved by the United States Environmental Protection Agency on June 28, 2007.

the TMDL and to specify regulatory requirements for compliance. As part of the Basin Plan Amendment, wasteload allocations are specified for entities that have permitted discharges.

TMDLs for San Francisco Bay PCBs and Mercury have been approved by the EPA and officially incorporated into the Basin Plan. The RWQCB also adopted the San Francisco Bay Watershed Permit (Order No. R2-2007-0077) addressing mercury discharges from municipal and industrial wastewater dischargers.⁴³⁰ In accordance with this permit, the mercury allocation for the Southeast plant is 2.1 kilograms per year by 2017 and 1.6 kilograms per year by 2027, reduced from an estimated annual load of 2.7 kilograms per year in 2003. The Basin Plan establishes an allocation of 0.3 kilograms per year of PCBs for the Southeast plant.

NPDES Waste Discharge Regulations

The federal Clean Water Act, Section 402, established the NPDES program to protect water quality of receiving waters. The NPDES program requires all facilities which discharge pollutants into waters of the United States to obtain a permit. The permit provides two levels of control – technology-based limits and water-quality-based limits – to control discharge of pollutants for the protection of water quality. Technology-based limits are based on the ability of dischargers in the same category to treat wastewater, while water-quality based limits are required if technology-based limits are not sufficient to provide protection of the water body. Water quality-based effluent limitations required to meet water quality criteria in the receiving water are based on criteria specified in the National Toxics Rule, the California Toxics Rule, and the Basin Plan. NPDES permits must also incorporate TMDL wasteload allocations when they are developed.

The regulations initially focused on municipal and industrial wastewater discharges in 1972, followed by stormwater discharge regulations, which became effective in November 1990. NPDES permits for wastewater and industrial discharges specify discharge prohibitions and effluent limitations and also include other provisions (such as monitoring and reporting programs) deemed necessary to protect water quality. In California, the SWRCB and the RWQCBs implement and enforce the NPDES program.

Southeast Plant, North Point, and Bayside Facilities NPDES Permit

The City currently holds an NPDES permit adopted by the RWQCB in June 2002 that covers the Southeast plant, the North Point Wet Weather Facility, and all of the Bayside wet-weather facilities, including discharges from the CSOs to the Bay.⁴³¹ The permit specifies discharge prohibitions, dry-weather effluent limitations, wet-weather effluent performance criteria, receiving water limitations, sludge management practices, and monitoring and reporting requirements. The permit prohibits overflows from the CSO structures during dry weather, and requires wet-weather overflows to comply

⁴³⁰ Regional Water Quality Control Board, San Francisco Bay Region, SF Mercury Watershed Permit, Municipal and Industrial Wastewater Dischargers, Order No. R2-2007-0077, adopted November 1, 2007.

⁴³¹ Regional Water Quality Control Board, San Francisco Bay Region, National Pollutant Discharge Elimination System (NPDES) Permit No. CA0037664, Order No.2002-0073, for City and County of San Francisco Southeast Water Pollution Control Plant, North Point Wet Weather Facility, and Bayside Wet Weather Facilities, adopted June 19, 2002.

with the nine minimum controls specified in the federal Combined Sewer Overflow Control Policy, described below.

Federal Combined Sewer Overflow Control Policy

On April 11, 1994 the EPA adopted the Combined Sewer Overflow Control Policy (CSO Control Policy), which became part of the Clean Water Act in December 2000. This policy establishes a consistent national approach for controlling discharges from combined sewers to the nation's water. Using the NPDES permit program, the policy initiates a two-phased process with higher priority given to more environmentally sensitive areas. During the first phase, the permittee is required to implement the following nine minimum controls that constitute the technology-based requirements of the Clean Water Act and can reduce the frequency of CSOs and their effects on receiving water quality:

1. Conduct proper operation and regular maintenance programs for the combined sewer system and CSO outfalls;
2. Maximize the use of the collection system for storage;
3. Review and modify pretreatment programs to ensure that CSO impacts are minimized;
4. Maximize flow to the treatment plant for treatment;
5. Prohibit CSOs during dry weather;
6. Control solids and floatable materials in CSOs;
7. Develop and implement pollution prevention programs that focus on contaminant reduction activities;
8. Notify the public; and
9. Monitor to effectively characterize CSO impacts and the efficacy of CSO controls.

The City is currently implementing these controls as required by the CSO Control Policy. This includes development of a Water Pollution Prevention Program which focuses on minimizing pollutants from entering the City's combined sewer system and addresses pollutants from residential, commercial, industrial, and nonpoint pollutant sources.

During the second phase, the permittee is required to continue implementation of the nine minimum controls, properly operate and maintain the completed CSO controls in accordance with the operational plan, and implement the post-construction monitoring program. In conformance with the CSO Control Policy, the City has developed a long-term control plan to select CSO controls to comply with water quality criteria and to protect the beneficial uses of the receiving waters. The plan utilizes the presumptive approach for the protection of water quality. In accordance with the CSO Control Policy, this approach must meet one of these criteria:

- An average of four CSO events per year;
- Elimination or capture no less than 85 percent by volume of the combined sewage collected in the combined sewer system during precipitation events on a system-wide average basis; or
- Removal of the mass of any contaminant causing water quality impairment that would be otherwise removed by eliminating or capturing the flow as specified above.

The CSO Control Policy requires that any CSOs that occur after implementation of the nine minimum control measures should receive a minimum of primary clarification (removal of floatables and settleable solids), solids and floatable disposal, and disinfection (if necessary to meet water quality standards and protect the beneficial uses of the receiving water). The San Francisco Wastewater Control Program exceeds the specifications of the presumptive approach because 100 percent of the combined sewer flows are captured and treated rather than the required 85 percent. As defined in the CSO Control Policy, San Francisco has no remaining untreated overflow events because the overflows that occur in San Francisco currently receive the equivalent of primary treatment within the storage/transport boxes, consisting of removal of floatables and settleable solids.

The City is currently in full compliance with the CSO Control Policy. In 1997, the City completed construction of a 20-year, \$1.6 billion Wastewater Master Plan which included extensive storage, transport and treatment upgrades to the combined sewer system that meet approved design criteria for overall protection of beneficial uses. Operation and implementation of these facilities satisfies the CSO Control Policy, including maximizing use of the system during wet weather.

Wastewater Discharges

Discharges of non-sewage wastewater to the combined sewer system, including groundwater produced during construction dewatering, are subject to the permit requirements specified in Article 4.1 of the *San Francisco Public Works Code* and supplemented by Department of Public Works Order No. 158170. The permit requirements include compliance with the federal CSO Control Policy minimum controls, including development and implementation of a pollution prevention program. The San Francisco pollution prevention program includes requirements for best management practices to minimize the amount of pollutants carried by stormwater to the combined sewer system from industrial uses, and the City conducts periodic inspections to ensure compliance.

Stormwater Management

In accordance with the San Francisco Stormwater Management Ordinance, approved in April 2010, development projects that discharge stormwater to the combined sewer system—which covers the Plan area—must comply with the San Francisco Stormwater Design Guidelines developed by the SFPUC and the Port of San Francisco.⁴³² The Guidelines offer five tools to help project developers achieve compliance with stormwater management requirements:

- A step-by-step guide describing how to manage stormwater on site;
- A set of stormwater Best Management Practices (BMP) Fact Sheets;
- A vegetation palette to assist in BMP-appropriate plant selection;

⁴³² San Francisco Public Utilities Commission and Port of San Francisco, *San Francisco Stormwater Design Guidelines*, November, 2009. Adopted by the SFPUC Commission January 12, 2010. http://sfwater.org/mto_main.cfm/MC_ID/14/MSD_ID/361/MTO_ID/543. Stormwater Management Ordinance: Ordinance 83-10, approved by the Board of Supervisors April 13, 2010, and signed by the Mayor April 22, 2010: <http://www.sfbos.org/ftp/uploadedfiles/bdsupvrs/ordinances10/o0083-10.pdf>.

- Sizing calculators to determine the required size of each BMP; and
- Maintenance checklists explaining the types and frequencies of the maintenance activities associated with each BMP.

In accordance with the San Francisco Stormwater Design Guidelines, developers of projects that disturb more than 5,000 square feet of ground must implement BMPs to reduce the flow rate and volume of stormwater going into the combined sewer system by achieving Leadership in Energy and Environmental Design (LEED®) Sustainable Sites Credit 6.1 (Stormwater Management Rate and Quantity). Development projects must also comply with Article 4.2 of the *San Francisco Public Works Code* and must submit a stormwater control plan (including an operations and maintenance plan). The SFPUC reviews the plan and certifies compliance with the San Francisco Stormwater Design Guidelines. Examples of BMPs that may be implemented include rainwater harvesting, rain gardens, green roofs, and permeable paving. (Separate requirements exist for parts of the City that have separate storm sewer systems.)

The SFPUC inspects stormwater BMPs once they are constructed, and any issues noted by the inspection must be corrected before the Certificate of Occupancy can be issued for the building. The owner is responsible for completing an annual self-certification inspection, and must submit completed checklists and maintenance logs for the year to the SFPUC. In addition, the SFPUC will inspect all stormwater BMPs every third year. Any issues identified by either inspection must be resolved before the SFPUC can renew the certificate of compliance.

Projects that are required to implement the San Francisco Stormwater Design Guidelines are also subject to review by the San Francisco Department of Building Inspection, and subject to building codes that include provisions for managing drainage for new construction. Specifically, Section 306.2 of the *San Francisco Plumbing Code* and Section 1503.4 of the *San Francisco Building Code* allow roofs and other building areas to drain to locations other than the combined sewer. In 2008, the SFPUC, Department of Building Inspection, and Department of Public Health also entered into a Memorandum of Agreement concluding that applicants can safely harvest rainwater for used in non-potable applications such as toilet flushing, irrigation, and vehicle washing without treating it to potable standards.

Implementation of the low impact development measures described above helps to reduce and delay the volumes of discharge entering the combined sewer system, thereby reducing the frequency of combined sewer overflows, minimizing flooding effects, and protecting water quality. Other plans and ordinances also contribute to reducing the frequency of combined sewer overflows by addressing stormwater management. The Sewer Master Improvement Program will include collection system projects to upgrade the aging sewer system and better handle the City's sewage and stormwater flows by providing both grey and green infrastructure solutions. The Better Streets Plan identifies innovative methods for reducing stormwater runoff from streets and sidewalks to create a more attractive and sustainable public realm in San Francisco. The Green Building Ordinance expands the scope of the green building standards to apply to private developments and redevelopment projects in addition to public buildings; it fosters environmentally sensitive design and sustainability in new development projects. The stormwater

management performance standards specified in the San Francisco Stormwater Design Guidelines were developed as part of this ordinance, and the ordinance provides the regulatory authority to implement stormwater management requirements in combined sewer areas.

Construction Stormwater Discharges

Construction-related stormwater discharges are subject to the requirements of Article 4.1 of the *San Francisco Public Works Code*, which incorporates and implements the City's NPDES permit and the nine minimum controls described in the federal CSO Control Policy. The minimum controls include development and implementation of a pollution prevention program. At a minimum, the City requires that the project sponsor develop and implement an erosion and sediment control plan to reduce the impact of runoff from the construction site. The erosion and sediment control plan must be reviewed and approved by the City prior to implementation, and the City conducts periodic inspections to ensure compliance with the erosion and sediment control plan.

Recycled Water

San Francisco's Reclaimed Water Ordinance, contained in Article 22 of the *San Francisco Public Works Code*, specifies that, in designated areas of the City new buildings 40,000 square feet or larger must install a recycled water system. All but the very northwestern corner of the Plan area is within the Eastside Reclaimed Water Use Area designated by the Ordinance, and therefore all development projects greater 40,000 square feet in size must provide for the construction and operation of a reclaimed water system for the transmission of the reclaimed water within buildings and structures. That is, unless granted an exemption, these new buildings would need to be designed with separate plumbing to service uses that could employ reclaimed water (e.g., toilets). The Ordinance also requires that owners, operators, or managers of all development projects register their projects with the SFPUC. The SFPUC issues a certificate exempting compliance in cases in which reclaimed water is not available, an alternative water supply is to be used, or the sponsor has shown that the use of reclaimed water is not appropriate. The SFPUC may inspect any recycled water operations to ensure compliance with the Ordinance, including mandatory use of recycled water. Currently, however, there is no source of recycled water for this area, but recycled water could eventually be provided through the Eastside Recycled Water Project or through the creation of a local facility constructed within the Plan area. The draft Plan includes a number of policies directing the creation of or otherwise securing source(s) of non-potable water, infrastructure for its distribution and use, and development practices to maximize use of non-potable water and reduce use of potable water (see **Appendix B**).

San Francisco Green Building Ordinance

The City of San Francisco's Green Building Ordinance, described in Section IV.H, Greenhouse Gas Emissions, requires newly constructed commercial buildings greater than 5,000 square feet in size and all residential developments to implement the San Francisco Stormwater Design Guidelines (described above). Newly constructed commercial buildings over 5,000 square feet and residential buildings over 75 feet in height including five or more units must also reduce the amount of potable water used for

landscaping by 50 percent and must reduce indoor use of potable water by 30 percent (as of 2011). Implementation of these measures are estimated to reduce wastewater and stormwater discharges by 90 million gallons citywide.⁴³³

Impact Analysis

Significance Criteria

The proposed project would have a significant hydrology and water quality impact if it were to:

- Violate any water quality standards or waste discharge requirements.
- Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted).
- Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner that would result in substantial erosion of siltation on- or off-site.
- Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner that would result in flooding on- or off-site.
- Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff.
- Otherwise substantially degrade water quality.
- Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other authoritative flood hazard delineation map.
- Place within a 100-year flood hazard area structures that would impede or redirect flood flows.
- Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam.

Impact Analysis: Transit Center District Plan

Impact HY-1: The proposed Transit Center District Plan would not violate water quality standards or otherwise substantially degrade water quality. (Less than Significant).

Construction

Stormwater Discharges

Construction of individual development projects that could be proposed and approved pursuant to the proposed zoning controls could affect water quality, but the effects would be less than significant with compliance with applicable permits and regulations. Water quality could be affected by grading and earthmoving operations, use of fuels and other chemicals for construction equipment, and demolition

⁴³³ Green Building Ordinance, Ordinance 180-08, approved August 4, 2008. Available on the internet at: <http://www.sfbos.org/ftp/uploadedfiles/bdsupvrs/ordinances08/o0180-08.pdf>.

and construction. Grading and earthmoving would expose soil during construction and could result in erosion and excess sediments carried in stormwater runoff to the combined sewer system. Stormwater runoff from temporary on-site use and storage of vehicles, fuels, wastes and other hazardous materials could also carry pollutants to the combined sewer system if these materials were improperly handled.

However, the federal Clean Water Act effectively prohibits discharges of stormwater from construction projects unless the discharge is in compliance with a NPDES permit. Construction stormwater discharges to the City's combined sewer system would be subject to the requirements of Article 4.1 of the San Francisco Public Works Code (supplemented by Department of Public Works Order No. 158170), which incorporates and implements the City's NPDES permit, and the federal CSO Control Policy described above. At a minimum, the City requires that a project sponsor develop and implement an erosion and sediment control plan to reduce the impact of runoff from a construction site. The plan must be reviewed and approved by the City prior to implementation, and the City conducts periodic inspections to ensure compliance with the plan. Any stormwater drainage during construction would flow to the City's combined sewer system, where it would receive treatment at the Southeast plant or other wet weather facilities and would be discharged through an existing outfall or overflow structure in compliance with the existing NPDES permit. Therefore, water quality impacts related to violation of water quality standards or degradation of water quality due to discharge of construction related stormwater runoff would be less than significant with compliance with applicable permits.

Groundwater Dewatering

As noted in Section O, Geology, Soils, and Seismicity, the groundwater level in the Plan area is expected at about 8 to 20 feet below ground surface. Because individual development projects that could be proposed and approved pursuant to the proposed zoning controls would include construction of foundations and/or below ground parking garages that could extend below this depth, dewatering likely would be necessary for some projects during construction. However, the draft Plan would allow for capture of this groundwater and reuse for non-potable uses, provided this water is suitable for these purposes. If any groundwater produced during construction dewatering required discharge to the combined sewer system, the discharge would be conducted in accordance with Article 4.1 of the *San Francisco Public Works Code*, as supplemented by Order No. 158170, which regulates the quantity and quality of discharges to the combined sewer system. This permit would contain appropriate discharge standards and may require installation of meters to measure the volume of the discharge. Although the groundwater could contain contaminants related to past site activities, as discussed in Section IV.Q, Hazards and Hazardous Materials, as well as sediment and suspended solids, the groundwater would be treated as necessary to meet permit requirements prior to discharge. With reuse of the groundwater produced during dewatering or discharge to the combined sewer system in accordance with regulatory requirements, water quality impacts related to violation of water quality standards or degradation of water quality due to discharge of groundwater would be less than significant.

Operation

Combined Sewer Overflows

Two aspects of the project could result in long-term beneficial changes to the wastewater flows to the City's combined sewer system: (1) implementation of San Francisco's Green Building Ordinance by individual projects that could be proposed and approved pursuant to the proposed zoning controls would locally decrease year-round sanitary sewage flows to the combined sewer system, and (2) implementation of stormwater BMPs in accordance with the San Francisco Stormwater Guidelines would decrease the volume of stormwater runoff to the combined sewer system. The effects of these factors on the combined sewer system are closely related, and the combined effect would result in a decreased volume and/or frequency of CSO discharges to the Bay.

Changes in Sanitary Sewage Flows

The proposed Plan would accommodate new development in the Plan area, which would, in turn, result in an increase of about 2,200 residents and about 25,000 jobs in the Plan area. Growth in the Plan area would contribute to a citywide population increase of almost 135,000, as well as a citywide employment increase of close to 200,000 by 2030. Most of the citywide growth would be on the City's eastern side, which is served by the Southeast treatment plant (and the North Point plant in wet weather); in addition to the Plan area, substantial growth would occur in the Market-Octavia and Balboa Park Better Neighborhood Plan areas; Candlestick Point and Hunters Point; Visitacion Valley; Mission Bay; and elsewhere in the greater Downtown, as well as, to a lesser degree, other areas such as transit corridors on Van Ness Avenue and Geary Street.

During dry weather (typically, May 1 to October 15), all sanitary sewage generated in the Plan area would be treated at the Southeast plant, which currently operates at about 80 percent of its design capacity. If additional dry weather flow associated with development occurred, they could be accommodated within the system's existing capacity.

During wet weather (typically, October 16 to April 30), however, there is a wide variation in volume of wet weather flow due to the addition of stormwater. The volume of wet weather flows is directly related to the rainfall intensity, and treatment of the wet weather flows varies depending on the characteristics of any individual rainstorm. While the system is in compliance with current regulations and permits, an incremental increase in sanitary sewage volume could affect the overall system's wet weather operations. Any net increase in combined sewage could cumulatively contribute to an increase in average volume of CSO discharges to the Bay, either in the Plan area or elsewhere along the Bay shore. An increase in the volume of CSO discharges could be a concern because the RWQCB has designated Mission Creek and Central Bay as impaired water bodies under Section 303(d) of the Clean Water Act, which indicates water quality standards are not expected to be met after implementation of technology-based effluent limitations, and because CSO discharges contain pollutants for which these water bodies are impaired.

However, in accordance with San Francisco's Green Building Ordinance (described in the Setting), newly constructed commercial buildings over 5,000 square feet and residential buildings over 75 feet in height

including five or more units must reduce the amount of potable water used for landscaping by 50 percent and must reduce indoor use of potable water by 30 percent (as of 2011), compared to conventional development (defined as plumbing fixture performance required by the federal Energy Policy Act of 1992). To support these goals, Policy 6.19 of the draft Plan calls for individual development projects that could be proposed and approved pursuant to the proposed Plan to minimize potable water usage; identify on-site sources of water that could be reused for non-potable purposes; install on-site collection, treatment, storage, and conveyance systems for non-potable needs; and meet all other non-potable demands using non-potable water from within the Plan area or a municipal supply of recycled water. Reduction of water use and reuse of water that would otherwise be discharged to the combined sewer system for non-potable purposes would contribute to a decrease in sanitary sewage and associated combined sewer overflows, compared to conditions that would be expected without these measures. In addition, as discussed in the Setting, the City is developing a Wastewater Master Plan that will include measures by the City to reduce the quantity and frequency of overflows and improve the water quality of overflows. Still, projects that could be approved pursuant to the draft Plan would generate up to about 1.1 million gallons per day of wastewater, and other anticipated development in the Plan area (Zone 1 of the approved Transbay Redevelopment Plan and other assumed growth) would add another 600,000 gallons per day. The total wastewater flow of 1.7 million gallons per day would represent about 2.5 percent of the daily wastewater flow to the Southeast Plant, and about 0.4 percent of the combined wet-weather capacity of the Southeast and North Point treatment plants.⁴³⁴

Changes in Stormwater Runoff

Stormwater runoff in an urban location such as the Plan area is a known source of pollution. Runoff from development projects that could be undertaken pursuant to the proposed zoning controls may contain many types of pollutants including polynuclear aromatic hydrocarbons from vehicle emissions; heavy metals, such as copper from brake pad wear and zinc from tire wear; dioxins as products of combustion; and mercury resulting from atmospheric deposition. All of these materials, and others, may be deposited on paved surfaces and rooftops as fine airborne particles, thus yielding stormwater runoff pollution that is unrelated to the particular activity or use associated with a given project. In addition, subsequent individual development projects could contribute specific pollutants including car maintenance wastes, pesticides, household hazardous wastes, pet wastes, sediments, nutrients, oil and grease, organics, and trash which can be washed into the combined sewer system. These pollutants can all affect water quality.

The Plan area is almost entirely covered by impervious surfaces at present and the vast majority of development projects in the Plan area that could be undertaken pursuant to the proposed zoning controls would be located on sites that are already developed. With implementation of stormwater control measures as required by San Francisco's Stormwater Design Guidelines (described in the Setting) and Policy 6.20 of the draft Plan, implementation of individual development projects that could be proposed and approved pursuant to the proposed zoning controls would contribute to a decrease in stormwater flows from the Plan area, compared to existing conditions, as more pervious surfaces, such as landscaped

⁴³⁴ To fully offset 1.7 million gallons in wastewater entering the combined sewer system during a storm would require capturing and detaining or reusing the equivalent of almost one-half inch of rainfall

areas of sidewalks, are created, and to the extent that impervious streets and sidewalks are replaced with permeable surfaces. Individual development projects would be required to incorporate low-impact design techniques into the project design and to implement stormwater BMPs to reduce the flow rate and volume of stormwater entering the combined sewer system. Appropriate stormwater management using low-impact design features would also improve the water quality of stormwater discharges from the district by capturing some contaminants in runoff that would otherwise travel to the combined sewer system. Examples of some low impact design features include use of permeable pavement, incorporating green roofs and green walls on buildings, including rain storage facilities, and providing landscaping or rain gardens into open space.

Projects that disturb more than 5,000 square feet of land would be required to submit a Stormwater Control Plan describing the BMPs that would be implemented and a plan for post construction operation and maintenance of the BMPs. Specifically, the plan would include the following elements:

- Site characterization
- Design and development goals
- Site plan
- Site design
- Source controls
- Treatment BMPs
- Comparison of design to established goals
- Operations and maintenance plan

For the Plan area, the site design would address several goals specified in the San Francisco Stormwater Design Guidelines, including minimizing impervious surfaces and disconnecting these surfaces from the combined sewer system; treating stormwater as a resource and not a waste product; treating storm water at its source; and using treatment trains (a combination of stormwater BMPs) to address a broad array of stormwater pollutants.

Implementation of source control BMPs such as covering and hydraulically isolating pollutant generating activities, implementing maintenance activities such as regular sweeping of exposed areas, and using non-polluting building and maintenance materials (including pesticides) would prevent or reduce the generation and discharge of pollutants and would improve the quality of stormwater for reuse or discharge to the combined sewer system. The selection of treatment BMPs to further reduce pollutant loads in stormwater runoff is guided by existing site conditions, design and development goals, and the pollutants of concern at the site. Treatment BMPs would reduce the pollutant loads stormwater via infiltration (e.g. permeable pavement or infiltration basins or trenches), detention (constructed wetlands, detention pond or vault, or wet pond), bioretention (e.g. flow through planter or rain garden), or biofiltration (e.g. vegetated areas; media, sand, or vegetated rock filters; swirl separators, water quality inlets, or drain inserts). One or more treatment BMPs could be required to address each of the potential stormwater pollutants of concern.

Project sponsors for individual development projects would be required to achieve the standards specified in LEED® SS6.1 (Stormwater Design: Quantity Control) to minimize the flow and volume of stormwater into the combined sewer system. For sites with less than 50 percent impervious surfaces, this standard requires project sponsors to implement a stormwater management plan to prevent the post-development peak discharge rate and quantity from exceeding the pre-development peak discharge rate and quantity for the one and two-year 24-hour design storms. For sites with greater than 50 percent impervious surfaces, the project sponsor must implement a stormwater management plan that results in a 25 percent decrease in the volume of storm water runoff from the two-year 24-hour design storm, compared to conditions without a management plan. Recommended BMPs to achieve these goals include infiltration methods such as vegetated roofs, pervious paving, and other measures to minimize impervious surfaces. Reuse of stormwater for non-potable uses such as landscape irrigation, toilet and urinal flushing, and custodial uses is also recommended.

Reduction in stormwater volume could be achieved through an increase in pervious surfaces (i.e., replacing asphalt or concrete with pervious asphalt or concrete or other hard surface that allows rainwater to percolate into the ground and/or with planted or otherwise unsurfaced areas. Stormwater volume can also be decreased through the alternative use of rainwater, such as by collecting the water in tanks and using it for toilet flushing and landscape irrigation. Reduction in peak stormwater volume can also avoid ultimate combined sewer overflows by detaining rainfall to keep it from entering the combined sewer until after the largest amount of water from other sites has passed through the system. Such retention strategies can include green roofs (on which plants permanently capture a portion of the rainfall and delay the arrival to the sewer of another portion) and holding tanks.⁴³⁵ As an example, if a 10,000-square-foot area were converted from conventional asphalt to pervious paving, about 3,700 gallons of water per inch of rain would be diverted to groundwater infiltration for every inch of rain. A 25 percent decrease in runoff, as required by the Stormwater Design Guidelines, would be 1,250 gallons per inch of rain. If all rainfall were collected and held for later discharge, more than 6,000 gallons of runoff would be retained from the same site per inch of rainfall.⁴³⁶

The Stormwater Control Plan would also include an Operations and Maintenance Plan that would identify who has the operational responsibility for the facility, applicable maintenance requirements for each stormwater control, detailed requirements for each treatment and control BMP, required maintenance of facilities. These requirements would transfer to any new owner, occupant, or lessee of the facility.

The Stormwater Control Plan must be reviewed and stamped by a licensed landscape architect, architect, or engineer. The SFPUC reviews the plan and certifies compliance with the Guidelines and inspects stormwater BMPs once they are constructed. Any issues noted by the inspection must be corrected before the Certificate of Occupancy can be issued for the building. Following occupancy, the owner is responsible for completing an annual self-certification inspection, and must submit completed checklists

⁴³⁵ Retention (or detention) basins are used to hold rainfall, and sometimes to allow it to percolate to groundwater, in less developed areas but are less feasible in urban areas.

⁴³⁶ Based on 27,154 gallons per acre-inch runoff coefficients of 0.8 and 0.2, per SFPUC Stormwater guidelines.

and maintenance logs for the year to the SFPUC. In addition, the SFPUC will inspect all stormwater BMPs every third year and any issues identified by either inspection must be resolved before the SFPUC can renew the certificate of compliance.

Net Impact to CSO Discharges

Based on the above discussion, implementation of the draft Plan would facilitate new development that would minimize year-round sanitary sewage flows and decrease stormwater runoff to the combined sewer system through compliance with San Francisco's Green Building Ordinance, Stormwater Design Guidelines, and policies included in the draft Plan. Implementation of stormwater BMPs in compliance with the Stormwater Design Guidelines would also increase the water quality for discharges of stormwater to the sewer system. Therefore, water quality impacts related to violation of water quality standards or degradation of water quality associated with changes in combined sewer overflow discharges to the Bay would be less than significant.

Long-Term Groundwater Dewatering

Development projects that include construction below the water table could also require groundwater dewatering year round. However, the draft Plan calls for capture of this groundwater and reuse for non-potable uses (Policy 6.15). If any groundwater produced during dewatering required discharge to the combined sewer system, the discharge would be conducted in accordance with Article 4.1 of the *San Francisco Public Works Code*, as supplemented by Department of Public Works Order No. 158170, which regulates the quantity and quality of discharges to the combined sewer system. This permit would contain appropriate discharge standards and may require installation of meters to measure the volume of the discharge. Although the groundwater could contain contaminants related to past site activities, as discussed in Section IV.Q, Hazards and Hazardous Materials, as well as sediment and suspended solids, the groundwater would be treated as necessary to meet permit requirements prior to discharge. With reuse of the groundwater produced during permanent dewatering or discharge to the combined sewer system in accordance with regulatory requirements, water quality impacts related to violation of water quality standards or degradation of water quality due to discharge of groundwater would be less than significant for permanent groundwater dewatering. Further, if development projects in the Plan area used groundwater produced from dewatering at existing facilities in the downtown core (currently discharged to the combined sewer system) for non-potable purposes like irrigation, as proposed in the draft Plan, the Plan could further contribute to a reduction in combined sewer overflows, a beneficial impact.

Mitigation: None required.

Impact HY-2: The proposed Transit Center District Plan would not substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level. (Less than Significant)

Development projects constructed under the draft Plan would use potable water from the SFPUC. If and when a supply of recycled water becomes available through the Eastside Recycled Water Project or a local facility constructed within the Plan area, these developments would use recycled water for non-potable uses such as toilet flushing and irrigation. Although groundwater dewatering could be required during construction and operation of individual projects that include construction below the water table, groundwater from the Downtown San Francisco Groundwater Basin is not used as a drinking water supply and there are no plans for development of this basin for groundwater production. The draft Plan area is almost completely covered with impervious surfaces under existing conditions, and projects constructed pursuant to the Plan would not increase impervious surface coverage or otherwise reduce infiltration or groundwater recharge. Further, stormwater controls implemented pursuant to the San Francisco Stormwater Design Guidelines (described in Impact HY-1) could include stormwater BMPs to promote infiltration of stormwater—such as through incrementally decreasing the amount of existing impervious surface—which would in turn recharge the groundwater basin. At any rate, because groundwater is not used as a potable water supply, and because there would be no net increase in impervious surface, impacts related to depletion of groundwater resources or interference with groundwater recharge would be less than significant.

Mitigation: None required.

Impact HY-3: The proposed Transit Center District Plan would implement stormwater control measures that would reduce the quantity and rate of stormwater runoff to the combined sewer system, decreasing the potential for erosion or flooding. (Less than Significant)

As discussed in Impact HY-1, development projects that could be proposed and approved pursuant to the proposed Plan would implement stormwater control measures as required by San Francisco's Stormwater Design Guidelines (described in the Setting) and Policy 6.20 of the draft Plan. This would reduce the peak quantity and peak rate of stormwater runoff to the city's combined sewer system, decreasing the potential for erosion and flooding, and would result in a less-than-significant impact.

Mitigation: None required.

Impact HY-4: The proposed Transit Center District Plan would not contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff. (Less than Significant)

As discussed in Impact HY-1, development projects that could be proposed and approved pursuant to the proposed Plan would implement stormwater control measures as required by San Francisco's Stormwater Design Guidelines (described in the Setting) and Policy 6.20 of the draft Plan. This would reduce the quantity and rate of stormwater runoff to the city's combined sewer system and improve the water quality of those discharges. Therefore, impacts related to contributing runoff water that would exceed the capacity of the combined sewer system or provide substantial additional sources of polluted runoff would be less than significant.

Mitigation: None required.

Impact HY-5: The proposed Transit Center District Plan would not expose people, housing, or structures, to substantial risk of loss due to flooding. (Less than Significant)

Development in the City and County of San Francisco must account for flooding potential. Areas located on fill or bay mud can subside to a point at which the sewers do not drain freely during a storm (and sometimes during dry weather) and there can be backups or flooding near these streets and sewers. As described in Section IV.O, Geology, Soils, and Seismicity, most the Plan area is underlain by artificial fill, and approximately the eastern half of the Plan area is bayward of the historic shoreline. Although the SFPUC has specifically identified potential flooding hazards related to the depth of sewer lines relative to properties they serve in locations west of the Plan area, areas east of Fourth Street, including the Plan area, have not been called out by SFPUC for the additional review required west of Fourth Street.

As discussed in the Setting, the Plan area is not located within a Zone A or Zone V flood zone identified on the preliminary FIRM prepared by FEMA, or in a Special Flood Hazard Area identified on San Francisco's Interim Floodplain Map. However, portions of the Plan area are within an area identified by the BCDC as potentially vulnerable to future flooding if the level of the bay increases as expected due to sea level rise. The projected 55-inch sea level rise by 2100 would not move the Bay shore closer to the Plan area because the Embarcadero seawall is a hard barrier (as opposed, for example, to marshland that presents a gradual slope up from the Bay). However, under the BCDC-forecast scenario for sea level rise, portions of the Plan area could potentially be susceptible to storm surge in the future (beyond approximately 2050). New developments would be constructed to more current seismic safety standards, which would also provide better protection from damage due to storm surge. As explained in the setting, sea level rise by 2050 is anticipated to approximate 15 inches and, while the rates of sea level rise is anticipated to increase beyond that time, the projections are less certain. Moreover, time beyond 2050 is beyond the planning horizon for the draft Plan. Thus, conclusions regarding sea level rise beyond the year 2050 would be speculative, and therefore, impacts related to development within a 100-year flood zone or risk due to flooding would be less than significant.

Mitigation: None required.

Impact HY-6: The proposed Transit Center District Plan would not expose people or structures to a significant risk of loss, injury or death involving inundation by seiche, tsunami, or mudflow. (Less than Significant)

The project site is not in an area subject to reservoir inundation hazards and is not located in a volcanic area that could be subject to mudflow.⁴³⁷ Therefore, there is no impact related to these hazards.

The easternmost portion of the Plan area is within an area that could be subjected to an approximately 8 foot seiche, as discussed in the Setting, and additional areas along the easternmost portion of the Plan area could be subjected to a seiche in the event of a future sea level rise due to global warming. In the event that an earthquake occurred that would be capable of producing a tsunami that could affect San Francisco, the National Warning System would provide warning to the City. The San Francisco outdoor warning system (sirens and loudspeakers, tested each Tuesday at 12:00 noon) would then be initiated which would sound an alarm alerting the public to tune into local TV, cable TV, or radio stations, which would carry instructions for appropriate actions to be taken as part of the Emergency Alert System. Police would also canvas the neighborhoods sounding sirens and bullhorns, as well as knocking on doors as needed, to provide emergency instructions. Evacuation centers would be set up if required. The advance warning system would allow for evacuation of people prior to a seiche and would provide a high level of protection to public safety.

Although people would be evacuated in the event of a seiche, there could be property damage due to inundation. However, tsunamis are extremely rare. Moreover, with implementation of the proposed Plan, there would not be a substantial change from existing conditions with regard to the number of buildings constructed within the potential zone of inundation from a seiche. Furthermore, new developments would be constructed to more current seismic safety standards which would also provide better protection from damage due to inundation by a seiche. Therefore, impacts related to exposure of people or structures to risk from inundation by seiche and tsunami are less than significant.

Mitigation: None required.

⁴³⁷ URS Corporation, City and County of San Francisco Hazard Mitigation Plan, December, 2008. Map C-14.

Impact Analysis: Transit Tower

Impact HY-7: The proposed Transit Tower would not violate water quality standards or otherwise substantially degrade water quality. (Less than Significant)

Construction

Water quality impacts associated with construction of the Transit Tower would be similar to those described in Impact HY-1, above, for development projects that could be proposed and approved pursuant to the draft Plan. Water quality impacts related to construction-related stormwater runoff and groundwater dewatering discharges would be less than significant with implementation of the requirements of Article 4.1 of the San Francisco Public Works Code (supplemented by Department of Public Works Order No. 158170). Further, groundwater produced during construction dewatering could potentially be captured for reuse on-site.

Operation

Similar to the development projects that could be proposed and approved pursuant to the proposed zoning controls, the Transit Tower would also contribute to a decrease in combined sewer overflows during operation through implementation of the San Francisco's Green Building Ordinance requirement to reduce the amount of potable water used for landscaping by 50 percent and indoor use by 30 percent (as of 2011), compared to conventional development, and implementation of Policy 6.19 of the draft Plan requiring projects to minimize water usage; identify on-site sources of water that could be reused for non-potable purposes; and install on-site collection, treatment, storage, and conveyance systems for non-potable needs. Stormwater flows would be decreased, compared to existing conditions, and their quality improved through implementation of the San Francisco Stormwater Design Guidelines and required stormwater control plan. Groundwater produced during long-term groundwater dewatering would be captured for reuse, or discharge would comply with requirements of Article 4.1 of the San Francisco Public Works Code (supplemented by Department of Public Works Order No. 158170).

With implementation of the above project proposals and City requirements, water quality impacts related to violation of water quality standards or degradation of water quality due to construction and operation of the Transit Tower would be less than significant.

Mitigation: None required.

Impact HY-8: The proposed Transit Tower would not substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level. (Less than Significant)

As with all development projects that could be proposed and approved pursuant to the draft Plan, the Transit Tower would use SFPUC system water and, if and when available, recycled water (for non-potable uses such as toilet flushing and landscape irrigation) as a water supply. The Transit Tower would

include stormwater BMPs that would increase stormwater infiltration, compared to existing conditions, under which the Transit Tower site allows for no such infiltration. Although the Transit Tower would likely require dewatering of groundwater, there are no existing or planned uses of groundwater within the Downtown San Francisco Groundwater Basin. Therefore, impacts related to depletion of groundwater resources or interference with groundwater recharge would be less than significant with respect to the Transit Tower.

Mitigation: None required.

Impact HY-9: The proposed Transit Tower would implement stormwater control measures that would reduce the quantity and rate of stormwater runoff to the combined sewer system, decreasing the potential for erosion or flooding. (Less than Significant)

As with other development projects that could be proposed and approved pursuant to the draft Plan, the Transit Tower would include stormwater control measures as required by San Francisco’s Stormwater Design Guidelines (described in the Setting) and Policy 6.20 of the Plan. Although the proposed Transit Tower would be built at nearly full site coverage, the building would comply with City requirements by reducing the volume and rate of peak stormwater discharge. As stated in Chapter II, Project Description, the TJPA is developing plans to substantially decrease the use of potable water for non-potable use at the Transit Center. These measures would be employed in the proposed Transit Tower project as well.⁴³⁸ They will include some or all of the following: collection of greywater from restroom sinks (but not in retail spaces); directing “blackwater” (sewage) directly to the City’s sewer system; collection of stormwater runoff and piping it to the storage system after pretreatment; and reuse of greywater for toilet flushing (including in retail spaces) following collection, storage, filtering and treatment. Additionally, the adjacent City Park—to be built atop the Transit Center—and Mission Square open spaces would provide opportunities for stormwater retention through plantings and permeable pavement surface in Mission Square. This would reduce the quantity and rate of stormwater runoff to the city’s combined sewer system, decreasing the potential for erosion and flooding, and would result in a less-than-significant impact.

Mitigation: None required.

⁴³⁸ Rana Creek, Atelier 10, and Flack & Kurtz, *Transbay Transit Center Water Systems Report, 25% Design Development*, July 1, 2010. This report is available for review at the Planning Department, 1650 Mission Street, Suite 400, in Case File No. 2007.0553E.

Impact HY-10: The proposed Transit Tower would not contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff. (Less than Significant)

Similar to the development projects that could be proposed and approved pursuant to the proposed zoning controls, the Transit Tower would include stormwater control measures as required by San Francisco's Stormwater Design Guidelines (described in the Setting) and Policy 6.20 of the draft Plan. This would reduce the quantity and rate of stormwater runoff to the city's combined sewer system, compared to existing conditions, and improve the water quality of those discharges. Therefore, impacts related to contributing runoff water that would exceed the capacity of the combined sewer system or provide substantial additional sources of polluted runoff would be less than significant for the Transit Tower.

Mitigation: None required.

Impact HY-11: The proposed Transit Tower would not expose people, housing, or structures, to substantial risk of loss due to flooding. (Less than Significant)

As with all development projects that could be proposed and approved pursuant to the proposed Plan, the Transit Tower site is not located within a Zone A or Zone V flood zone identified on the preliminary FIRM prepared by FEMA, or in a Special Flood Hazard Area identified on San Francisco's Interim Floodplain Map. As discussed with respect to Plan effects in Impact HY-5, portions of the Plan area are within an area identified by the BCDC as potentially vulnerable to future flooding if the level of the bay increases as expected due to sea level rise. As explained in the setting, sea level rise by 2050 is anticipated to approximate 15 inches and, while the rates of sea level rise is anticipated to increase beyond that time, the projections are less certain. Moreover, time beyond 2050 is beyond the planning horizon for the draft Plan. Thus, conclusions regarding sea level rise beyond the year 2050 would be speculative, and therefore, impacts related to development within a 100-year flood zone or risk due to flooding would be less than significant for the Transit Tower.

Mitigation: None required.

Impact HY-12: The proposed Transit Tower would not expose people or structures to a significant risk of loss, injury or death involving inundation by seiche, tsunami, or mudflow. (Less than Significant)

Similar to the development projects that could be proposed and approved pursuant to the proposed zoning controls, the Transit Tower site is not in an area subject to reservoir inundation hazards⁴³⁹ and is not located in a volcanic area that could be subject to mudflow. In addition, the Transit Tower site is located

⁴³⁹ URS Corporation, City and County of San Francisco Hazard Mitigation Plan, December, 2008. Map C-14.

outside of the area that would be subject to a seiche. Therefore, there is no impact related to these hazards for the Transit Tower.

Mitigation: None required.

Cumulative Impacts

Impact C-HY: The proposed Transit Center District Plan and Transit Tower, in combination with past, present, and reasonably foreseeable future projects in the site vicinity, would result in less-than-significant cumulative impacts to hydrology and water quality. (Less than Significant)

As discussed above, implementation of the draft Plan would allow for new development that would increase year-round sanitary sewage flows, but would be expected to decrease stormwater runoff peak rate and total volume to the combined sewer system through compliance with San Francisco's Green Building Ordinance and Stormwater Design Guidelines. Moreover, sanitary sewage volumes would be decreased on a building-by-building and per-person basis, compared to historical trend, because of low-water-use requirements in the Green Building Ordinance. Implementation of stormwater BMPs in compliance with the Stormwater Design Guidelines might also improve the water quality for discharges of stormwater to the sewer system. Other development projects in the City would also be required to implement these standards and collectively, all new development would contribute to a decrease in combined sewer overflows and contribute to an improvement in the water quality of those discharges. Associated risks of flooding and exceeding the capacity of the combined sewer system would also be cumulatively decreased over time as stormwater is diverted from the combined sewer system. Therefore, potential cumulative impacts related to hydrology and water quality would be less than significant.

Mitigation: None required.

Q. Hazards and Hazardous Materials

Introduction and Methodology

This section presents the existing setting and potential impacts related to hazards and hazardous materials associated with the implementation of the Transit Center District Plan and Transit Tower. The Setting includes a definition of hazardous materials and waste, an overview of general environmental conditions in the Transit Center District Plan area with respect to the presence of hazardous materials and wastes, a general description of hazardous building materials likely to be present within the Plan area, and an overview of the relevant hazardous materials regulations that are applicable to the Plan area. Based on this information, impacts associated with the potential to be exposed to hazardous materials during construction and as a result of future land use changes due to implementation of the project are identified.

Environmental Setting

Hazardous materials, defined in Section 25501(o) of the California Health and Safety Code, are materials that, because of their “quantity, concentration, or physical or chemical characteristics, pose a significant present or potential hazard to human health and safety or to the environment if released to the workplace or environment.” Hazardous materials have been and are commonly used in commercial, agricultural, and industrial applications as well as in residential areas to a limited extent.

A waste is any material that is relinquished, recycled, or inherently waste-like. Title 22 of the CCR, Chapter 11 (Identification and Listing of Hazardous Waste) contains regulations for the classification of hazardous wastes (22 CCR 66261.1, et seq.). A waste is considered a hazardous waste if it is toxic (causes human health effects), ignitable (has the ability to burn), corrosive (causes severe burns or damage to materials), or reactive (causes explosions or generates toxic gases) in accordance with the criteria established in Article 3 of Chapter 11. Articles 4 and 4.1 also list specific hazardous wastes and Article 5 identifies specific waste categories, including federal Resource Conservation and Recovery Act (RCRA) hazardous wastes, non-RCRA hazardous wastes, extremely hazardous wastes, hazardous wastes of concern, and special wastes. If improperly handled and if released to the soil, groundwater, or air (in the form of vapors, fumes, or dust), hazardous materials and wastes can result in public health hazards.

The following potential sources of hazardous materials are present in the Plan area:

- fill materials, including those placed east of the historic high tide line;
- historic and existing uses of hazardous materials, and permitted handling of hazardous wastes;
- identified sites where soil or groundwater has been affected by a chemical release(s) from past or present land uses (referred to as “environmental cases” or “spill sites”); and
- hazardous building materials that were historically used in construction.

Fill Materials

As described Section IV.O, Geology and Soils, the majority of the Plan area is underlain by up to 25 feet of artificial fill. Filling of the Plan area began in the mid 1800s when development began. The Plan area is with the limits of the area destroyed by the fire following the 1906 earthquake. During reconstruction following the fire, many portions of the Plan area were covered with an additional layer of fill, locally known as earthquake fill. This earthquake fill generally consists of loose to dense sand with varying amounts of silt and building debris (including concrete, wood, and brick debris) and is present beneath most, if not all, of the Plan area. The fill materials were primarily obtained from dune sands and quarried rock (including serpentinite bedrock found in many areas of San Francisco), and also includes industrial refuse and building debris from the 1906 earthquake.

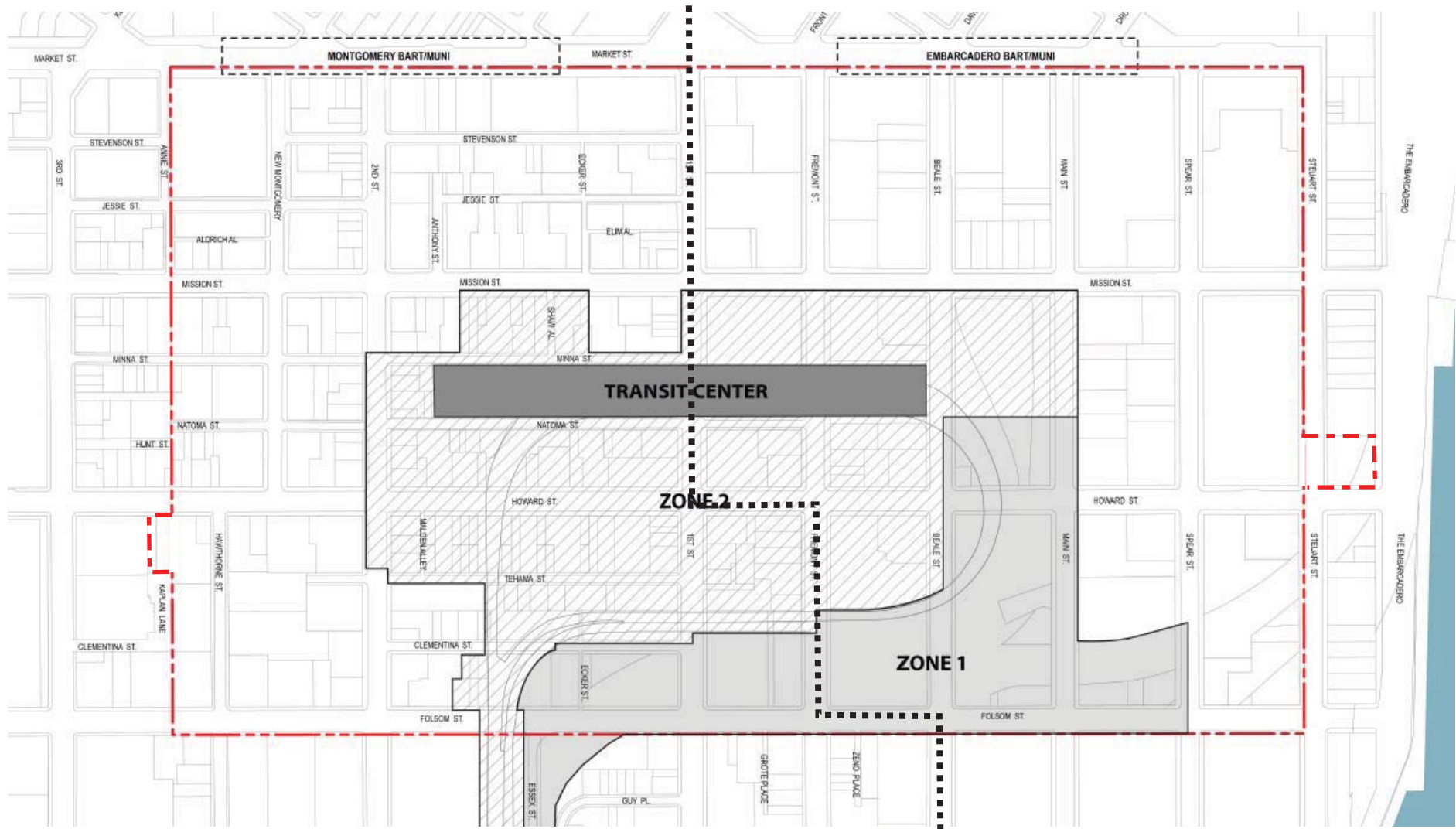
Hazardous materials used in the industries that were destroyed during the 1906 fire and earthquake were commonly incorporated into the building debris, which was then incorporated into the earthquake fill, and built upon during reconstruction. Because of this historical practice, the 1906 earthquake fill commonly contains polynuclear aromatic hydrocarbons,⁴⁴⁰ heavy metals, oil and grease, and volatile organic compounds.⁴⁴¹ The existence of hazardous materials in the earthquake fill is one of the reasons for enactment of Article 22A of the *San Francisco Health Code* (previously referred to as the Maher Ordinance), which is described below under Regulatory Framework. Article 22A requires site assessments at specified sites located eastward of the historic high tide line where the land has been filled, unless a waiver is granted by the Director of the Department of Public Health (or designee). Depending on the results of the site assessments, mitigation can be required to clean up hazardous materials identified in the soil. The portion of the Plan area generally located east of First Street, including the proposed Transit Tower site and a portion of the planned new Transit Center itself, are located eastward of the historic high tide line as indicated in **Figure 74**, and development projects in these portions of the Plan area would be subject to the requirements of Article 22A.

Land Uses

Many of the historical uses of properties in the Plan area included hazardous materials, either in the building materials or in specific activities. Historical land uses in the Plan area, including foundries, lumber yards, metal working facilities, printing shops, gasoline service stations, auto repair shops, are commonly associated with the use of petroleum products, metals, solvents, creosote, and polychlorinated

⁴⁴⁰ Polynuclear aromatic hydrocarbons (PAHs) are group of chemicals that are formed during the incomplete burning of coal, oil, gas, wood, garbage, or other organic substances, such as tobacco and charbroiled meat. PAHs usually occur naturally, but they can be manufactured. A few PAHs are used in medicines and to make dyes, plastics, and pesticides. Others are contained in asphalt used in road construction. They can also be found in substances such as crude oil, coal, coal tar pitch, creosote, and roofing tar. They are found throughout the environment in the air, water, and soil. They can occur in the air, either attached to dust particles or as solids in soil or sediment.

⁴⁴¹ Volatile organic compounds (VOCs) are emitted as gases from certain solids or liquids, such as paints and lacquers, paint strippers, cleaning supplies, pesticides, building materials and furnishings, office equipment (i.e., copiers and printers, correction fluids and carbonless copy paper, graphics and craft materials including glues and adhesives, permanent markers, and photographic solutions).



- - - - - Plan Area
- Historic High Tide Line (Area Bayward of Line is Subject to Article 22A)

biphenyls (PCBs).⁴⁴² Other historic land uses in the area include coal yards and coal gasification plants and coal storage yards. Historic coal yards or coal storage warehouses are a potential source of metals and polycyclic nuclear hydrocarbons. Manufactured gas plant (coal gasification) sites are also potential sources of crude oil, manufactured gas, ammonia, cyanide, and hydrogen.

Based on review of historical photographs, most of the Plan area was built out by the 1930s or earlier. Existing land uses area include primarily office and retail uses, as well as cultural and institutional uses and some residential buildings. There are no existing major industrial uses, and none of the Plan area is any longer zoned for industrial uses. No automobile service stations remain in the Plan area, and existing Plan area office, retail, and other uses are not typically associated with large-scale use of hazardous materials other than cleaning supplies, prepackaged materials for resale, photo-processing chemicals, or similar materials.

Permitted Hazardous Materials Uses

Permitted uses of hazardous materials include those facilities that historically used hazardous materials or currently use hazardous materials or handle hazardous wastes in accordance with current hazardous materials and hazardous waste regulations. Because the use and handling of hazardous materials at permitted sites are subject to strict regulation, the potential for a release of hazardous materials from these sites is considered low unless there is a documented chemical release at that same site. In such cases, the site would also be tracked in the environmental databases as an environmental case (described separately below). Permitted sites without documented releases are nevertheless potential sources of hazardous materials in the soil and/or groundwater (compared to sites where there are no hazardous materials) because of the potential for accidental spills, incidental leakage, or spillage that may have gone undetected.

An environmental database review⁴⁴³ conducted for the Plan area identified over two hundred permitted users of hazardous materials, the vast majority of which have submitted hazardous wastes manifests to the California Department of Toxic Substances Control (DTSC) for off-site disposal of hazardous wastes such as photo-processing wastes. There are about 14 existing facilities with permitted underground storage tanks (USTs) in the Plan area (UST database), six facilities with above ground storage tanks (AST database) and five facilities that manufacture or import chemical substances (TSCA database). Permitted uses associated with handling of hazardous wastes include one large quantity generator, 30 small quantity generators and eight generators that do not currently generate hazardous wastes, permitted under RCRA (RCRA-LGQ, RCRA-SQG, and RCRA-NonGen databases), and about 210 facilities that have submitted hazardous waste manifests to DTSC for off-site disposal (HAZNET database). Finally, the database reported 37 facilities that report emissions to the Bay Area Air Quality Management District (AIRS database).

⁴⁴² PSC Associates, Inc., Phase I Environmental Site Assessment, Transbay Redevelopment Plan, San Francisco, California. April 23, 1997.

⁴⁴³ Environmental Data Resources, 2008. *The EDR Radius Map Report with GeoCheck, 1st Street/Mission Street, San Francisco, CA, 94105*. June 11, 2008.

Environmental Cases and Spill Sites

Environmental cases relate to those sites that are suspected of releasing hazardous materials or have had cause for hazardous materials investigations and are identified on regulatory agency lists. Identification of hazardous materials in the soil or groundwater at these sites is generally due to site disturbance activities, such as removal or repair of a UST, a spill of hazardous materials, or excavation for new construction. The status of each environmental case varies and can be either active (ongoing investigations or remediation), closed (remediation or cleanup completed and approved by the regulatory agency), or unknown. However, the status can change with time, and new cases are periodically added to the databases. This discussion also identifies sites where a spill of hazardous materials was reported to state or federal agencies. Historic uses of hazardous materials noted in the database review for the Plan area,⁴⁴⁴ including historic USTs, automobile service stations, dry cleaners, and manufactured gas plants are also included in this discussion because they were not subject to the same level of regulatory oversight as current uses and could have potentially resulted in historic release of hazardous materials.

The large majority of environmental cases identified by the environmental database review⁴⁴⁵ conducted for the Plan area include 36 sites with leaking underground storage tanks (LUST database), which would generally involve a release of petroleum products. Many of these cases have been closed by the regulatory agencies, but could still include residual levels of petroleum products in the soil or groundwater depending on the cleanup levels approved by the regulatory agencies. Although the potential to encounter petroleum in the soil and/or groundwater near these sites depends on the extent of the release, remedial status of the individual site, and approved cleanup levels for closed sites, standard treatment and disposal methods are available for remediation of the petroleum products and these sites would not normally present a substantial barrier to development or an ongoing health risk once remediated.

The database review also identified two sites under the jurisdiction of the California Regional Water Quality Control Board (SLIC database), one site that has entered a voluntary cleanup agreement with DTSC⁴⁴⁶ (VCP database), two potential hazardous waste sites identified by DTSC (Envirostor database), and six sites with administrative, enforcement, or compliance actions related to the Federal Insecticide, Fungicide, and Rodenticide Act (FTTS and HIST FTTS databases). Ten spill sites were identified in the Plan area (ERNS and CHRIMS databases). Historic uses of hazardous materials include nearly 50 sites with historic USTs (CA FID UST, HIST UST, and SWEEPS databases), 34 historical automobile service stations (EDR Historical Auto Stations database), 22 historical dry cleaners (EDR Historical Cleaners database), and a former manufactured gas plant (Manufactured Gas Plant database).

⁴⁴⁴ *Ibid.*

⁴⁴⁵ *Ibid.*

⁴⁴⁶ Voluntary cleanup agreements are a tool that allow responsible parties and others to remediate low-risk properties quickly and efficiently without the issuance of a regulatory order. They establish requirements for investigation and cleanup of a site. With a voluntary cleanup agreement, the responsible party must be able to fund these activities as well as the costs for DTSC oversight which allows the DTSC to prioritize low risk sites for future development.

The former manufactured gas plant site is located on the southern portion of the block bounded by First, Howard, Fremont, and Mission Streets. Although this site is not listed as under investigation by a regulatory agency, residues from former manufactured gas plant sites typically contain polynuclear aromatic hydrocarbons, petroleum hydrocarbons, benzene, cyanide, metals, and phenols which could have remained at the site and affected soil and groundwater quality.⁴⁴⁷ The former manufactured gas plant (the San Francisco Gas Company, which operated at this site from 1854 until the 1890s) historically disposed of residual or waste material known as coal tar directly to the shallow waters of the old Yerba Buena Cove and fill material was deposited directly on top of the discharged coal tar during the filling of the cove. Coal tar residues are believed to be present in soil throughout the entire area of the former Yerba Buena Cove from First Street to The Embarcadero. This material is often encountered during excavations in areas near the former manufactured gas plant. Coal tar is known to exist on top of Bay Mud deposits along Beale Street from approximately Mission to Folsom Streets. The approximate depth to the top of the deposit is 10 to 12 feet at Beale Street, shallowing to the west and deepening to the east, although shallow deposits have also been encountered near The Embarcadero at Howard Street. The thickness of the coal tar deposits ranges from near zero along the fringes of the deposit and up to seven to 10 feet in the area of Beale and Howard Streets.

Within the Plan area, coal tar and coal tar residues have been encountered during investigation and construction of the two high-rise buildings along the southern side of the intersection of Howard and Beale Streets and beneath the foundation of the building on Fremont Street between Howard and Folsom Streets.

Environmental Conditions at Developer-Proposed Sites

Known environmental conditions at sites in the Plan area, based on an environmental assessment prepared for the Plan area,⁴⁴⁸ include earthquake fill that is expected at many potential development sites. In addition, existing USTs are noted at 2 New Montgomery Street and USTs have been removed or closed at 148 Natoma Street, Mission and Main Streets, and 125 Stevenson Street. A soil investigation at 41 Tehama Street identified lead at concentrations requiring disposal of excavated soil as a hazardous waste. Hazardous materials have been left in place at 148 Natoma Street, and a hazardous materials management plan is in place to prevent human contact within these hazardous materials.

Environmental Conditions at Transit Tower Site

Based on the environmental database review and historical data reports prepared in support of the environmental assessment for the Plan area, historic land uses in 1887 (prior to the 1906 earthquake) included a mechanics mill, iron works, forge shop, brass works, machine shops, cabinet shop and lumber

⁴⁴⁷ United States Environmental Protection Agency, 1999. *A Resource for MGP Site Characterization and Remediation, Expedited Site Characterization and Source Remediation at Former Manufactured Gas Plant Sites*. May, 1999.

⁴⁴⁸ Treadwell & Rollo. Draft Environmental Assessment, Proposed EIR Development, Transit Center District Plan, San Francisco, California. September 1, 2008.

facility, and coppersmith.⁴⁴⁹ All of these uses could have involved the use of hazardous materials such as petroleum products, metals, solvents, creosote, and PCBs. The site is also located approximately one block north of the former manufactured gas plant at First, Howard, Fremont and Natoma Streets.⁴⁵⁰ In 1939, the site was converted to use as the passenger waiting and loading area in front of the then-new Transbay Terminal, as well as the Muni drop off/lay over area, and this use continued until demolition of the Transbay Terminal began in 2010. Review of city directory data from 1910 to 2005 does not indicate that there were land uses at this site during the intervening period that would have involved the use of hazardous materials.⁴⁵¹

The Transit Tower site is partially located on the site of the former Transbay Terminal, which was identified as a leaking underground storage tank site (LUST database) and has also manifested hazardous wastes for off-site disposal (HAZNET database).⁴⁵² The leaking underground storage tank case involved a release of diesel from an underground storage tank that was contained in an intact 8-inch thick concrete vault. Soil affected by the release was removed and the case was closed in 1999. Hazardous wastes manifested for off-site disposal from the Transbay Terminal include liquids with a pH less than 2, other organic solids, other inorganic solid wastes, asbestos-containing waste, and an unspecified solvent mixture. A release of 6 gallons of muriatic acid was also reported at the terminal in 1994 (CHMIRS and ERNS databases).

Hazardous Building Materials

Hazardous building materials are included in this discussion because future development may involve demolition or renovation of existing structures that may contain hazardous building materials. Some building materials commonly used in older buildings could present a public health risk if disturbed during an accident or during demolition or renovation of an existing building. Hazardous building materials include asbestos, electrical equipment such as transformers and fluorescent light ballasts that contain PCBs or di (2 ethylhexyl) phthalate (DEHP), fluorescent lights containing mercury vapors, and lead-based paints. Asbestos and lead-based paint may also present a health risk to existing building occupants if they are in a deteriorated condition. If removed during demolition of a building, these materials would also require special disposal procedures.

Asbestos is a common name for a group of naturally occurring fibrous silicate minerals that are made up of thin but strong, durable fibers. Because of its physical properties, asbestos was commonly used until the 1970s as a building material, including use as insulation materials, shingles and siding, roofing felt, floor tiles, and acoustical ceiling material. Asbestos is a known carcinogen and presents a public health

⁴⁴⁹ Environmental Data Resources, 1st Street/Mission Street, San Francisco, CA, 94105. Certified Sanborn Map Report. Inquiry Number: 2241174.3s. June 12, 2008.

⁴⁵⁰ Environmental Data Resources, 1st Street/Mission Street, San Francisco, CA, 94105, The EDR Radius Map Report with GeoCheck Inquiry Number: 2241174.2s. June 11, 2008.

⁴⁵¹ Environmental Data Resources, 1st Street/Mission Street, San Francisco, CA, 94105. The EDR-City Directory Abstract. Inquiry Number: 2241174.6. June 12, 2008.

⁴⁵² Environmental Data Resources, 1st Street/Mission Street, San Francisco, CA, 94105, The EDR Radius Map Report with GeoCheck. Inquiry Number: 2241174.2s. June 11, 2008.

hazard if it is present in friable (easily crumbled) form. Long-term, chronic inhalation of high levels of asbestos can cause lung diseases such as asbestosis, mesothelioma, and/or lung cancer.⁴⁵³ Friable, finely divided and powdered waste containing greater than 1 percent asbestos is classified in the California Code of Regulations (CCR) as a hazardous waste that requires disposal at a licensed landfill (22 CCR 66261.24). Wastes containing non-friable asbestos are not considered hazardous and are not subject to regulation under 22 CCR 66001, et seq.

PCBs are mixtures of synthetic organic chemicals with physical properties ranging from oily liquids to waxy solids. Because of their nonflammability, chemical stability, high boiling point, and electrical insulating properties, PCBs were used historically in hundreds of industrial and commercial applications, including use in electrical, heat transfer, and hydraulic equipment; as plasticizers in paints, plastic, and rubber compounds; in pigments, dyes, and carbonless copy paper; and many other applications. PCBs are a known human carcinogen; they are highly toxic substances that remain persistent in the environment, accumulate in biological systems, interfere with the reproductive system, and act as immunosuppressants. Under Section 6(e) of the Toxic Substance Control Act (TSCA) (15 USC 2601, et seq.), Congress began regulating the use and manufacturing of PCBs in 1976, legislating “cradle to grave” (i.e., from manufacture to disposal) management of PCBs in the United States. Under the TSCA, the U.S. Environmental Protection Agency (EPA) began to impose bans on PCB manufacturing and sales and on most PCB uses in 1978. TSCA requires incineration or an alternative destruction method for oils containing PCB concentrations greater than 50 parts per million (ppm) and requires that free liquids be drained from electrical equipment prior to disposal, and that the liquids are appropriately disposed of. In California, PCB wastes are regulated as hazardous waste if the PCB concentration exceeds 50 ppm or the soluble concentration exceeds 5 ppm as oily liquid (22 CCR 66261.24).

Most fluorescent light ballasts manufactured before 1978 contain PCBs in their capacitor and potting material. Ballasts manufactured after January 1, 1978, do not contain PCBs and should be labeled as such on the ballast. Approved disposal methods for PCB-containing ballasts depend on the condition of the ballast and the PCB content of the potting material and capacitor oil. If the PCB concentration of the potting material is less than 50 ppm and the ballast contains a small, intact, non-leaking capacitor, the ballast may be disposed of at a municipal landfill. In general, all leaking ballasts and ballasts containing potting material with PCB concentrations greater than or equal to 50 ppm must be incinerated or destroyed by alternative methods, disposed of in a hazardous waste landfill, or decontaminated using approved methods.

Between 1979 and the early 1990s, DEHP was used in place of PCB as a dielectric fluid in some fluorescent light ballasts and other electrical equipment.⁴⁵⁴ DEHP is classified as a probable human carcinogen by the U.S. Department of Health and Human Services and as a hazardous substance by the

⁴⁵³ Agency for Toxic Substances and Disease Registry. Asbestos. Available online at <www.atsdr.cdc.gov/asbestos/asbestos/health_effects/>. December 12, 2010.

⁴⁵⁴ Green Lights Recycling, Inc. Ballasts Facts. Accessed at www.greenlightsrecycling.com/ballast%20Facts.htm. December 12, 2010.

EPA. Because of this, ballasts containing DEHP must be legally disposed of; ballast incineration or a combination of ballast recycling and incineration are recommended for complete destruction of DEHP.

Spent fluorescent lamps and tubes commonly contain mercury vapors and are considered a hazardous waste in California (22 CCR 66261.50). In 2004, new regulations classified all fluorescent lamps and tubes in California as a hazardous waste because they contain mercury. When these lamps or tubes are placed in the trash and collected for disposal, they can be broken and release mercury to the environment. The mercury can be absorbed through the lungs into the bloodstream of people nearby and can be washed by rain into waterways. The mercury in urban storm water sediment results in part from improperly discarded fluorescent lamps and tubes.⁴⁵⁵ Approximately 370 pounds of mercury were released in California in 2000 due to electric lamps and tubes breaking during storage and transportation. It is estimated that nearly 75 million waste fluorescent lamps and tubes are generated annually in California and these lamps and tubes contain more than half a ton of mercury. Because they are considered a hazardous waste, all fluorescent lamps and tubes must be recycled or taken to a so-called “universal waste” handler.

Lead-based paint was commonly used prior to 1960 and is likely present in buildings constructed before 1960. Lead is toxic to humans, particularly young children, and can cause a range of human health effects, depending on the level of exposure. When adhered to the surface of the material on which it is painted, lead-based paint poses little health risk. Where the paint is delaminated or chipping, the paint can cause a potential threat to the health of young children or other building occupants who may ingest the paint. Lead dust could also present public health risks during demolition of a structure with lead-based paint. Lead-based paint that has separated from a structure may also contaminate nearby soil. Lead-based paint is defined by 17 CCR 35033 as paint containing lead at a concentration of 5,000 mg/kg (0.5 percent) or greater. Separated paint would be considered a hazardous waste if the lead concentration exceeds the total threshold limit of 1,000 mg/kg, if the soluble lead concentration exceeds the soluble threshold limit concentration of 5 mg/L, or the federal toxicity regulatory level of 5 mg/L (22 CCR 66261.24).

Regulatory Framework

Hazardous materials and hazardous wastes are subject to extensive federal, state, and local regulations, with the major objective of protecting public health and the environment. In general, these regulations define hazardous materials; establish reporting requirements; set guidelines for handling, storage, transport, remediation, and disposal of hazardous wastes; and require health and safety provisions for workers and the public. The major federal, state, and regional agencies enforcing these regulations include the EPA (federal); the Department of Toxic Substances Control (DTSC), the State Water Resources Control Board and the California RWQCB (state); and the Bay Area Air Quality Management District (BAAQMD) (regional). The San Francisco Department of Public Health (DPH) often acts as lead agency to ensure proper remediation of LUST sites and other contaminated sites in San Francisco.

⁴⁵⁵ California Integrated Waste Management Board. *Waste Prevention Information Exchange: Fluorescent Lamps and Tubes*. Accessed at <http://www.calrecycle.ca.gov/ReduceWaste/FluoresLamps>. December 12, 2010.

City Hazardous Materials Regulations

Local regulations that have been enacted to address the potential to encounter hazardous materials in the soil at development sites and the safe handling of hazardous materials (including hazardous wastes). The following sections of the *San Francisco Health Code*, briefly summarized below, could apply to sites to be developed or reused in the Plan area. These include Article 22A (Analyzing the Soil for Hazardous Waste, formerly the Maher Ordinance), Article 21 (Hazardous Materials), Article 21A (Risk Management Program), and Article 22 (Hazardous Waste Management).

Under Article 22A, construction of projects located bayward of the historic high tide line that would involve excavation of greater than 50 cubic yards of soil requires preparation a site history to identify whether past uses might have cause contamination, characterization of on-site soils, and preparation of a site mitigation plan if contamination is identified. The soil analysis report is submitted to the San Francisco Department of Public Health (DPH), California Department of Toxic Substances Control (DTSC) and California Regional Water Quality Control Board (RWQCB). The measures recommended in the site mitigation plan must be completed during construction. If hazardous materials remain in the soil or groundwater, DPH approval of the site mitigation may be conditioned upon submittal of a Risk Management Plan, Health and Safety Plan, and possibly a Cap Maintenance Plan to prevent exposure to hazardous materials in the soil or groundwater after construction of the project. DPH may also require compliance with Article 22A at sites westward of the historic high tide line if the department has reason to believe that hazards wastes may be present in the soil at the property.

Article 21 of the *Health Code* provides for safe handling of hazardous materials in the City. It requires any person or business that handles, sells, stores, or otherwise uses specified quantities of to keep a current certificate of registration and to implement a hazardous materials business plan. A special permit is required for USTs. (This article also incorporates state tank regulations.).

Article 21A of the *Health Code* provides for safe handling of federally regulated hazardous, toxic, and flammable substances in the City, requiring businesses that use these substances to register with DPH and prepare a Risk Management Plan that includes an assessment of the effects of an accidental release and programs for preventing and responding to an accidental release.

Article 22 of the *Health Code* provides for safe handling of hazardous wastes in the City. It authorizes DPH to implement the state hazardous waste regulations, including authority to conduct inspections and document compliance.

In addition, construction, demolition, or renovation work that results in disturbance of lead-based paint or asbestos must comply with Section 3423 of the San Francisco Building Code (Work Practices for Lead-Based Paint on Pre-1979 Buildings and Steel Structures) and Section 3424 of the San Francisco Building Code (Asbestos Information and Notice).

Brownfields Reuse

Properties with abandoned, idled, or underused industrial and commercial facilities are referred to as brownfields, where redevelopment or expansion is complicated by suspected or identified past pollution. Historically, the development potential of these sites has adversely affected the unknown costs associated with cleanup of existing contamination and because of the potential for assuming the long-term liability associated with contamination at a property. Both the federal government and the state have developed “Brownfield Initiatives” to reduce or eliminate barriers to development of these properties, including the California Land Reuse and Revitalization Act, which took effect, for five years only, on January 1, 2005. This law allows some landowners to obtain immunity from liability for certain hazardous materials response costs and other damages if they assess and clean up the property as necessary and enter into an agreement with a regulatory oversight agency for the implementation of assessments and response actions. Specific public participation requirements apply to response actions conducted. Senate Bill 143 extended the repeal date for this act to January 1, 2017.⁴⁵⁶

Impact Analysis

Significance Criteria

The proposed project would have a significant hazardous materials impact if it were to:

- Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials;
- Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment;
- Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school;
- Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment;
- For a project located within 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, would the project result in a safety hazard for people residing or working in the project area;
- For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area;
- Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan; or
- Expose people or structures to a significant risk of loss, injury or death involving fires.

⁴⁵⁶ California Department of Toxic Substances Control, *Legislative Mandates 2009, A Compilation of New Mandates and Statutory Changes Affecting DTSC Programs*. November, 2009.

Project Impacts

Neither the draft Plan nor the proposed Transit Tower are located within two miles of an airport or private air strip and therefore would not interfere with air traffic or create safety hazards in the vicinity of an airport. Therefore, these two criteria are not applicable, and are not further discussed below. There are no schools elementary, middle, or high schools within one-quarter mile of the Plan area. Therefore, the criterion concerning hazardous emissions and materials within one-quarter mile of an existing or planned school is not applicable. (However, see Section IV.G, Air Quality, concerning effects related to emissions of toxic air contaminants.)

Impact Analysis: Transit Center District Plan

Impact HZ-1: Implementation of the Transit Center District Plan would not create a significant hazard through routine transport, use, or disposal of hazardous materials. (Less than Significant)

The draft Plan would result in new planning policies and controls for land use, including the potential creation of a district-wide combined heat and power (cogeneration) system. Most of the new land uses developed as a result of Plan implementation would likely handle common types of hazardous materials, such as cleaners, disinfectants, and chemical agents required to maintain the sanitation of the residential areas, and commercial bathrooms and food preparation areas. These commercial products are labeled to inform users of potential risks and to instruct them in appropriate handling procedures. However, the cogeneration facility, if implemented, could involve the use of additional hazardous materials such as petroleum products and solvents. Because this system is not designed, subsequent CEQA review would be required.

Similar to existing conditions, any business that handles or stores hazardous materials or petroleum products above threshold quantities would be required to comply with the requirements of the City's hazardous materials handling requirements specified in Article 21 of the *San Francisco Health Code* (discussed in the Setting). In accordance with this article, any facility that handles hazardous materials in excess of specified quantities would be required to obtain a Certificate of Registration from DPH and to implement a Hazardous Materials Business Plan that includes inventories, a program for reducing the use of hazardous materials and generation of hazardous wastes, site layouts, a program and implementation plan for training all new employees and annual training for all employees, and emergency response procedures and plans.

Facilities that store petroleum products in USTs would be required to obtain a permit for the UST in compliance with Article 21 of the *Health Code* and to comply with the regulatory requirements for inspection, monitoring, and secondary containment of USTs. Facilities that store petroleum products in above-ground tanks (ASTs) beyond a specified size would be required to submit a storage statement to the State Water Resources Control Board and prepare a Spill Prevention Control and Countermeasure Plan. In the unlikely event of a leak or tank rupture from a UST or AST, the spill would likely be contained within the secondary containment system for the tank.

In addition, DPH implements its Risk Management and Prevention Program specified in Article 21A of the *Health Code* and requires businesses that handle regulated substances to prepare a written Risk Management Plan. Similarly, any new businesses that handle hazardous waste must comply with the City's hazardous waste handling requirements specified in *Health Code* Article 22.

Compliance with the *San Francisco Health Code*, which incorporates state and federal requirements, would minimize potential exposure of site personnel and the public to any accidental releases of hazardous materials or waste and would also protect against potential environmental contamination. In addition, transportation of hazardous materials is well regulated by the California Highway Patrol and the California Department of Transportation. Therefore, the potential impacts related to the routine use, transport, and disposal of hazardous materials associated with plan implementation would be less than significant.

Mitigation: None required.

Impact HZ-2: Excavation in the Transit Center District Plan area would require the handling of potentially contaminated soil and groundwater, potentially exposing workers and the public to hazardous materials, or resulting in a release to the environment during construction. (Less than Significant with Mitigation)

As discussed in the Setting, most if not all of the Plan area is underlain by 1906 earthquake fill which commonly contains polynuclear aromatic hydrocarbons, heavy metals, oil and grease, and volatile organic compounds. In addition, many of the historical uses of properties in the Plan area would have involved the use of hazardous materials, including foundries, lumber yards, metal working facilities, printing shops, gasoline service stations, auto repair shops, that are commonly associated with the use of petroleum products, metals, solvents, creosote, and PCBs. There are also historic coal yards and coal storage warehouses that are a potential source of metals and polycyclic nuclear hydrocarbons, and a former manufactured gas plant sites that is a potential source of crude oil, manufactured gas, ammonia, cyanide, and hydrogen. Other historic land uses identified by the environmental database review for the project include nearly 50 sites with historic USTs (CA FID UST, HIST UST, and SWEEPS databases), 34 historical automobile service stations (EDR Historical Auto Stations database), 22 historical dry cleaners (EDR Historical Cleaners database).

The former manufactured gas plant site at First, Howard, Fremont and Natoma Streets disposed of residual or waste material known as coal tar directly to the shallow waters of the old Yerba Buena Cove and fill material was deposited directly on top of the discharged coal tar during the filling of the cove. Coal tar residues are believed to be present in soil throughout the entire area of the former Yerba Buena Cove from First Street to The Embarcadero. Therefore, this material is often encountered during excavations in areas near the former manufactured gas plant. Coal tar is known to exist on top of Bay Mud deposits along Beale Street from approximately Mission to Folsom Streets. The approximate depth to the top of the deposit is 10 to 12 feet at Beale Street, shallowing to the west and deepening to the east,

although shallow deposits have also been encountered near The Embarcadero at Howard Street. The thickness of the coal tar deposits varies. The thickness is near zero along the fringes of the deposit, and is 7 to 10 feet in the area of Beale and Howard Streets.

In addition to these historic land uses and fill practices that could have resulted in contamination of soil and groundwater and deposits of waste within the Plan area, there are a number of environmental cases with documented soil or contamination, including 36 sites with leaking underground storage tanks (LUST database), which would generally involve a release of petroleum products; two sites under the jurisdiction of the California Regional Water Quality Control Board (SLIC database); one site that has entered a voluntary cleanup agreement with DTSC (VCP database); two potential hazardous waste sites identified by DTSC (Envirostor database); and six sites with administrative, enforcement, or compliance actions related to the Federal Insecticide, Fungicide, and Rodenticide Act (FTTS and HIST FTTS databases). Ten spill sites were identified in the Plan area (ERNS and CHRIMS databases). The potential to encounter soil and/or groundwater contamination near these sites depends on the extent of the release, remedial status of the individual site, and approved cleanup levels for closed sites.

Existing permitted hazardous materials uses could also potentially contribute to soil or groundwater contamination in the Plan area, including 14 facilities with permitted underground storage tanks (UST database), six facilities with above ground storage tanks (AST database), five facilities that manufacture or import chemical substances (TSCA database); and hazardous waste handlers permitted under RCRA (one large quantity generator, 30 small quantity generators and eight generators that do not currently generate hazardous wastes; RCRA-LGQ, RCRA-SQG, and RCRA-NonGen databases).

Workers and the public could be exposed to hazardous materials during closure of hazardous materials handling facilities and USTs, during construction within contaminated materials, and during disposal of contaminated materials as a result of Plan implementation. Impacts related to these activities are discussed below.

Closure of hazardous materials handling facilities and USTs. Impacts related to closure of hazardous materials handling facilities and USTs would be less than significant with compliance with regulations. Facilities undergoing closure would be required to comply with Article 21 of the *San Francisco Health Code* to reduce the potential for hazardous materials to be left in place. Compliance would include preparation and implementation of a closure plan addressing the need for further maintenance of the closed facility; methods to ensure that the threat to public health and the environment from residual hazardous materials is eliminated; and methods to ensure that hazardous materials used at the facility are appropriately removed, disposed of, neutralized, or reused. The closure plan would be submitted to DPH for approval and upon submittal; DPH may add additional requirements for closure. Where a release is discovered, investigation and cleanup could be required under the oversight of the Local Oversight Program. In this case, a corrective action plan may be required and DPH would determine the adequacy of the plan and may also request state or federal agency review. The DPH findings would be published for public review.

If removal of a permitted or previously unidentified abandoned or no longer used UST is required, the tank would be closed in accordance with Article 21 of the *San Francisco Health Code*. A closure plan, identifying appropriate requirements for disposition of any remaining hazardous materials in the tank and the tank, would be submitted to the City for approval prior to removal of the UST. Soil from the UST excavation, and possibly the groundwater, would also be sampled in accordance with Article 21. Upon completion of closure, a release or contamination report would be submitted to DPH if a release were indicated on the basis of visual observations or sampling, and a final report documenting tank removal activities and any residual contamination left in place would be submitted to the City. Upon approval of this report, the City would issue a Certificate of Completion. If a release were indicated, the site owner would be required to submit a corrective action plan, including a community health and safety plan, to DPH and RWQCB, and remediation would be required in accordance with federal, state and local regulations. Alternatively, the tank could be abandoned in place if removal were infeasible.

Construction within contaminated materials. Based on the number of historic and current land uses in the Plan area that involved hazardous materials, the presence of earthquake fill throughout most of the area, the documented presence of coal tar wastes throughout portions of the area, and the number of environmental cases within the area, there is a high potential to encounter soil and groundwater contamination during construction activities associated with implementation of the draft Plan. Without implementation of proper precautions, workers or the community could be exposed to hazardous materials during excavation, grading, and dewatering, or during related site investigation and remediation. Vapors, if present, could also accumulate in structures constructed as a result of Plan implementation, causing nuisance vapors, adverse health effects, or flammable or explosive conditions. Therefore, impacts associated with construction within contaminated soil and groundwater are potentially significant. Implementation of **Mitigation Measure M-HZ-2, Site Assessment and Corrective Action**, would reduce this impact to a less-than-significant-level by requiring appropriate assessment of the potential for contaminated soil or groundwater, and requiring implementation of site investigation and remediation activities should the potential for contamination be identified.

Disposal of contaminated materials. Where remediation or tank removal requires off-site transport of contaminated soil or groundwater, these materials could be classified as a restricted or hazardous waste under state or federal regulations depending on the specific characteristics of the materials. However, the generator of the hazardous wastes would be required to follow state and federal regulations for manifesting the wastes, using licensed waste haulers, and disposing the materials at a permitted disposal or recycling facility. With compliance with these regulatory requirements, impacts related to disposal of hazardous wastes would be less than significant.

As noted in Section O, Geology, Soils, and Seismicity, the groundwater level in the Plan Area is expected at about 8 to 20 feet below ground surface. Because individual development projects that could be proposed and approved pursuant to the proposed zoning controls would include construction of foundations and/or below ground parking garages that could extend below this depth, dewatering likely would be necessary for some projects during construction. However, the draft Plan would allow for capture of this groundwater and reuse for non-potable uses. If any groundwater produced during

construction dewatering required discharge to the combined sewer system, the discharge would be conducted in compliance with Article 4.1 of the *San Francisco Public Works Code*, as supplemented by Order No. 158170, which specifies conditions and criteria for discharge of groundwater (see Section O., Hydrology and Water Quality for further discussion of Article 4.1 and Order No. 158170). This article also prohibits discharge of hazardous wastes into the combined sewer system. The discharged water would have to be sampled during dewatering to demonstrate that discharge limitations in the ordinance are met. If the groundwater does not meet discharge requirements, on-site pretreatment may be required before discharge to the sewer system. If standards could not be met with on-site treatment, off-site disposal by a certified waste hauler would be required. With implementation of these regulatory requirements, impacts related to the discharge of contaminated groundwater would be less than significant.

Mitigation Measures

Many of the potential development sites are located bayward of the historic high tide line, and would be subject to Article 22A of the *San Francisco Health Code* and many are not (see Figure 74, p. 627). While the assessment of the potential for contamination and implementation of corrective actions at all sites would be similar, they would differ slightly based on specific regulatory requirements. Therefore, the following mitigation measures specify requirements that apply differently to sites that are located bayward of the high tide line and those that are not. In addition, these measures specify requirements for the assessment of vapors that apply to all sites within the Plan area.

M-HZ-2a: Site Assessment and Corrective Action for Sites Located Bayward of Historic Tide Line. For any project located bayward of the historic high tide line the project sponsor shall initiate compliance with, and ensure that the project fully complies with, Article 22A of the *San Francisco Health Code*. In accordance with this article, a site history report shall be prepared, and if appropriate, a soil investigation, soil analysis report, site mitigation plan, and certification report shall also be prepared. If the presence of hazardous materials is indicated, a site health and safety plan shall also be required. The soil analysis report is submitted to DPH. If required on the basis of the soil analysis report, a site mitigation plan shall be prepared to 1) assess potential environmental and health and safety risks; 2) recommend cleanup levels and mitigation measures, if any are necessary, that would be protective of workers and visitors to the property; 3) recommend measures to mitigate the risks identified; 4) identify appropriate waste disposal and handling requirements; and 5) present criteria for on-site reuse of soil. The recommended measures would be completed during construction. Upon completion, a certification report shall be prepared documenting that all mitigation measures recommended in the site mitigation report have been completed and that completion of the mitigation measures has been verified through follow-up soil sampling and analysis, if required.

If the approved site mitigation plan includes leaving hazardous materials in soil or the groundwater with containment measures such as landscaping or a cap to prevent

exposure to hazardous materials, the project sponsor shall ensure the preparation of a risk management plan, health and safety plan, and possibly a cap maintenance plan in accordance with DPH requirements. These plans shall specify how unsafe exposure to hazardous materials left in place would be prevented, as well as safe procedures for handling hazardous materials should site disturbance be required. DPH could require a deed notice, for example, prohibiting or limiting certain future land uses, and the requirements of these plans and the deed restriction would transfer to the new property owners in the event that the property was sold.

M-HZ-2b: Site Assessment and Corrective Action for Projects Landward of the Historic High Tide Line. For any project that is not located bayward of the historic high tide line, the project sponsor shall ensure that a site-specific Phase I environmental site assessment is prepared prior to development. The site assessment shall include visual inspection of the property; review of historical documents; and review of environmental databases to assess the potential for contamination from sources such as underground storage tanks, current and historical site operations, and migration from off-site sources. The project sponsor shall ensure that the Phase I assessment and any related documentation is provided to the Planning Department's Environmental Planning (EP) division and, if required by EP, to DPH for review and consideration of potential corrective action.

Where the Phase I site assessment indicates evidence of site contamination, additional data shall be gathered during a Phase II investigation, including sampling and laboratory analysis of the soil and groundwater for the suspected chemicals to identify the nature and extent of contamination. If the level(s) of chemical(s) would create an unacceptable risk to human health or the environment, appropriate cleanup levels for each chemical, based on current and planned land use, shall be determined in accordance with accepted procedures adopted by the lead regulatory agency providing oversight (e.g., the DTSC, the RWQCB, or DPH). At sites where there are ecological receptors such as sensitive plant or animal species that could be exposed, cleanup levels shall be determined according to the accepted ecological risk assessment methodology of the lead agency, and shall be protective of ecological receptors known to be present at the site.

If agreed-upon cleanup levels were exceeded, a remedial action plan or similar plan for remediation shall be prepared and submitted review and approval by the appropriate regulatory agency. The plan shall include proposed methods to remove or treat identified chemicals to the approved cleanup levels or containment measures to prevent exposure to chemicals left in place at concentrations greater than cleanup levels.

Upon determination that a site remediation has been successfully completed, the regulatory agency shall issue a closure letter to the responsible party. For sites that are cleaned to levels that do not allow unrestricted land use, or where containment measures were used to prevent exposure to hazardous materials, the DTSC may require a

limitation on the future use of the property. The types of land use restriction include deed notice, deed restriction, or a land use restriction that binds current and future owners. A risk management plan, health and safety plan, and possibly a cap maintenance plan could be required. These plans would specify procedures for preventing unsafe exposure to hazardous materials left in place and safe procedures for handling hazardous materials should site disturbance be required. The requirements of these plans and the land use restriction shall transfer to the new property owners in the event that the property is sold.

M-HZ-2c: Site Assessment and Corrective Action for All Sites. If potential exposure to vapors is suspected, a screening evaluation shall be conducted in accordance with guidance developed by the DTSC⁴⁵⁷ to estimate worst case risks to building occupants from vapor intrusion using site specific data and conservative assumptions specified in the guidance. If an unacceptable risk were indicated by this conservative analysis, then additional site data shall be collected and a site specific vapor intrusion evaluation, including fate and transport modeling, shall be required to more accurately evaluate site risks. Should the site specific evaluation identify substantial risks, then additional measures shall be required to reduce risks to acceptable levels. These measures could include remediation of site soil and/or groundwater to remove vapor sources, or, should this be infeasible, use of engineering controls such as a passive or active vent system and a membrane system to control vapor intrusion. Where engineering controls are used, a deed restriction shall be required, and shall include a description of the potential cause of vapors, a prohibition against construction without removal or treatment of contamination to approved risk-based levels, monitoring of the engineering controls to prevent vapor intrusion until risk-based cleanup levels have been met, and notification requirements to utility workers or contractors who may have contact with contaminated soil and groundwater while installing utilities or undertaking construction activities.

The screening level and site-specific evaluations shall be conducted under the oversight of DPH and methods for compliance shall be specified in the site mitigation plan prepared in accordance with this measure, and subject to review and approval by the DPH. The deed restriction, if required, shall be recorded at the San Francisco Office of the Assessor-Recorder after approval by the DPH and DTSC.

Level of Significance after Mitigation

Implementation of Mitigation Measure M-HZ-2 would reduce impacts related to contamination at sites of future development under the draft Plan to a less-than-significant level.

⁴⁵⁷ California Department of Toxic Substances Control, *Interim Final, Guidance for Evaluation and Mitigation of Subsurface Vapor Intrusion to Indoor Air*. December 15, 2004, revised February 7, 2005.

Impact HZ-3: Demolition and renovation of buildings in the Transit Center District Plan area could potentially expose workers and the public to hazardous building materials including asbestos-containing materials, lead-based paint, PCBs, DEHP, and mercury, or result in a release of these materials to the environment during construction. (Less than Significant with Mitigation)

As discussed in the Setting, most of the Plan area was developed by the 1930s or earlier; therefore, many of the existing buildings may contain hazardous building materials including asbestos-containing materials, lead-based paint, and electrical equipment containing PCBs. Most of the buildings could also include fluorescent light ballasts containing PCBs or DEHP, and fluorescent light tubes containing mercury vapors. All of these materials were commonly employed until the second half of the 20th century. If a building is demolished or renovated as a result of plan implementation, workers and the public could be exposed to hazardous building materials if they were not abated prior to demolition. However, as discussed below, there is a well established regulatory framework for the abatement of asbestos-containing materials and lead-based paint, and impacts related to exposure to these hazardous building materials would be less than significant with compliance with regulatory requirements. Impacts related to exposure to other hazardous building materials would be potentially significant, and mitigation to reduce this impact to a less-than-significant level is identified below.

Asbestos Containing Materials. Section 19827.5 of the *California Health and Safety Code* requires that local agencies not issue demolition or alteration permits until an applicant has demonstrated compliance with notification requirements under applicable Federal regulations regarding hazardous air pollutants, including asbestos. The Bay Area Air Quality Management District (BAAQMD) is vested by the California legislature with authority to regulate airborne pollutants, including asbestos, through both inspection and law enforcement, and is to be notified ten days in advance of any proposed demolition or abatement work.

Notification includes the names and addresses of operations and persons responsible; description and location of the structure to be demolished/altered including size, age and prior use, and the approximate amount of friable asbestos; scheduled starting and completion dates of demolition or abatement; nature of planned work and methods to be employed; procedures to be employed to meet BAAQMD requirements; and the name and location of the waste disposal site to be used. The District randomly inspects asbestos removal operations. In addition, the District will inspect any removal operation when a complaint has been received.

The local office of the State Occupational Safety and Health Administration (Cal-OSHA) must be notified of asbestos abatement to be carried out. Asbestos abatement contractors must follow state regulations contained in 8CCR1529 and 8CCR341.6 through 341.14 where there is asbestos-related work involving 100 square feet or more of asbestos-containing material. Asbestos removal contractors must be certified as such by the Contractors Licensing Board of the State of California. The owner of the property where abatement is to occur must have a Hazardous Waste Generator Number assigned by and registered with the Office of the California Department of Health Services in Sacramento. The contractor and hauler of the material are required to file a Hazardous Waste Manifest which details the hauling of the material

from the site and the disposal of it. Pursuant to California law, DBI would not issue the required permit until the applicant has complied with the notice and abatement requirements described above.

These regulations and procedures, already established as a part of the permit review process, would ensure that any potential impacts due demolition or renovation of structures with asbestos-containing materials would be less than significant.

Lead-based Paint. Work that could result in disturbance of lead paint must comply with Section 3423 of the *San Francisco Building Code*, Work Practices for Lead-Based Paint on Pre-1979 Buildings and Steel Structures. Where there is any work that may disturb or remove lead paint on the exterior of any building built prior to 1979, Section 3423 requires specific notification and work standards, and identifies prohibited work methods and penalties. (The reader may be familiar with notices commonly placed on residential and other buildings in San Francisco that are undergoing re-painting. Generally affixed to a drape that covers all or portions of a building, these notices are a required part of the Section 3423 notification procedure.)

Section 3423 applies to the exterior of all buildings or steel structures on which original construction was completed prior to 1979 (which are assumed to have lead-based paint on their surfaces, unless demonstrated otherwise through laboratory analysis), and to the interior of residential buildings, hotels, and childcare centers. The ordinance contains performance standards, including establishment of containment barriers, at least as effective at protecting human health and the environment as those in the U.S. Department of Housing and Urban Development Guidelines (the most recent Guidelines for Evaluation and Control of Lead-Based Paint Hazards) and identifies prohibited practices that may not be used in disturbances or removal of lead-based paint. Any person performing work subject to the ordinance shall, to the maximum extent possible, protect the ground from contamination during exterior work; protect floors and other horizontal surfaces from work debris during interior work; and make all reasonable efforts to prevent migration of lead paint contaminants beyond containment barriers during the course of the work. Clean-up standards require the removal of visible work debris, including the use of a High Efficiency Particulate Air Filter (HEPA) vacuum following interior work.

The ordinance also includes notification requirements and requirements for signs. Prior to the commencement of work, the responsible party must provide written notice to the Director of DBI, of the address and location of the project; the scope of work, including specific location; methods and tools to be used; the approximate age of the structure; anticipated job start and completion dates for the work; whether the building is residential or nonresidential, owner-occupied or rental property; the dates by which the responsible party has or will fulfill any tenant or adjacent property notification requirements; and the name, address, telephone number, and pager number of the party who will perform the work. (Further notice requirements include Sign when containment is required, Requirements for sign when containment is required; Notice to occupants, Availability of pamphlet related to protection from lead in the home, and Early Commencement of Work [Requested by Tenant]). The ordinance contains provisions regarding inspection and sampling for compliance by DBI, and enforcement, and describes penalties for non-compliance with the requirements of the ordinance.

These regulations and procedures of the *Building Code* would ensure that potential impacts of demolition or renovation of structures with lead-based paint would be less than significant.

Other Hazardous Building Materials. Other hazardous building materials that could be present within the Plan area include electrical transformers that could contain PCBs, fluorescent light ballasts that could contain PCBs or DEHP, and fluorescent light tubes that could contain mercury vapors. Disruption of these materials could pose health threats for construction workers if not properly disposed of, a potentially significant impact. However, implementation of **Mitigation Measure M-HZ-3, Hazardous Building Materials Abatement**, would require that the presence of such materials be evaluated prior to demolition or renovation and, if such materials were present, that they be properly handled during removal and building demolition or renovation. This would reduce the potential impacts of exposure to these hazardous building materials to a less-than-significant level.

Mitigation Measure

M-HZ-3: Hazardous Building Materials Abatement. The project sponsor of any development project in the Plan area shall ensure that any building planned for demolition or renovation is surveyed for hazardous building materials including PCB-containing electrical equipment, fluorescent light ballasts containing PCBs or DEHP, and fluorescent light tubes containing mercury vapors. These materials shall be removed and properly disposed of prior to the start of demolition or renovation. Old light ballasts that are proposed to be removed during renovation shall be evaluated for the presence of PCBs and in the case where the presence of PCBs in the light ballast cannot be verified, they shall be assumed to contain PCBs, and handled and disposed of as such, according to applicable laws and regulations. Any other hazardous building materials identified either before or during demolition or renovation shall be abated according to federal, state, and local laws and regulations.

Level of Significance after Mitigation

Implementation of Mitigation Measure M-HZ-3 would reduce impacts related to hazardous building materials under the draft Plan to a less-than-significant level.

Impact HZ-4: Implementation of the Transit Center District Plan would not impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan. (Less than Significant)

Occupants of new buildings that would be constructed as a result of implementation of the draft Plan could contribute to congestion if an emergency evacuation of the Downtown neighborhood were required. However, Section 12.202(e)(1) of the *San Francisco Fire Code* requires that all owners of high-rise buildings (over 75 feet) "shall establish or cause to be established procedures to be followed in case of fire or other emergencies. All such procedures shall be reviewed and approved by the chief of division."

Additionally, project construction would have to conform to the provisions of the *Building Code* and *Fire Code* which require additional life-safety protections for high-rise buildings.

Although not “adopted” by legislative action, the City has a published Emergency Response Plan, prepared by the Department of Emergency Management as part of the City’s Emergency Management Program, which also includes plans for hazard mitigation and disaster preparedness and recovery.⁴⁵⁸ The Emergency Response Plan identifies hazards to which San Francisco is particularly susceptible as earthquake, hurricane, tsunami, flood, winter storm, and act of terrorism, including use of chemical, biological, radiological, nuclear, and explosive weapons. The Emergency Response Plan complies with several relevant state and federal directives for emergency planning, including the California Standardized Emergency Management System and the Incident Command System. The Plan includes sections on operations, including management and procedures; staffing, operations, and logistics regarding the City’s emergency operations center; and mutual aid involving other agencies. The Plan assigns responsibilities for disaster planning, operations (including fire and rescue, law enforcement, human services, infrastructure, transportation, communications, and community support), and logistics, as well as finance and administration, to City agencies and departments. The Plan also identifies volunteer agencies, such as the American Red Cross, that are integral to disaster response efforts.

The Emergency Response Plan contains 16 “annexes” (similar to appendices), consistent with a federally established framework, that cover topics including firefighting, public works and engineering, mass casualty care, and earthquakes, among numerous others. The Earthquake Annex, in particular, sets forth planning assumptions for a series of earthquakes of varying magnitudes on different faults, and sets forth procedures for assessment of damage and injuries, and operational response and strategies in the event of a major earthquake.

Development pursuant to the draft Plan would increase both the residential population and, in particular, the daytime employment population in the City that would be subject to a potential disaster, including a major earthquake or any of the other hazards identified in the Emergency Response Plan. With regard to earthquake hazards, in particular, the Plan area, like other parts of San Francisco and the Bay Area, is subject to ground shaking from potentially large earthquakes on the San Andreas and Hayward faults, as well as on other faults in the region. Relatively more of the Plan area is subject to stronger groundshaking intensity than the rest of the City because much of the eastern edge of the area is built on filled land. New buildings that would be developed pursuant to the draft Plan are subject to more stringent building and structural standards than most existing buildings, particularly older structures. Therefore, persons living and working in new buildings would be relatively safer than those in some older existing buildings.⁴⁵⁹ However, during a major earthquake, glass, and in some cases building cladding, may endanger those on the streets and sidewalks. Bridges leading to and from San Francisco may be damaged, as was the case

⁴⁵⁸ San Francisco Department of Emergency Management, *City and County of San Francisco Emergency Response Plan*, December 2009. Available at: <http://www.sfdem.org/Modules/ShowDocument.aspx?documentid=1154>. Reviewed September 9, 2011.

⁴⁵⁹ *San Francisco Building Code* requirements with respect to tall buildings are discussed in Section O, Geology, Soils, and Seismicity, p. 588.

with the Bay Bridge east span in the 1989 Loma Prieta Earthquake (although the new east span now nearing completion will perform better in an earthquake). BART, Muni, and Caltrain rail service could be interrupted, and power outages would likely occur. However, the draft Plan would not obstruct implementation of the City's Emergency Response Plan, nor would it necessarily interfere with emergency evacuation planning. With compliance with the legal requirements noted above and implementation of the Emergency Response Plan, impacts related to emergency response or evacuation plans would be less than significant.

Mitigation: None required.

Impact HZ-5: Implementation of the Transit Center District Plan would not expose people or structures to a significant risk of loss, injury or death involving fires. (Less than Significant)

San Francisco ensures fire safety primarily through provisions of the *Building Code* and the *Fire Code*. Existing and new buildings are required to meet standards contained in these codes. In addition, the final building plans for any new residential project greater than two units would be reviewed by the San Francisco Fire Department (as well as DBI) to ensure conformance with these provisions. Construction that would occur as a result of implementation of the draft Plan would conform to these standards, which (depending on the building type) may also include development of an emergency procedure manual and an exit drill plan. Development projects in the Plan area would be required conform to these standards, which (depending on the building type) may include development of an emergency procedure manual and an exit drill plan.

The proposed Plan, an area plan that would include adoption of changes in the City's *Planning Code* and *General Plan*, would not directly result in any direct physical changes. Although the draft Plan would facilitate development projects within the Plan area, all such development would occur in the developed area of San Francisco, where fire, medical, and police services are available and provided. The existing street grid provides ample access for emergency responders and egress for residents and workers, and the proposed Plan would neither directly nor indirectly alter that situation to any substantial degree. Moreover, the Fire Department reviews building permits for multi-story structures. Therefore, the draft Plan would not impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan. Finally, for the reasons just set forth, the draft Plan would not directly or indirectly result in any additional exposure of residents or workers to fire risk. Any development and/or redevelopment in the Plan area would occur in a fully urbanized area, which lacks the "urban-wildland interface" that tends to place new development at risk in undeveloped areas of California. Therefore, the proposed Plan would not expose people or structures to a significant risk of loss, injury or death involving fires.

As noted in Section IV.M, Public Services, the proposed relocation of Fire Station No. 1 from the Plan area to 935 Folsom Street, between Fifth and Sixth Streets, would not result in any significant effects with respect to Fire Department response times in the Plan area.

Compliance with the *San Francisco Building Code* and *Fire Code* through the City's ongoing permit review process would ensure that potential fire hazards related to development activities (including those associated with hydrant water pressure and emergency access) would be minimized during the permit review process and that future projects would not interfere with an existing emergency response or emergency evacuation plan. Therefore, this impact would be less than significant.

Additionally, construction of high-rise buildings (taller than 75 feet), such as the Transit Tower and other tall buildings, both those with applications on file and other anticipated development, must conform to the provisions of the *Building Code* and *Fire Code* which require additional life-safety protections for such structures. With compliance with these legal requirements, impacts related to emergency response or evacuation plans would be reduced to a less-than-significant level.

Mitigation: None required.

Impact Analysis: Transit Tower

Impact HZ-6: The proposed Transit Tower would not create a significant hazard through routine transport, use, or disposal of hazardous materials. (Less than Significant)

Similar to other projects that would be constructed with implementation of the draft Plan, operation of the Transit Tower would likely involve handling of common types of hazardous materials, such as cleaners, disinfectants, and chemical agents required to maintain the sanitation of the commercial bathrooms and food preparation areas. These commercial products are labeled to inform users of potential risks and to instruct them in appropriate handling procedures. If hazardous materials were used above threshold quantities, the owner would be required to comply with the requirements of the City's hazardous materials handling requirements specified in Article 21 of the *San Francisco Health Code* (discussed in the Setting) and obtain a Certificate of Registration from DPH and implement a Hazardous Materials Business Plan. Compliance with the *San Francisco Health Code*, which incorporates state and federal requirements, would minimize potential exposure of site personnel and the public to any accidental releases of hazardous materials or waste and would also protect against potential environmental contamination. In addition, transportation of hazardous materials is well regulated by the California Highway Patrol and the California Department of Transportation. Therefore, the potential impacts related to the routine use, transport, and disposal of hazardous materials associated with the Transit Tower would be less than significant.

Mitigation: None required.

Impact HZ-7: Excavation for the proposed Transit Tower would require the handling of potentially contaminated soil and groundwater, potentially exposing workers and the public to hazardous materials, or resulting in a release to the environment during construction. (Less than Significant with Mitigation)

As discussed in the Setting, the proposed Transit Tower site is underlain by 1906 earthquake fill which commonly contains polynuclear aromatic hydrocarbons, heavy metals, oil and grease, and volatile organic compounds. In addition, many of the historical uses of properties at the site would have involved the use of hazardous materials, including a mechanics mill, iron works, forge shop, brass works, machine shops, cabinet shop and lumber facility, and coppersmith. All of these uses could have involved the use of hazardous materials such as petroleum products, metals, solvents, creosote, and PCBs. The site is also located approximately one block north of the former manufactured gas plant at First, Howard, Fremont and Natoma Streets which historically disposed of residual or waste material known as coal tar directly to the shallow waters of the old Yerba Buena Cove. Based on the historic land uses at the site, and the proximity to the former manufactured gas plant, there is a high potential to encounter soil and groundwater contamination during construction. Without implementation of proper precautions, workers or the community could be exposed to hazardous materials during excavation, grading, and dewatering, or during related site investigation and remediation. Vapors, if present, could also accumulate in the below ground parking structures, causing nuisance vapors, adverse health effects, or flammable or explosive conditions. Therefore, impacts associated with construction within contaminated soil and groundwater are potentially significant. However, similar to the draft Plan, implementation of **Mitigation Measures M-HZ-2a, 2b, and 2c, Site Assessment and Corrective Action**, would reduce this impact to a less-than-significant-level by requiring appropriate assessment of the potential for contaminated soil or groundwater, and requiring implementation of site investigation and remediation activities should the potential for contamination be identified. Because this site is partially located bayward of the high tide line, all three mitigation measures noted above would apply, as would the requirements of Article 22A.

Similar to the draft Plan, impacts related to the disposal of hazardous wastes produced during construction of the Transit Tower would be less than significant with compliance with regulatory requirements, and impacts related to discharge of contaminated water produced during construction dewatering to the City's combined storm and sanitary sewer system would be less than significant with compliance with Article 4.1 of the *San Francisco Public Works Code*, as supplemented by Order No. 158170.

Mitigation Measure

M-HZ-7: Implement Mitigation Measures M-HZ-2a, 2b, and 2c, **Site Assessment and Corrective Action**, for construction of the Transit Tower project.

Level of Significance after Mitigation

With implementation of Mitigation Measure M-HZ-2a, 2b, and 2c, to investigate and, where applicable, remediate soil and/or groundwater that may be contaminated prior to construction of the Transit Tower, the impacts related to contamination at the Transit Tower site would be less than significant

Impact HZ-8: Workers and the public would not be exposed to hazardous building materials as a result of construction of the proposed Transit Tower. (No Impact)

There would be no impact related to exposure to hazardous building materials at the proposed Transit Tower site because all structures at this site have been eliminated as part of the demolition of the Transbay Terminal that began in 2010.

Mitigation: None required.

Impact HZ-9: The proposed Transit Tower would not impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan. (Less than Significant)

Occupants of the proposed Transit Tower could contribute to congestion if an emergency evacuation of the Downtown neighborhood were required. However, Section 12.202(e)(1) of the *San Francisco Fire Code* requires that all owners of high-rise buildings (over 75 feet) “shall establish or cause to be established procedures to be followed in case of fire or other emergencies. All such procedures shall be reviewed and approved by the chief of division.” Additionally, construction of high-rise buildings (taller than 75 feet) would have to conform to the provisions of the *Building Code* and *Fire Code* which require additional life-safety protections for such taller buildings. As stated in Impact HZ-4, development pursuant to the draft Plan—which includes the proposed Transit Tower—would not interfere with implementation of the City’s Emergency Response Plan, or with emergency evacuation. With compliance with the legal requirements noted above and implementation of the Emergency Response Plan, impacts related to emergency response or evacuation plans would be less than significant.

Mitigation: None required.

Impact HZ-10: The proposed Transit Tower would not expose people or structures to a significant risk of loss, injury or death involving fires. (Less than Significant)

As stated under Impact HZ-6, San Francisco ensures fire safety primarily through provisions of the *Building Code* and the *Fire Code*. Existing and new buildings are required to meet standards contained in these codes. In addition, the final building plans would be reviewed by the San Francisco Fire Department (as well as DBI) to ensure conformance with these provisions. The proposed Transit Tower would conform to these standards, which (depending on the building type) may also include development of an emergency procedure manual and an exit drill plan. With compliance with these regulatory requirements, impacts related to potential fire hazards would be less than significant.

Mitigation: None required.

Cumulative Impacts

Impact C-HZ: Implementation of the Transit Center District Plan and construction of the proposed Transit Tower, in combination with past, present, and reasonably foreseeable future projects in the site vicinity, would result in less-than-significant impacts related to hazards and hazardous materials. (Less than Significant)

As discussed previously, the Transit Tower project and development projects that could be proposed and approved pursuant to the draft Plan could all involve some uses of hazardous materials. However, the draft Plan's impacts related to the routine transport, use, or disposal of hazardous materials would be less than significant with compliance with existing regulations, including Articles 21, 21A, and 22 of the San Francisco Health Code and the draft Plan's contribution to this cumulative impact would not be cumulatively considerable with compliance these regulations. Further, any new uses of hazardous materials would be subject to the same regulatory requirements.

The proposed project would result in the disturbance of contaminated soil and groundwater during construction and could also require closure of existing USTs or hazardous materials handling facilities, potentially resulting in exposure of workers and the public to hazardous materials. Based on the common presence of earthquake fill as well as historic and current land uses that involved the use of hazardous materials throughout much of the City, new development projects could also encounter hazardous materials in the soil and groundwater or require UST and facility closures. However, as discussed above, the Transit Tower project and development projects that could be proposed and approved and constructed pursuant to the draft Plan would comply with existing regulations for UST and facility closure specified in Article 21 of the *San Francisco Health Code*; implement Mitigation Measure M-HZ-2, Site Assessment and Corrective Action, which requires appropriate assessment of the potential for contaminated soil or groundwater, and implementation of site investigation and remediation activities should the potential for contamination be identified; and comply with existing regulations for disposal of contaminated soil and discharge of contaminated water. With implementation of these legal regulatory requirements and Mitigation Measure M-HZ-2, the draft Plan and proposed Transit Tower project's contribution to this impact would not be cumulatively considerable, and thus would be less than significant. Further, implementation of the draft Plan and the proposed Transit Tower project would result in increased construction activities which may trigger the need for additional site cleanups, thereby removing existing contamination from the Plan area which is, overall, a beneficial impact.

Similarly, implementation of the draft Plan would result in the demolition or renovation of existing buildings that could include hazardous building materials. Based on the age of many buildings in the Plan area, development projects in the Plan area could also require demolition or renovation of buildings that contain hazardous building materials. However, as discussed above, the development projects that could be proposed and approved pursuant to the draft Plan would comply with existing regulations for abatement of asbestos-containing materials and lead-based paint and would implement Mitigation Measure M-HZ-3, Hazardous Building Materials, which requires a survey for other hazardous building materials as well as removal and disposal of these materials in accordance with applicable laws. With implementation of these regulatory requirements and Mitigation Measure M-HZ-3, the proposed

project's contribution to this impact would not be cumulatively considerable (less than significant). Further, implementation of the proposed project would result in increased construction activities which would trigger the need for abatement of hazardous building materials, thereby removing more of these materials from the Plan area which is, overall, a beneficial impact.

Mitigation: None required.

R. Mineral and Energy Resources

Setting

All land in San Francisco, including the Plan area and Transit Tower site, is designated Mineral Resource Zone 4 (MRZ-4) by the CDMG under the Surface Mining and Reclamation Act of 1975 (CDMG, Open File Report 96-03 and Special Report 146 Parts I and II). This designation indicates that there is not adequate information available for assignment to any other Mineral Resource Zone and thus the site is not a designated area of significant mineral deposits. However, since the Plan area and the Transit Tower project site are already developed, future evaluation or designation of these areas would not affect or be affected by the project. There are no operational mineral resource recovery sites in the Plan area vicinity whose operations or accessibility would be affected by the implementation of the draft Plan.

Impacts

Significance Criteria

The proposed project would result in a significant impact with respect to mineral and energy resources if it would:

- Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state;
- Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan; or
- Encourage activities which result in the use of large amounts of fuel, water, or energy, or use these in a wasteful manner.

Impact Analysis

The Plan would be implemented in an urban infill area. The draft Plan would not require quarrying, mining, dredging, or extraction of locally important mineral resources on site, nor would it deplete any nonrenewable natural resources. Therefore, the Plan, including the Transit Tower would have no effect on mineral resources.

All land in San Francisco, including the Plan area and Transit Tower site, is designated Mineral Resource Zone 4 (MRZ-4) by the California Division of Mines and Geology (CDMG) under the Surface Mining and Reclamation Act of 1975 (CDMG, Open File Report 96-03 and Special Report 146 Parts I and II). This designation indicates that there is inadequate information available for assignment to any other MRZ and thus the site is not a designated area of significant mineral deposits. Since the project site is already developed, future evaluation or designation of the site would not affect or be affected by the draft Plan. There are no operational mineral resource recovery sites in the Plan area whose operations or accessibility would be affected by the construction or operation pursuant to the draft Plan.

Impact ME-1: Neither the Transit Center District Plan nor the development of the Transit Tower would encourage activities which result in the use of large amounts of fuel, water, or energy, or use these in a wasteful manner. (Less than Significant)

Development pursuant to the Plan would entail construction of new office, residential, hotel, retail, and entertainment uses. Development of these uses would not result in unusually large amounts of fuel, water, or energy in the context of energy use throughout the City and region. Demand from development projects in the Plan area would be typical for a buildings of the size and nature proposed and would meet, or exceed, the current state and local codes and standards concerning energy consumption, including Title 24 of the *California Code of Regulations* and the San Francisco Green Building Ordinance. Documentation showing compliance with these standards is submitted with the application for the building permit. Title 24 and the Green Building Ordinance are enforced by DBI. Moreover, new development in the Plan are would be anticipated to incorporate energy-saving features that would reduce energy consumption to levels lower than those of conventionally built structures.

The draft Plan includes a chapter on District Sustainability, which includes a number of objectives and policies aimed at reducing energy consumption. For example, Objective 6.1 states, “Increase energy efficiency, reduce carbon intensiveness of energy production, and enhance energy reliability in the district.” Policy 6.8 would require new large projects to develop an “energy strategy” that would document how the project would minimize its use of fossil fuel use for heating, cooling and power through energy efficiency, efficient supply, and no or low carbon generation. Policy 6.9 calls for integrating passive solar features (such as building orientation, shading, and window treatments) into the design of new buildings. And Policies 6.12 and 6.13 call for new development to exceed basic LEED (Leadership in Energy and Environmental Design) standards established in the Green Building Ordinance, both with respect to energy and water use. Finally, the draft Plan proposes consideration of the establishment of a so-called District Energy System that could efficiently supply both heating and electricity to new development from a co-generation facility. These objectives and policies would be consistent with CEQA Guidelines Appendix F, Energy Conservation, which identifies conservation measures such as reducing wasteful, inefficient and unnecessary energy consumption; building siting, orientation, and design to minimize energy consumption; reducing peak energy demand; the use of alternative fuels or energy systems; and energy conservation through recycling.

It is noted that, because no physical improvements have been defined to implement a district-wide heat and power system in the Plan area, this EIR analyzes this aspect of the draft Plan at a very general, programmatic level. Any district-wide energy system proposed in the future would be subject to subsequent environmental review. Individual building cogeneration plants are subject to review by the Bay Area Air Quality Management District, in much the same manner as are individual boilers and generators.

Because subsequent projects, including the Transit Tower, would meet or exceed current state and local codes concerning energy consumption and would not cause a wasteful use of energy, and because of the project’s stated goal of LEED certification, effects related to energy consumption would not be considered

significant, and neither the draft Plan nor the Transit Tower would make a considerable contribution to cumulative energy consumption impacts.

Mitigation: None required.

S. Agricultural and Forest Resources

Setting

The Plan area, including the Transit Tower site, is located within an urban area in the City and County of San Francisco. The California Department of Conservation's Farmland Mapping and Monitoring Program identifies the site as *Urban and Built-Up Land*, which is defined as "...land [that] is used for residential, industrial, commercial, institutional, public administrative purposes, railroad and other transportation yards, cemeteries, airports, golf courses, sanitary landfills, sewage treatment, water control structures, and other developed purposes."

Impacts

Significance Criteria

The proposed project would result in a significant impact with respect to agricultural and forest resources if it would:

- Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance, as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use;
- Conflict with existing zoning for agricultural use, or a Williamson Act contract; or
- Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code Section 12220(g)) or timberland (as defined by Public Resources Code Section 4526);
- Result in the loss of forest land or conversion of forest land to non-forest use; or
- Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland to non-agricultural use or forest land to non-forest use.

Impact Analysis

Impact AG-1: Neither the Transit Center District Plan nor the development of the Transit Tower would convert farmland to non-agricultural use or conflict with existing agricultural zoning or a Williamson Act contract, conflict with zoning for forest land, result in the loss of forest land to non-forest use, or involve any other changes that would convert farmland to non-agricultural use or convert forest land into non-forest use. (No Impact)

Because the Plan area and the surrounding areas do not contain agricultural or forest uses and are not zoned for such uses, implementation of the draft Plan would not convert any prime farmland, unique farmland or Farmland of Statewide Importance to non-agricultural use, and it would not conflict with existing zoning for agricultural land use or a Williamson contract, nor would it involve any changes to the environment that could result in the conversion of farmland. Nor would it result in the loss of forest land or conversion of forest land to non-forest uses. Accordingly, these criteria are not applicable to the proposed project.

Mitigation: None required.

CHAPTER V

Other CEQA Considerations

A. Growth Inducement

As described in Section IV.C, Population and Housing, Business Activity, and Employment, implementation of the draft Plan would accommodate an additional 8,000 jobs in downtown San Francisco beyond what could be accommodated under existing zoning (including existing height limits). Analysis of the future demand for office space undertaken for the Planning Department as part of development of the draft Plan concluded that, without an increase in Downtown development potential, the City would lack sufficient capacity to accommodate the anticipated future demand for office space.

In this regard, adoption and implementation of the draft Plan could be seen as removing an impediment to future growth in San Francisco. In fact, as described in Chapter II, Project Description:

The overarching premise of the Transit Center District Plan is to continue the concentration of additional growth where it is most responsible and productive to do so—in proximity to San Francisco’s greatest concentration of public transit service. The increase in development, in turn, will provide additional revenue for the Transit Center project and for the necessary improvements and infrastructure in the District.⁴⁶⁰

Thus, the draft Plan seeks to accommodate future growth, including office growth, in downtown San Francisco in a manner that builds on the *General Plan* Urban Design Element and the Downtown Plan; capitalizes on major transit investment (notably, the new Transit Center currently under construction); provides a supporting network of streets and open spaces, along with public amenities; generates financial support for the new Transit Center; and ensures that the Plan area is environmentally sustainable. The potentially significant impacts of new growth associated with the draft Plan are described in this EIR.

With regard to the proposed Transit Tower, it would accommodate a portion of the anticipated demand for office space in a signature tower that is complementary in design to the new Transit Center, and that would generate substantial funding in support of the Transit Center.

Effects of implementing the draft Plan’s objectives and policies, including proposed rezoning, and of developing the proposed Transit Tower, are described in Chapter IV.

⁴⁶⁰ November 2009 draft, p. 4

B. Significant Environmental Effects that Cannot Be Avoided if the Proposed Project Is Implemented

In accordance with Section 21067 of the California Environmental Quality Act (CEQA), and with Sections 15040, 15081 and 15082 of the State CEQA Guidelines, potential impacts that could not be eliminated or reduced to an insignificant level are limited to effects related to aesthetics, cultural (historic architectural) resources, transportation, noise, air quality, and shadow. The following significant and unavoidable impacts are identified in this EIR:

- Impact AE-3:** The draft Plan would alter public views of the Plan area from key long-range vantage points.
- Impact C-AE-1:** The draft Plan, in combination with the Transit Tower and other foreseeable projects nearby, would alter the visual character of the greater Downtown and would alter public views of and through the greater Downtown, but would not adversely affect scenic resources or substantially increase light and glare.
- Impact CP-3:** Changes to the zoning controls in the Plan area could result in adverse impacts to historic architectural resources through demolition or substantial alteration.
- Impact C-CP:** Development pursuant to the draft Plan, along with cumulative development, including the Transit Tower, could adversely affect historical resources.
- Impact TR-1:** Traffic growth related to the draft Plan, including the street changes, would adversely affect local intersection operation, and therefore would conflict with established measures of effectiveness for the performance of the circulation system.
- Impact TR-2:** Traffic growth related to the draft Plan, including the street changes, would result in a considerable contribution to congested operations at the Fourth/Harrison Streets and First/Harrison Streets freeway on-ramps, and therefore would conflict with established measures of effectiveness for the performance of the circulation system.
- Impact TR-3:** Transit ridership related to the draft Plan, including the street changes, would cause a substantial increase in transit demand that could not be accommodated by adjacent transit capacity, resulting in unacceptable levels of transit service; and would cause a substantial increase in delays or operating costs such that significant adverse impacts in transit service levels could result.
- Impact TR-4:** Pedestrian activity resulting from implementation of the draft Plan would cause the level of service at sidewalks, street corners, and crosswalks to deteriorate.
- Impact TR-5:** Development of large projects pursuant to the draft Plan would create potentially hazardous conditions for pedestrians and otherwise interfere with pedestrian accessibility.
- Impact TR-6:** Implementation of the draft Plan would create potentially hazardous conditions for bicyclists or otherwise substantially interfere with bicycle accessibility to the site and adjoining areas.
- Impact TR-7:** Implementation of the draft Plan 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 create potentially hazardous conditions or significant delays affecting traffic, transit, bicycles, and pedestrians.
- Impact TR-9:** Plan area construction, including construction of individual projects and ongoing construction of the Transit Center, would result in disruption of nearby streets, transit service, and pedestrian and bicycle circulation.

- Impact TR-10:** Traffic generated by the proposed Transit Tower would increase average vehicle delay and would degrade level of service at local intersections.
- Impact TR-12:** The proposed Transit Tower would not result in substantial overcrowding on public sidewalks, but would create potentially hazardous conditions for pedestrians or otherwise interfere with pedestrian accessibility to the site and adjoining areas.
- Impact TR-14:** The proposed project 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 could create potentially hazardous conditions or significant delays affecting traffic, transit, bicycles and pedestrians.
- Impact TR-16:** Project construction, along with construction of the Transit Center and other nearby projects, would result in disruption of nearby streets, transit service, and pedestrian and bicycle circulation.
- Impact NO-1:** Implementation of the draft Plan would not result in a substantial permanent increase in ambient noise or vibration levels, but Plan implementation could result in exposure of persons to noise levels in excess of standards in the San Francisco General Plan and could introduce new sensitive uses that would be affected by existing noise levels.
- Impact NO-3:** Construction activities in the Plan area could expose persons to temporary increases in vibration levels substantially in excess of ambient levels.
- Impact C-NO:** The draft Plan and proposed Transit Tower, in combination with past, present, and reasonably foreseeable future projects, would result in cumulative noise impacts.
- Impact AQ-2:** The draft Plan would expose sensitive receptors to substantial concentrations of PM2.5 and toxic air contaminants.
- Impact AQ-3:** The draft Plan would expose sensitive receptors to substantial pollutant concentrations by exposing existing sensitive receptors to potentially elevated levels of PM2.5 and toxic air contaminants from new vehicles and equipment.
- Impact AQ-4:** Implementation of the draft Plan would result in construction-period emissions of criteria air pollutants, including ozone precursors, that would contribute to an existing or projected air quality violation or result in a cumulatively considerable increase in criteria pollutants, and could expose sensitive receptors to substantial levels of construction dust.
- Impact AQ-5:** Implementation of the draft Plan could expose sensitive receptors to substantial levels of toxic air contaminants generated by construction equipment.
- Impact AQ-7:** Construction of the Transit Tower would expose sensitive receptors to substantial levels of toxic air contaminants generated by construction equipment.
- Impact C-AQ:** The draft Plan and the proposed Transit Tower would contribute considerably to cumulative air quality impacts.
- Impact SH-1:** The draft Plan would adversely affect the use of various parks under the jurisdiction of the Recreation and Park Department and, potentially, other open spaces.
- Impact SH-2:** The proposed Transit Tower would adversely affect the use of various parks under the jurisdiction of the Recreation and Park Department and, potentially, other open spaces.
- Impact C-SH:** The draft Plan, including the proposed Transit Tower, would contribute to cumulative new shadow that would adversely affect the use of various parks under the jurisdiction of the Recreation and Park Department and, potentially, other open spaces.

C. Significant Irreversible Environmental Changes That Would Result if the Proposed Project is Implemented

In accordance with Section 21100(b)(2)(B) of CEQA, and Section 15126.2(c) of the CEQA Guidelines, an EIR must identify any significant irreversible environmental changes that could result from implementation of the proposed project. This may include current or future uses of non-renewable resources, and secondary or growth-inducing impacts that commit future uses of non-renewable resources, and secondary or growth-inducing impacts that commit future generations to similar uses. According to the CEQA Guidelines, irretrievable commitments of resources should be evaluated to assure that such current consumption is justified.

In general, such irreversible commitments include resources such as energy consumed and construction materials used in construction of a proposed project, as well as the energy and natural resources (notably water) that would be required to sustain a project and its inhabitants or occupants over the usable life of the project. This latter commitment of resources to project operation essentially assumes that residents or occupants would not require a similar commitment but for the proposed project; that is, in the case of the Transit Center District Plan and the Transit Tower, occupants of Plan area office space would not work in San Francisco, new residents in Plan area dwelling units would not live in San Francisco, and guests in new Plan area hotel rooms would not visit the City, unless new development in the Plan area were undertaken. Such a condition is unlikely (because other office space, residential units, and hotel rooms are, and will continue to be available in the City and because only a portion of employees or residents in any given new building are likely to relocate to the area as a result of their employment or housing), although the assumption is consistent with similar conservative assumptions underlying the rest of the analyses in the EIR (e.g., that trips generated by workers, residents, and guests to and from Plan area buildings would not occur in downtown San Francisco unless new development were constructed).

In this light, it can be said that the proposed project would intensify development in the Plan area and at the Transit Tower project site, although as noted elsewhere in this EIR, the draft Plan and the proposed Transit Tower would be generally consistent with land use and development patterns in the built-out urban environment that characterizes downtown San Francisco. Development pursuant to the draft Plan, including development of the Transit Tower project, would commit future generations to an irreversible commitment of energy, primarily in the form of fossil fuels for heating and cooling of buildings, for automobile and truck fuel, and for energy production for lighting, computers, and other equipment in the Plan area buildings. Implementation of the draft Plan, including the proposed Transit Tower, would also require an ongoing commitment of potable water for building occupants and landscaping, although the draft Plan includes policies intended to reduce potable water consumption, and the Transit Center and proposed Transit Tower would include such features. Additionally, development projects in the Plan area, including the Transit Tower, would use fossil fuel during demolition of existing buildings and parking lots where new buildings would be located, and in construction of the proposed new buildings themselves. Construction would also require the commitment of construction materials, such as steel, aluminum, and other metals, concrete, masonry, lumber, sand and gravel, and other such materials, as

well as water. Because all development in the Plan area would comply with *California Code of Regulations* Title 24 and the City's Green Building Ordinance, this development would be expected to use less energy and water over the lifetime of newly constructed buildings than comparable structures not built to current standards. Therefore, it is not anticipated that development projects in the Plan area, including the Transit Tower, would use energy or water in a wasteful manner.

D. Areas of Known Controversy and Issues to Be Resolved

On the basis of public comments on the NOP, it is believed that areas of controversy with respect to the draft Plan and Transit Tower include the potential for shadow impacts on Recreation and Park Department parks and other open spaces, as well as recreation and park impacts generally; wind effects, including combined effects of wind, shadow, and fog, and shading of sidewalks; aesthetic impacts, including changes in views from entry points to the City and from elevated viewpoints outside downtown; effects on traffic, transit, pedestrians, and bicyclists, along with cumulative impacts associated with potential future high-speed rail service to the new Transit Center; potential contamination of soil and/or groundwater from historical uses and the resulting need for remediation; and seismic impacts, including effects on emergency vehicle access. Each of these issues is analyzed in this EIR.

In addition, comments were received with respect to concerns about the potential for greater development intensity than proposed in the draft Plan, and the use and applicability of the EIR and its analyses in consideration of development projects in the Plan area. With respect to the former, Chapter VI, Alternatives, includes an alternative identified as the Developer Scenario (Alternative D), under which towers at select sites are assumed to be built to greater heights, as proposed by project sponsors with projects on file at the Planning Department. Any development or subsequent project that is not encompassed within the proposed project or the range of alternatives analyzed in this EIR could be subject to future project-specific CEQA analysis. With respect to the use and applicability of this EIR with respect to subsequent development projects, the Planning Department anticipates, consistent with CEQA Guidelines Section 15183, considering whether subsequent projects require further environmental review, or whether they can rely, in general, on this EIR. Section 15183 provides an exemption from environmental review for projects that are consistent with the development density established by existing zoning, community plan or general plan policies for which an EIR was certified, except as might be necessary to examine whether there are project-specific effects which are peculiar to the project or its site. The Planning Department has prepared such "community plan exemptions" for projects in the Eastern Neighborhoods and Market & Octavia plan areas, and may prepare such documents for projects in the proposed Transit Center District Plan area in the future.

CHAPTER VI

Alternatives to the Proposed Project

This chapter identifies alternatives to the proposed project and discusses environmental impacts associated with each alternative. Project decision-makers could adopt any of the following alternatives or an option that is within the range of alternatives analyzed, if feasible, instead of approving the proposed project. Under Section 15126.6 of the state CEQA Guidelines, an EIR is required to consider "...a range of reasonable alternatives to the project, or to the location of the project, which would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project...."

This chapter analyzes the following alternatives to the Transit Center District Plan and the Transit Tower as proposed in November 2009 and March 2011, respectively:

- No Project Alternative (Alternative A);
- Reduced Project Alternative (Alternative B);
- Reduced Shadow Alternative (Alternative C); and
- Developer Scenario (Alternative D).

Alternatives to the Transit Tower are discussed within the description of each Plan alternative, following the discussion of the Plan alternative.

A. Alternative A: No Project

Description

CEQA Guidelines Section 15126.6(e)(3)(A) states that, generally, when a project being analyzed is the revision of an existing land use or regulatory plan—such as the Transit Center District Plan and *Planning Code* and Zoning Map revisions that would implement the plan—the No Project Alternative should be considered to be continuation of the existing plan into the future. "Typically this is a situation where other projects initiated under the existing plan will continue while the new plan is developed. Thus, the projected impacts of the proposed plan or alternative plans would be compared to the impacts that would occur under the existing plan." Consistent with this guidance, the No Project Alternative considered in this EIR, with respect to the draft Plan, is the maintenance of the existing zoning and height and bulk controls in the Plan area, and no adoption of the draft Plan. This alternative assumes that development in Zone 1 of the approved Transbay Redevelopment Plan area—primarily along the north side of Folsom Street east of Essex Street, and also between Beale and Main Streets south of Mission Street—would proceed consistent with the approved redevelopment plan. Approved development in the Rincon Hill Plan area would also proceed

consistent with that plan, and projects proposed west of the Transit Center District Plan area would also be undertaken, although at generally lesser heights than currently presumed.

Development assumptions for the No Project Alternative include the addition, in the Plan area, of approximately 4.2 million square feet of office space (about one-third less than with the project), approximately 500 dwelling units (about 60 percent fewer), and about 180 hotel rooms (less than one-fifth of the project's total). These assumptions reflect allowable development under existing zoning, allocated with respect to use according to historical development patterns in and around the Plan area. Ground-floor retail space would be similar, because the sites where development is anticipated would be essentially the same, although shorter, somewhat less bulky buildings would be developed. Total floor area developed would be about 40 percent less than with implementation of the draft Plan. As stated in Chapter II, Project Description, the Transit Tower site is currently zoned for a height limit of 30 feet, because the height limit was not increased subsequent to adoption of the Transbay Redevelopment Plan in 2005. While it is conceivable that development on the Transit Tower site could be undertaken in the form of a 30-foot-tall building consistent with the existing height limit, this is not considered reasonably foreseeable, given the land cost and development cost in downtown San Francisco. Moreover, such an outcome would be inconsistent with the adopted Redevelopment Plan (as well as with the proposed Transit Center District Plan). Therefore, the No Project Alternative assumes development of a 550-foot tall Transit Tower with approximately 564,000 square feet of office space, consistent with the Transbay Redevelopment Plan, although the No Project Alternative for the Transit Tower itself would involve no development of the site (see below).

There would be no change in the assumptions for nearby development in Zone 1 of the Transbay Redevelopment Plan, in the Rincon Hill Plan area, or with respect to cumulative projects west of the Plan area. Although some of these cumulative projects might necessitate zoning changes (e.g., increased height limits), those actions would be unrelated to adoption of the draft Plan, and those projects are included in the No Project Alternative for purposes of a conservative assessment.

Table 45 sets forth a description of the alternatives and compares them to the draft Plan.

Transit Tower

Normally the no project alternative for an individual development project is “the circumstance under which the project does not proceed” (CEQA Guidelines Section 15126.6(e)(3)(B)). Accordingly, a project-specific No Project – No Build scenario for the proposed Transit Tower would involve no development on that site. A project-specific No Project – Existing Zoning Alternative for the Transit Tower would include development of a 30-foot-tall building, which is the height of the building that could be built on the Transit Tower site if the property were not rezoned.⁴⁶¹

⁴⁶¹ As stated in Chapter II, Project Description, the Transit Tower site is currently zoned for a height limit of 30 feet, because the height limit has not been increased subsequent to adoption of the Transbay Redevelopment Plan in 2005. While it is conceivable that development on the Transit Tower site could be undertaken in the form of a 30-foot-tall building consistent with the existing height limit, this is not considered reasonably foreseeable, given the land cost and development cost in downtown San Francisco. Moreover, such an outcome would be inconsistent with the adopted Redevelopment Plan (as well as with the proposed Transit Center District Plan).

**TABLE 45
ALTERNATIVES TO THE DRAFT PLAN AND THEIR GENERALIZED SHADOW EFFECTS**

Site	Draft Transit Center District Plan	A. No Project	B. Reduced Project	C. Reduced Shadow	D. Developer Scenario
	Height (feet)	Height (feet)	Height (feet)	Height (feet)	Height (feet) ^a
Projects That Would Vary in Height Under One or More Alternatives					
Transit Tower ^b	1,070	550	550	840	1,070
<i>Applications on File</i>					
350 Mission Street ^c	700	350	625	625	375
181 Fremont Street	700	350	640	640	750
50 First Street (Twr. A)	850	550	550	675	915
50 First Street (Twr. B)	550	300	300	450	640
Palace Hotel Tower	600	300	365	500	727
41 Tehama Street	400	200	400	400	342
201 Second Street ^c	350	350	250	350	350
<i>No Applications</i>					
TJPA Parcel F	750	450	465	450	750
Golden Gate Univ.	700	550	550	700	700
648-60 Howard Street	350	250	250	350	350
Projects That Would Not Vary in Height Under the Alternatives					
<i>Applications on File</i>					
222 Second Street ^c	350	350	350	350	350
<i>No Applications</i>					
524 Howard Street ^d	450	450	450	450	450
661-67 Howard Street	250	250	250	250	250
176 Second Street	150	150	150	150	150
	Development Program	Development Program	Development Program	Development Program	Development Program
Office (Square Feet)	6,200,000	4,200,000	3,800,000	5,300,000	6,100,000
<i>Difference from Plan</i>	—	-32%	-39%	-14%	-1%
Hotel (Rooms)	985	180	415	825	665
<i>Difference from Plan</i>	—	-86%	-68%	-36%	-49%
Residential (Units)	1,300	500	960	1,145	1,125
<i>Difference from Plan</i>	—	-62%	-26%	-12%	-13%
	Parks Shaded	Parks Shaded	Parks Shaded	Parks Shaded	Parks Shaded
Union Square	Yes	Yes	Yes	Yes	Yes
Portsmouth Square	Yes	Yes	Yes	Yes	Yes
St. Mary's Square	Yes	Yes	Yes	Yes	Yes
Justin Herman Plaza	Yes	No	No	No	Yes
Maritime Plaza	Yes	No	No	No	Yes
Willie Wong Plgrd.	Yes	No	No	Yes	Yes
Chinese Rec. Ctr.	Yes	No	No	No	Yes
Woh Hei Yuen Plgrd.	Yes	No	No	No	Yes
Boeddeker Park	Yes	No	No	No	Yes

^a For developers' alternative, heights indicated for Transit Tower, 181 Fremont Street, 50 First Street, Palace Hotel tower, and 41 Tehama (indicated in *italics*) are total heights, including proposed rooftop sculptural extensions and parapets.

^b The height indicated for the Transit Tower in the No Project Alternative is in the context of the draft Plan. As indicated in the text, the No Project Alternative for the Transit Tower is no build (zero feet).

^c Project Approved. (In the case of 201 Second Street, a project was approved that would likely have to be modified due to the planned Caltrain downtown extension, which would pass partially beneath this site. The approved project is considered in the Reduced Project Alternative.)

^d A prior approval for a 23-story, 202,000-sq.-ft. office building at 524 Howard Street was revoked by the Planning Commission on June 9, 2011 (Case Nos. 2011.0503B, 84.199BEKRX, 98.843BKX).

NOTE: Table does not itemize building sites of less than 100 feet in height, and does not include ground-floor retail space, which is anticipated to be similar under the Plan and each alternative.

No Project Alternative: Impacts

The analysis in this EIR evaluates impacts in the entire Plan area. The No Project Alternative considers development of the same sites where the EIR's analysis assumed development as set forth at the start of Chapter IV (see p. 72), but assumes that buildings at these sites would be developed to existing height limits, rather than the height limits that are proposed in the draft Plan. The No Project Alternative also assumes that other growth in the Plan area and the City would occur with or without implementation of the draft Plan.

Plan Impacts

Transportation

Effects related to the intensity of development would be reduced, compared to those of the proposed project (the draft Plan) because less office space and fewer residential units and hotel rooms would be developed. Daily and peak-hour vehicle trip generation would be approximately 36 percent less than with implementation of the draft Plan. This would result in incrementally less average vehicle delay at some local intersections, but the reduction in trip generation would result in minimal changes in the level of service at the 62 study intersections, compared to conditions with the proposed plan, and 47 of the 62 intersections would operate at LOS E or F in the p.m. peak hour, compared to 48 at LOS E or F under Plan conditions. In the morning peak hour, five of 12 study intersections would operate at LOS E or F, compared to seven with draft Plan implementation. This alternative would not avoid the draft Plan's **significant and unavoidable impacts** on LOS at the study intersections. Due to the concentration of intersections operating at LOS E or F in the Plan area, it is reasonable to expect vehicle queuing and transit delays to occur under the No Project Alternative, as would occur under the draft Plan. Likewise, as with the draft Plan, three of the five ramps analyzed would operate at LOS F under this alternative, although average vehicle delay attributable to this alternative would be incrementally less than with the draft Plan. Impacts on freeway ramps would be **significant and unavoidable**, as with the draft Plan.

Transit ridership would also be about 36 percent less than with implementation of the draft Plan. Revenue generated under the City's Transit Impact Development Fee (TIDF) program would also be reduced, by an estimated 37 percent. The relative reduction in ridership would avoid the draft Plan's significant impact on Muni capacity utilization on the northwest, southeast, and southwest screenlines in the p.m. peak hour and on the Geary and Haight/Noriega corridors in the a.m. peak hour and the Chestnut/Union corridor in the p.m. peak hour. However, other screenlines and corridors that would experience unacceptable levels of service under the draft Plan would also do so under this alternative and the impact, as under the Plan, would be **significant and unavoidable**. This alternative would avoid significant effects on regional transit (BART East Bay service and Golden Gate Transit buses).

Pedestrian and bicycle operations would not be markedly different under the No Project Alternative from those with implementation of the draft Plan, because this alternative would nevertheless result in substantial increases in pedestrian volume and bicycle ridership (about 60 percent of the Plan's increases). Effects with respect to pedestrian operations would be significant but mitigable, as with the draft Plan,

while bicycle impacts would be less than significant. As with the draft Plan, effects related to off-street freight loading would be **significant and unavoidable**.

The No Project Alternative would not implement public realm improvements proposed as part of the draft Plan, such as widened sidewalks and plantings, addition of mid-block signalized crosswalks, creation of some pedestrian-only alleyways near the Transit Center, and a pedestrian and bicycle path from Howard to Folsom Streets. The No Project Alternative also would not implement the draft Plan's proposed dedicated transit lanes on Mission, Fremont and Beale Streets, thereby potentially resulting in degradation in transit service, compared to conditions with the draft Plan, due to transit vehicles stuck in increasing congestion. Because the Transit Center is a separate project that is currently under construction and would continue even without the draft Plan, pedestrian activity in the area would be expected to increase beyond the level that would be associated solely with development in accordance with existing zoning. Under the No Project Alternative, pedestrian and bicycle amenities would not be provided to the degree that they would with implementation of the draft Plan.

Air Quality, Greenhouse Gas Emissions, and Noise

The relative reduction in vehicle trip generation would incrementally reduce emissions of criteria air pollutants and greenhouse gases (GHGs). These impacts would be less than significant with implementation of mitigation identified in the EIR, where applicable, as with the draft Plan. However, construction-related air quality emissions from development proceeding under current policies would result in a **significant, unavoidable impact**, as with the proposed project because, depending on construction schedules of individual projects, diesel-powered construction equipment that operates with emissions levels low enough to avoid exceeding the Bay Area Air Quality Management District's recommended thresholds of significance may not be available, at least during the early years of Plan implementation. Exposure of sensitive receptors (existing and future residents, along with child-care centers) to toxic air contaminants from existing and future stationary sources (mostly backup generators and on-site co-generation plants, as well as buses at the new Transit Center) would also result in a **significant and unavoidable impact**, as with the draft Plan.

On the other hand, it is noted that, to the extent that development precluded under this alternative from taking place in the Plan area were to occur elsewhere in the Bay Area, employees in and residents of that development could potentially generate substantially greater impacts on transportation systems, air quality, and greenhouse gases than would be the case for development of a similar amount of office space in the more compact and better-served-by-transit Plan area. This would be particularly likely for development in more outlying parts of the region where fewer services and less transit access is provided. Such development might occur in proximity to fewer people due to the lower densities of areas outside downtown San Francisco, thereby exposing fewer individuals to construction-related air pollutants; however, the operational impacts of such development would be relatively greater because lower density reduces transit accessibility, making it likely that equivalent amounts of office space would result in more vehicle trips in other locations.

This alternative would incrementally decrease traffic-generated noise, compared to that under the draft Plan, but noise impacts from traffic and cumulative construction noise, along with construction vibration, would be **significant and unavoidable**, as with the project.

Other Effects Related to the Intensity of Development

Effects related to recreation and public space, utilities and service systems, and public services would be less substantial than those of the draft Plan, given the reduced intensity of development; these effects would be less than significant, as with the proposed project.

Aesthetics

Aesthetic changes would be less noticeable than those of the draft Plan, because fewer buildings are assumed to be developed, and those that are would be considerably shorter. The existing maximum height limits would be retained, except that it is assumed that the Transit Tower site would be rezoned to a height limit of 550 feet, consistent with the tower analyzed for that site in the EIR for the approved Transbay Redevelopment Plan. Under the No Project Alternative, however, no height limits would be increased beyond the current maximum for the Plan area of 550 feet. From mid-range viewpoints (Figures 27B – 30B, pp. 122 - 128) and from Alamo Square (Figure 31B, p. 131) and Telegraph Hill (Figure 38B, p. 148), little change in the skyline, compared to existing conditions, would result from implementation of the No Project Alternative, and the effects would be far less substantial than the draft Plan's significant effects. However, as can be seen in several of the longer-range visual simulations in Section IV.B (Figures 32B through 37B, pp. 138 - 146, and Figures 39B and 40B, pp. 150 – 152), the No Project Alternative would result in changes to the skyline, compared to existing conditions. This is because the No Project Alternative assumes development in including Zone 1 of the approved Transbay Redevelopment Plan area would proceed consistent with that plan. Additionally, other nearby development, such as on Rincon Hill, is also assumed to proceed, as would projects west of the Plan area, albeit at lesser heights. Therefore, as shown in Figures 32B and 33B, for example, cumulative development under the No Project Alternative would result in obscuring the towers of the Bay Bridge and parts of the Bay and the East Bay Hills in certain views. Aesthetic changes in the Plan area, however, would consist of less substantial increases in building heights, compared to the draft Plan, thereby reinforcing the flattened skyline, or benched effect, of many buildings built to similar heights in the South Financial District, including the Plan area. The No Project alternative would not change height limits or otherwise encourage development beyond what is currently permitted; however, development would nevertheless contribute to the overall effects on these views and conservatively would be considered significant and unavoidable under this alternative. Nevertheless, unlike the draft Plan, the No Project Alternative would not emphasize the center Plan area as a major transportation hub, as called for in Policy 3.5 of the *General Plan* Urban Design Element, and would exacerbate the "benched" appearance of the skyline. Therefore, despite the potential for significant impact, the overall aesthetic effects of the draft Plan could be considered preferable to the No Project alternative on a subjective level. However, cumulative impacts would be **significant and unavoidable**, as with the draft Plan.

Shadow

The No Project Alternative would reduce shadow impacts, compared to the proposed project because the maximum height limit in the Plan area would remain at 550 feet, as under existing conditions. However, the No Project Alternative would not avoid the significant, unmitigable effects of the proposed project with respect to shadow, because building heights under existing zoning on certain sites within the northern portion of the Plan area would add new shadow to Union Square, Portsmouth Square, and St. Mary's Square. Unlike the Plan, this alternative would not add new shadow to Willie "Woo Woo" Wong Playground, Chinese Recreation Center, Woh Hei Yuen Park, Justin Herman Plaza, Maritime Plaza, or Boeddeker Park. Although the amount of new shadow would be substantially less than that cast by buildings that could be developed pursuant to the draft Plan, development pursuant to the No Project Alternative would require an increase in the Absolute Cumulative Limit for Union Square, Portsmouth Square and St. Mary's Square, which would be considered a **significant and unavoidable impact**. While sculpting or otherwise modifying individual buildings could be possible and would be likely to occur at the time such projects are considered for approval, at the programmatic level of this EIR, the potential for significant shadow would exist.

Wind

Effects on ground-level wind conditions would not be expected to differ substantially from those identified for the proposed project. Pedestrian-level wind speeds would generally increase incrementally under this alternative, likely to a somewhat lesser degree than with the taller buildings that would be permitted under the draft Plan. Like the project, this alternative would result in less-than-significant wind impacts, with mitigation. Wind effects on the planned City Park, however, would likely be similar to those anticipated with implementation of the draft Plan, because the presence of several very tall (450 to 550 feet) buildings immediately adjacent to the park would be expected to result in comparable effects to those of the Plan's even taller buildings. This is because tall buildings tend to influence ground-level winds to the greatest degree at locations adjacent to and very near those buildings.

Historic Architectural Resources

Because it would involve the same or very similar development sites as the project, albeit at reduced densities, this alternative, like the draft Plan, would result in a significant impacts on historical resources resulting from the demolition or substantial alteration of a number of historical resources, likely including three buildings on the west side of First Street north of Mission Street, one to three buildings on the north side of Howard Street across from Hawthorne Street, and one or two buildings on the south side of Howard Street, west of Hawthorne Street. Also like the draft Plan, this alternative could result in a substantial adverse effect on the Palace Hotel, City Landmark No. 18, and possibly on the New Montgomery-Second Street Conservation District, from construction of a residential tower at the southwest corner of the hotel site. As would be the case for the draft Plan, to the extent that historical resources would be adversely affected by development projects in the Plan area, effects on historical resources would be **significant and unavoidable**. However, it is likely that, in the absence of Plan adoption and rezoning to permit greater heights than currently allowed, some subsequent development

projects envisioned under the draft Plan would not proceed, because there would be less economic incentive without the greater permitted height. Therefore, effects of this alternative on historical resources, though **significant and unavoidable**, would be anticipated to be somewhat less substantial than those of the project.

Biological Resources

Effects on biological resources would be similar to those resulting from implementation of the draft Plan. While the No Project Alternative would not permit buildings as tall as those that would be allowed under the draft Plan, as described in Section IV.N, Biological Resources, the lower stories of highly glazed buildings tend to result in the greatest risk of bird strikes because reflections of attractive ground-level features like vegetation can confuse birds and result in collisions. On the other hand, this alternative would result in fewer new lighting sources in the form of tall buildings that project above existing development, compared with implementation of the draft Plan. Therefore, effects related to bird strikes would be similar to, or somewhat less substantial than, those of the proposed project. This impact, however, would be rendered less than significant by compliance with *Planning Code* Section 139 and the *City's Standards for Bird-Safe Buildings*, and other effects to biological resources could be reduced to a less-than-significant level through implementation of mitigation measures identified in the EIR. Therefore, as with the draft Plan, effects on biological resources would be less than significant with mitigation.

Other Effects Related to the Site-Specific Conditions

Impacts related to site-specific conditions, such as those related subsurface cultural (archeological) resources, geology, hydrology and water quality, and hazardous materials would be similar to those of the draft Plan because the same or very similar development sites would be involved. It is not anticipated that foundation systems (and, therefore, ground-disturbing activities) would be substantially different than with development pursuant to the draft Plan, because the No Project Alternative would construct high-rise buildings on the same sites. With respect to archeological resources, the same mitigation measures as are applicable to the project would reduce these effects to a less-than-significant level.

As with the draft Plan, the No Project Alternative would have less-than-significant impacts related to mineral and energy resources and no impacts on agricultural or forest resources.

Transit Tower Impacts

Under the No Project Alternative for the Transit Tower (No Build scenario), the Transit Tower project would not be undertaken. The project site, immediately north of the Transit Center, would remain vacant for the foreseeable future. The site thus would retain the undeveloped character of the space along Mission Street between First and Fremont Streets. At some indeterminate point in the future, the Transbay Joint Powers Authority (TJPA) would either sell the property to a private developer or would pursue development of the site. Under this scenario, none of the impacts described for the Transit Tower in Chapter IV would occur. Given the site's prominent location, however, and its ownership by the TJPA, which is developing the new Transit Center, it is likely that another project would be conceived for this

site in the near future. To the extent that it were to differ from the Transit Tower as currently proposed, any such project would be subject to its own CEQA review at such time as it were proposed. Because the proposed Mission Square open space at Fremont and Mission Streets would be funded through the development of the proposed Transit Tower, neither the No Build scenario nor the construction of a 30-foot-tall building under the Existing Zoning scenario would result in creation of this open space.

With either the No Build scenario or development of a 30-foot-tall building at the Transit Tower site, trip generation at that location would be substantially less than assumed with the draft Plan. This would incrementally reduce vehicle delays at nearby intersections, although it is not anticipated that any significant intersection degradation would be avoided because of the volume of traffic generated by other Plan area sites and other development outside of the Plan area. Transit ridership would be reduced, but not to a degree that would avoid significant impacts due to Plan area and other growth. Likewise, pedestrian and bicycle congestion and shortfalls of off-street loading and parking related to the Transit Tower site would be reduced; the Transit Tower-specific significant impact related to loading would be eliminated.

Both the No Build scenario and development of a 30-foot-tall building at the Transit Tower site would reduce Tower-specific emissions to a negligible volume. Assuming no subsurface construction, such a building might not result in significant, unavoidable construction-period impacts due to exposure of sensitive receptors to diesel emissions.

A 30-foot-tall building at the Transit Tower site would not be visible from locations outside the immediate neighborhood, and thus would likely have negligible aesthetic impacts. (The No Build scenario would have no effects related to aesthetics.)

A 30-foot-tall building at the Transit Tower site would not shade any open spaces protected by *Planning Code* Section 295, nor would it cast any meaningful shadow on nearby privately owned, publicly accessible open spaces. Moreover, a 30-foot-tall building would not be subject to Section 295. A 30-foot building would not cast new shadow on any streets protected by *Planning Code* Section 146(a), although it would be subject to Sections 146(c) and 147. No adverse effects would be anticipated. (The No Build scenario would have no effects related to shading of open space.)

A 30-foot-tall building at the Transit Tower site would not result in any perceptible wind effects, and would likely reduce wind speeds in areas of City Park closest to the Transit Tower site, compared to conditions with a 550-foot or taller Tower. (The No Build scenario would have no wind impacts.)

Neither the No Build scenario nor development of a 30-foot-tall building at the Transit Tower site would have no effects on historical resources.

A 30-foot-tall building at the Transit Tower site would, as with the proposed Transit Tower, be required to comply with *Planning Code* Section 139 and the City's *Standards for Bird-Safe Buildings*. Biological resources impacts, therefore, would be less than significant. Since the City Park level of the Transit Center will be 70 feet above grade level, any building below that height would largely eliminate the potential for

bird strike impacts at City Park associated with the proposed Transit Tower. (The No Build scenario would have no effects on biological resources.)

Depending on the level of excavation proposed, a 30-foot building at the Transit Tower site would be expected to substantially reduce impacts on archeological resources, compared to those of the draft Plan, because less ground disturbance would be anticipated. (The No Build scenario would avoid any effects on archeological resources.)

Project Objectives

Transit Center District Plan

Because the No Project Alternative would develop approximately 40 percent less total floor area than the draft Plan, this alternative would be less successful than the Plan in “continu[ing] the concentration of additional growth where it is most responsible and productive to do so—in proximity to San Francisco’s greatest concentration of public transit service,” which is the overarching premise behind the draft Plan. Additionally, the No Project Alternative would not achieve the draft Plan’s goal of accommodating projected job growth in San Francisco for the next 25 years, based on a study commissioned by the Planning Department.⁴⁶² Without the public realm improvements proposed under the draft Plan, the No Project Alternative would not achieve the draft Plan’s goal of creating “a framework for a network of public streets and open spaces that support the transit system, and ... a wide variety of public amenities and a world-class pedestrian experience,” nor would this alternative generate as much financial support for the new Transit Center that is currently under construction. The No Project Alternative could, however, “support existing city environmental, sustainability and climate change objectives.” Under this alternative, the amount of impact fees collected from new development in the Plan area and directed to public improvements would be lower than with implementation of the draft Plan, particularly if the financing mechanisms described in the draft Plan were not established.

Transit Tower

The No Build Alternative (No Project alternative for the Transit Tower) would not result in development of the proposed Transit Tower site; therefore, it would not achieve any of the project objectives.

The No Project – Existing Zoning Alternative (No Project alternative for the TCDP) would result in a 30-foot-tall building on the proposed Transit Tower site, which also would not achieve any of the project objectives. It would not create a visual focal point for downtown San Francisco because the 30-foot building would not be visible from a distance; it would create only a negligible amount of new office or retail space; it would provide little or no land sale and tax increment revenue to support the Transit Center Project, which also means it would not support development of Mission Square. It is possible that a small structure on the site could complement the design of and/or improve access to the Transit Center, but on the whole, this alternative does not achieve the sponsor’s objectives for the Transit Tower project.

⁴⁶² Seifel Associates, “Downtown San Francisco: Market Demand, Growth Projections, and Capacity Analysis.” May 2008; see footnote 9, p. 9.

Alternative B: Reduced Project

Description

Alternative B, Reduced Project, assumes construction on each of the “soft” development sites identified in this EIR, but at lesser heights and intensity than would be permitted under the draft Plan. The heights selected were those at which development would cast no additional shadow on Section 295 parks, compared to that from buildings developed to existing height limits. In other words, where development to existing height limits would newly shade one or more parks, the existing height limit was assumed, and no sites were assumed to be “downzoned” to lower height limits under this alternative. The reason for this assumption is that reducing existing height limits would not only be fundamentally inconsistent with the draft Plan, but would be lesser development than reasonably foreseeable under the No Project Alternative. As stated in Chapter II, Project Description:

The overarching premise of the Transit Center District Plan is to continue the concentration of additional growth where it is most responsible and productive to do so—in proximity to San Francisco’s greatest concentration of public transit service. The increase in development, in turn, will provide additional revenue for the Transit Center project and for the necessary improvements and infrastructure in the District.⁴⁶³

As a result of the lesser heights under this alternative, it is assumed that development of Plan area sites containing historical resources would proceed in a different manner than would be allowed under the draft Plan, thereby reducing the Plan’s impacts on historic architectural resources. In particular, this alternative assumes that development at five sites in the Plan area that contain identified or potential historic architectural resources would generally be undertaken consistent with the *Secretary of the Interior’s Standards for the Treatment of Historic Properties*⁴⁶⁴ (or otherwise determined by Planning Department preservation staff to result in less-than-significant impacts under CEQA, to the maximum extent feasible) in order that historical resources on these sites are minimally affected. These sites, which are the same locations discussed in Section IV.C, Cultural Resources (see p. 264), are described below.

1. 50 First Street: As described in Section IV.C, the project on file for this site, at the northwest corner of First and Mission Streets, would demolish four existing structures, three of which are historical resources, and develop three buildings containing office, residential, and hotel use, that would be 184 to 915 feet in maximum height. Under the Reduced Project Alternative, height limits at this site would not be increased above the existing limit of 550 feet, and only two towers would be built, with the smallest of the three proposed being eliminated. Under this alternative, this project would consist of a 550-foot office tower at 38 – 50 First Street and a 300-foot residential/hotel tower at 512 – 526 Mission Street, with separation of the towers as proscribed under existing zoning. It is assumed that the office tower site would be expanded slightly by the addition of the parcel occupied by an existing building at 38 – 40 First Street, not currently under the control of the project sponsor, to facilitate a more rationalized building plan, without a “notch” cut out of the tower’s northeast corner. This tower would require demolition of two buildings, at 38 – 40 First Street and 50 First Street, both of which have been altered such that they “no longer retain sufficient integrity” to be

⁴⁶³ November 2009 draft, p. 4

⁴⁶⁴ See footnote 150, p. 239.

eligible for state or local listing as historical resources.⁴⁶⁵ However, three historical resources that would be demolished under the draft Plan would be retained. These are the buildings at 62, 76, and 88 First Street. The second tower, on Mission Street, would be developed on vacant parcels and would not require demolition of any buildings. Under this alternative, this project would consist of approximately 615,000 square feet of office space (just over half of that proposed), and just over half the residential and hotel space than proposed (90 units and 180 rooms). This alternative would also include designation of the remaining buildings as historical resources under Article 11 of the *Planning Code*, and they would be afforded protection through the ability to sell development rights (“TDR”). In the case of the Marwedel Building at 76 – 78 First Street, which has been determined eligible for listing on the National Register of Historic Places and, as a result, is listed on the California Register of Historical Resources, it is presumed that this building would be designated Category I, Significant. Demolition of Category I buildings is generally prohibited, absent a determination by the Planning Commission that the building has no substantial market value or reasonable use.

2. **Palace Hotel Tower, 2 Montgomery Street:** As described in Section IV.C, the construction of a 680-foot residential tower at the rear of the Palace Hotel would result in the demolition of a non-historic addition to the City Landmark Palace Hotel. This project also proposes alterations to the Landmark hotel building, both as part of a structural upgrade to connect the existing hotel to the tower, and potentially as part of other program-related alterations to the hotel. As explained in Section IV.C, the historical resources analysis conservatively assumes that this project could result in a significant adverse impact on the City Landmark. (This project will be the subject of a separate, project-specific EIR that will fully evaluate historical resources impacts, mitigation measures, and alternatives.) Under the Reduced Project Alternative, the tower addition to the Palace Hotel would be 365 feet tall, greater than the existing 300-foot height limit, but a height at which the new tower would not cast new shadow on Union Square during the hours covered by *Planning Code* Section 295. The addition would provide for about 290 dwelling units, some 35 percent fewer than proposed. Under this alternative, alterations might occur to the hotel building independent of the draft Plan, but the proposed tower would be smaller in scale and would have less potential for impact on the Landmark hotel and the New Montgomery-Second Street Conservation District.
3. **201 Second Street:** As stated in Section IV.C, while a residential building was approved in 2006 for this site, the development parcel is proposed be acquired by the Transbay Joint Powers Authority (TJPA), along with two parcels to the south on Second Street occupied by existing buildings, as part of the project to extend underground Caltrain tracks to the new Transit Center, assuming funding of the Caltrain extension. Accordingly, the draft Plan calls for the City to consider vacating Malden Alley to facilitate construction of a building on a larger site, with the foundation set back from the underground rails. Demolition of the building at 217 Second Street, a historical resource, was approved as part of the separate Caltrain extension project. However, the enlarged development site would encompass parcels at 583 and 589 Howard Street and 90 Tehama Street, all of which contain historical resources. Under the Reduced Project Alternative, the two buildings on Howard Street, which are contributors to the National Register Second and Howard Streets Historic District, would be substantially retained, and only 90 Tehama Street would be demolished, with a vertical addition constructed on the Tehama Street portion of the site. It is assumed that the project would be a 19-story residential building containing about 55 dwelling units.

⁴⁶⁵ Kelley & VerPlanck, “Transit Center District Survey,” (footnote 127, p. 208); page 64.

4. 648 – 660 Howard Street. As stated in Section IV.C, this site is assumed to be developed under the draft Plan with a 350-foot building, which could result in the substantial alteration or demolition of three historic resources, at 147 and 161 Natoma Street and 658 Howard Street. Under the Reduced Project Alternative, the existing height limit of 250 feet would not be increased, and a 250-foot office building would be developed on the site's Howard Street frontage, avoiding significant effects on the two Natoma Street buildings, while demolishing only the building at 658 Howard Street. Under this alternative, this building would accommodate about 130,000 square feet of office space, or one-third of the space assumed under the draft Plan.
5. 669 Howard Street. As stated in Section IV.C, a building is assumed to be built on this site at the existing height limit of 250 feet, resulting in the demolition of one historic resource, at 667 Howard Street. Because this potential development site is relatively small (approximately 11,200 square feet), it is not feasible to retain the building at 667 Howard Street. Therefore, the Reduced Project Alternative assumes that the façade of this building would be retained and incorporated into the new building, with the new building set back approximately 20 feet from the historic façade. This would reduce potential development at this site to about 150,000 square feet of office space, about 14 percent less than assumed with the draft Plan.

This alternative would include some of the public realm improvements, subject to funding, that are proposed under the draft Plan. There would be no change under this alternative in the assumptions for nearby development in Zone 1 of the Transbay Redevelopment Plan, in the Rincon Hill Plan area, or with respect to cumulative projects west of the Plan area. However, under this alternative, certain changes to street configurations would not occur. Specifically, the Reduced Project Alternative would not convert Howard Street to two-way operations between New Montgomery and Fremont Streets, nor would it convert Folsom Street to two-way operations between Second and Fremont Streets. This alternative also would not include installation of signalized mid-block crosswalks across First Street at Minna and Natoma Streets, north and south of the new Transit Center. It should be noted that the public realm improvements are related to private development projects primarily on a funding level (i.e., development fees would fund public realm changes), so aspects of the public realm plan could be changed regardless of adopted building height or other land use controls. Therefore, some proposed components could be removed from the public realm plan by decision-makers when considering Plan approval, provided that the public realm plan as adopted is within the range of alternatives analyzed in this EIR.

This alternative would entail development of about 308 million square feet of office space (about 39 percent less than with the project), approximately 960 dwelling units (about 26 percent fewer), and about 415 hotel rooms (32 percent of the project's total). Ground-floor retail space would be similar, because the sites where development is anticipated would be essentially the same, although shorter, somewhat less bulky buildings would be developed. Total floor area developed would be about 35 percent less than with implementation of the draft Plan. **Table 45**, p. 664, sets forth a description of the alternatives and compares them to the draft Plan.

Under the Reduced Project Alternative, the Transit Tower would be 550 feet tall, with the same development program as under the draft Plan's No Project Alternative.

Reduced Project Alternative: Impacts

Plan Impacts

Transportation

The Reduced Project Alternative would result in similar traffic and transit impacts to those of the No Project Alternative, because office employment, the primary activity in the Plan area—would be comparable. Daily and peak-hour vehicle trip generation and transit ridership would be about 35 percent less than with the draft Plan, and would be similar to that with the No Project Alternative. Although there could be some incremental redistribution of vehicle trips and transit riders, effects would be comparable to those of the No Project Alternative. As with the draft Plan, three of the freeway five ramps analyzed would operate at LOS F under this alternative, although average vehicle delay attributable to this alternative would be incrementally less than with the draft Plan. Impacts on intersections and freeway ramps would be **significant and unavoidable**, as with the draft Plan. Without the conversion of portions of Howard and Folsom Street from one-way to two-way operations, however, this alternative would avoid conflicts between left-turning vehicles and oncoming traffic at intersections on Howard and Folsom Streets with Fremont, First, and Second Streets. This would be expected to result in shorter queues at these intersections, and would also potentially improve operations for Golden Gate Transit buses, which would travel on Folsom Street to the new Transit Center (and currently travel on Folsom to the Temporary Transbay Terminal). However, as shown in Section IV.E, Transportation (Table 19, p. p. 289), it is likely that, while certain intersections would operate at improved level of service without the extension of two-way operations on Howard and Folsom Streets, other intersections, particularly on Harrison Street, would operate at worse LOS. Elimination of mid-block signalized crosswalks on First Street could reduce p.m. peak-hour vehicle queues, and possibly transit delays, on First Street, but would not improve LOS, because intersections on First Street would operate at unacceptable LOS under No Project conditions, as well. Overall, intersection operations, and the resulting transit delays, would not be substantially different throughout most of the Plan area.

As with the No Project Alternative, the Reduced Project Alternative would not avoid the draft Plan's **significant, unavoidable impacts** on Muni capacity utilization on the northwest, southeast, and southwest screenlines in the p.m. peak hour and on the Geary corridor in the a.m. peak hour. The Reduced Project Alternative would also result in **significant, unavoidable impacts** on BART East Bay service and Golden Gate Transit buses.

Although pedestrian and bicycle trip generation would be similar to that under the No Project Alternative, the Reduced Project Alternative is assumed to implement at least some of the public realm improvements proposed under the draft Plan, subject to funding, and therefore the less-than-significant effects on pedestrian and bicycle circulation would be incrementally better than under the No Project Alternative. With no signalized crosswalks at First and Minna and First and Natoma Streets, this alternative would require that pedestrians cross First Street at Mission or Howard Streets. Like the draft Plan, this alternative would have a **significant, unavoidable impact** relative to off-street freight loading.

Other Effects Related to the Intensity of Development

Emissions of criteria air pollutants and greenhouse gases would be incrementally reduced, compared to those of the draft Plan; these impacts would be less than significant with implementation of mitigation identified in the EIR, where applicable, as with the draft Plan. As with the Plan, construction-related air quality emissions would result in a **significant, unavoidable impact**. Exposure of sensitive receptors (existing and future residents, along with child-care centers) to toxic air contaminants from existing and future stationary sources (mostly backup generators and on-site co-generation plants, as well as buses at the new Transit Center) would also result in a **significant and unavoidable impact**, as with the draft Plan. Effects related to recreation and public space, utilities and service systems, and public services would be less substantial than those of the draft Plan, given the reduced intensity of development; these effects would be less than significant, as with the proposed project.

This alternative would generate less traffic-related noise, compared to that under the draft Plan, but noise impacts from traffic and cumulative construction noise, along with construction vibration, would be **significant and unavoidable**, as with the project.

On the other hand, similar to the No Project Alternative, to the extent that development precluded under this alternative from taking place in the Plan area were to occur elsewhere in the Bay Area, employees in and residents of that development could potentially generate substantially greater impacts on transportation systems, air quality, and greenhouse gases than would be the case for development of a similar amount of office space in the more compact and better-served-by-transit Plan area. This would be particularly likely for development in more outlying parts of the region where fewer services and less transit access is provided.

Aesthetics

Aesthetic impacts would be less than significant, unlike with the draft Plan. Under the Reduced Project Alternative, effects would be similar to those of the No Project Alternative (depicted in the visual simulations, Figures 27B through 41B, in Section IV.B, Aesthetics). Although buildings on several assumed development sites would be taller than under the No Project Alternative, only two potential sites would be built to more than the existing height limit of 550 feet (maximum of 640 feet at 181 Fremont Street), and thus no buildings would stand out on the skyline as clearly demarking the location of the new Transit Center or the Plan area as a whole. Therefore, in long-range views, the skyline would be seen to have a flattened, benched effect comparable to that of the No Project Alternative and of existing conditions, the result of a concentration of towers at similar heights. As with the No Project Alternative, the Reduced Project Alternative assumes development in Zone 1 of the approved Transbay Redevelopment Plan area would proceed consistent with that plan, and that other nearby development, such as on Rincon Hill, would also proceed, as would projects west of the Plan area, albeit at lesser heights. Therefore, as shown in Figures 33B and 34B, for example, cumulative development under the No Project Alternative would result in obscuring the towers of the Bay Bridge and parts of the Bay and the East Bay Hills in certain views. The Reduced Project alternative would contribute to the overall effects on views, and the contribution to cumulative impacts conservatively would be considered **significant and**

unavoidable under this alternative, as with the draft Plan. Nevertheless, unlike the draft Plan the Reduced Project Alternative would not emphasize the center Plan area as a major transportation hub, as called for in Policy 3.5 of the General Plan Urban Design Element, and, with some exceptions, would exacerbate the “benched” appearance of the skyline – therefore, despite the potential for significant impact, the overall aesthetic effects of the draft Plan could be considered preferable to the Reduced Project alternative on a subjective level.

Shadow

Shadow effects would be reduced under the Reduced Project Alternative, with new shadow affecting three Section 295 parks (Union Square, Portsmouth Square, and St. Mary’s Square), compared to nine parks with implementation of the draft Plan. However, impacts would be **significant and unavoidable**, as with the draft Plan.

Alternative B would have essentially the same shadow effects as the No Project Alternative. Under the Reduced Project Alternative, neither the Transit Tower (550 feet) nor the Palace Hotel tower (365 feet) would add new shadow to Union Square; the only new shadow on Union Square would come from a potential development at the existing site of Golden Gate University, on the north side of Mission Street between First and Second Street. Because of its relatively proximity to Union Square, a development on this site at the existing 550-foot height limit would cast a small amount of shadow on Union Square in early May and early August, between about 7:15 and 7:35 a.m. (Such an effect might be small enough to be found to be less than significant in the context of an individual project evaluation, or be able to be avoided through building design.) Effects would occur during far fewer weeks of the year, compared to the draft Plan, which would add new shadow to Union Square from mid-March through mid-September.

Under Alternative B, shadow would be cast on Portsmouth Square by the Transit Tower (550 feet) and a tower at 50 First Street (also 550 feet). New shadow would reach Portsmouth Square in late November and early December, and in early January, for a few minutes per day between about 8:00 and 8:30 a.m. This compares to more than three-and-a-half months of new shadow (late October through early February) with the draft Plan. Because Portsmouth Square is used in the early morning, this could be considered a significant impact. As with the No Project Alternative, it is possible that buildings could be designed to avoid this impact; however, without certainty on this issue it is assumed that the impact would be reduced but would remain **significant and unavoidable** under this alternative.

St. Mary’s Square would be affected by new shadow under Alternative B for less than two weeks per year (late October and early March), around 8:30 a.m. Under the draft Plan, new shadow would fall on St. Mary’s Square for about 1.5 months per year (late September to early October and early to mid-March).

Effects on St. Mary’s Square under the Reduced Project Alternative would be similar to those of the draft Plan, and would be **significant and unavoidable**.

As with the draft Plan, development pursuant to the Reduced Project Alternative could require an increase in the Absolute Cumulative Limit for Union Square, Portsmouth Square, and St. Mary's Square, which would be considered a significant impact. While sculpting or otherwise modifying individual buildings could be possible and would be likely to occur at the time such projects are considered for approval, at the programmatic level of this EIR, the potential for significant shadow would exist.

Wind

Wind effects would be incrementally reduced, compared to those of the proposed project because the lesser building heights would capture less of the upper-level winds that, when channeled to ground level by a structure, are increased in speed. However, the changes at ground level, compared to winds with the draft Plan, would likely be imperceptible at most locations. These effects would likely be less than significant, as with the project.

Historic Architectural Resources

The Reduced Project Alternative would substantially reduce effects on historic architectural resources, compared to those of the draft Plan. As explained above in the description of this alternative, it is assumed that effects on historical resources would be less-than-significant with respect to the projects with applications on file, at 50 First Street and the Palace Hotel, while potential development at 201 Second Street, 648 – 660 Howard Street, and 669 Howard Street would result in lesser impacts than with the draft Plan. While impacts at these projects could be minimized, and while some historic buildings in the Plan area might be retained under this alternative that would otherwise be lost with the incentive for redevelopment that greater height limits would provide, it cannot be stated with certainty that the Reduced Project Alternative would preclude demolition or other substantial alteration of historical resources. Therefore, this effect would remain **significant and unavoidable** with respect to at least some resources, as with implementation of the draft Plan. As stated in the description of this alternative, incentives and protection under Article 11 of the *Planning Code* would be expected to reduce impacts on historical resources on First Street near Mission Street.

Biological Resources

Effects on biological resources would be similar to those of the project, because most of the same buildings would be developed at the same locations, including several near or adjacent to the planned City Park atop the new Transit Center; compliance with *Planning Code* Section 139 and the City's *Standards for Bird-Safe Buildings* would render bird strike impacts less than significant, and the same mitigation measures as would apply to the project would reduce other biological impacts to a less-than-significant level.

Other Effects Related to the Site-Specific Conditions

Impacts related to site-specific conditions, such as those related historical and subsurface cultural (archeological) resources, geology, hydrology and water quality, and hazardous materials would be similar to those of the draft Plan because most of the same development sites would be affected. These

impacts would be less than significant, with the same mitigation measures, where applicable, as with the Plan.

As with the draft Plan, this alternative would have less-than-significant impacts related to mineral and energy resources and no impacts on agricultural or forest resources.

Transit Tower Impacts

Under the Reduced Project Alternative, the Transit Tower would be built to a height of 550 feet, consistent with the approved Transbay Redevelopment Plan. It would contain a similar amount of retail space to the proposed Transit Tower. With approximately 565,000 square feet of office space (44 percent of the office space with the proposed Transit Tower), the tower under this alternative would be less than half the size of the proposed Transit Tower. Effects related to the intensity of development, including trip generation and traffic-generated air pollutant emissions and noise, would be comparably reduced. However, the smaller tower would result in **significant and unavoidable impacts**, albeit reduced in magnitude, on intersection level of service at the same four intersections as with the proposed project. (Potential effects of development of a 30-foot-tall building on the Transit Tower site are discussed in the previous section.) Construction effects related to exposure to emissions from diesel equipment would be **significant and unavoidable**, as with the proposed project, and the Tower would also contribute to **significant and unavoidable** cumulative impacts with respect to exposure to toxic air contaminants from stationary sources and traffic in the Plan area, as with the proposed project. Cumulative construction noise impacts would also be **significant and unavoidable**, as with the proposed project.

In terms of aesthetic effects, the tower under the Reduced Project Alternative would be far less noticeable on the skyline than the proposed project. As is illustrated in the photomontages in Section IV.B, the shorter tower would not be visible in views from some of the closer-in vantage points, while in long-range views (Figures 32B through 37B, pp. 138 - 146, and Figures 39B and 40B, pp. 150 - 152), the shorter tower would essentially blend in with the existing skyline and would have little effect on these views. At the ground level, the reduced-height tower would have similar impacts to the proposed project. As with the proposed project, project-specific aesthetic impacts would be less than significant. At a height of 550 feet, the Transit Tower would not be a noticeable addition to the skyline that would project, in isolation, above the surrounding buildings, even in the event that it is the first new tower in the Plan area to be developed.

The shorter tower would cast shadow on only one Section 295 park—Portsmouth Square—compared to eight such parks with the proposed 1,070-foot-tall Transit Tower. Shadow would fall on Portsmouth Square between late November and early December, and in January, from about 8:00 - 8:20 a.m., and the amount of net new shadow, in square-foot-hours, would be less than 10 percent of that with the project. Because of the need to increase the Absolute Cumulative Limit for Portsmouth Square, shadow impacts would likely be **significant and unavoidable**, as with the proposed Transit Tower. However, it is possible that, with sculpting of the shorter tower under this alternative, and depending on the resulting

location of new shadow, this impact could be found to be less than significant. Given current information, it is assumed that this alternative would result in significant, unavoidable shadow effects.

Wind effects would be incrementally reduced, compared to those of the proposed project because the lesser building height would capture less of the upper-level winds that, when channeled to ground level by a structure, are increased in speed. These effects would likely be less than significant, as with the project.

Other impacts, including those on recreation and public space, utilities and service systems, and public services, would be less substantial than those of the proposed project, given the reduced size of the Tower. These effects would be less than significant, as with the proposed project. Impacts related to site-specific conditions, such as those related historical and subsurface cultural (archeological) resources, geology, hydrology and water quality, and hazardous materials would be similar to those of the proposed project because the same development site would be affected. These impacts would be less than significant, with the same mitigation measures, where applicable, as with the proposed Transit Tower. Effects on biological resources would be similar to those of the project, because the lower tower would be built adjacent to the planned City Park atop the new Transit Center. The same mitigation measures as would apply to the project would reduce impacts to a less-than-significant level, while compliance with *Planning Code* Section 139 and the City's *Standards for Bird-Safe Buildings* would avoid significant effects related to bird strikes.

Project Objectives

Transit Center District Plan

Because the Reduced Project Alternative would develop about one-third less total floor area than the draft Plan, this alternative would be less successful than the Plan in “continu[ing] the concentration of additional growth where it is most responsible and productive to do so—in proximity to San Francisco’s greatest concentration of public transit service,” which is the overarching premise behind the draft Plan; however, it would be incrementally more successful in achieving this objective than would the No Project Alternative. As with the No Project Alternative, the Reduced Project Alternative would not achieve the draft Plan’s goal of accommodating projected job growth in San Francisco for the next 25 years, based on a study commissioned by the Planning Department.⁴⁶⁶ Without all of the public realm improvements proposed under the draft Plan due to decreased funding generated, the Reduced Project Alternative would not achieve the draft Plan’s goal of creating “a framework for a network of public streets and open spaces that support the transit system, and provides a wide variety of public amenities and a world-class pedestrian experience,” nor would this alternative generate as much financial support for the new Transit Center that is currently under construction. The Reduced Project Alternative could, however, “support existing city environmental, sustainability and climate change objectives.” Under this alternative, the

⁴⁶⁶ Seifel Associates, “Downtown San Francisco: Market Demand, Growth Projections, and Capacity Analysis.” May 2008; see footnote 9, p. 9.

amount of impact fees collected from new development in the Plan area and directed to public improvements would be lower than with implementation of the draft Plan.

Transit Tower

With regard to the project objectives for the Transit Tower, a 550-foot building would not create a new visual focus for downtown within the Plan area, because the 550-foot building would be the same size as several other existing downtown buildings and proposed Plan area buildings. This alternative would provide substantially less land sale and tax increment revenue to support the Transit Center project than the 1,070-foot building due to two major factors: (1) the 550-foot building would have about 56 percent less floor area than the proposed Transit Tower, and (2) the higher floors of a 1,070-foot building would command higher rents and would be of much greater value than the rent in a shorter building. This reduction in revenue would also reduce the amount of funding available for the other infrastructure projects, such as Mission Square and the surrounding streetscape, which would reduce the quality of the ground level pedestrian spaces around the building. Hence, this alternative would not achieve three of the four Transit Tower project objectives. Finally, the reduction in height of the proposed Transit Tower under this alternative would account for approximately one-fourth of the overall reduction in Plan area development under this alternative, which would diminish the achievement of the Transit Center District Plan project objectives.

Alternative C: Reduced Shadow

Description

Alternative C, Reduced Shadow, is premised on retaining in large measure the draft Plan’s fundamental urban design concept that the Transit Tower, which would identify the location of the new Transit Center, be the City’s tallest and most prominent building—the “crown” of the downtown core that rises notably above the dense cluster of downtown buildings, as stated in draft Plan Policy 2.1. In contrast to Alternative B, which is based on site-by-site evaluation of building heights to reduce shadow on Section 295 parks, Alternative C would retain the Transit Tower as the tallest building in the Plan area, at a height of 840 feet. (It is assumed that this would entail about 790 feet of enclosed building space and a 50-foot-tall sculptural element.) At a height of 840 feet, the Transit Tower would be about 60 feet taller than the Bank of America Building, and about 15 feet shorter than the tip of the Transamerica Pyramid. **Table 45** describes this alternative and compares it to the draft Plan.

This alternative would also proportionally adjust the proposed height limits on the other sites in the Plan area in relation to the Transit Tower in order to maintain similar massing/height relationships as contemplated under the draft Plan’s urban form concepts. In addition to height, some projects proposed are not fully consistent with the ratio of office to non-office development proposed in the draft Plan.

This alternative would include some of the public realm improvements, subject to funding, that area proposed under the draft Plan. For the purpose of this analysis, the Reduced Project Alternative (Alternative B) includes specific changes to the public realm plan. It should be noted that the public realm

improvements are related to private development projects primarily on a funding level (i.e., development fees would fund public realm changes), so aspects of the public realm plan could be changed regardless of adopted building height or other land use controls. Therefore, changes to the public realm plan could be adopted by decision-makers at the time of project approval, provided they are within the range of alternatives analyzed in this EIR.

There would be no change under this alternative in the assumptions for nearby development in Zone 1 of the Transbay Redevelopment Plan, in the Rincon Hill Plan area, or with respect to cumulative projects west of the Plan area.

This alternative would entail development of about 5.3 million square feet of office space (about 14 percent less than with the project), approximately 1,145 dwelling units (about 12 percent fewer), and about 830 hotel rooms (36 percent less than the project's total). Ground-floor retail space would be similar, because the sites where development is anticipated would be essentially the same, although shorter, somewhat less bulky buildings would be developed. Total floor area developed would be about 13 percent less than with implementation of the draft Plan. As noted, under the Reduced Shadow Alternative, the Transit Tower would be 840 feet tall. It would contain about 1 million square feet of office space (about 20 percent less than under the proposed project), along with approximately the same amount of retail space (16,500 square feet) as under the project.

Reduced Shadow Alternative: Impacts

Plan Impacts

Transportation

The Reduced Shadow Alternative would result in traffic and transit impacts that would be comparable to those of the draft Plan, because the development intensity would be incrementally reduced. Daily and peak-hour vehicle trip generation and transit ridership would be about 13 percent less than with the draft Plan, meaning that effects on intersection level of service and transit capacity utilization would be the same as, or similar to, those of the Plan. Thus, the Reduced Shadow Alternative would, like the draft Plan, result in **significant, unavoidable impact** on LOS at many of the study intersections.

The Reduced Shadow Alternative would have the same **significant, unavoidable** transit effects as the draft Plan, on Muni capacity utilization on the northwest, southeast, and southwest screenlines in the p.m. peak hour and on the Geary corridor in the a.m. peak hour, and on BART East Bay service and Golden Gate Transit buses. Likewise, as with the draft Plan, three of the five freeway ramps analyzed would operate at LOS F under this alternative, although average vehicle delay attributable to this alternative would be incrementally less than with the draft Plan. Impacts on ramps would be **significant and unavoidable**, as with the draft Plan.

Pedestrian and bicycle trip generation would also be similar to that under the draft Plan. Alternative C is assumed to implement many of the public realm improvements proposed under the draft Plan, subject to

funding. Therefore, the less-than-significant effects on pedestrian and bicycle circulation would be comparable to those of the draft Plan. Like the draft Plan, this alternative would have a significant, unmitigable effect relative to off-street freight loading.

Other Effects Related to the Intensity of Development

Emissions of criteria air pollutants and greenhouse gases would be incrementally reduced, compared to those of the draft Plan; these impacts would be less than significant with implementation of mitigation identified in the EIR, where applicable, as with the draft Plan. As with the Plan, construction-related air quality emissions would result in a significant, unavoidable impact. Effects related to recreation and public space, utilities and service systems, and public services would be less substantial than those of the draft Plan, given the reduced intensity of development. Therefore, these effects would be less than significant, as with the proposed project.

On the other hand, to the extent that development precluded under this alternative from taking place in the Plan area were to occur elsewhere in the Bay Area, employees in and residents of that development could potentially generate substantially greater impacts on transportation systems, air quality, and greenhouse gases than would be the case for development of a similar amount of office space in the more compact and better-served-by-transit Plan area. This would be particularly likely for development in more outlying parts of the region where fewer services and less transit access is provided. This effect would be reduced under this alternative, compared to the No Project and Reduced Project alternatives, because this alternative would include more development in the Plan area than would those two alternatives.

Exposure of sensitive receptors (existing and future residents, along with child-care centers) to toxic air contaminants from existing and future stationary sources (mostly backup generators and on-site co-generation plants, as well as buses at the new Transit Center) and from diesel-powered construction equipment would result in a **significant and unavoidable impact**, as with the draft Plan.

This alternative would generate less traffic-related noise, compared to that under the draft Plan, but noise impacts from traffic and cumulative construction noise, along with construction vibration, would be **significant and unavoidable**, as with the project.

Aesthetics

Aesthetic impacts would be less than significant for the Reduced Shadow Alternative, except that building heights could result in similar impacts to those of the draft Plan with respect to changes in views from Twin Peaks and Portola Drive, and would contribute to the **significant and unavoidable** cumulative impact.

Under the Reduced Shadow Alternative, views would be of a skyline that would present some aspects of both the draft Plan and of the No Project Alternative. With the Transit Tower at 840 feet, this alternative would present a relatively clear marker of the location of the new Transit Tower, at least partially

consistent with the intent of the draft Plan and the policies of the *General Plan* Urban Design Element. At approximately 200 feet taller than the tallest existing buildings, and 165 feet taller than the next tallest potential building in the Plan area, the 840-foot Transit Tower would be a distinctive element on the skyline, but would not stand out in importance to the same degree as under the draft Plan. As with the draft Plan, therefore, the Reduced Shadow Alternative would, at least to some degree, emphasize the Plan area as a major transportation hub, as called for in Policy 3.5 of the *General Plan* Urban Design Element. However, the overall skyline form would be somewhat less distinctive than it would under the draft Plan.

Shadow

Shadow effects would be reduced under Alternative C, with new shadow affecting four parks (Union Square, Portsmouth Square, and St. Mary's Square, and Willie "Woo Woo" Wong Playground), compared to nine parks with implementation of the draft Plan. Impacts would be **significant and unavoidable**, as with the draft Plan.

Alternative C, Reduced Shadow, would reduced shadow effects on certain parks, compared to the draft Plan. The Transit Tower (840 feet), the Palace Hotel tower (500 feet), and the 50 First Street project (675 feet) would all add new shadow to Union Square, as would a potential development at the existing site of Golden Gate University, on the north side of Mission Street between First and Second Street (700 feet). Effects would occur at generally the same times of day as with the draft Plan, although the duration of new shadow on most days would be a few minutes less (typically, ending earlier in the morning). Additionally, new shadow would occur over about 2.5 months (late March to late April and mid-August to mid-September), compared to six months with the draft Plan

Portsmouth Square would be newly shaded for about three months of the year, compared to about 3.7 months with the draft Plan; new shadow would occur between approximately 8:00 and 9:10 a.m., as under the Plan.

Effects on St. Mary's Square would be similar to those of the draft Plan, as would effects on Willie "Woo Woo" Wong Playground.

As with the draft Plan, development pursuant to the Reduced Shadow Alternative would require an increase in the Absolute Cumulative Limit for Union Square, Portsmouth Square, St. Mary's Square, and Willie "Woo Woo" Wong Playground, which would be considered a **significant, unavoidable impact**. While sculpting or otherwise modifying individual buildings could be possible and would be likely to occur at the time such projects are considered for approval, at the programmatic level of this EIR, the potential for significant shadow would exist.

Wind

Wind effects would be incrementally reduced, compared to those of the proposed project because the lesser building heights would capture less of the upper-level winds that, when channeled to ground level

by a structure, are increased in speed. However, the changes at ground level, compared to winds with the draft Plan, would likely be imperceptible at most locations. These effects would likely be less than significant, as with the project.

Historic Architectural Resources

Effects on historical resources would be incrementally less substantial than those of the draft Plan, as some historic buildings in the Plan area might be retained that would otherwise be lost, because lesser increases in heights would potentially provide less incentive for redevelopment; however, this effect would remain **significant and unavoidable** with respect to at least some resources, as with implementation of the draft Plan.

Biological Resources

Effects on biological resources would be similar to those of the project, because most of the same buildings would be developed at the same locations, including several near or adjacent to the planned City Park atop the new Transit Center; compliance with *Planning Code* Section 139 and the City's *Standards for Bird-Safe Buildings* would render bird strike impacts less than significant, and the same mitigation measures as would apply to the project would reduce other biological impacts to a less-than-significant level.

Other Effects Related to the Site-Specific Conditions

Impacts related to site-specific conditions, such as those related historical and subsurface cultural (archeological) resources, geology, hydrology and water quality, and hazardous materials would be similar to those of the draft Plan because most of the same development sites would be affected. These impacts would be less than significant, with the same mitigation measures, where applicable, as with the Plan.

As with the draft Plan, this alternative would have less-than-significant impacts related to mineral and energy resources and no impacts on agricultural or forest resources.

Transit Tower Impacts

Under the Reduced Shadow Alternative, the Transit Tower would be built to a height of 840 feet. Effects related to the intensity of development, including trip generation and traffic-generated air pollutant emissions and noise, would be reduced by about 20 percent, compared to those of the 1,070-foot-tall Transit Tower. However, the smaller tower would result in **significant and unavoidable impacts**, albeit reduced in magnitude, on intersection level of service at the same four intersections as with the proposed project. Construction effects related to exposure to emissions from diesel equipment would be **significant and unavoidable**, as with the proposed project, and the Tower would also contribute to **significant and unavoidable** cumulative impacts with respect to exposure to toxic air contaminants from stationary sources and traffic in the Plan area, as with the proposed project. Cumulative construction noise impacts would also be **significant and unavoidable**, as with the proposed project.

In terms of aesthetic effects, the tower under the Reduced Shadow Alternative would be somewhat less noticeable on the skyline than the proposed project, but would still be the tallest building in the Plan area and the tallest in San Francisco other than the sculptural tip of the Transamerica Pyramid. Therefore, aesthetic impacts would be similar to those of the proposed project. As with the proposed project, these impacts would be less than significant. If the Transit Tower were to be constructed in advance of other buildings in the Plan area, without these other buildings to contribute to overall urban form, the Tower—at the reduced height of 840 feet—would be less noticeable than it would appear at 1,070 feet, as is proposed under the project.

The shorter tower would cast shadow on three Section 295 parks—Union Square, Portsmouth Square, and St. Mary’s Square—compared to eight such parks with the proposed 1,070-foot-tall Transit Tower. New shadow would fall on Union Square in the first half of August and in late April and early May, from about 7:15 to 7:35 a.m., and the amount of new shadow, in square-foot-hours, would be less than 25 percent that of the proposed project, shadow would fall on Portsmouth Square between late November and early December, and in January, from about 8:00 - 8:20 a.m., and the amount of net new shadow, in square-foot-hours, would be less than 10 percent of that with the project. On St. Mary’s Square, the 840-foot tower would add new shadow for less than one month, in early October and mid-March, at around 8:30 a.m. As with the proposed project, some of the theoretical new shadow—and a greater percentage than with the taller tower because of the lesser overall height—would not actually be visible on the ground, because it is assumed to be cast by the Tower’s sculptural element, and this element would have structural features that would not be wide enough to obscure the sun at distant locations. However, because of the potential need to increase the Absolute Cumulative Limit for these three parks, shadow impacts would likely be **significant and unavoidable**, as with the proposed Transit Tower. However, it is possible that, with sculpting of the shorter tower under this alternative, and depending on the resulting location of new shadow, this impact could be found to be less than significant. At a height of 840 feet, the Transit Tower, under this Alternative, would not add new shadow to Justin Herman Plaza, Maritime Plaza, Chinese Recreation Center, or Woh Hei Yuen Park. (The Transit Tower would not cast any new shadow on Willie “Woo Woo” Wong Playground, even at 1,070 feet.) Shadow could still reach Union Square, St. Mary’s Square, Portsmouth Square and Boeddeker Park, but the Absolute Cumulative Limit might not be exceeded, depending on existing shadow and how the Tower is sculpted. Given current information, however, this alternative would result in significant, unmitigable shadow effects.

Wind effects would be similar to those of the proposed project because the incrementally lower building height would not make a meaningful difference in ground-level wind speeds; these effects would likely be less than significant, as with the project.

Other impacts, including those on recreation and public space, utilities and service systems, and public services, would be incrementally less substantial than those of the project, given the small relative decrease in the size of the Tower. These effects would be less than significant, as with the proposed project. Impacts related to site-specific conditions, such as those related historical and subsurface cultural (archeological) resources, geology, hydrology and water quality, and hazardous materials would be

similar to those of the proposed project because the same development site would be affected. These impacts would be less than significant, with the same mitigation measures, where applicable, as with the proposed Transit Tower. Effects on biological resources would be similar to those of the project, because the lower tower would be built adjacent to the planned City Park atop the new Transit Center. The same mitigation measures as would apply to the project would reduce impacts to a less-than-significant level, while compliance with *Planning Code* Section 139 and the City's *Standards for Bird-Safe Buildings* would avoid significant effects related to bird strikes.

Project Objectives

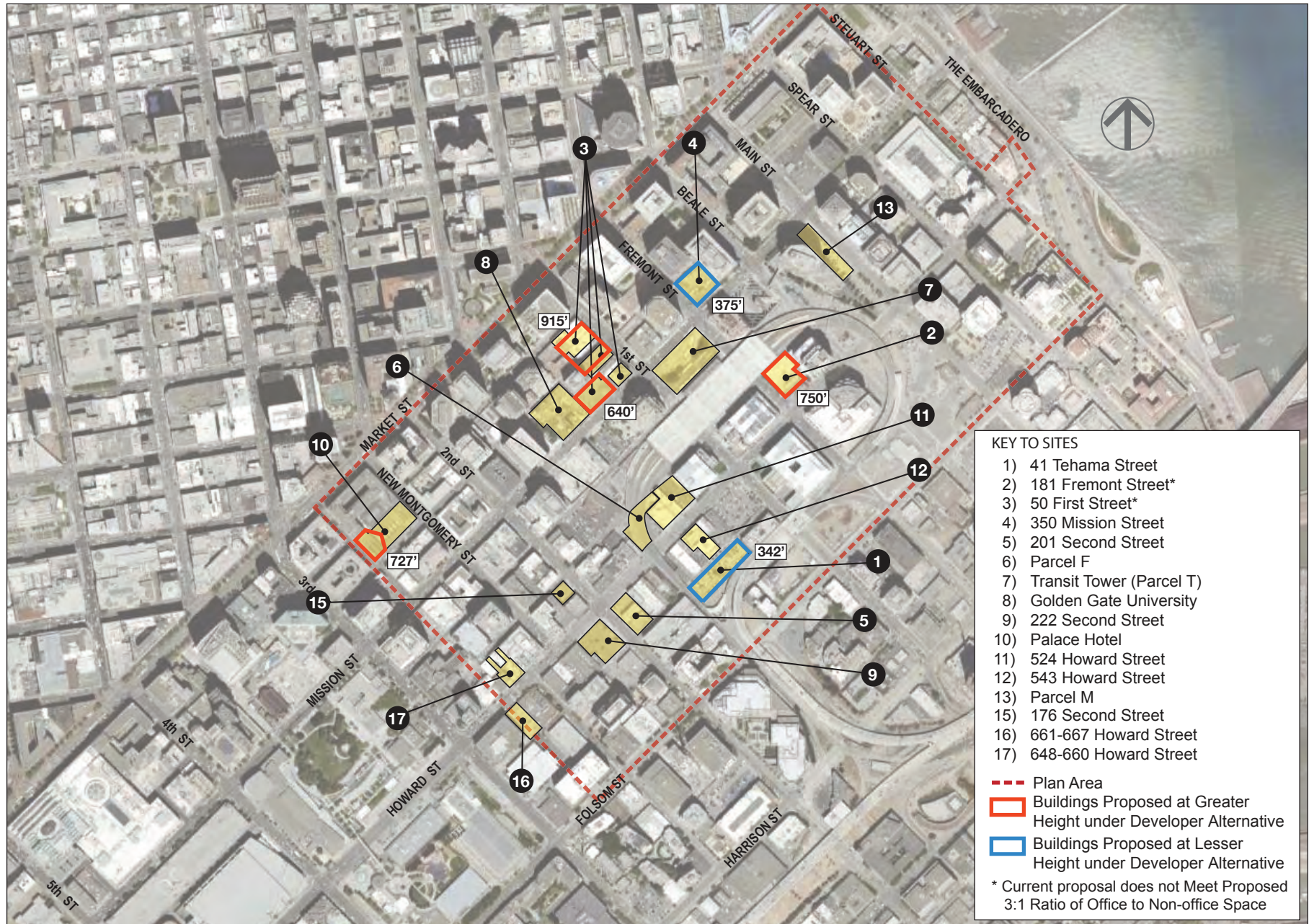
Because the Reduced Shadow Alternative would develop about 13 percent less total floor area than the draft Plan, it is anticipated that this alternative would have comparable, if incrementally reduced, success in attaining the objectives of the draft Plan, as would the Plan itself.

The Reduced Shadow Alternative for the Transit Tower would result in development of an 840-foot building. This alternative would only partially meet the objectives of the Transit Tower Project. An 840-foot building would not be the tallest building in San Francisco (the Transamerica Pyramid is 853 feet); while a building of this height in this location would be visually prominent, it would not be the sole, signature visual focus for Downtown and the Transit Center now under construction. Because the 840-foot building would be approximately 20 percent shorter and provide about 20 percent less floor area than the proposed Transit Tower, it would provide less land sale and tax increment revenue to support the Transit Center project. The land sale and tax increment revenue would be expected to be reduced to a greater degree than the reduction in floor area because the space on the upper floors of the building would be expected to be of greater value than the space on lower floors, and a shorter tower would have less upper-level space. This reduction in revenue would also reduce the amount of funding available for the other infrastructure projects, such as Mission Square and the surrounding streetscape, which would reduce the quality of the ground level pedestrian spaces around the building. Hence, this alternative would not achieve three of the four project Transit Tower objectives, although it would achieve the objectives to a greater degree than the other reduced impact alternatives analyzed in this chapter.

Alternative D: Developer Scenario

Description

This alternative differs from the draft Plan in that development assumptions for certain specific sites would reflect project applications that are on file at the Planning Department. In up to three instances, this alternative would therefore permit taller buildings than the draft Plan proposes, while for two other sites, lesser height is assumed (see Table 45 and **Figure 75**). The major difference in height, compared to the draft Plan, is that the proposed residential tower at the Palace Hotel is proposed at a height of 727 feet, whereas the Plan calls for a 600-foot building. The other two projects for which “additional” height is proposed are 50 First Street and 181 Fremont Street. In both of these cases, the developer-proposed height is the same at the roof line as called for in the Plan; the potential difference is that the



draft Plan would potentially allow additional height on particular building sites if the form above the roof height does not cast significant shadow on protected open spaces. This determination would have to be made based on a detailed, project-specific shadow analysis of each applicable project, which would be undertaken at a greater level of precision than is feasible or appropriate for a programmatic EIR analysis of an area as large as the proposed Transit Center district.

Although this alternative would result in several buildings being taller than proposed with the draft Plan development assumptions for the Developer Scenario Alternative would be similar to those of the Plan with respect to office space, and somewhat less intensive than the Plan with respect to residential units and hotel space. This is because the projects with applications on file at the Planning Department propose a different mix of uses than the Plan forecasts assume for those sites. Additionally, the projects on file that propose residential uses generally include larger units than the Plan assumes, and therefore would create fewer units in the same floor area.⁴⁶⁷ Finally, an office project at 350 Mission Street was approved in 2011 as a 375-foot-tall, 356,000-square-foot building, whereas the draft Plan proposes a 700-foot height limit at this site. For the Developer Scenario Alternative, development assumptions include the net addition, in the Plan area, of approximately 6.1 million square feet of office space (about 1 percent less than with the project), approximately 1,125 dwelling units (about 13 percent fewer), and about 665 hotel rooms (50 percent fewer than with the draft Plan). Ground-floor retail space would be similar, because the sites where development is anticipated would be essentially the same, although shorter, somewhat less bulky buildings would be developed. Total floor area developed, assuming the larger residential units proposed, would be about the same as with implementation of the draft Plan.

The Transit Tower would be 1,070 feet tall under this alternative, as under the draft Plan.

The Developer Scenario Alternative is assumed to implement the same public realm improvements as would be undertaken with implementation of the draft Plan. Under this alternative, there would be no change in the assumptions for nearby development in Zone 1 of the Transbay Redevelopment Plan, in the Rincon Hill Plan area, or with respect to cumulative projects west of the Plan area.

Developer Scenario: Impacts

Plan Impacts

Transportation

Because of the somewhat lesser development assumptions for this alternative described above, based on proposed and approved projects, effects related to the intensity of development within the Plan area would be incrementally less under the Developer Scenario Alternative than they would for the proposed project, given the small relative change in total assumed commercial and residential development. Daily and peak-hour vehicle trip generation would decrease slightly (by about 4 percent), compared to that

⁴⁶⁷ The development assumptions on which the analysis of the Plan is based incorporate a mix of land uses consistent with Plan objectives and also consider past trends in land uses. They cannot, however, be fully predictive of actual development proposals.

with implementation of the draft Plan because of the relative decrease in residential and hotel space (notably, about 175 fewer dwelling units and 320 fewer hotel rooms). Vehicle delay could increase or decrease slightly at some intersections, but would be not result in any new or substantially more severe impacts than those identified in the EIR.

Other Effects Related to the Intensity of Development

Because of the incremental decrease in building space and traffic, Plan-area-generated air quality impacts and GHG emissions would decrease marginally under the Developer Scenario Alternative, compared to those with implementation of the draft Plan. However, the differences would not result in different conclusions or any new significant effects, compared to those of the draft Plan. Impacts on intersection level of service and freeway ramps would be **significant and unavoidable**, as with the draft Plan.

Exposure of sensitive receptors (existing and future residents, along with child-care centers) to toxic air contaminants from existing and future stationary sources (mostly backup generators and on-site co-generation plants, as well as buses at the new Transit Center) and from diesel-powered construction equipment would result in a **significant and unavoidable impact**, as with the draft Plan.

This alternative would generate less traffic-related noise, compared to that under the draft Plan, but noise impacts from traffic and cumulative construction noise, along with construction vibration, would be **significant and unavoidable**, as with the project.

Effects related to recreation and public space, utilities and service systems, and public services would be essentially the same as those of the draft Plan, given the minor variation in development assumptions; these effects would be less than significant, as with the proposed project.

Aesthetics

Aesthetic impacts would be comparable under the Developer Scenario Alternative to those with implementation of the draft Plan. Because development would occur at the same locations, close-in views and aesthetic impacts would not change from those of the draft Plan. Long-range views would be similar to those under the Plan, because the differences in heights proposed under this alternative are, in most cases, not dramatic. The greatest proposed difference is in the case of the proposed Palace Hotel Tower, which would be approximately 130 feet (21 percent) taller under this alternative than with implementation of the draft Plan. Because this proposed tower would be on a site at the western edge of the Plan area, it would be visually set apart from most other tall buildings in the Plan area, and under this alternative, it could, to some degree, serve as an additional focal point in the Plan area, contrary to the project objectives and the Urban Design Element of the *General Plan*. However, the Transit Tower, at 1,070 feet, would be more than 340 feet taller, and would be the tallest building in the City, as it would under the draft Plan. The taller of two proposed towers at 50 First Street, at 915 feet including sculptural element, would be more than 150 feet shorter than the Transit Tower.

Shadow

The Developer-Proposed Scenario Alternative would result in greater shadow impacts on Union Square, compared to the proposed project because greater height would be permitted at the site of the proposed Palace Hotel tower. As explained in Section IV.J, Shadow, this proposed tower's location relative to Union Square makes it the major contributor to new shadow on this Section 295 park. Under the Developer Scenario Alternative, the net increase in shadow on Union Square, measured in square-foot-hours, would be approximately one-third greater than with the draft Plan.

The Developer Scenario would also increase new shadow, from the 50 First Street project, on Union Square (by about 5 percent) and Justin Herman Plaza (by about 16 percent), but would decrease Plan shadow on St. Mary's Square (by about 14 percent) and Portsmouth Square (by about 6 percent). This is because, while the Developer Scenario would build a taller building, the building would not occupy the entire site. Also, the massing of the tower under this alternative would be irregular. While the Developer Scenario would also involve additional height on the project at 181 Fremont Street, this proposed building would be tapered as it rises, so shading of Union Square by a building on this site would be similar to that for the draft Plan scenario.⁴⁶⁸

As with the draft Plan, development pursuant to the Developer Scenario Alternative would require an increase in the Absolute Cumulative Limit for Union Square, Portsmouth Square, St. Mary's Square, Willie "Woo Woo" Wong Playground, Chinese Recreation Center, Woh Hei Yuen Park, Justin Herman Plaza, Maritime Plaza, and Boeddeker Park. As with the draft Plan, this would be considered a **significant, unavoidable impact**. While sculpting or otherwise modifying individual buildings could be possible and would be likely to occur at the time such projects are considered for approval, at the programmatic level of this EIR, the potential for significant shadow would exist.

Wind

Effects on ground-level wind conditions would be comparable to those of the draft Plan, because the relatively minor differences in height would not substantially affect wind speeds; these effects would likely be less than significant, as with the Plan.

Historic Architectural Resources

Because it would involve the same or very similar development sites as the project, the Developer Scenario Alternative, like the draft Plan and the No Project Alternative, would result in a significant unavoidable impact on historical resources resulting from the demolition or substantial alteration of a number of historical resources, likely including three buildings on the west side of First Street north of Mission Street, one to four buildings at the northeast corner of Second and Howard Streets, one to three

⁴⁶⁸ This programmatic analysis of both the 50 First Street and 181 Fremont Street projects may overstate shadow impacts at very long distance (i.e., on Union Square and Portsmouth Square), because the analysis is based on generalized massing models, and not specific building designs. As with all high-rise buildings subject to *Planning Code* Section 295, each of these projects would be analyzed in detail, based on actual project plans, as part of project-specific CEQA review and consideration of the project by the Planning Department and Planning Commission.

buildings on the north side of Howard Street across from Hawthorne Street, and one or two buildings on the south side of Howard Street, west of Hawthorne Street. Also like the draft Plan, this alternative could result in a substantial adverse effect on the Palace Hotel, City Landmark No. 18, and possibly on the New Montgomery-Second Street Conservation District, from construction of a residential tower at the southwest corner of the hotel site. As would be the case for the draft Plan, effects on historical resources would be **significant and unavoidable**.

Biological Resources

Effects on biological resources would be similar to those resulting from implementation of the draft Plan, because most of the same buildings would be developed at the same locations, including several near or adjacent to the planned City Park atop the new Transit Center; compliance with *Planning Code* Section 139 and the City's *Standards for Bird-Safe Buildings* would render bird strike impacts less than significant, and the same mitigation measures as would apply to the project would reduce other biological impacts to a less-than-significant level.

Other Effects Related to the Site-Specific Conditions

Impacts related to site-specific conditions, such as those related subsurface cultural (archeological) resources, geology, hydrology and water quality, and hazardous materials would be similar to those of the draft Plan because the same or very similar development sites would be involved. As with the draft Plan, the No Project Alternative, and the Reduced Project and Reduced Shadow Alternatives, these effects would be less than significant (with applicable mitigation in the case of archeological resources).

As with the draft Plan, this alternative would have less-than-significant impacts related to mineral and energy resources and no impacts on agricultural or forest resources.

Transit Tower Impacts

Under the Developer Scenario Alternative, the Transit Tower would be built to a height of 1,070 feet, as with the draft Plan. Therefore, effects related to the Tower would be as described in Chapter IV.

Project Objectives

Given that this alternative's development assumptions are similar to those of the draft Plan, the Developer Scenario Alternative would meet most of the same project objectives as would the draft Plan. However, the greater height proposed for the residential tower addition to the Palace Hotel would be somewhat inconsistent with the draft Plan's urban design objectives.

Conclusion

Because it would substantially reduce shadow impacts on parks subject to Section 295 and effects on historic architectural resources, compared to the proposed project, Alternative B, Reduced Project, is considered the environmentally superior alternative for both the draft Plan and the proposed Transit

Tower. As noted previously in this chapter, however, to the extent that development precluded under the Reduced Project Alternative from taking place in the Plan area were to occur elsewhere in the Bay Area, employees in and residents of that development could potentially generate substantially greater impacts on transportation systems, air quality, and greenhouse gases than would be the case for development of a similar amount of office space in the more compact and better-served-by-transit Plan area. This would be particularly likely for development in more outlying parts of the region where fewer services and less transit access is provided. Therefore, while it would be speculative to attempt to quantify or specify the location of the impacts, it is acknowledged that, while the Reduced Project Alternative would incrementally reduce local impacts, in the Plan area and in San Francisco, it could also increase regional emissions of criteria air pollutants and greenhouse gases, and to increase regional traffic congestion. It could also incrementally increase impacts related to “greenfield” development on previously undeveloped locations in the Bay Area and, possibly, beyond.

Alternative C, Reduced Shadow, would be the most effective alternative at reducing Plan impacts to some extent while meeting or approaching many of the project objectives.

CHAPTER VII

Appendices

- A. Notice of Preparation
- B. Plan Objectives and Policies
- C. Proposed Public Realm Plan
- D. Air Quality
- E. Transit Tower Wind Tunnel Analysis

APPENDIX A

Notice of Preparation



SAN FRANCISCO PLANNING DEPARTMENT

Notice of Preparation of Environmental Impact Report

Date: July 20, 2008
Case No.: **2007.0558E; 2008.0789E**
Project Title: **TRANSIT CENTER DISTRICT PLAN AND TRANSIT TOWER**
Zoning: Multiple Zoning and Height and Bulk Districts
Block/Lot: Multiple
Lot Size: N/A
Project Sponsor: San Francisco Planning Department and Transbay Joint Powers Authority
Joshua Switzky - (415) 575-6815
Lead Agency: San Francisco Planning Department
Staff Contact: Sarah Jones – (415) 575-9034
Sarah.B.Jones@sfgov.org

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415.558.6409

Planning
Information:
415.558.6377

PROJECT DESCRIPTION

The Transit Center District Plan (Plan or proposed project) is a comprehensive plan for the southern portion of the downtown Financial District, roughly bounded by Market Street, the Embarcadero, Folsom Street, and Third Street (Plan Area). The area includes both private properties and properties owned or to be acquired by the Transbay Joint Powers Authority (TJPA) in and around the adopted Transbay Redevelopment Project Area (a plan for which was adopted in 2005) and Transbay Terminal. The Plan Area includes all of Zone 2 of the Transbay Redevelopment Area; streetscape changes and road modifications would occur within Zone 1 of the Redevelopment Area, but no land use or height changes are envisioned within this area. The Transit Tower, a high-rise office tower (approximately 1,000 feet in height) would be located adjacent to a new Transbay Transit Center. The Transit Tower would be located on the southeast corner of First Street and Mission Street at 425 Mission Street, Assessor's Block 3720 Lot 001, in the P (Public) zoning district and the 30-X/80-X height and bulk district.

The proposed project would result in new planning policies and controls for land use, urban form, and building design, as well as impact fees and other funding mechanisms to direct funding to the Transit Center and Caltrain Downtown Extension projects and other public infrastructure in the area. The proposed project includes a comprehensive plan for improvements and changes to streets, circulation, and open space in the area to support the existing, planned, and proposed land uses and activity in the area. The Plan also proposes amendments to the San Francisco *General Plan*, *Planning Code* and *Zoning Maps*. For the purposes of environmental review the proposed project includes both the Plan, which will be analyzed at a programmatic level, and the Transit Tower, which will be analyzed at a project level.

A more detailed project description is provided following this NOP or can be obtained from the staff contact listed above or at http://www.sfgov.org/site/planning_index.asp?id=80504.

FINDING

This project may have a significant effect on the environment and an Environmental Impact Report is required. This determination is based upon the criteria of the State CEQA Guidelines, Section 15063 (Initial Study), 15064 (Determining Significant Effect), and 15065 (Mandatory Findings of Significance). The purpose of the EIR is to provide information about potential significant physical environmental effects of the proposed project, to identify possible ways to minimize the significant effects, and to describe and analyze possible alternatives to the proposed project. Preparation of an NOP or EIR does not indicate a decision by the City to approve or to disapprove the project. However, prior to making any such decision, the decision makers must review and consider the information contained in the EIR.

SCOPING OF ENVIRONMENTAL REVIEW

Pursuant to the State of California Public Resources Code Section 21083.9 and California Environmental Quality Act Guidelines Section 15206, the Planning Department will hold a public scoping meeting to receive oral comments concerning the scope of the EIR. The meeting will be held on **August 6, 2008 at 6:00 p.m. at the San Francisco State University Downtown Campus, 835 Market Street, Room 626/627.** Written comments will also be accepted at this meeting and until the close of business on **August 19, 2008.** Written comments should be sent to Bill Wycko, Acting Environmental Review Officer, Transit Center District Plan NOP, San Francisco Planning Department, 1650 Mission Street, Suite 400, San Francisco, CA 94103.

State Agencies: We need to know the views of your agency as to the scope and content of the environmental information that is germane to your agency's statutory responsibilities in connection with the proposed project. Your agency may need to use the EIR when considering a permit or other approval for this project. Please include the name of a contact person in your agency. Thank you.

July 17, 2008
Date

Bill Wycko
Bill Wycko
Acting Environmental Review Officer

Transit Center District Plan and Transit Tower Case No. 2007.0558E and 2008.0789E

PROJECT DESCRIPTION

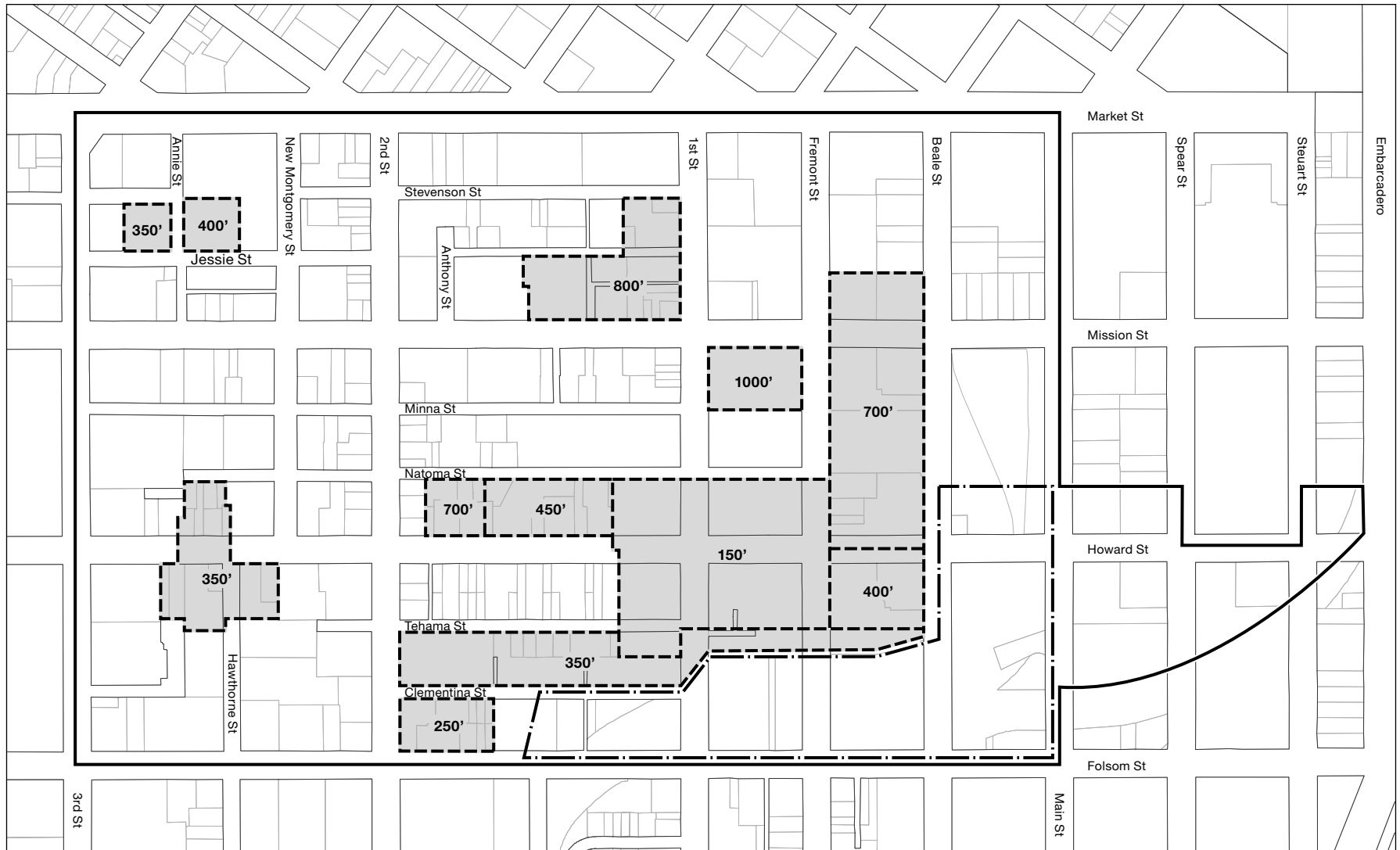
Overview

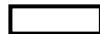


The Transit Center District Plan (Plan) is a comprehensive plan for the southern portion of the downtown Financial District, roughly bounded by Market Street, the Embarcadero, Folsom Street, and Third Street. The area includes private properties as well as properties owned or to be acquired by the Transbay Joint Powers Authority (TJPA) in and around the Transbay Redevelopment Project Area (a plan for which was adopted in 2005) and Transbay Terminal. The Plan Area includes all of Zone 2 of the Transbay Redevelopment Area, but generally excludes Zone 1 (see Figure 1). The Transit Tower, a high-rise office tower (approximately 1,000 feet in height, plus additional design features for a total height of up to approximately 1,200 feet) would be located adjacent to a new Transbay Terminal, or "Transit Center," on the south side of Mission Street between Fremont Street and First Street. The Transit Center District Plan and Transit Tower together comprise the proposed project for analysis.

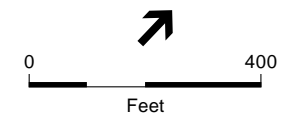
The Proposed Project would result in new planning policies and controls for land use, urban form, building height and design, and street network modifications/public realm improvements. The Plan would allow for height limit increases in subareas comprised of multiple parcels or blocks within the Plan Area (See Figure 1). It would also propose one or more programs to support the Transit Center Program and other necessary public infrastructure and amenities in the area (Note: "Transit Center Program" includes the rebuilt Transbay Transit Center on the site of the existing Transbay Terminal, and the downtown extension of rail for Caltrain and future California High-Speed Rail from the current rail terminus at 4th/King Streets into the Transit Center). The Proposed Project would result in a comprehensive plan and implementing mechanisms, including *General Plan*, *Planning Code* and *Zoning Map* amendments, as necessary.

The main goals and objectives of the proposed plan are outlined below. In general, they include increasing the amount of allowable development in the transit-rich downtown core, while at the same time improving public amenities, modifying the system of streets and circulation to meet the needs and goals of a dense transit-oriented district, providing additional open space, and implementing policies to preserve existing historic structures. A primary goal of the proposed urban design controls is to alter the downtown skyline in a manner consistent with the existing objective of creating a downtown "hill" form, while relating the proposed structures to the surrounding mid- and low-rise residential and commercial neighborhoods.

The Planning Department will prepare a programmatic environmental impact report (EIR) to evaluate the physical environmental effects of the proposed Transit Center District Plan project. This document will contain the cumulative environmental impact analysis of development under the Proposed Project through the year 2030. The EIR also will analyze the project-specific effects of developing the proposed Transit Tower. In addition to the new policies and controls (including modified building height controls) proposed by the Planning Department for the Transit Center District Plan, the EIR will also analyze a Developer-Proposed Scenario, which would consist of a program-level analysis that reflects several applications submitted to the



-  Plan Boundary
-  Zone 1 of Transbay Redevelopment Project Area
-  Proposed Height District Subareas



SOURCE: San Francisco Planning Department, 2008

Case No. 2007.0558E: Transit Center Plan . 207439

Figure 1
Proposed Transit Center District Plan Boundaries
and Analysis Subareas

Planning Department by private project sponsors proposing individual buildings, generally at heights that exceed the height limits identified in the proposed Plan.¹

The EIR will also evaluate a No Project Alternative, which would entail a continuation of existing zoning controls within the Plan Area, including existing height limits and *General Plan* policies, as well as one or more reduced-intensity project alternatives that could potentially reduce or avoid any significant environmental impacts associated with the Proposed Project.

The Planning Department has held two public workshops to date on the Plan, addressing a variety of topics including citywide and downtown growth, land use, urban form, shadows, historic resources, and the public realm (streets and open spaces). Additional workshops will be held in the future as the Plan evolves. As part of the review process under the California Environmental Quality Act (CEQA), the Planning Department will convene a public scoping meeting at which public comment will be solicited on the issues that will be covered in the EIR. This notice provides a summary description of the Proposed Project, identifies environmental issues anticipated to be analyzed in the EIR, and provides the time, date, and location of the public scoping meeting.

BACKGROUND

In response to development trends and infrastructure investments in the vicinity of downtown San Francisco, the Planning Department is drafting a comprehensive plan for the area around the Transbay Transit Center. These recent changes include:

- *Transbay Transit Center/Rail Extension* – The Transbay Transit Center project will replace the existing Transbay Terminal with a new modern multimodal Transit Center that will serve multiple transportation systems under one roof and anchor the Transbay Redevelopment Area. The new terminal also would accommodate an underground extension of Caltrain line as well as the future California High-Speed Rail from Fourth and King Streets to the new terminal.²
- *2005 Transbay Redevelopment Plan* - The Transbay Redevelopment Project Area, created in 2005, encompasses about 40 acres and is generally bounded by Mission, Main, Folsom, and Second Streets. The Redevelopment Plan Area contains the existing Transbay Terminal and access ramps, as well as a number of vacant and underutilized properties and older buildings, many of which are substantially deteriorated and/or constructed of unreinforced masonry. The Redevelopment Plan is intended to address these conditions of “blight.” The Plan sets forth various projects and programs that will be funded with tax increment dollars over the life of the Redevelopment Plan. Approximately \$178 million of the net tax increment will be pledged to the Transbay Joint Powers Authority to help pay the cost of rebuilding the Transbay Terminal into a regional transit hub (the Transbay Transit Center). The

¹ These individual proposed projects include 350 Mission Street (Case No. 2006.1524), 50 First Street (Case No 2006.1523), 41 Tehama Street (Case No. 2008.0801), 181 Fremont Street (Case No. 2007.0456), and 2 New Montgomery Street (Case No. 2005.1101). These case files are available for review by appointment at the Planning Department, 1650 Mission Street, Suite 400.

² U.S. Department of Transportation Federal Transit Administration, the City and County of San Francisco, Peninsula Corridor Joint Powers Board, and San Francisco Redevelopment Agency, *Transbay Terminal/Caltrain Downtown Extension/ Redevelopment Project Final Environmental Impact Statement/Environmental Impact Report and Section 4(f) Evaluation, June 2004*. Available for review by appointment at the Planning Department, 1650 Mission Street, Suite 400, in Case No 2007.0558E and also available at <http://www.transbaycenter.org/TransBay/content.aspx?id=114>.

Plan also calls for new residential development on parcels along Folsom Street formerly occupied by the Embarcadero Freeway ramps, as well as office space adjacent to the new terminal (the Transit Tower). The Transbay Redevelopment Plan was analyzed in the previously-referenced EIR for the Transbay Transit Center/Rail Extension.

- *Rincon Hill Plan* - The Rincon Hill Plan, adopted in 2005, encourages high-density residential development and greater building heights in the area between Folsom Street and the Bay Bridge. The goal of the Plan is to encourage the ongoing transformation of the area into a new mixed-use residential neighborhood adjacent to the downtown, with both strong urban design controls and implementing mechanisms to fund the necessary public infrastructure, including open space, streets, community facilities, and affordable housing. Together with plans for the Transbay Redevelopment Plan, the Rincon Hill Plan will create housing for as many as 20,000 new residents. The Plan calls for location of retail shops and neighborhood services along Folsom Street, and transformation of Main, Beale, and Spear Streets into traffic-calmed, landscaped residential streets lined with townhouses and front doors. Funding is also included, from development impact fees, for the acquisition and development of open space in the district.
- *2006 Mayor's Interagency Working Group* - In early 2006, a Mayor's Interagency Working Group concluded that raising certain height limits and increasing development potential in the Transit Center district area would be consistent with the City's existing vision for downtown. It identifies a potential for generating additional funds for the Transit Center Program, which would result from the changes in controls of land use and urban form.

The Planning Department has determined that, due to the changes described above, coupled with the realization of moving forward with the Transit Center Program and the fact that substantial growth has occurred in the 20+ years since the *1985 Downtown Plan* was adopted, the land uses, urban form and public realm of the downtown core should be reexamined. This planning effort is intended to shape the next generation of downtown growth, extrapolating on the core principles of city building at the heart of the Urban Design Element and *Downtown Plan*.

The proposed Transit Center District Plan would build on the City's *1985 Downtown Plan* that envisioned the area around the Transbay Terminal as the heart of the expanded downtown, which at the time was concentrated north of Market Street. In contrast to the adopted *2005 Transbay Redevelopment Plan*, which focuses mostly on public properties south of the Transit Center along Folsom Street, this new effort focuses on both private properties and properties owned or to be owned by the TJPA around the Transit Center itself and extending toward Market Street. The Plan will include mechanisms to direct fund the construction of the Transit Center and other public improvements in the area.

The Plan Area overlaps with the Transbay Redevelopment Project Area, and includes all of Zone 2 of the Project area.³ The San Francisco Redevelopment Agency has implemented a Delegation Agreement with the Planning Department to generally delegate responsibility and jurisdiction

³ The proposed Transit Center District Plan would include streetscape changes and road modifications within Zone 1 of the Transbay Redevelopment Area, although no land use or height changes are envisioned within this area.

for planning, zoning, and project entitlements to the *Planning Code*, Planning Department and Planning Commission. The Plan is being conducted in partnership with the Redevelopment Agency and involves the review by the Agency's Transbay Citizen's Advisory Committee.

MAJOR PROJECT COMPONENTS

The proposed project consists of an area plan that would produce new policies and land use controls for multiple plan subareas identified as appropriate sites for future downtown growth. Development assumptions concerning specific land uses within the different building types will be identified in the EIR.

Land Use

Office and Residential Controls

One of the major goals of the proposed Plan is to ensure that there is sufficient growth opportunity for high-density jobs in the downtown core, immediately proximate to the region's best transit service. To this end, the Plan would limit the amount of non-office space in major new construction opportunity sites within the district in an effort to achieve an overall ratio of no less than 70 percent office space within the Plan Area. To achieve this, the Planning Department is considering a preliminary recommendation that major new construction on large opportunity sites through most of the Plan Area (construction of greater than 7:1 Floor Area Ratio (FAR) on sites larger than 15,000 square feet) be required to have a minimum ratio of commercial to non-commercial (e.g. residential, hotel, cultural) uses of approximately 3:1.

Floor Area Ratio and TDR

As part of the proposed zoning amendments for the Plan Area, the current 18:1 FAR maximum limitation would be eliminated. The existing Transfer of Development Rights (TDR)⁴ program would likely remain in place for projects achieving up to 18:1 FAR, with land use control mechanisms and/or appropriate fees applying to projects with FAR greater than 18:1.

Building Heights and Form

Figure 1 illustrates the subareas where height limits are proposed to be increased within the Plan Area. Heights greater than 600 feet constitute total heights of enclosed building space (including major mechanical penthouses), but exclude any thin or non-enclosed spires or ornamentation at the top of the building. All other building heights represent the highest occupied floor, excluding mechanical penthouses.

Within the proposed 800-foot Height District, the Plan would allow for only one building on the multiple potential opportunity sites in that zone to surpass 600 feet and reach a height of 800 feet.

Additional bulk, form, and ground-floor design controls and guidelines would also be included as part of the proposed project. Table 1, below, summarizes the proposed changes to height districts within each of the Plan subareas.

⁴ Zoning provisions that allow for the purchase of the right to develop land located in one particular area (a sending area) and the transfer of these rights to land located in another area (a receiving area). The "base" allowable FAR in the area varies, but is generally 9:1. A project may achieve up to a maximum of 18:1 through purchase and application of transferrable development rights ("TDR") from qualifying historic buildings in the downtown.

**TABLE 1
PROPOSED HEIGHT DISTRICT CHANGES, BY SUBAREA**

Subarea Location	Existing Height District(s) (feet)	Proposed Height District (feet)
Transit Tower (Mission and First Streets)	30	1,000
Between Fremont and Beale Streets, from north of Mission Street to Howard Street	Ranges from 80 to 550	700
Between Fremont and Beale Streets, from Howard Street to north of Folsom Street	Ranges from 200 to 350	400
Between Second and Beale Streets, from Tehama to Clementina Streets	Ranges from 80 to 350	350
Between Clementina and Folsom Streets, from Second Street to west of First Street	200	250
Between Natoma Street and south of Tehama Street, from Fremont Street to west of First Street	Ranges from 200 to 400	150
Between Natoma and Howard Streets, mid-block between First and Second Streets	450	450
Between Natoma and Howard Streets, east of Second Street	450	700
Between Stevenson and Mission Streets, west of First Street	550	800
Between Stevenson and Jessie Streets, west of Annie Street	120	350
Between Stevenson and Jessie Streets, from Annie to New Montgomery Streets	Ranges from 150 to 300	400
Between Natoma Street to north of Folsom Street, mid-block between Second and Third Streets	Ranges from 150 to 250	350

TRANSIT TOWER

As noted above, the EIR also will analyze on a project-specific level (in contrast to the program-level analysis otherwise contained in the EIR) the environmental impacts associated with developing the Transit Tower, an 80-story, 1,000-1,200-foot office building proposed for Block 3720, Lot 001, at Mission and First Streets. The Transit Tower project site is approximately 50,000 square feet in size and is currently used as the Transbay Terminal passenger waiting and loading area, with only a few offices occupied within the existing terminal building. Under the proposed Transit Tower project, the usable space within the building would encompass approximately 1,880,000 square feet and the tower would be constructed on a footprint of about 29,000 square feet, with approximately 170-foot frontages along each side. The new tower would include three floors of below-grade parking with approximately 400 to 600 parking spaces (combined), retail space within the first four floors, and office space spanning the remainder of the 80-story tower (see Figures 2 and 3). The Transit Tower would be projected to accommodate approximately 5,000 to 6,000 employees.

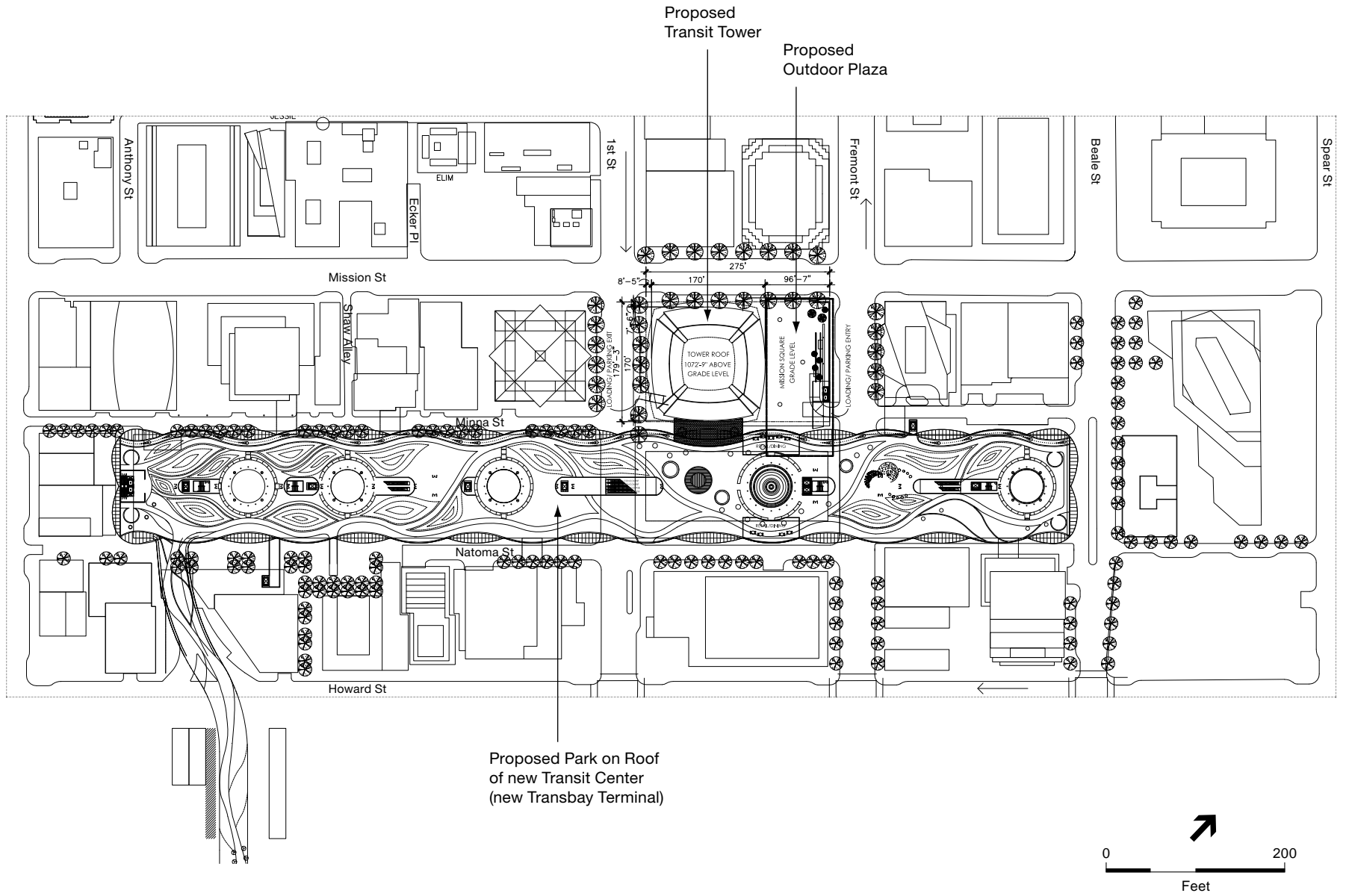
Historic Resources

The New Montgomery-Second Street Conservation District and the Second and Howard National Register District are located entirely within the Transit Center District Plan Area. The Planning Department is in the process of completing historic surveys within and surrounding the Plan Area in order to identify additional historic resources for potential preservation and rehabilitation in the future. Based on the preliminary findings of these surveys, an expansion of the existing local conservation district would likely be proposed as part of or in conjunction with the Transit Center District Plan. The proposed expansion would encompass areas along Howard Street, between First and Second Streets, and areas along Mission Street, between New Montgomery and Third Streets. The San Francisco Planning Department also could seek expansion of the existing Second and Howard National Register District through the State Office of Historic Preservation.

The *Planning Code* Article 11 ratings for individual buildings in the potentially expanded conservation district would be revised and updated, and newly-rated buildings would become eligible to sell TDR to development sites in the downtown. A small number of individual buildings outside of the current and proposed expanded Conservation District may be proposed for Article 10 or Article 11 rated status. These buildings are still being assessed through the Historic Resources survey process.

Streets and Circulation

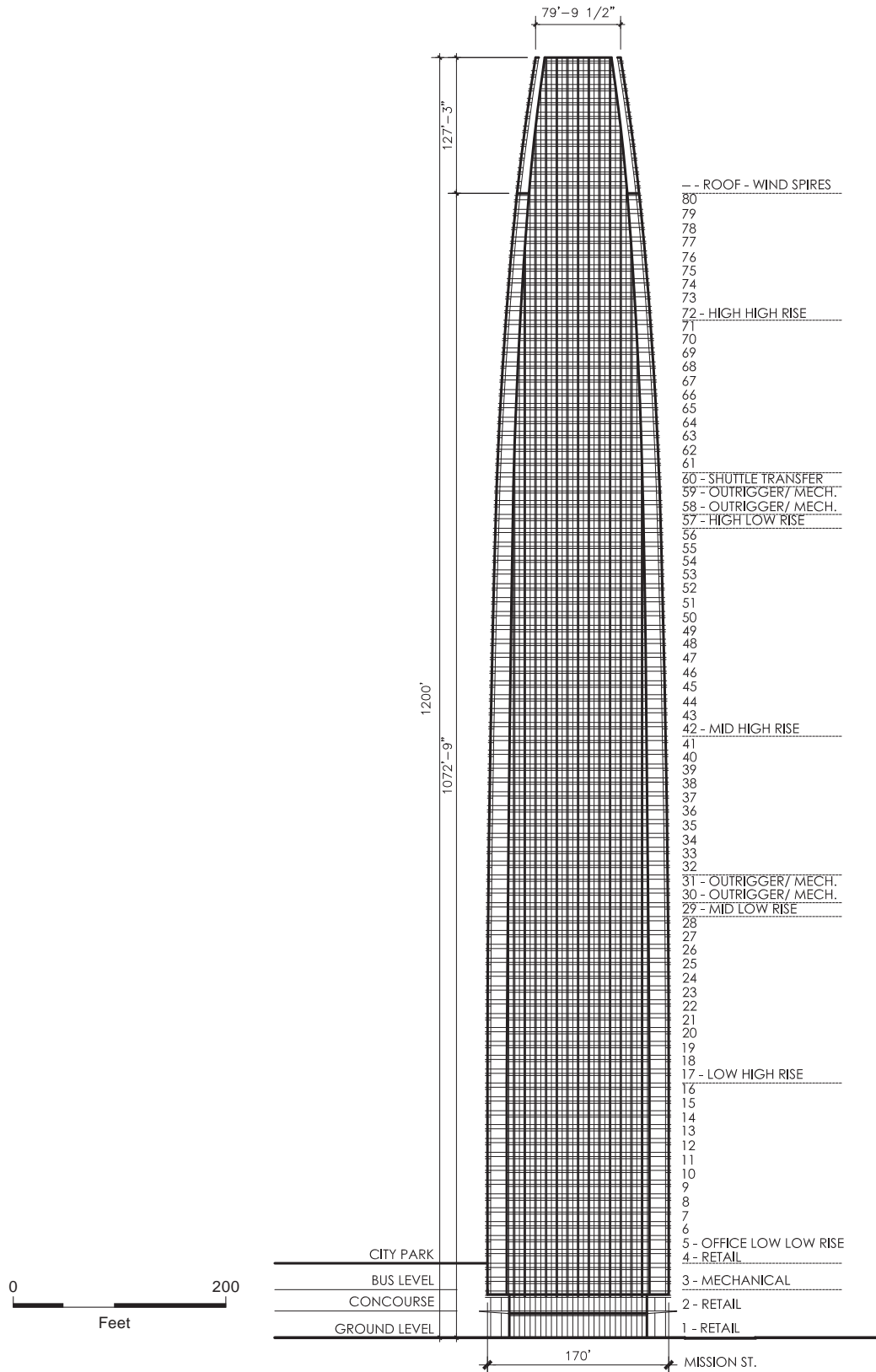
The Proposed Project would reconfigure many of the existing right-of-ways throughout the Plan Area in an effort to meet the changing transportation and public space needs within the area, particularly to accommodate anticipated increases in pedestrian volume that would result from the intensification of the land uses and the completion of the Transbay Transit Center Program.



SOURCE: Pelli Clarke Pelli Architects, 2008

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Figure 2
Transit Tower Site Plan



SOURCE: Pelli Clarke Pelli Architects, 2008

Case No. 2007.0558E: Transit Center Plan . 207439

Figure 3
Transit Tower Elevation View

Such modifications could include the widening of sidewalks, the removal or reconfiguration of parking and/or loading areas, the closure of one or more streets and alleys to general automobile traffic, installation of traffic-calming mechanisms, removal, addition or reconfiguration of auto travel lanes, conversion of one or more streets into a one-way or two-way operation, and dedication of transit-only lanes and delineation of pedestrian areas. Specific street and circulation improvements are currently being developed in collaboration with the San Francisco Municipal Transportation Agency and other agencies.

Open Space

In addition, as part of the Transit Center project being analyzed and implemented by the TJPA, a 5.4-acre "City Park" would be constructed atop the new Transit Center, and would contain various ecological settings representative of Northern California, different types of public spaces, walking paths, and areas for art exhibitions. In addition to the park atop the new Transit Center, discussed above, the Plan proposes to create a new public space at the northeast corner of Howard and Second Streets (Block 3721/ Lots 022, 023, 025, 092-106, 109-118), that would include a vertical circulation feature connecting to the rooftop park on the Transit Center and the connecting elevated bus ramps. This public space would be located on the combined parcels now occupied by the buildings identified for demolition as part of cut-and-cover construction for the Caltrain Downtown Extension (DTX), analyzed in the EIS/EIR for that project. The public space could be an open plaza, an indoor space, or a combination of indoor and outdoor space.

PROJECT OBJECTIVES:

The objectives for the Transit Center District Plan include the following:

- (1) Create appropriate transit-oriented land use and density of development to provide supporting ridership for existing and planned mass transit infrastructure, including the Transit Center Program.
- (2) Increase capacity for job growth in the existing downtown core to reflect local and regional smart growth and environmental sustainability strategies (e.g., location of growth in major urbanized centers proximate to major transit infrastructure).
- (3) Create additional funding for the Transit Center Program and other necessary public improvements and infrastructure in the area, including streets and open space improvements.
- (4) Modify building height and other form controls to create an elegant downtown skyline, building on existing policy to craft a distinct downtown "hill" form, with its apex at the Transit Center, tapering in all directions; provide distinct transitions to adjacent neighborhoods, topographic, and man made features of the cityscape.
- (5) Enact urban design controls to ensure that the ground-level interface of buildings are active and engaging for pedestrians, in addition to providing adequate supporting retail and public services for the district.
- (6) Ensure that changes to building heights and the skyline enhance, and do not detract from, important public viewpoints throughout the City and region, enhancing the perception of the City's and region's unique setting, features and quality of place, including views of key features, such as the Bay, bridges, hills, and neighborhoods, amongst others.

- (7) Ensure that revisions to building heights meet the intent and requirements of Proposition K [Section 295 of the *Planning Code*] to minimize reduction of sunlight access on key downtown open spaces; balance shadow-related considerations with other major goals and objectives of the Plan.
- (8) Protect important historical resources in the area, including both districts and individual structures.
- (9) Modify the streets in the district to accommodate projected high pedestrian volumes, provide an enjoyable pedestrian experience, and enhance the level of landscaping, pedestrian amenity and consistency in streetscape treatments.
- (10) Facilitate and improve surface transit movement to the Transit Center and through the district.
- (11) Facilitate and improve facilities, circulation and safety for non-single-occupant-auto modes of transportation in the area.
- (12) Enhance the open space network in the area to serve increasing numbers of workers, residents, and visitors, including provision of additional ground-level public open spaces.
- (13) Create access points and maximize the visibility of the future rooftop park on the Transit Center from the surrounding neighborhoods, especially neighborhoods to the south.
- (14) Adopt standards and guidelines for buildings and public improvements to ensure the highest-achievable levels of ecological performance and resource efficiency for individual projects and for the Plan Area as a whole.

POTENTIAL ENVIRONMENTAL ISSUES

The Proposed Project could result in potentially significant environmental effects. As required by CEQA, the EIR will examine those effects, identify mitigation measures, and analyze whether proposed mitigation measures would reduce the environmental effects to a less than significant level. As noted in the Overview, the EIR will analyze a Proposed Project based on the proposed new planning policies and controls for land use, urban form, building design, and street network/public realm improvements and including the Transit Tower, and will also analyze the Developer-Proposed Scenario, the No Project Alternative, and one or more reduced-project alternatives.

The following environmental issues are likely to be addressed in the EIR:

Land Use

By amending the existing land use and zoning controls, the proposed Transit Center District Plan would encourage increased density within the Plan Area and emphasize opportunities for office development. The EIR will analyze whether these changes could result in potential conflicts between uses and whether the existing neighborhoods surrounding the Transbay Terminal could be adversely affected. As part of the land use impact analysis, the EIR will describe and map the existing land uses within the Plan Area, as well as the proposed land use and zoning changes, which will be based on proposed controls and the Department's growth forecasts. The EIR will also consider any land use impacts associated with the development of the Transit Tower and the

associated change in use of its site. Any existing or potential land use conflicts will be described and analyzed.

The EIR will compare existing land uses to potential land use changes under proposed rezoning and describe the nature and magnitude of the change (types of uses, amounts of space lost and gained). Potential conflicts in land uses, should they arise, would be discussed in the context of the physical effect, and, thus, would be discussed under applicable topics such as noise and air quality.

The EIR will discuss consistency with the City's adopted *General Plan* and its relevant elements (notably the Housing and Urban Design Elements), including the *Downtown Plan*, Urban Design Element, Transportation Element, and *Rincon Hill Area Plan*. Other applicable planning documents and efforts will be discussed for context, including, among others, the *Transbay Redevelopment Plan*, *Bicycle Plan*, and *Climate Action Plan*. The EIR will also discuss the relationship between the proposed project and the San Francisco *Planning Code*, including specific sections relevant to downtown, such as Sections 124 (Floor Area Ratio), 128 (Transferrable Development Rights), 270 (Bulk), 309 (C-3 permit review), 321 (office limit), 148 (wind), and 295 (shadow).

Visual Quality

The potential addition of a handful of very tall towers, along with the ongoing and already approved increases in high-rise development in the eastern South of Market area, could engender the most dramatic change in San Francisco's skyline since the building boom of the late 1960s and early 1970s. The EIR will describe the existing urban design features for the environmental setting, including visual character, views and viewsheds, urban form, orientation, and shading of parks and streets. Assessment of height and urban design effects will be conducted by considering the Transit Tower within the visual setting of downtown and by translating land use changes, as well as modifications in building height and bulk, into physical changes that would be predicted to occur under the proposed rezoning.

In addition, visual simulations from at least ten publicly accessible viewpoints located throughout San Francisco will be presented for the existing setting, the proposed project, the Developer-Proposed Scenario, and the No-Project Alternative. The analysis of potential effects on existing visual character will focus on visual contrast and compatibility, including consistency with urban design objectives for the overall City form and skyline, and changes to visibility and relationship of major aspects of the City's and region's defining physical features, such as the Bay, bridges, hills, open spaces, and neighborhoods. Impacts will be described in terms of the type and magnitude of change in the visual components identified in the setting. Potential project effects on views and view corridors will be described. Potential effects on visual quality under the Developer-Proposed Scenario will also be described.

Population, Housing, and Employment

The EIR will adapt and summarize the results of the study titled *Downtown San Francisco: Market Demand, Growth Projections and Capacity Analysis*, completed by Seifel Consulting⁵ in May 2008. In addition, it will describe existing and expected future conditions for housing supply, population,

⁵ Available for review by appointment at the San Francisco Planning Department, 1650 Mission Street, Suite 400, in Project File Case No. 2007.0558E, or on the internet at http://www.sfgov.org/site/uploadedfiles/planning/City_Design_Group/R_TransitCenter_051308_Final.pdf.

housing market conditions, business activity, and employment in the Plan Area, selected nearby neighborhoods and districts, the rest of the City, and the rest of the region, as relevant. The impact analysis will consider how the proposed project, specifically including the Transit Tower and generally comprising new development in the Plan Area, would influence population and employment growth patterns in the City and the region—evaluating the potential for net additions to growth as well as geographic shifts of growth that might otherwise occur in other locations.

The EIR will evaluate potential for displacement of housing, population, business activity and jobs—from both the Plan Area and, indirectly, from nearby areas, as appropriate. Finally, the analysis will evaluate the proposed Plan’s implications for San Francisco’s housing market and on housing affordability. This will include assessment of the Plan Area jobs/housing relationship in the context of jobs and housing in the rest of the City and the region.

Archaeological and Historical Resources

The analysis of potential archaeological impacts will include an areawide summary of the findings of existing archaeological research. This analysis may include a map of archaeological mitigation zones or specific areas of heightened concern for potential resources, for which project-specific mitigation will be required for subsequent development projects. The EIR will also describe specific conditions and any necessary mitigation measures for archaeological resources on the Transit Tower site.

The EIR will describe previously listed historical resources and those newly identified in the survey effort currently underway, and will identify potential impacts on historic resources that could be considered “at risk,” based on anticipated development patterns resulting from land use changes and areas of potentially increased development density. Provisions for taking into consideration potential impacts on properties that are not currently identified as having historic significance will be described, including the City’s ongoing procedures for review of future development proposals.

Transportation

The EIR will summarize the Transportation Study that will be prepared for the proposed project and will include an analysis of specific transportation impacts and mitigation measures associated with the Transit Tower and program-level impacts and mitigation measures associated with the Plan. Future traffic volumes will be developed from output of the San Francisco County Transportation Authority’s travel demand model (herein referred to as the “SFCTA Model”), as the 2030 Base scenario. The travel demand associated with the alternatives studied will be obtained from the SFCTA Model based upon the anticipated future land uses that will be developed as a result of the land use controls under those options.

Transit conditions will be assessed, with future ridership also derived from the SFCTA Model. Pedestrian and bicycle conditions, freight loading, and parking conditions will be analyzed.

Noise

The EIR will evaluate the project design and land use mix for noise compatibility with existing and proposed land uses as well as with future traffic levels (including planned bus operations). Noise analysis will use available published information, such as the Department of Public Health’s (DPH) recently prepared map of roadway noise levels, to evaluate compatibility of new

uses with traffic noise levels.⁶ The EIR also will describe construction-period noise levels and identify sensitive receptors (residences) nearest to locations of anticipated major development and construction activities.

Air Quality

The air quality analysis will be prepared in accordance with the *BAAQMD CEQA Guidelines'* direction for plans, with the significance based upon Plan consistency with the most recent *Clean Air Plan* (currently the *Bay Area 2005 Ozone Strategy*), including the *Clean Air Plan's* transportation control measures. The EIR also will analyze the air quality effects of the proposed Transit Tower on a project-specific level. The EIR will include a discussion of roadway-generated pollutant concentrations, notably PM_{2.5} and diesel particulate emissions. The EIR also will quantify anticipated greenhouse gas emissions that could result from the Transit Tower and other development in the Plan Area, including analysis of the project's consistency with the California Global Warming Solutions Act of 2006 (AB 32). The EIR will also discuss issues associated with air quality for new development in close proximity to high-volume traffic corridors, consistent with DPH's *Assessment and Mitigation of Air Pollution Health Effects from Intra-Urban Roadways: Guidance for Land Use Planning and Environmental Review*.⁷

Wind Impacts

Tall structures (those over 100 feet in height) tend to redirect winds downward along the building facades and have the potential to result in adverse impacts on the pedestrian wind environment. Wind testing is currently under way to model existing wind conditions within the Plan Area as well as wind conditions that might result with the introduction of the Transit Tower and other very tall towers within the area. The EIR will summarize the results of the wind tests and will describe any mitigation measures intended to alleviate potentially adverse wind conditions in areas where wind speeds might exceed the established wind hazard criterion. The methodology used for conducting the wind testing is one that has been used for prior projects in downtown San Francisco. Wind testing will also be conducted for the Developer-Proposed Scenario and the No Project Alternative, and will be likewise summarized in the EIR.

Shadow Impacts

At least six major parks regulated under Section 295 of the *Planning Code* could be affected by the Transit Center District Plan: Union Square, Justin Herman Plaza, Portsmouth Square, St. Mary's Square, Maritime Plaza, and Ferry Park. Additional smaller parks also may be affected by the proposed project. It is likely that the Transit Tower would shade one or more protected open spaces, and at least some of the proposed and contemplated building heights for other parcels in the Plan Area could result in additional shadow. In accordance with Section 295 of the *Planning Code*, the EIR will prepare graphical depictions of net new shadow from the Proposed Project, the Developer-Proposed Scenario, and the No-Project Alternative. The EIR will also quantify Transit Tower-related and cumulative shadow impacts in terms of the durations and amounts of open space surface areas that may be shaded with the implementation of the proposed land use controls and building height modifications. Mitigation measures for shadow impacts will be identified as appropriate.

⁶ The Department of Public Health noise map is available online at <http://www.sfdph.org/dph/files/EHSdocs/ehsPubldocs/Noise/noisemap2.pdf>.

⁷ This document can be viewed online at <http://www.sfgov.org/site/frame.asp?u=http://www.dph.sf.ca.us/> (accessed June 23, 2008).

Recreation & Public Space; Utilities & Service Systems; Public Services

The EIR will analyze whether the San Francisco Public Utilities Commission has adequate water and sewer infrastructure in the area to provide both potable water and sewage treatment services with the implementation of the proposed project. The EIR also will assess the adequacy of parks and open space facilities and programs, schools, and the Fire and Police Departments, to determine whether the increased development in the Plan Area, including taller high-rise buildings than now exist in the City, would raise specific issues regarding current equipment, preparedness, or practices regarding public safety or fire protection, or would result in increased school enrollment or park and recreation facility use to a level that would result in significant environmental impacts.

Geology, Soils, and Seismicity

This section will summarize the geotechnical analysis for the Plan Area that is currently being prepared. The EIR will disclose the geotechnical feasibility of development pursuant to the Transit Center District Plan, including the proposal for several very tall towers, and will specifically identify geotechnical considerations for the Transit Tower.

Hydrology and Water Quality

This EIR section will assess potential construction-related impacts to water quality and will qualitatively analyze potential changes in municipal sewage and stormwater runoff associated with project implementation. This section will describe the City's combined sewer-storm drain system, discuss the regulatory framework for control of water quality, qualitatively assess changes in the volume of discharges to the combined sewer system, if any, as a result of the Transit Tower and other development anticipated in the Plan Area (along with any substantial cumulative increases from other development), and discuss the effects of any project-generated discharges to the SFPUC's Sewer System Master Plan currently being developed.

Hazards and Hazardous Materials

This section will be based on an area-wide Phase I environmental site assessment and environmental database review, will describe the legal requirements and required processes for remediation of contaminated sites, and will discuss the types of contaminants that are expected to be encountered on the Transit Tower site and within the Plan Area, based on historic land uses and subsurface conditions.

Energy

The EIR will evaluate energy use associated with the proposed project and also will consider potential energy savings of development at the Transit Tower site or on other locations in the Plan Area, compared to a comparable degree of development elsewhere, due to accessibility of jobs to housing, the relatively high density of development, and the numerous transit options in the Plan Area. This analysis will also identify potential energy savings, compared to development under the *Building Code* and Green Building Ordinance, for higher levels of LEED certification in buildings, if such structures are proposed by the TJPA and/or private developers.

Other Issues

The EIR will briefly discuss potential effects related to biological resources, mineral resources, and agricultural resources.

APPENDIX B

Plan Objectives and Policies

1. Land Use

Objective 1.1: Maintain downtown San Francisco as the region's premier location for transit-oriented job growth within the Bay Area.

Objective 1.2: Reinforce the role of downtown within the city as its major job center by protecting and enhancing the central district's remaining capacity, principally for employment growth.

Objective 1.3: Continue to foster a mix of land uses to reinforce the 24-hour character of the area.

Policy 1.1: Increase the overall capacity of the Transit Center District for additional growth.

Policy 1.2: Revise height and bulk limits in the Plan Area consistent with other Plan objectives and considerations.

Policy 1.3: Reserve the bulk of remaining space in the core Transit Center District for job growth, by limiting the amount of noncommercial uses on major opportunity sites.

Policy 1.4: Prevent long-term under-building in the area by requiring minimum building intensities for new development on major sites.

Policy 1.5: Consider the complexity and size of projects in establishing the duration for entitlements for large development projects.

Objective 1.4: Ensure the district maintains areas that contain concentrations of ground-level public-serving retail and convenience uses for workers and visitors.

Objective 1.5 :Activate alleys and mid-block pedestrian walkways with active uses in adjacent buildings to make these spaces attractive and enjoyable.

Policy 1.6: Designate certain select street frontages as active retail areas and limit non-retail commercial uses, such as office lobbies, real estate offices, brokerages, and medical offices, from dominating the street level spaces.

2. Urban Form

Objective 2.1 :Maximize building envelope and density in the plan area within the bounds of urban form and livability objectives of the San Francisco General Plan.

Objective 2.2: Create an elegant downtown skyline, building on existing policy to craft a distinct downtown "hill" form, with its apex at the transit center, and tapering in all directions.

Objective 2.3: Form the downtown skyline to emphasize the Transit Center as the center of downtown, reinforcing the primacy of public transit in organizing the city's development pattern, and recognizing the location's importance in local and regional accessibility, activity, and density.

Objective 2.4: Provide distinct transitions to adjacent neighborhoods and to topographic and man-made features of the cityscape to ensure the skyline enhances, and does not detract from, important public views throughout the city and region.

Objective 2.5: Balance consideration of shadow impacts on key public open spaces with other major goals and objectives of the plan, and if possible, avoid shading key public spaces during prime usage times.

Policy 2.1: Establish the Transit Tower as the “crown” of the downtown core—its tallest and most prominent building—at an enclosed height of 1,000 feet.

Policy 2.2: Create a light, transparent sculptural element to terminate the Transit Tower to enhance skyline expression without casting significant shadows. This vertical element may extend above the 1,000 foot height limit.

Policy 2.3: Create a balanced skyline by permitting a limited number of tall buildings to rise above the dense cluster that forms the downtown core, stepping down from the Transit Tower in significant height increments.

Policy 2.4: Transition heights downward from Mission Street to Folsom Street and maintain a lower “saddle” to clearly distinguish the downtown form from the Rincon Hill form and to maintain views between the city’s central hills and the Bay Bridge.

Policy 2.5: Transition heights down to adjacent areas, with particularly attention on the transitions to the southwest and west in the lower scale South of Market areas and to the waterfront to the east.

Policy 2.6: Establish a minimum height requirement for the Transit Tower site, as well as other adjacent sites zoned for a height limit of 750 feet or greater.

Objective 2.6: Provide flexibility and sufficient allowance for the structural core of tall buildings (taller than 600 feet), while ensuring that the buildings maintain elegant and slender proportions and profile.

Objective 2.7: Ensure articulation and reduction to the mass of the upper portions and tops of towers in order to create visual interest in the skyline and help maintain views.

Objective 2.8: Maintain separation between tall buildings to permit air and light to reach the street, as well as to help reduce ‘urban canyon’ effects.

Policy 2.7: Do not limit the floorplate or dimensions of the lower tower for buildings taller than 550 feet.

Policy 2.8: Require a minimum 25 percent reduction in the average floorplate and average diagonal dimension for the upper tower as related to the lower tower.

Policy 2.9: Maintain current tower separation rules for buildings up to 550 feet in height, extend these requirements for buildings taller than 550 feet, and define limited exceptions to these requirements to account for unique circumstances. Proposed changes include:

- Maintain the 35-foot setback from interior property lines for buildings taller than 550 feet.
- For buildings taller than 550 feet in height, extend the currently required setback plane that increases with height from the center line of a major street (e.g. Mission St.), resulting in a setback of 70 feet for a building height of 1,000’.
- Apply tower separation rules to proposals for multiple towers on the same property, not just between adjacent properties. Require such buildings to meet standards for setbacks from interior property lines.

- Permit partial or full waiver of the interior property line setback requirement for buildings immediately adjacent to the Transit Center, for portions of buildings where the height limit of the adjacent site is lower, and on sites where the adjacent lot has a historic building whose development rights have been transferred.

Objective 2.9: Provide building articulation above a building base to maintain or create a distinctive streetwall compatible with the street's width and character.

Objective 2.10: Maintain appropriate character-defining building scale in the historic district.

Policy 2.10: Ensure that buildings taller than 150 feet in height establish a distinct base element to define the street realm at a comfortable height of not more than 1.25 times the width of the street.

- Such a base element must be discernible from the tower form by any combination of upper level setbacks, projections, or other building features or articulations.
- Provide combined horizontal relief of at least 10 feet for at least 60 percent of the development lot width at the streetwall.
- Recesses of the base or changes of material alone are not sufficient streetwall defining treatments.

Policy 2.11: All buildings within the 2nd/New Montgomery Conservation District should meet the following design guidelines:

- Buildings should be built out to the sidewalk-abutting property line consistent with the historic buildings.
- Buildings taller than 85 feet should maintain a streetwall height of 50 to 85 feet, above which there must be a setback of at least 15 feet. This policy does not apply along New Montgomery, where the height limit is 150' feet and buildings may rise to their full height of 150 feet at the property line.

Policy 2.12: Where construction of the downtown rail extension must unavoidably demolish buildings, reduce impacts on the District's character by facilitating appropriate re-use of these parcels.

Objective 2.11: Pursue building setbacks to augment a sidewalk widening program on street frontages where significant contiguous stretches of parcels are likely to be redeveloped.

Policy 2.13: As appropriate on a case-by-case basis, require new buildings located at major street corners (outside of the Conservation District) in the Plan Area to modestly chamfer the corner of the building at the ground level (if the building is otherwise built out to the property line) in order to provide additional pedestrian space at busy corners.

Policy 2.14: Require a building setback of ten feet on the following frontage:

- South side of Mission Street between First and Fremont streets (Transit Tower)

Policy 2.15: Consider requiring a building setback of up to ten feet on the following frontages if development proceeds such that a desirable pattern of buildings would result:

- North side of Mission Street between First and Second streets

- North side of Howard Street between First and Second streets • West side of First Street between Market and Mission streets

Objective 2.12: Ensure that development is pedestrian-oriented, fostering a vital and active street life.

Objective 2.13: Enact urban design controls to ensure that the ground-level interface of buildings is active and engaging for pedestrians, in addition to providing adequate supporting retail and public services for the district.

Objective 2.14: Encourage tall and spacious ground floor spaces.

Objective 2.15: Encourage articulation of the building façade to help define the pedestrian realm.

Objective 2.16: Minimize and prohibit blank walls and access to off-street parking and loading at the ground floor on primary streets to help preserve a safe and active pedestrian environment.

Policy 2.16: Establish a pedestrian zone below a building height of 20 to 25 feet through the use of façade treatments, such as building projections, changes in materials, setbacks, or other such architectural articulation.

Policy 2.17: Require major entrances, corners of buildings, and street corners to be clearly articulated within the building's streetwall.

Policy 2.18: Allow overhead horizontal projections of a decorative character to be deeper than one foot at all levels of a building on major streets.

Policy 2.19: Limit the street frontage of lobbies to 40 feet in width or 25 percent of the street frontage of the building, whichever is larger, and require the remaining frontage to be occupied with public-oriented uses, including commercial uses and public open space.

Policy 2.20: Discourage the use of arcades along street frontages, particularly in lieu of setting buildings back. If provided, arcades must meet the following design guidelines:

- Arcade must be at least 20 feet in height as measured from sidewalk grade to bottom of finished ceiling.
- Arcade must feature a continuous clear width (as measured from inside-face of exterior column to closest point of ground floor facade) of not less than twice the finished width of the column, but not less than 8 feet.
- Columns must not be spaced closer than 4 times the finished width of the columns.
- Outdoor seating or displays may not reduce clear walking width in the arcade to less than 8 feet at any point.

Policy 2.21: Require transparency of ground-level facades (containing non-residential uses) that face public spaces.

Guidelines for ground floors include:

- At least sixty percent of the portion of the façade between 3 and 12 feet above grade shall be comprised of clear, non-reflective windows that allow views of indoor space.

- The use of louvers should be minimized. No mechanical louvers or grates for venting or air intake are permitted below 25 feet from grade, and no louvers may face a major street.

Policy 2.22 :Limit the width of the individual commercial frontages on 2nd Street to 75 feet to maintain a dense diversity of active uses.

Policy 2.23: Eliminate the Floor Area Ratio penalty for tall floors. Section 102.11 of the Planning Code currently requires creating and counting “phantom floors” in square footage calculations when average floor-to-floor height exceeds 15 feet. This discourages tall ground floor spaces that add variety and grandeur to a streetscape.

Policy 2.24: Prohibit access to off-street parking and loading on key street frontages. Whenever possible, all loading areas should be accessed from alleys.

Objective 2.17: Promote a high level of quality of design and execution , and enhance the design and material quality of the neighboring architecture.

Policy 2.25: Assure that new buildings contribute to the visual unity of the city.

Policy 2.26: Maximize daylight on streets and open spaces and reduce heat-island effect, by using materials with high light reflectance, without producing glare.

Policy 2.27: Encourage the use of green, or “living,” walls as part of a building design in order to reduce solar heat gain as well as to add interest and lushness to the pedestrian realm.

3. Public Realm

Objective 3.1: Make walking a safe, pleasant, and convenient means of moving about throughout the district.

Objective 3.2: Create a high-quality pedestrian environment in the district consistent with the vision for the central district of a world-class city.

Objective 3.3 Graciously accommodate increases in pedestrian volumes in the district.

Objective 3.4: Emphasize the importance of streets and sidewalks as the largest component of public open space in the Transit Center District.

Policy 3.1: Create and implement a district streetscape plan to ensure consistent corridor-length streetscape treatments.

Policy 3.2: Widen sidewalks to improve the pedestrian environment by providing space for necessary infrastructure, amenities and streetscape improvements.

Policy 3.3: Facilitate pedestrian circulation by providing sidewalk widths that meet the needs of projected pedestrian volumes and provide a comfortable and safe walking environment.

Policy 3.4: Continue the Living Streets treatment to create linear plazas along Beale, Main, and Spear streets.

Policy 3.5: Create additional pedestrian capacity and shorten pedestrian crossing distances by narrowing roadways and creating corner curb bulb-outs.

Policy 3.6: Enhance pedestrian crossings with special treatments (e.g. paving, lighting, raised crossings) to enhance pedestrian safety and comfort, especially where bulb-outs cannot be installed.

Policy 3.7: Develop “quality of place” and “quality of service” indicators and benchmarks for the pedestrian realm in the district, and measure progress in achieving benchmarks on a regular basis.

Objective 3.5: Restrict curb cuts on key streets to increase pedestrian comfort and safety, to provide a continuous building edge of ground floor uses, to provide a continuous sidewalk for streetscape improvements and amenities, and to eliminate conflicts with transit.

Policy 3.8: Designate Plan Area streets where no curb cuts are allowed or are discouraged. Where curb cuts are necessary, they should be limited in number and designed to avoid maneuvering on sidewalks or in street traffic. When crossing sidewalks, driveways should be only as wide as necessary to accomplish this function.

Objective 3.6: Enhance the pedestrian network with new linkages to provide direct and varied pathways, to shorten walking distances, and to relieve congestion at major street corners,

Objective 3.7: Encourage pedestrians arriving at or leaving the transit center to use all entrances along the full length of the transit center by maximizing access via mid-block passageways and crosswalks.

Objective 3.8: Ensure that new development enhances the pedestrian network and reduces the scale of long blocks by maintaining and improving public access along existing alleys and creating new throughblock pedestrian connections where none exist.

Objective 3.9: Ensure that mid-block crosswalks and through-block passageways are convenient, safe, and inviting.

Policy 3.9: Create convenient pedestrian access by providing signalized mid-block crosswalks, especially on blocks longer than 300 feet.

Policy 3.10: Prohibit the elimination of existing alleys within the District. Consider the benefits of shifting or re-configuring alley alignments if the proposal provides an equivalent or greater degree of public circulation.

Policy 3.11: Design new and improved through-block pedestrian passages to make them attractive and functional parts of the public pedestrian network.

Policy 3.12: Require a new public mid-block pedestrian pathway on Block 3721, connecting Howard and Natoma Streets between First and Second streets.

Policy 3.13: Close Shaw Alley permanently to vehicles and design it as a pedestrian-only open space for thru-connection to the Transit Center.

Policy 3.14: Convert the western portion of Natoma Street between First and Second streets on the south side of the Transit Center to a primarily pedestrian-only street.

Objective 3.10: Enhance the open space network in the area to serve increasing numbers of workers, residents, and visitors.

Policy 3.15: Create a new public plaza at the northeast corner of Second and Howard streets.

Objective 3.11: Enhance access and maximize the visibility of the Transit Center's future rooftop park from the surrounding neighborhoods, especially neighborhoods to the south.

Policy 3.16: Encourage the rooftop Transit Center Park to remain open from sunrise to sunset, seven days a week.

Policy 3.17: Permit buildings to satisfy open space requirements through direct connections to the Transit Center Park.

Policy 3.18: Extend the Transit Center rooftop park along the new bus ramp, so that it connects to a future Bay Bridge bicycle and pedestrian pathway.

Objective 3.12: Ensure that private open space both enhances the public open space network and achieves the plan's open space goals.

Objective 3.13: Provide flexibility and alternatives to meeting open space requirements that achieve the district's open space vision, and that enhance and improve access to planned public space, particularly the Transit Center park.

Policy 3.19: Permit payment of an in-lieu fee as an alternative to fulfilling Section 138 Open Space Requirements in C-3 Districts.

Policy 3.20: Permit and encourage buildings to satisfy open space requirements through direct connections across Minna and Natoma Streets to the Transit Center Park.

Objective 3.14: Ensure that indoor open space functions as public space independent of the building's primary uses.

Policy 3.21: Design interior open spaces to have a distinct street presence separate from the building's primary building entrance and lobby functions.

Objective 3.15: Provide publicly accessible amenities in the district's tallest towers.

Policy 3.22: The Transit Tower should have a facility of public accommodation at a level no lower than 650 feet above grade that provides the general public the opportunity for views of the cityscape and Bay.

4. Moving About

Objective 4.1: The district's transportation system will prioritize and incentivize the use of transit. public transportation will be the main, non-pedestrian mode for moving into and between destinations in the Transit Center District.

Objective 4.2: The district's transportation system will implement and require transportation demand management strategies to minimize growth in auto trips and reduce volumes as necessary. actively manage the transportation system to optimize person-carrying capacity.

Objective 4.3: The district's transportation system will meet changing transit needs, particularly to support the new Transbay Transit Center and accommodate increased densities. make changes in the circulation network that ensure delivery of reliable and convenient transit service to the Transbay Transit Center and for district residents, employees, and visitors.

Objective 4.4: The district's transportation system will prioritize pedestrian amenity and safety. Invest in circulation modifications and urban design measures that support the creation of an attractive and memorable public realm.

Objective 4.5: The district's transportation system will build on successful traffic and parking management programs and policies that are in place. expand and strengthen existing adopted policies (e.g. Downtown Plan, C-3 parking controls) and current planning initiatives (e.g. Transit Effectiveness Project, SFPark).

Objective 4.6: The district's transportation system will require management of Bay Bridge queues to reduce and mitigate impacts of regional traffic on transit circulation and the public realm in the district.

Objective 4.7: The district's transportation system will further sustainability goals. Advance the goals of the city's climate action plan, by reducing greenhouse gas emissions generated by vehicular transportation.

Objective 4.8: Design the circulation system and transit facilities to accommodate anticipated growth in travel to and through the district in 2030 and beyond.

Objective 4.9: Prioritize transit movements through and within the district over all other transportation modes .

Objective 4.10: Design transit facilities to improve the reliability and function of transit movements and to enhance the rider experience.

Objective 4.11: Ensure that changes to the circulation network, including pedestrian and streetscape improvements, are designed to support and enhance the operation of transit.

Policy 4.1: Extend self-enforcing, dedicated transit lanes throughout the district.

Policy 4.2: Design all transit lanes to be self-enforcing and to heighten awareness of transit facilities.

Policy 4.3: Evaluate the concept for a transit-only zone on Mission between First and Fremont streets.

Objective 4.12: Provide high-quality facilities and experience for transit passengers.

Policy 4.4: Provide sidewalk space and facilities for enhanced transit stops with passenger amenities on Mission Street and other primary transit streets.

Objective 4.13: Support enhanced funding and capacity for regional transit service to support increases in population and employment growth as well as shifts from auto to public transit travel.

Policy 4.5: Support funding and construction of the Transbay Transit Center project to further goals of the District Plan, including completion of the Downtown Extension for Caltrain and High Speed Rail.

Policy 4.6: Ensure that regional transit carriers operating on city streets are prioritized along with local transit by implementing the surface transit priority improvements proposed in this plan.

Policy 4.7: Work with BART to identify and fund measures to increase capacity as necessary to serve the District, particularly at the Montgomery and Embarcadero stations.

Objective 4.14: Support enhanced funding and capacity for local transit service to support increases in population and employment growth as well as shifts from auto to public transit travel .

Policy 4.8: Support revenue measures and investments essential to enhancing Muni's capacity, reliability and operational efficiency in providing service to and within the District.

Objective 4.15: Use demand management strategies to reduce overall levels of auto traffic in the plan area and downtown, particularly in the peak hours, in order to reduce auto impacts on other transportation modes and enable the creation of a high quality public realm.

Policy 4.9: Complete a detailed traffic analysis for the downtown and the District specifically to determine which TDM measures will be most effective and necessary to reduce traffic volumes and traffic impacts on the District.

Policy 4.10: Update the goals of the Downtown Plan and establish specific targets for cumulative traffic volumes and non-auto travel that are necessary to achieve the conditions that enable the flow of transit, the flow of local circulation, and the creation of the public realm infrastructure as proposed by the Plan.

Policy 4.11: Study the feasibility of and implement, as feasibility and necessity determines, congestion pricing of roadways as a primary tool to reduce overall traffic levels in the Plan area, particularly peak-hour bridge and freeway queues.

Objective 4.16: Create a parking plan that encourages the use of public transit and other modes of transportation that are alternatives to single -occupant vehicles.

Objective 4.17: Create and ensure compliance with mechanisms that provide workers and residents with incentives to take transit and use modes of transportation other than single-occupant autos.

Policy 4.12: Ensure compliance with the Commuter Benefits Ordinance.

Policy 4.13: Pursue creation of requirements for transportation incentives and brokerage services for large residential properties in the District.

Objective 4.18: Encourage the use of non-auto modes of transportation by requiring participation in a transportation demand management program in new buildings throughout the district.

Objective 4.19: Ensure that brokerage and TDM requirements are appropriate for current and future travel patterns for the district and downtown, are designed for greatest effectiveness while maintaining flexibility, include all modes of transportation, and provide a toolkit of financial incentives to reduce auto trips.

Policy 4.14: Reduce the size threshold for new and renovated buildings to trigger the requirement for transportation demand management and participation in the Transportation Management Association (TMA).

Policy 4.15: Expand the TMA requirement to include non-office uses, including hotels, large retail, cultural, and institutional uses.

Policy 4.16: Require commercial property managers or owners to monitor and report yearly mode split or peak-hour vehicle trips of their employees and to increase or modify TDM programs if targets are not being met.

Policy 4.17: Fund a comprehensive study to develop recommendations on the structure, operations, and authority of the existing downtown Transportation Management Association (TMA), update the goals and tools available to the TMA, and evaluate whether a district-specific TMA is needed.

Policy 4.18: Expand the purview and funding of the existing downtown Transportation Management Association (TMA) or create a district-specific TMA.

Policy 4.19: Require that the downtown Transportation Management Association (TMA) duties, programs, and funding be reviewed and updated every 5 years and updated if necessary.

Policy 4.20: Develop a transportation monitoring and enforcement plan for the district based on adopted performance measures; to be implemented by the TMA with annual reports submitted to Planning and San Francisco Municipal Transportation Agency.

Objective 4.20: Make walking a safe, pleasant, and convenient means of moving to and throughout the district.

Objective 4.21: Create a high-quality pedestrian environment in the district consistent with the vision for the central district of a world-class central city.

Objective 4.22: Graciously accommodate increases in pedestrian volumes in the district.

Objective 4.23: Emphasize the importance of streets and sidewalks as the largest component of public open space in the transit center district.

Policy 4.21: Facilitate pedestrian circulation by providing sidewalk widths that meet the needs of projected pedestrian volumes and provide a comfortable and safe walking environment.

Policy 4.22: Create and implement a district streetscape plan to ensure consistent corridor-length streetscape treatments.

Policy 4.23: Widen sidewalks to improve the pedestrian environment by providing space for necessary infrastructure, amenities and streetscape improvements.

Policy 4.24: Facilitate pedestrian circulation by providing sidewalk widths that meet the needs of projected pedestrian volumes and provide a comfortable and safe walking environment.

Policy 4.25: Continue the Living Streets treatment to create linear plazas along Beale, Main, and Spear streets.

Policy 4.26: Create additional pedestrian capacity and shorten pedestrian crossing distances by narrowing roadways, and creating corner curb bulb-outs

Policy 4.27: Enhance crosswalks with special treatments (e.g. paving, lighting, raised crossings) to enhance pedestrian safety and comfort especially at potential conflict locations, such as at new mid-block crosswalks or where bulb-outs cannot be installed.

Policy 4.28: Develop “quality of service” indicators and benchmarks for pedestrian travel to and through the district, and measure progress in achieving benchmarks on a regular basis.

Objective 4.24: Restrict curb cuts on key streets to increase pedestrian comfort and safety, to provide a continuous building edge of ground floor uses , to provide a continuous sidewalk for streetscape improvements and amenities , and to eliminate conflicts with transit.

Policy 4.29: Designate Plan Area streets where no curb cuts are allowed or are discouraged. Where curb cuts are necessary, they should be limited in number and designed to avoid maneuvering on sidewalks or in street traffic.

Objective 4.25: Enhance the pedestrian network with new linkages to provide direct and varied pathways, to shorten walking distances , and to relieve congestion at major street corners.

Objective 4.26: Encourage pedestrians arriving at or leaving the transit center to use all entrances along the full length of the transit center by maximizing access via mid-block passageways and crosswalks.

Objective 4.27: Ensure that new development enhances the pedestrian network and reduces the scale of long blocks by maintaining and improving public access along existing alleys and by creating new throughblock pedestrian connections where none exist.

Objective 4.28: Ensure that mid-block crosswalks and through-block passageways are convenient, safe, and inviting.

Policy 4.30: Create convenient pedestrian access by providing signalized mid-block crosswalks, especially on blocks longer than 300 feet

Policy 4.31: Prohibit the elimination of existing alleys within the District. Consider the benefits of shifting or re-configuring alley alignments if the proposal provides an equivalent or greater degree of public circulation.

Policy 4.32: Design new and improved through-block pedestrian passages to make them attractive and functional parts of the public pedestrian network.

Policy 4.33: Require a new public mid-block pedestrian pathway on Block 3721, connecting Howard and Natoma Streets between First and Second streets.

Policy 4.34: Close Shaw Alley permanently to vehicles and design it as a pedestrian-only open space for thru-connection to the Transit Center.

Policy 4.35: Convert the western portion of Natoma Street between First and Second streets on the south side of the Transit Center to a primarily pedestrian-only street.

Objective 4.29: Make cycling a safe, pleasant, and convenient means of transportation throughout the district.

Objective 4.30: Ensure high-quality on-street bicycle connections to the Transbay Transit Center.

Objective 4.31: Enhance facilities for intra-district bicycle travel.

Objective 4.32: Ensure local connections to regional bicycle facilities.

Policy 4.36: Maintain flexibility on key streets in order to expand the Bike Network in the future.

Policy 4.37: Provide the necessary connections to the future bicycle ramp on Howard Street between First and Second streets, which will be the primary access point for bicycles to the Transit Center, including a bicycle station at the train concourse level.

Policy 4.38: Do not preclude future connections to a potential Bay Bridge multi-use pathway.

Objective 4.33: Ensure the provision of adequate secure, on- and off-street bicycle parking facilities to accommodate and encourage employees to cycle for commuting and daily needs.

Policy 4.39: Increase the requirement for secure bicycle parking in new and renovated non-residential buildings to a minimum of five percent of peak on-site employees and visitors.

Policy 4.40: Develop a plan to identify demand and locations for installation of on-street bicycle parking in the Plan Area to supplement current process of bicycle racks being installed at the request of building owners.

Policy 4.41: Pursue legislation to require existing commercial and industrial development to provide secure bicycle parking in conformance with current requirements or to allow employees to bring bicycles into the building if parking is not provided.

Policy 4.42: Support and implement a public bicycle sharing program in the District.

Policy 4.43: Update and publish an improved Bicycle Parking Design Guidelines document to establish appropriate parameters for off-street bicycle parking in new residential, commercial, and industrial development, consistent with the requirements in the Planning Code.

Objective 4.34: Facilitate traffic flow to and through the district at levels that are consistent with envisioned improvements for transit, pedestrians and bicycles.

Objective 4.35: Mitigate the impacts of regional auto traffic within the district.

Objective 4.36: Design streets to slow and calm traffic, to improve safety and attractiveness for all road users, commerce and for social interaction.

Objective 4.37: Facilitate improved circulation within the district for local destinations.

Policy 4.44: Do not compromise pedestrian, bicycle, or transit amenity or service within the District to accommodate or maintain levels of service for regional auto trips.

Policy 4.45: Pursue measures to actively manage traffic volumes and bridge and freeway vehicle queues in order to achieve appropriate levels of traffic necessary to allow for the creation of the public realm and circulation system envisioned and necessary for the District.

Policy 4.46: Prioritize vehicle trips that increase the efficiency and person-carrying capacity of the transportation system (e.g. carpools, taxis) and that are “high-value” (e.g. goods movement, emergency response).

Policy 4.47: Consider rerouting bridge and freeway vehicle queues onto other streets outside the core of the District, avoiding primary transit, bicycle, and pedestrian streets.

Policy 4.48: Consider converting some one-way streets to two-way in order to improve local circulation.

Policy 4.49: Support taxi use and circulation in the District but manage their circulation to prevent conflicts with other transportation modes, particularly transit and bicycles.

Objective 4.38: Create a parking supply and demand management plan that encourages the use of public transit and other non-single occupant vehicle modes of transportation.

Objective 4.39: Limit growth in auto trips to the district and congestion through strict limits on the supply of parking.

Objective 4.40: Establish a parking pricing structure as a primary strategy to manage parking demand and achieve goals for parking turnover and availability.

Objective 4.41: Implement parking management strategies and technologies that facilitate the dynamic management of parking supply and demand.

Objective 4.42: Minimize the impacts of parking facilities on transit, pedestrians, and building design by regulating the location and design of parking facilities , including entrance and egress locations.

Objective 4.43: Limit the continuance of surface parking lots and ensure that lots contribute to the public realm.

Policy 4.50: Establish an absolute maximum cap on number of parking spaces in the district and adjacent areas based on the established targets for traffic reduction and goals for transit usage.

Policy 4.51: Scrutinize and restrict new accessory and non-accessory parking in the Plan area until a comprehensive cap on new parking is adopted.

Policy 4.52: Increase and expand active management of on- and off-street parking, such as SFpark.

Policy 4.53: Prohibit parking and loading curb cuts on key transit and pedestrian streets, including Mission, Second, and Folsom streets.

Policy 4.54: Do not permit any new surface parking lots in the district, including as temporary uses.

Policy 4.55: Ensure that existing surface parking lots provide landscaping and other amenities to improve the public realm and mitigate their ecological impacts.

Policy 4.56: Require that temporary surface parking lots, as a condition of any re-authorization, include facilities for other non-private auto modes, including parking for car sharing vehicles and bicycles.

Policy 4.57: Develop an administrative enforcement mechanism and authority to levy administrative fines for the existing Planning Code requirement for short-term parking pricing and prohibitions on discount rates for long-term parking.

Policy 4.58: Make all non-residential parking, including accessory parking, subject to the City's Parking Tax, regardless of whether such parking is made available to the public for a fee.

Policy 4.59: Develop a local enforcement mechanism for the existing State of California "parking cash-out" law for parking accessory to commercial development.

Policy 4.60: Develop a local parking cash-out ordinance to apply to all parking accessory to commercial development.

Policy 4.61: Support the establishment of a multimodal transportation fee for new development based on the number of parking spaces and auto trips generated, and invest the revenue in projects and programs that reduce or mitigate vehicle trips in the District.

Objective 4.44: Ensure continued access to freight and business delivery services in the district.

Objective 4.45: Minimize conflicts of loading activity with pedestrians, transit, bicycles, and automobile traffic through siting, design, and operational regulation of loading.

Objective 4.46: Improve enforcement of loading and truck restrictions.

Policy 4.62: Maintain off-street loading facility requirements for all major new development.

Policy 4.63: Require loading docks to be located only on alleys and on streets where curb cuts are not restricted.

Policy 4.64: Restrict commercial loading and deliveries to non-peak periods.

Policy 4.65: Where sidewalks are widened through the elimination of on-street parking, consider the creation of on-street loading "pull-outs" where sufficient sidewalk space exists without compromising pedestrian space and infrastructure.

Policy 4.66: Restrict the use of commercial freight/delivery vehicles over 30 feet long during peak-hour travel periods when street capacity is constrained.

Policy 4.67: Explore the feasibility of using the TMA to facilitate coordination of deliveries for member buildings.

Policy 4.68: Explore the feasibility of creating centralized distribution centers in or near the District for commercial deliveries, enabling the use of smaller and non-motorized vehicles for deliveries within the District.

Policy 4.69: Develop and adopt in the Planning Code an enforcement mechanism to effectively impose loading and truck limitations.

Objective 4.47: Ensure that adequate space is provided for car sharing services throughout the district accessible to residents, employees, and visitors.

Policy 4.70: Require parking spaces dedicated for car sharing vehicles in off-street parking garages in all new and renovated nonresidential buildings in the Plan Area that provide parking for autos.

Policy 4.71: Pursue the dedication of on-street parking spaces for car sharing vehicles. Work with the MTA to identify appropriate locations for dedicated on-street parking spaces for car sharing vehicles.

Objective 4.48: Support the casual carpool system by enhancing existing facilities and amenities . if necessary, the carpool facilities should be reconfigured or relocated to equally convenient locations.

Policy 4.72: Create sufficient sidewalk waiting and passenger loading/unloading space at casual carpool locations in the Plan Area.

Policy 4.73: Add passenger amenities at evening waiting locations, including shelters, informational signage, and other supportive services.

Objective 4.49: Encourage the creation of new and extended alleys wherever feasible to enhance the pedestrian and bicycle network, provide off-street loading opportunities , and enhance access for service and emergency response vehicles.

Policy 4.74: Create new public alleys on long blocks, including at the following locations:

- Natoma Street (1 block between Beale and Main Streets)
- Tehama Street (1 block between Beale and Main Streets)
- Clementina Street (2 blocks between 1st and Beale Streets)
- Clementina Street (2 blocks between Beale and Spear Streets)

5. Historic Preservation

Objective 5.1: Protect, preserve, and reuse those historic resources that have been identified and evaluated within the transit center plan area.

Policy 5.1: Protect individually significant historic and cultural resources and historic districts in the Transit Center District Plan from demolition or adverse alteration.

Policy 5.2: Apply the Secretary of the Interior’s Standards for the Treatment of Historic Properties in conjunction with applicable Articles 10 and 11 of the Planning Code requirements to the Transit Center District Plan Area and objectives for all projects involving historic or cultural resources.

Policy 5.3: Pursue formal recognition and designation of the Transit Center historic and cultural resources, as appropriate.

Policy 5.4: Recognize and protect historic and cultural resources that are less than fifty years old that may display exceptional significance to the recent past.

Objective 5.2: Provide preservation incentives, guidance, and leadership within the transit center district plan area.

Policy 5.5: Develop incentives that promote the retention and rehabilitation of significant resources within the Transit Center District Plan Area.

Policy 5.6: Maintain the TDR program as a critical component of the historic preservation program in the downtown and the Plan Area, but modify the program in the Plan Area based on updated information about the TDR program and on other objectives of this Plan.

Policy 5.7: Balance the TDR requirement with other public benefits programs in the District by reducing the square footage requirement for the purchase of TDR by each individual development project.

Policy 5.8: Provide flexibility for development in satisfaction of the TDR requirement by providing an in-lieu mechanism that directly benefits the preservation, rehabilitation, maintenance and public education of historic resources in the downtown.

Objective 5.3: Foster public awareness and appreciation of historic and cultural resources within the Transit Center District Plan area.

Policy 5.9: Foster education and appreciation of historic and cultural resources within the Transit Center District Plan Area among business leaders, neighborhood groups, and the general public through outreach efforts. In cooperation with the Arts Commission and the Department of Public Works develop a self-guided architectural and cultural tour, and infrastructure improvements, such as permanent markers in public spaces and along the public right-of-way, within the Transit Center District Plan Area.

Objective 5.4: Promote well-designed, contemporary infill development within the historic core of the Transit Center District Plan area.

Policy 5.10: Encourage well-designed, contemporary buildings for vacant sites, or to replace non-contributing buildings within the Conservation District that meet the Secretary of the Interior's Standards.

Policy 5.11: Provide technical assistance to government agencies and property owners for the development of buildings and amenities within the New Montgomery-Mission-Second Street Conservation District that strengthen its historic character and improve the public realm.

6. District Sustainability

Objective 6.1: Increase energy efficiency, reduce carbon intensiveness of energy production, and enhance energy reliability in the district.

Objective 6.2: Capitalize on the balanced, dense, mixed-use development in the transit center district and Transbay redevelopment areas to enact district-scale energy measures.

Objective 6.3: Streamline potential implementation of a district energy distribution network by phasing major streetscape and utility works in line with new building development in the Transit Center District and Transbay Redevelopment Area.

Policy 6.1: Create efficient, shared district energy, heating and cooling systems in the district.

Policy 6.2: Pursue a Combined Heat and Power (CHP) system or series of systems for the Transit Center District and the Transbay Redevelopment Area (Zone 1).

Policy 6.3: Require all new buildings to be designed to plug into such a system in the future.

Policy 6.4: Require all buildings undergoing major refurbishment (defined as requiring new HVAC plant) to be designed to plug into such a system in the future.

Policy 6.5: Identify and protect either suitable public sites or major development sites within the Plan Area for locating generation facilities.

Policy 6.6: Require all major development to demonstrate that proposed heating and cooling systems have been designed in accordance with the following order of diminishing preference:

- Connection to sources of waste heat or underutilized boiler or CHP plant within the Transit Center District or adjacent areas
- Connection to existing district heating, cooling, and/or power plant or distribution networks with excess capacity
- Site-wide CHP powered by renewable energy
- Site-wide CHP powered by natural gas
- Building level communal heating and cooling powered by renewable energy
- Building level communal heating and cooling powered by natural gas

Policy 6.7: Investigate City support for Energy Service Companies to finance, build, operate, and maintain Transit Center District energy networks; and work with PG&E to facilitate connection of new electricity supply from CHP to the grid.

Policy 6.8: Require all major development in the Plan Area to produce a detailed Energy Strategy document outlining how the design of the building minimizes its use of fossil fuel driven heating, cooling and power—through energy efficiency, efficient supply, and no or low carbon generation.

Objective 6.4: All new buildings developed in the plan area will be of leading edge design in terms of sustainability, both high performance for their inhabitants and low impact for the environment.

Policy 6.9: Take maximum advantage of San Francisco's moderate year-round climate by integrating passive solar features into building design.

Policy 6.10: Reduce the need for mechanical air conditioning through the use of natural ventilation.

Policy 6.11: Use on-site renewable energy systems to reduce the use of fossil fuel generated energy.

Policy 6.12: Require all major buildings in the Plan Area to achieve the minimum LEED levels established in the SF Green Building Ordinance, not including credits for the given inherent factors of location, density, and existing City parking controls, in order to achieve high-performance buildings.

Policy 6.13: All major buildings in the Plan Area should exceed the minimum credits required by the SF Green Building Ordinance under the Energy and Water categories of the LEED schemes.

Objective 6.5: Reduce the amount of potable water used in new development in the district.

Objective 6.6: Reduce stormwater runoff from the district into the sewer system to improve bay water quality and reduce strain on treatment plants during wet weather events.

Objective 6.7: Take advantage of significant concentrated development and infrastructure reconstruction in the district and adjacent areas to create district-scale water efficiency and reuse measures.

Policy 6.14: Create a reliable supply of non-potable water that can be used throughout the plan area to reduce potable water demand.

Policy 6.15: Pursue a variety of potential sources of non-potable water, including municipally-supplied recycled water and district-based greywater, stormwater, and building de-watering.

Policy 6.16: Create infrastructure in the Transit Center District and immediately adjacent areas for non-potable water use, including treatment and distribution.

Policy 6.17: include distribution pipes and other necessary infrastructure for non-potable water when undertaking any major streetscape or other infrastructure work in the right-of-ways in the Transit Center District and immediately vicinity.

Policy 6.18: Identify and protect suitable sites within the Plan Area or immediate vicinity for locating a treatment facility for creating a local non-potable supply.

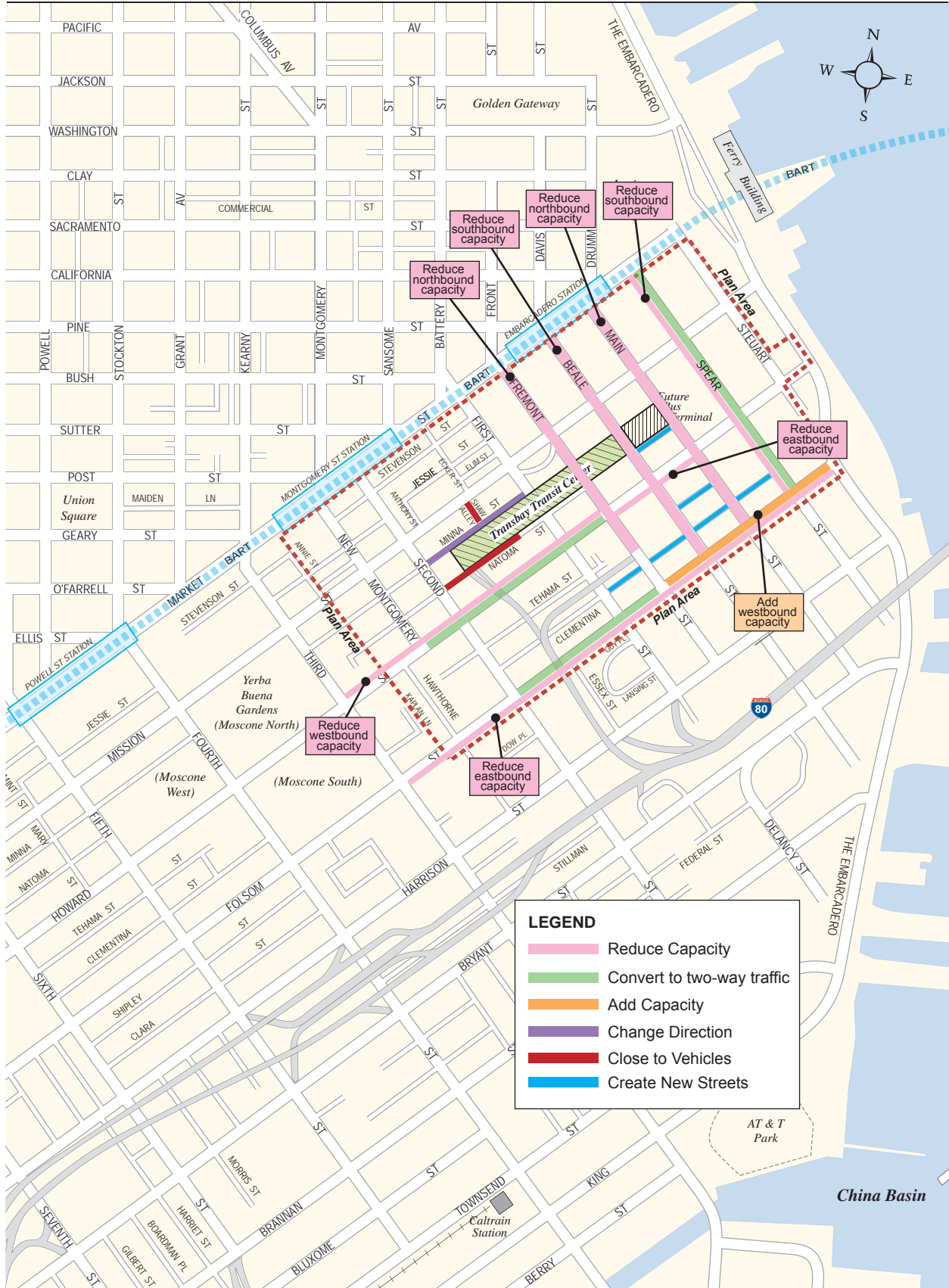
Policy 6.19: All new and large redevelopment projects in the city should adhere to the following hierarchical approach to maximize resources and minimize use of potable water:

- Reduce demands by installing efficient water fixtures and behaviors;
- Design sites to reduce the total amounts of stormwater generated on site; through the use of alternative surfaces and collection and treatment devices;
- Identify all on-site sources (rainwater, cooling tower blow down, fog, greywater, stormwater, and diverted sump water);
- Install appropriate on-site collection, treatment, storage and conveyance systems for non-potable needs;
- Meet all other unmet non-potable demands using district non-potable water or municipal recycled water; and
- Meet all other unmet demands using potable water.

Policy 6.20: Ensure projects use Low Impact Design (L.I.D.) techniques in all streetscape, public space, and development projects to reduce the quantity of stormwater runoff and slow its flow into the sewer system, and to harvest this water for on-site uses.

APPENDIX C

Proposed Public Realm Plan



Public Plan Road Changes.apr

June 24, 2011

TRANSIT CENTER DISTRICT PLAN

Figure 3a
PUBLIC REALM PLAN
Roadway Network Changes



Public Plan Transit Changes.ai

May 12, 2011

TRANSIT CENTER DISTRICT PLAN

Figure 3b

PUBLIC REALM PLAN
Transit Network Changes

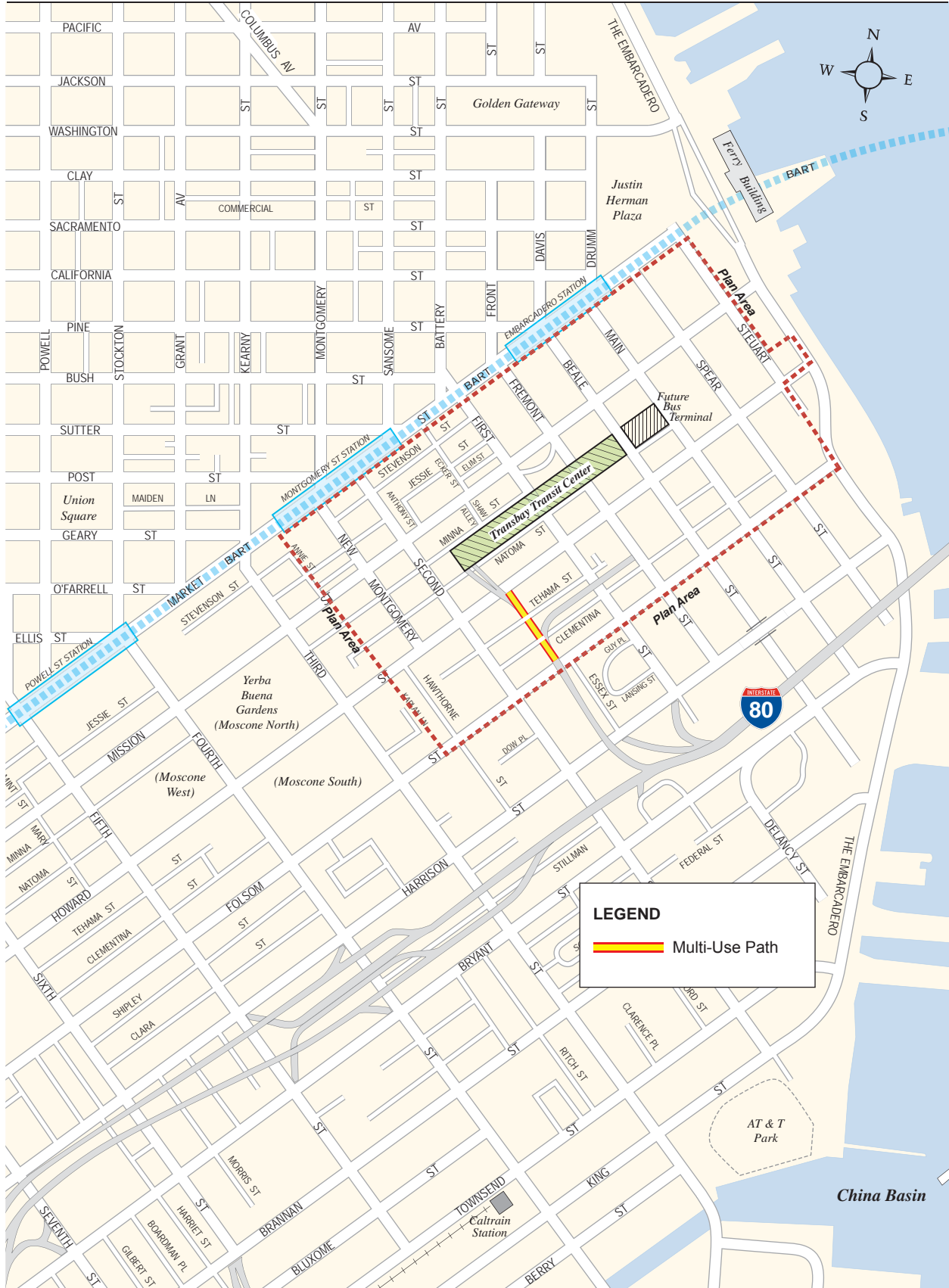


Public Plan Pedestrian Changes.ai

May 12, 2011

TRANSIT CENTER DISTRICT PLAN

Figure 3c
PUBLIC REALM PLAN
Pedestrian Network Changes



Public Plan Bicycle Changes.ai

May 12, 2011

TRANSIT CENTER DISTRICT PLAN

Figure 3d

**PUBLIC REALM PLAN
Bicycle Network Changes**



Public Plan Loading & Parking Changes.ai

May 12, 2011

TRANSIT CENTER DISTRICT PLAN

Figure 3e
PUBLIC REALM PLAN
Loading and Parking Changes

APPENDIX D

Air Quality

Urbemis 2007 Version 9.2.4

Combined Summer Emissions Reports (Pounds/Day)

File Name: C:\Users\kfh\AppData\Roaming\Urbemis\Version9a\Projects\Transit_Tower_rev_11-0705.urb924

Project Name: Transit Tower

Project Location: San Francisco County

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

CONSTRUCTION EMISSION ESTIMATES

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10 Dust</u>	<u>PM10 Exhaust</u>	<u>PM10</u>	<u>PM2.5 Dust</u>	<u>PM2.5 Exhaust</u>	<u>PM2.5</u>	<u>CO2</u>
2013 TOTALS (lbs/day unmitigated)	5.11	52.67	80.53	0.11	759.84	2.20	762.05	158.71	2.03	160.74	11,476.69
2013 TOTALS (lbs/day mitigated)	5.11	52.67	80.53	0.11	359.61	2.20	361.81	75.13	2.03	77.16	11,476.69
2014 TOTALS (lbs/day unmitigated)	2.94	12.12	74.67	0.11	0.52	0.64	1.16	0.19	0.57	0.75	11,479.86
2014 TOTALS (lbs/day mitigated)	2.94	12.12	74.67	0.11	0.52	0.64	1.16	0.19	0.57	0.75	11,479.86
2015 TOTALS (lbs/day unmitigated)	114.45	11.03	70.21	0.11	0.53	0.61	1.13	0.19	0.53	0.72	11,615.54
2015 TOTALS (lbs/day mitigated)	40.45	11.03	70.21	0.11	0.53	0.61	1.13	0.19	0.53	0.72	11,615.54
2016 TOTALS (lbs/day unmitigated)	111.75	0.04	0.84	0.00	0.01	0.00	0.01	0.00	0.00	0.00	133.43
2016 TOTALS (lbs/day mitigated)	37.18	0.04	0.84	0.00	0.01	0.00	0.01	0.00	0.00	0.00	133.43

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AREA SOURCE EMISSION ESTIMATES

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10</u>	<u>PM2.5</u>	<u>CO2</u>
TOTALS (lbs/day, unmitigated)	1.31	9.20	10.78	0.00	0.03	0.03	10,997.02
TOTALS (lbs/day, mitigated)	1.18	7.37	9.25	0.00	0.02	0.02	8,798.74
Percent Reduction	9.92	19.89	14.19	NaN	33.33	33.33	19.99

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10</u>	<u>PM2.5</u>	<u>CO2</u>
TOTALS (lbs/day, unmitigated)	27.51	21.54	216.19	0.31	55.09	10.42	30,708.07

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10</u>	<u>PM2.5</u>	<u>CO2</u>
TOTALS (lbs/day, unmitigated)	28.82	30.74	226.97	0.31	55.12	10.45	41,705.09

Both Area and Operational Mitigation must be turned on to get a combined mitigated total.

Construction Unmitigated Detail Report:

CONSTRUCTION EMISSION ESTIMATES Summer Pounds Per Day, Unmitigated

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10 Dust</u>	<u>PM10 Exhaust</u>	<u>PM10</u>	<u>PM2.5 Dust</u>	<u>PM2.5 Exhaust</u>	<u>PM2.5</u>	<u>CO2</u>
Time Slice 7/1/2013-9/30/2013 Active Days: 66	<u>5.11</u>	<u>52.67</u>	24.65	0.06	<u>759.84</u>	<u>2.20</u>	<u>762.05</u>	<u>158.71</u>	<u>2.03</u>	<u>160.74</u>	9,632.25
Mass Grading 07/01/2013-09/30/2013	5.11	52.67	24.65	0.06	759.84	2.20	762.05	158.71	2.03	160.74	9,632.25
Mass Grading Dust	0.00	0.00	0.00	0.00	759.60	0.00	759.60	158.63	0.00	158.63	0.00
Mass Grading Off Road Diesel	3.14	24.92	14.36	0.00	0.00	1.24	1.24	0.00	1.14	1.14	2,794.41
Mass Grading On Road Diesel	1.93	27.70	9.28	0.06	0.23	0.96	1.20	0.08	0.88	0.96	6,710.02
Mass Grading Worker Trips	0.03	0.05	1.02	0.00	0.01	0.00	0.01	0.00	0.00	0.00	127.82

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Time Slice 10/1/2013-12/31/2013 Active Days: 66	3.23	13.37	80.53	<u>0.11</u>	0.52	0.70	1.22	0.19	0.62	0.80	<u>11,476.69</u>
Building 10/01/2013-12/31/2015	3.23	13.37	80.53	0.11	0.52	0.70	1.22	0.19	0.62	0.80	11,476.69
Building Off Road Diesel	0.44	2.89	2.23	0.00	0.00	0.24	0.24	0.00	0.22	0.22	327.46
Building Vendor Trips	0.57	6.64	6.91	0.02	0.08	0.24	0.33	0.03	0.22	0.25	2,206.33
Building Worker Trips	2.21	3.84	71.39	0.09	0.44	0.21	0.65	0.16	0.17	0.33	8,942.90
Time Slice 1/1/2014-12/31/2014 Active Days: 261	<u>2.94</u>	<u>12.12</u>	<u>74.67</u>	<u>0.11</u>	<u>0.52</u>	<u>0.64</u>	<u>1.16</u>	<u>0.19</u>	<u>0.57</u>	<u>0.75</u>	<u>11,479.86</u>
Building 10/01/2013-12/31/2015	2.94	12.12	74.67	0.11	0.52	0.64	1.16	0.19	0.57	0.75	11,479.86
Building Off Road Diesel	0.40	2.69	2.22	0.00	0.00	0.21	0.21	0.00	0.19	0.19	327.46
Building Vendor Trips	0.53	5.93	6.49	0.02	0.08	0.22	0.30	0.03	0.20	0.23	2,206.55
Building Worker Trips	2.00	3.50	65.96	0.09	0.44	0.21	0.65	0.16	0.17	0.33	8,945.85
Time Slice 1/1/2015-6/30/2015 Active Days: 129	2.69	10.98	69.30	0.11	0.52	0.60	1.12	0.19	0.53	0.72	11,482.14
Building 10/01/2013-12/31/2015	2.69	10.98	69.30	0.11	0.52	0.60	1.12	0.19	0.53	0.72	11,482.14
Building Off Road Diesel	0.37	2.45	2.20	0.00	0.00	0.19	0.19	0.00	0.17	0.17	327.46
Building Vendor Trips	0.50	5.32	6.10	0.02	0.08	0.20	0.28	0.03	0.18	0.21	2,206.79
Building Worker Trips	1.83	3.20	61.00	0.09	0.44	0.21	0.65	0.16	0.17	0.33	8,947.89
Time Slice 7/1/2015-12/31/2015 Active Days: 132	<u>114.45</u>	<u>11.03</u>	<u>70.21</u>	<u>0.11</u>	<u>0.53</u>	<u>0.61</u>	<u>1.13</u>	<u>0.19</u>	<u>0.53</u>	<u>0.72</u>	<u>11,615.54</u>
Building 10/01/2013-12/31/2015	2.69	10.98	69.30	0.11	0.52	0.60	1.12	0.19	0.53	0.72	11,482.14
Building Off Road Diesel	0.37	2.45	2.20	0.00	0.00	0.19	0.19	0.00	0.17	0.17	327.46
Building Vendor Trips	0.50	5.32	6.10	0.02	0.08	0.20	0.28	0.03	0.18	0.21	2,206.79
Building Worker Trips	1.83	3.20	61.00	0.09	0.44	0.21	0.65	0.16	0.17	0.33	8,947.89
Coating 07/01/2015-06/30/2016	111.75	0.05	0.91	0.00	0.01	0.00	0.01	0.00	0.00	0.00	133.41
Architectural Coating	111.73	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.03	0.05	0.91	0.00	0.01	0.00	0.01	0.00	0.00	0.00	133.41

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Time Slice 1/1/2016-6/30/2016	<u>111.75</u>	<u>0.04</u>	<u>0.84</u>	<u>0.00</u>	<u>0.01</u>	<u>0.00</u>	<u>0.01</u>	<u>0.00</u>	<u>0.00</u>	<u>0.00</u>	<u>133.43</u>
Active Days: 130											
Coating 07/01/2015-06/30/2016	111.75	0.04	0.84	0.00	0.01	0.00	0.01	0.00	0.00	0.00	133.43
Architectural Coating	111.73	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.02	0.04	0.84	0.00	0.01	0.00	0.01	0.00	0.00	0.00	133.43

Phase Assumptions

Phase: Mass Grading 7/1/2013 - 9/30/2013 - Default Mass Grading Description

Total Acres Disturbed: 1.16

Maximum Daily Acreage Disturbed: 1.16

Fugitive Dust Level of Detail: Low

Onsite Cut/Fill: 0 cubic yards/day; Offsite Cut/Fill: 1700 cubic yards/day

On Road Truck Travel (VMT): 1666.67

Off-Road Equipment:

- 1 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day
- 1 Graders (174 hp) operating at a 0.61 load factor for 6 hours per day
- 1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day
- 1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day
- 1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Building Construction 10/1/2013 - 12/31/2015 - Default Building Construction Description

Off-Road Equipment:

- 1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 8 hours per day

Phase: Architectural Coating 7/1/2015 - 6/30/2016 - Default Coating Description

Rule: Residential Interior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Rule: Residential Exterior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Rule: Nonresidential Interior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Rule: Nonresidential Exterior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Construction Mitigated Detail Report:

CONSTRUCTION EMISSION ESTIMATES Summer Pounds Per Day, Mitigated

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10 Dust</u>	<u>PM10 Exhaust</u>	<u>PM10</u>	<u>PM2.5 Dust</u>	<u>PM2.5 Exhaust</u>	<u>PM2.5</u>	<u>CO2</u>
Time Slice 7/1/2013-9/30/2013 Active Days: 66	<u>5.11</u>	<u>52.67</u>	24.65	0.06	<u>359.61</u>	<u>2.20</u>	<u>361.81</u>	<u>75.13</u>	<u>2.03</u>	<u>77.16</u>	9,632.25
Mass Grading 07/01/2013-09/30/2013	5.11	52.67	24.65	0.06	359.61	2.20	361.81	75.13	2.03	77.16	9,632.25
Mass Grading Dust	0.00	0.00	0.00	0.00	359.37	0.00	359.37	75.05	0.00	75.05	0.00
Mass Grading Off Road Diesel	3.14	24.92	14.36	0.00	0.00	1.24	1.24	0.00	1.14	1.14	2,794.41
Mass Grading On Road Diesel	1.93	27.70	9.28	0.06	0.23	0.96	1.20	0.08	0.88	0.96	6,710.02
Mass Grading Worker Trips	0.03	0.05	1.02	0.00	0.01	0.00	0.01	0.00	0.00	0.00	127.82
Time Slice 10/1/2013-12/31/2013 Active Days: 66	<u>3.23</u>	<u>13.37</u>	<u>80.53</u>	<u>0.11</u>	0.52	0.70	1.22	0.19	0.62	0.80	<u>11,476.69</u>
Building 10/01/2013-12/31/2015	3.23	13.37	80.53	0.11	0.52	0.70	1.22	0.19	0.62	0.80	11,476.69
Building Off Road Diesel	0.44	2.89	2.23	0.00	0.00	0.24	0.24	0.00	0.22	0.22	327.46
Building Vendor Trips	0.57	6.64	6.91	0.02	0.08	0.24	0.33	0.03	0.22	0.25	2,206.33
Building Worker Trips	2.21	3.84	71.39	0.09	0.44	0.21	0.65	0.16	0.17	0.33	8,942.90
Time Slice 1/1/2014-12/31/2014 Active Days: 261	<u>2.94</u>	<u>12.12</u>	<u>74.67</u>	<u>0.11</u>	<u>0.52</u>	<u>0.64</u>	<u>1.16</u>	<u>0.19</u>	<u>0.57</u>	<u>0.75</u>	<u>11,479.86</u>
Building 10/01/2013-12/31/2015	2.94	12.12	74.67	0.11	0.52	0.64	1.16	0.19	0.57	0.75	11,479.86
Building Off Road Diesel	0.40	2.69	2.22	0.00	0.00	0.21	0.21	0.00	0.19	0.19	327.46
Building Vendor Trips	0.53	5.93	6.49	0.02	0.08	0.22	0.30	0.03	0.20	0.23	2,206.55
Building Worker Trips	2.00	3.50	65.96	0.09	0.44	0.21	0.65	0.16	0.17	0.33	8,945.85

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Time Slice 1/1/2015-6/30/2015 Active Days: 129	2.69	10.98	69.30	0.11	0.52	0.60	1.12	0.19	0.53	0.72	11,482.14
Building 10/01/2013-12/31/2015	2.69	10.98	69.30	0.11	0.52	0.60	1.12	0.19	0.53	0.72	11,482.14
Building Off Road Diesel	0.37	2.45	2.20	0.00	0.00	0.19	0.19	0.00	0.17	0.17	327.46
Building Vendor Trips	0.50	5.32	6.10	0.02	0.08	0.20	0.28	0.03	0.18	0.21	2,206.79
Building Worker Trips	1.83	3.20	61.00	0.09	0.44	0.21	0.65	0.16	0.17	0.33	8,947.89
Time Slice 7/1/2015-12/31/2015 Active Days: 132	<u>40.45</u>	<u>11.03</u>	<u>70.21</u>	<u>0.11</u>	<u>0.53</u>	<u>0.61</u>	<u>1.13</u>	<u>0.19</u>	<u>0.53</u>	<u>0.72</u>	<u>11,615.54</u>
Building 10/01/2013-12/31/2015	2.69	10.98	69.30	0.11	0.52	0.60	1.12	0.19	0.53	0.72	11,482.14
Building Off Road Diesel	0.37	2.45	2.20	0.00	0.00	0.19	0.19	0.00	0.17	0.17	327.46
Building Vendor Trips	0.50	5.32	6.10	0.02	0.08	0.20	0.28	0.03	0.18	0.21	2,206.79
Building Worker Trips	1.83	3.20	61.00	0.09	0.44	0.21	0.65	0.16	0.17	0.33	8,947.89
Coating 07/01/2015-06/30/2016	37.76	0.05	0.91	0.00	0.01	0.00	0.01	0.00	0.00	0.00	133.41
Architectural Coating	37.73	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.03	0.05	0.91	0.00	0.01	0.00	0.01	0.00	0.00	0.00	133.41
Time Slice 1/1/2016-6/30/2016 Active Days: 130	<u>37.18</u>	<u>0.04</u>	<u>0.84</u>	<u>0.00</u>	<u>0.01</u>	<u>0.00</u>	<u>0.01</u>	<u>0.00</u>	<u>0.00</u>	<u>0.00</u>	<u>133.43</u>
Coating 07/01/2015-06/30/2016	37.18	0.04	0.84	0.00	0.01	0.00	0.01	0.00	0.00	0.00	133.43
Architectural Coating	37.16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.02	0.04	0.84	0.00	0.01	0.00	0.01	0.00	0.00	0.00	133.43

Construction Related Mitigation Measures

The following mitigation measures apply to Phase: Mass Grading 7/1/2013 - 9/30/2013 - Default Mass Grading Description

For Soil Stabilizing Measures, the Water exposed surfaces 2x daily watering mitigation reduces emissions by:

PM10: 55% PM25: 55%

For Unpaved Roads Measures, the Reduce speed on unpaved roads to less than 15 mph mitigation reduces emissions by:

PM10: 44% PM25: 44%

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The following mitigation measures apply to Phase: Architectural Coating 7/1/2015 - 6/30/2016 - Default Coating Description

For Nonresidential Architectural Coating Measures, the Nonresidential Exterior: Use Low VOC Coatings mitigation reduces emissions by:

ROG: 95%

For Nonresidential Architectural Coating Measures, the Nonresidential Interior: Use Low VOC Coatings mitigation reduces emissions by:

ROG: 10%

Area Source Unmitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Summer Pounds Per Day, Unmitigated

<u>Source</u>	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10</u>	<u>PM2.5</u>	<u>CO2</u>
Natural Gas	0.66	9.16	7.69	0.00	0.02	0.02	10,991.40
Hearth							
Landscape	0.25	0.04	3.09	0.00	0.01	0.01	5.62
Consumer Products	0.00						
Architectural Coatings	0.40						
TOTALS (lbs/day, unmitigated)	1.31	9.20	10.78	0.00	0.03	0.03	10,997.02

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Area Source Mitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Summer Pounds Per Day, Mitigated

<u>Source</u>	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10</u>	<u>PM2.5</u>	<u>CO2</u>
Natural Gas	0.53	7.33	6.16	0.00	0.01	0.01	8,793.12
Hearth							
Landscape	0.25	0.04	3.09	0.00	0.01	0.01	5.62
Consumer Products	0.00						
Architectural Coatings	0.40						
TOTALS (lbs/day, mitigated)	1.18	7.37	9.25	0.00	0.02	0.02	8,798.74

Area Source Mitigation Measures Selected

<u>Mitigation Description</u>	<u>Percent Reduction</u>
Commercial Increase Energy Efficiency Beyond Title 24	20.00

Area Source Changes to Defaults

The nonresidential percentage of surface area repainted each year changed from 10% to 0.5%

Operational Unmitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Summer Pounds Per Day, Unmitigated

<u>Source</u>	<u>ROG</u>	<u>NOX</u>	<u>CO</u>	<u>SO2</u>	<u>PM10</u>	<u>PM25</u>	<u>CO2</u>
Hardware/paint store	1.61	1.98	19.23	0.03	5.03	0.95	2,788.99
General office building	25.90	19.56	196.96	0.28	50.06	9.47	27,919.08
TOTALS (lbs/day, unmitigated)	27.51	21.54	216.19	0.31	55.09	10.42	30,708.07

Operational Settings:

Does not include correction for passby trips

Does not include double counting adjustment for internal trips

Analysis Year: 2016 Temperature (F): 85 Season: Summer

Emfac: Version : Emfac2007 V2.3 Nov 1 2006

Summary of Land Uses

Land Use Type	Acreage	Trip Rate	Unit Type	No. Units	Total Trips	Total VMT
Hardware/paint store		24.06	1000 sq ft	16.50	396.99	2,934.95
General office building		2.67	1000 sq ft	1,350.00	3,604.50	29,205.46
					4,001.49	32,140.41

Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	60.9	0.2	99.6	0.2
Light Truck < 3750 lbs	11.0	0.0	99.1	0.9
Light Truck 3751-5750 lbs	16.5	0.0	100.0	0.0
Med Truck 5751-8500 lbs	4.7	0.0	100.0	0.0
Lite-Heavy Truck 8501-10,000 lbs	0.5	0.0	80.0	20.0
Lite-Heavy Truck 10,001-14,000 lbs	0.5	0.0	60.0	40.0
Med-Heavy Truck 14,001-33,000 lbs	1.6	0.0	18.8	81.2
Heavy-Heavy Truck 33,001-60,000 lbs	0.1	0.0	0.0	100.0
Other Bus	0.1	0.0	0.0	100.0
Urban Bus	0.3	0.0	0.0	100.0
Motorcycle	3.5	45.7	54.3	0.0
School Bus	0.1	0.0	0.0	100.0

Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Motor Home	0.2	0.0	100.0	0.0

Travel Conditions

	Residential			Commuter	Commercial	
	Home-Work	Home-Shop	Home-Other		Non-Work	Customer
Urban Trip Length (miles)	10.8	7.3	7.5	9.5	7.4	7.4
Rural Trip Length (miles)	16.8	7.1	7.9	14.7	6.6	6.6
Trip speeds (mph)	35.0	35.0	35.0	35.0	35.0	35.0
% of Trips - Residential	32.9	18.0	49.1			
% of Trips - Commercial (by land use)						
Hardware/paint store				2.0	1.0	97.0
General office building				35.0	17.5	47.5

Operational Changes to Defaults

Urbemis 2007 Version 9.2.4

Combined Winter Emissions Reports (Pounds/Day)

File Name: C:\Users\kfh\AppData\Roaming\Urbemis\Version9a\Projects\Transit_Tower_rev_11-0705.urb924

Project Name: Transit Tower

Project Location: San Francisco County

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

CONSTRUCTION EMISSION ESTIMATES

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10 Dust</u>	<u>PM10 Exhaust</u>	<u>PM10</u>	<u>PM2.5 Dust</u>	<u>PM2.5 Exhaust</u>	<u>PM2.5</u>	<u>CO2</u>
2013 TOTALS (lbs/day unmitigated)	5.11	52.67	80.53	0.11	759.84	2.20	762.05	158.71	2.03	160.74	11,476.69
2013 TOTALS (lbs/day mitigated)	5.11	52.67	80.53	0.11	359.61	2.20	361.81	75.13	2.03	77.16	11,476.69
2014 TOTALS (lbs/day unmitigated)	2.94	12.12	74.67	0.11	0.52	0.64	1.16	0.19	0.57	0.75	11,479.86
2014 TOTALS (lbs/day mitigated)	2.94	12.12	74.67	0.11	0.52	0.64	1.16	0.19	0.57	0.75	11,479.86
2015 TOTALS (lbs/day unmitigated)	114.45	11.03	70.21	0.11	0.53	0.61	1.13	0.19	0.53	0.72	11,615.54
2015 TOTALS (lbs/day mitigated)	40.45	11.03	70.21	0.11	0.53	0.61	1.13	0.19	0.53	0.72	11,615.54
2016 TOTALS (lbs/day unmitigated)	111.75	0.04	0.84	0.00	0.01	0.00	0.01	0.00	0.00	0.00	133.43
2016 TOTALS (lbs/day mitigated)	37.18	0.04	0.84	0.00	0.01	0.00	0.01	0.00	0.00	0.00	133.43

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AREA SOURCE EMISSION ESTIMATES

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10</u>	<u>PM2.5</u>	<u>CO2</u>
TOTALS (lbs/day, unmitigated)	1.06	9.16	7.69	0.00	0.02	0.02	10,991.40
TOTALS (lbs/day, mitigated)	0.93	7.33	6.16	0.00	0.01	0.01	8,793.12
Percent Reduction	12.26	19.98	19.90	NaN	50.00	50.00	20.00

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10</u>	<u>PM2.5</u>	<u>CO2</u>
TOTALS (lbs/day, unmitigated)	19.85	31.55	226.07	0.26	55.09	10.42	26,484.44

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10</u>	<u>PM2.5</u>	<u>CO2</u>
TOTALS (lbs/day, unmitigated)	20.91	40.71	233.76	0.26	55.11	10.44	37,475.84

Both Area and Operational Mitigation must be turned on to get a combined mitigated total.

Construction Unmitigated Detail Report:

CONSTRUCTION EMISSION ESTIMATES Winter Pounds Per Day, Unmitigated

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10 Dust</u>	<u>PM10 Exhaust</u>	<u>PM10</u>	<u>PM2.5 Dust</u>	<u>PM2.5 Exhaust</u>	<u>PM2.5</u>	<u>CO2</u>
Time Slice 7/1/2013-9/30/2013 Active Days: 66	<u>5.11</u>	<u>52.67</u>	24.65	0.06	<u>759.84</u>	<u>2.20</u>	<u>762.05</u>	<u>158.71</u>	<u>2.03</u>	<u>160.74</u>	9,632.25
Mass Grading 07/01/2013-09/30/2013	5.11	52.67	24.65	0.06	759.84	2.20	762.05	158.71	2.03	160.74	9,632.25
Mass Grading Dust	0.00	0.00	0.00	0.00	759.60	0.00	759.60	158.63	0.00	158.63	0.00
Mass Grading Off Road Diesel	3.14	24.92	14.36	0.00	0.00	1.24	1.24	0.00	1.14	1.14	2,794.41
Mass Grading On Road Diesel	1.93	27.70	9.28	0.06	0.23	0.96	1.20	0.08	0.88	0.96	6,710.02
Mass Grading Worker Trips	0.03	0.05	1.02	0.00	0.01	0.00	0.01	0.00	0.00	0.00	127.82

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Time Slice 10/1/2013-12/31/2013 Active Days: 66	3.23	13.37	80.53	<u>0.11</u>	0.52	0.70	1.22	0.19	0.62	0.80	<u>11,476.69</u>
Building 10/01/2013-12/31/2015	3.23	13.37	80.53	0.11	0.52	0.70	1.22	0.19	0.62	0.80	11,476.69
Building Off Road Diesel	0.44	2.89	2.23	0.00	0.00	0.24	0.24	0.00	0.22	0.22	327.46
Building Vendor Trips	0.57	6.64	6.91	0.02	0.08	0.24	0.33	0.03	0.22	0.25	2,206.33
Building Worker Trips	2.21	3.84	71.39	0.09	0.44	0.21	0.65	0.16	0.17	0.33	8,942.90
Time Slice 1/1/2014-12/31/2014 Active Days: 261	<u>2.94</u>	<u>12.12</u>	<u>74.67</u>	<u>0.11</u>	<u>0.52</u>	<u>0.64</u>	<u>1.16</u>	<u>0.19</u>	<u>0.57</u>	<u>0.75</u>	<u>11,479.86</u>
Building 10/01/2013-12/31/2015	2.94	12.12	74.67	0.11	0.52	0.64	1.16	0.19	0.57	0.75	11,479.86
Building Off Road Diesel	0.40	2.69	2.22	0.00	0.00	0.21	0.21	0.00	0.19	0.19	327.46
Building Vendor Trips	0.53	5.93	6.49	0.02	0.08	0.22	0.30	0.03	0.20	0.23	2,206.55
Building Worker Trips	2.00	3.50	65.96	0.09	0.44	0.21	0.65	0.16	0.17	0.33	8,945.85
Time Slice 1/1/2015-6/30/2015 Active Days: 129	2.69	10.98	69.30	0.11	0.52	0.60	1.12	0.19	0.53	0.72	11,482.14
Building 10/01/2013-12/31/2015	2.69	10.98	69.30	0.11	0.52	0.60	1.12	0.19	0.53	0.72	11,482.14
Building Off Road Diesel	0.37	2.45	2.20	0.00	0.00	0.19	0.19	0.00	0.17	0.17	327.46
Building Vendor Trips	0.50	5.32	6.10	0.02	0.08	0.20	0.28	0.03	0.18	0.21	2,206.79
Building Worker Trips	1.83	3.20	61.00	0.09	0.44	0.21	0.65	0.16	0.17	0.33	8,947.89
Time Slice 7/1/2015-12/31/2015 Active Days: 132	<u>114.45</u>	<u>11.03</u>	<u>70.21</u>	<u>0.11</u>	<u>0.53</u>	<u>0.61</u>	<u>1.13</u>	<u>0.19</u>	<u>0.53</u>	<u>0.72</u>	<u>11,615.54</u>
Building 10/01/2013-12/31/2015	2.69	10.98	69.30	0.11	0.52	0.60	1.12	0.19	0.53	0.72	11,482.14
Building Off Road Diesel	0.37	2.45	2.20	0.00	0.00	0.19	0.19	0.00	0.17	0.17	327.46
Building Vendor Trips	0.50	5.32	6.10	0.02	0.08	0.20	0.28	0.03	0.18	0.21	2,206.79
Building Worker Trips	1.83	3.20	61.00	0.09	0.44	0.21	0.65	0.16	0.17	0.33	8,947.89
Coating 07/01/2015-06/30/2016	111.75	0.05	0.91	0.00	0.01	0.00	0.01	0.00	0.00	0.00	133.41
Architectural Coating	111.73	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.03	0.05	0.91	0.00	0.01	0.00	0.01	0.00	0.00	0.00	133.41

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Time Slice 1/1/2016-6/30/2016	<u>111.75</u>	<u>0.04</u>	<u>0.84</u>	<u>0.00</u>	<u>0.01</u>	<u>0.00</u>	<u>0.01</u>	<u>0.00</u>	<u>0.00</u>	<u>0.00</u>	<u>133.43</u>
Active Days: 130											
Coating 07/01/2015-06/30/2016	111.75	0.04	0.84	0.00	0.01	0.00	0.01	0.00	0.00	0.00	133.43
Architectural Coating	111.73	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.02	0.04	0.84	0.00	0.01	0.00	0.01	0.00	0.00	0.00	133.43

Phase Assumptions

Phase: Mass Grading 7/1/2013 - 9/30/2013 - Default Mass Grading Description
Total Acres Disturbed: 1.16
Maximum Daily Acreage Disturbed: 1.16
Fugitive Dust Level of Detail: Low
Onsite Cut/Fill: 0 cubic yards/day; Offsite Cut/Fill: 1700 cubic yards/day
On Road Truck Travel (VMT): 1666.67
Off-Road Equipment:
1 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day
1 Graders (174 hp) operating at a 0.61 load factor for 6 hours per day
1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day
1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day
1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Building Construction 10/1/2013 - 12/31/2015 - Default Building Construction Description
Off-Road Equipment:
1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 8 hours per day

Phase: Architectural Coating 7/1/2015 - 6/30/2016 - Default Coating Description
Rule: Residential Interior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250
Rule: Residential Exterior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250
Rule: Nonresidential Interior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250
Rule: Nonresidential Exterior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Construction Mitigated Detail Report:

CONSTRUCTION EMISSION ESTIMATES Winter Pounds Per Day, Mitigated

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10 Dust</u>	<u>PM10 Exhaust</u>	<u>PM10</u>	<u>PM2.5 Dust</u>	<u>PM2.5 Exhaust</u>	<u>PM2.5</u>	<u>CO2</u>
Time Slice 7/1/2013-9/30/2013 Active Days: 66	<u>5.11</u>	<u>52.67</u>	24.65	0.06	<u>359.61</u>	<u>2.20</u>	<u>361.81</u>	<u>75.13</u>	<u>2.03</u>	<u>77.16</u>	9,632.25
Mass Grading 07/01/2013-09/30/2013	5.11	52.67	24.65	0.06	359.61	2.20	361.81	75.13	2.03	77.16	9,632.25
Mass Grading Dust	0.00	0.00	0.00	0.00	359.37	0.00	359.37	75.05	0.00	75.05	0.00
Mass Grading Off Road Diesel	3.14	24.92	14.36	0.00	0.00	1.24	1.24	0.00	1.14	1.14	2,794.41
Mass Grading On Road Diesel	1.93	27.70	9.28	0.06	0.23	0.96	1.20	0.08	0.88	0.96	6,710.02
Mass Grading Worker Trips	0.03	0.05	1.02	0.00	0.01	0.00	0.01	0.00	0.00	0.00	127.82
Time Slice 10/1/2013-12/31/2013 Active Days: 66	<u>3.23</u>	<u>13.37</u>	<u>80.53</u>	<u>0.11</u>	0.52	0.70	1.22	0.19	0.62	0.80	<u>11,476.69</u>
Building 10/01/2013-12/31/2015	3.23	13.37	80.53	0.11	0.52	0.70	1.22	0.19	0.62	0.80	11,476.69
Building Off Road Diesel	0.44	2.89	2.23	0.00	0.00	0.24	0.24	0.00	0.22	0.22	327.46
Building Vendor Trips	0.57	6.64	6.91	0.02	0.08	0.24	0.33	0.03	0.22	0.25	2,206.33
Building Worker Trips	2.21	3.84	71.39	0.09	0.44	0.21	0.65	0.16	0.17	0.33	8,942.90
Time Slice 1/1/2014-12/31/2014 Active Days: 261	<u>2.94</u>	<u>12.12</u>	<u>74.67</u>	<u>0.11</u>	<u>0.52</u>	<u>0.64</u>	<u>1.16</u>	<u>0.19</u>	<u>0.57</u>	<u>0.75</u>	<u>11,479.86</u>
Building 10/01/2013-12/31/2015	2.94	12.12	74.67	0.11	0.52	0.64	1.16	0.19	0.57	0.75	11,479.86
Building Off Road Diesel	0.40	2.69	2.22	0.00	0.00	0.21	0.21	0.00	0.19	0.19	327.46
Building Vendor Trips	0.53	5.93	6.49	0.02	0.08	0.22	0.30	0.03	0.20	0.23	2,206.55
Building Worker Trips	2.00	3.50	65.96	0.09	0.44	0.21	0.65	0.16	0.17	0.33	8,945.85

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Time Slice 1/1/2015-6/30/2015 Active Days: 129	2.69	10.98	69.30	0.11	0.52	0.60	1.12	0.19	0.53	0.72	11,482.14
Building 10/01/2013-12/31/2015	2.69	10.98	69.30	0.11	0.52	0.60	1.12	0.19	0.53	0.72	11,482.14
Building Off Road Diesel	0.37	2.45	2.20	0.00	0.00	0.19	0.19	0.00	0.17	0.17	327.46
Building Vendor Trips	0.50	5.32	6.10	0.02	0.08	0.20	0.28	0.03	0.18	0.21	2,206.79
Building Worker Trips	1.83	3.20	61.00	0.09	0.44	0.21	0.65	0.16	0.17	0.33	8,947.89
Time Slice 7/1/2015-12/31/2015 Active Days: 132	<u>40.45</u>	<u>11.03</u>	<u>70.21</u>	<u>0.11</u>	<u>0.53</u>	<u>0.61</u>	<u>1.13</u>	<u>0.19</u>	<u>0.53</u>	<u>0.72</u>	<u>11,615.54</u>
Building 10/01/2013-12/31/2015	2.69	10.98	69.30	0.11	0.52	0.60	1.12	0.19	0.53	0.72	11,482.14
Building Off Road Diesel	0.37	2.45	2.20	0.00	0.00	0.19	0.19	0.00	0.17	0.17	327.46
Building Vendor Trips	0.50	5.32	6.10	0.02	0.08	0.20	0.28	0.03	0.18	0.21	2,206.79
Building Worker Trips	1.83	3.20	61.00	0.09	0.44	0.21	0.65	0.16	0.17	0.33	8,947.89
Coating 07/01/2015-06/30/2016	37.76	0.05	0.91	0.00	0.01	0.00	0.01	0.00	0.00	0.00	133.41
Architectural Coating	37.73	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.03	0.05	0.91	0.00	0.01	0.00	0.01	0.00	0.00	0.00	133.41
Time Slice 1/1/2016-6/30/2016 Active Days: 130	<u>37.18</u>	<u>0.04</u>	<u>0.84</u>	<u>0.00</u>	<u>0.01</u>	<u>0.00</u>	<u>0.01</u>	<u>0.00</u>	<u>0.00</u>	<u>0.00</u>	<u>133.43</u>
Coating 07/01/2015-06/30/2016	37.18	0.04	0.84	0.00	0.01	0.00	0.01	0.00	0.00	0.00	133.43
Architectural Coating	37.16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.02	0.04	0.84	0.00	0.01	0.00	0.01	0.00	0.00	0.00	133.43

Construction Related Mitigation Measures

The following mitigation measures apply to Phase: Mass Grading 7/1/2013 - 9/30/2013 - Default Mass Grading Description

For Soil Stabilizing Measures, the Water exposed surfaces 2x daily watering mitigation reduces emissions by:

PM10: 55% PM25: 55%

For Unpaved Roads Measures, the Reduce speed on unpaved roads to less than 15 mph mitigation reduces emissions by:

PM10: 44% PM25: 44%

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The following mitigation measures apply to Phase: Architectural Coating 7/1/2015 - 6/30/2016 - Default Coating Description

For Nonresidential Architectural Coating Measures, the Nonresidential Exterior: Use Low VOC Coatings mitigation reduces emissions by:

ROG: 95%

For Nonresidential Architectural Coating Measures, the Nonresidential Interior: Use Low VOC Coatings mitigation reduces emissions by:

ROG: 10%

Area Source Unmitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Winter Pounds Per Day, Unmitigated

<u>Source</u>	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10</u>	<u>PM2.5</u>	<u>CO2</u>
Natural Gas	0.66	9.16	7.69	0.00	0.02	0.02	10,991.40
Hearth							
Landscaping - No Winter Emissions							
Consumer Products	0.00						
Architectural Coatings	0.40						
TOTALS (lbs/day, unmitigated)	1.06	9.16	7.69	0.00	0.02	0.02	10,991.40

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Area Source Mitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Winter Pounds Per Day, Mitigated

<u>Source</u>	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10</u>	<u>PM2.5</u>	<u>CO2</u>
Natural Gas	0.53	7.33	6.16	0.00	0.01	0.01	8,793.12
Hearth							
Landscaping - No Winter Emissions							
Consumer Products	0.00						
Architectural Coatings	0.40						
TOTALS (lbs/day, mitigated)	0.93	7.33	6.16	0.00	0.01	0.01	8,793.12

Area Source Mitigation Measures Selected

<u>Mitigation Description</u>	<u>Percent Reduction</u>
Commercial Increase Energy Efficiency Beyond Title 24	20.00

Area Source Changes to Defaults

The nonresidential percentage of surface area repainted each year changed from 10% to 0.5%

Operational Unmitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Winter Pounds Per Day, Unmitigated

<u>Source</u>	<u>ROG</u>	<u>NOX</u>	<u>CO</u>	<u>SO2</u>	<u>PM10</u>	<u>PM25</u>	<u>CO2</u>
Hardware/paint store	1.84	2.89	20.57	0.02	5.03	0.95	2,403.30
General office building	18.01	28.66	205.50	0.24	50.06	9.47	24,081.14
TOTALS (lbs/day, unmitigated)	19.85	31.55	226.07	0.26	55.09	10.42	26,484.44

Operational Settings:

Does not include correction for passby trips

Does not include double counting adjustment for internal trips

Analysis Year: 2016 Temperature (F): 40 Season: Winter

Emfac: Version : Emfac2007 V2.3 Nov 1 2006

Summary of Land Uses

Land Use Type	Acreage	Trip Rate	Unit Type	No. Units	Total Trips	Total VMT
Hardware/paint store		24.06	1000 sq ft	16.50	396.99	2,934.95
General office building		2.67	1000 sq ft	1,350.00	3,604.50	29,205.46
					4,001.49	32,140.41

Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	60.9	0.2	99.6	0.2
Light Truck < 3750 lbs	11.0	0.0	99.1	0.9
Light Truck 3751-5750 lbs	16.5	0.0	100.0	0.0
Med Truck 5751-8500 lbs	4.7	0.0	100.0	0.0
Lite-Heavy Truck 8501-10,000 lbs	0.5	0.0	80.0	20.0
Lite-Heavy Truck 10,001-14,000 lbs	0.5	0.0	60.0	40.0
Med-Heavy Truck 14,001-33,000 lbs	1.6	0.0	18.8	81.2
Heavy-Heavy Truck 33,001-60,000 lbs	0.1	0.0	0.0	100.0
Other Bus	0.1	0.0	0.0	100.0
Urban Bus	0.3	0.0	0.0	100.0
Motorcycle	3.5	45.7	54.3	0.0
School Bus	0.1	0.0	0.0	100.0

Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Motor Home	0.2	0.0	100.0	0.0

Travel Conditions

	Residential			Commuter	Commercial	
	Home-Work	Home-Shop	Home-Other		Non-Work	Customer
Urban Trip Length (miles)	10.8	7.3	7.5	9.5	7.4	7.4
Rural Trip Length (miles)	16.8	7.1	7.9	14.7	6.6	6.6
Trip speeds (mph)	35.0	35.0	35.0	35.0	35.0	35.0
% of Trips - Residential	32.9	18.0	49.1			
% of Trips - Commercial (by land use)						
Hardware/paint store				2.0	1.0	97.0
General office building				35.0	17.5	47.5

Operational Changes to Defaults

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2016 TOTALS (tons/year mitigated)	2.42	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.67
Percent Reduction	66.73	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

AREA SOURCE EMISSION ESTIMATES

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10</u>	<u>PM2.5</u>	<u>CO2</u>
TOTALS (tons/year, unmitigated)	0.21	1.67	1.68	0.00	0.00	0.00	2,006.44
TOTALS (tons/year, mitigated)	0.19	1.34	1.40	0.00	0.00	0.00	1,605.25
Percent Reduction	9.52	19.76	16.67	NaN	NaN	NaN	20.00

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10</u>	<u>PM2.5</u>	<u>CO2</u>
TOTALS (tons/year, unmitigated)	4.56	4.54	40.06	0.05	10.06	1.90	5,347.29

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10</u>	<u>PM2.5</u>	<u>CO2</u>
TOTALS (tons/year, unmitigated)	4.77	6.21	41.74	0.05	10.06	1.90	7,353.73

Both Area and Operational Mitigation must be turned on to get a combined mitigated total.

Table 1 Summary of Emissions From Construction^{1,2,3}
Transit Tower Project Level Analysis
San Francisco, CA

Construction Year	DPM	PM _{2.5}	TOG
	[tons/yr]	[tons/yr]	[lbs/day]
2013	0.05	0.10	3.7
2014	0.03	0.03	--
2015	0.03	0.03	--
2016	0	0	--

Notes:

1. Emissions were calculated by California Emissions Estimator Model (CalEEMod).
2. Construction schedule and equipment information were obtained from Karl Heisler of Environmental Science Associates (ESA).
3. Default emissions factors for diesel equipment were used. No mitigation measures were assumed in the emissions calculations.

Abbreviations:

CalEEMod: California Emissions Estimator Model

DPM: Diesel Particulate Matter

ESA: Environmental Science Associates

lbs: pounds

PM_{2.5}: particles in the atmosphere with a diameter of 2.5 micrometers or less

TOG: Total Organic Gases

yr: year

**Table 2 Summary of Emissions From Operation of an Emergency Generator
Transit Tower Project Level Analysis
San Francisco, CA**

	BHP¹	EF²	Hours per year³	Emissions	Emissions
		[g/hp-hr]	[hrs/yr]	[lbs/yr]	[lbs/hr]
DPM	1750	0.07	50	14	--
TOG	1750	0.3	--	--	1.2

Notes:

1. Brake horsepower was obtained from Karl Heisler of Environmental Science Associates (ESA).
2. Tier 4 interim standard was assumed to calculate emergency generator emissions.
3. Maximum hours of operation allowed by BAAQMD was assumed to be conservative.

Abbreviations:

BHP: Brake Horsepower

DPM: Diesel Particulate Matter

EF: Emission Factor

ESA: Environmental Science Associates

g: gram

hp: horsepower

hr: hour

lbs: pounds

TOG: Total Organic Gases

yr: year

**Table 3 Estimated Health Risks from Construction on the Maximum Exposed Individual¹
Transit Tower Project Level Analysis
San Francisco, CA**

Analysis	MEI Location	Population	Building Level	Risk Value	Risk Unit
Cancer Risk	Millennium Tower	Residential Child	3rd Floor	17	# in one million
Chronic HI	Millennium Tower	Residential Child	3rd Floor	0.02	[-]
Acute HI	Proposed 50 1st St. Residential	Residential Adult	2nd Floor	0.35	[-]
PM _{2.5} Concentration	Millennium Tower	Residential Child	3rd Floor	0.2	ug/m ³

Notes:

1. Resident child was assumed to be exposed to the construction emissions from the third trimester of pregnancy till the end of the construction.
2. All exposure assumptions were based on recommendations by the Office of Environmental Health Hazard Assessment OEHHA 2009 and BAAQMD 2010.

Abbreviations:

HI: Hazard Index

m: meter

MEI: Maximum Exposed Individual

PM_{2.5}: particles in the atmosphere with a diameter of 2.5 micrometers or less

ug: microgram

References:

Bay Area Air Quality Management District (BAAQMD). 2010. Air Toxics NSR Program Health Risk Screening Analysis (HRSA) Guidelines. January.

Office of Environmental Health Hazard Assessment (OEHHA). 2009. Technical Support Document for Cancer Potency Factors: Methodologies for derivation, listing of available values, and adjustments to allow for early life stage exposures. May.

**Table 4 Estimated Health Risks from Operation of an Emergency Generator on the Maximum Exposed Individual¹
Transit Tower Project Level Analysis
San Francisco, CA**

Analysis	MEI Location	Population	Building Level	Risk Value	Risk Unit
Cancer Risk	Millennium Tower	Residential Adult	3rd Floor	0.7	# in one million
Chronic HI	Millennium Tower	Residential Adult	3rd Floor	0.0003	[-]
Acute HI	Millennium Tower	Residential Adult	3rd Floor	0.10	[-]
PM _{2.5} Concentration	Millennium Tower	Residential Adult	3rd Floor	0.001	ug/m ³

Notes:

1. Resident adult was assumed to be exposed to the emergency generators emissions for the life time of 70 years.
2. All exposure assumptions were based on recommendations by the Office of Environmental Health Hazard Assessment OEHHA 2009 and BAAQMD 2010.

Abbreviations:

BAAQMD: Bay Area Air Quality Management District

HI: Hazard Index

m: meter

MEI: Maximum Exposed Individual

OEHHA: Office of Environmental Health Hazard Assessment

PM_{2.5}: particles in the atmosphere with a diameter of 2.5 micrometers or less

ug: microgram

References:

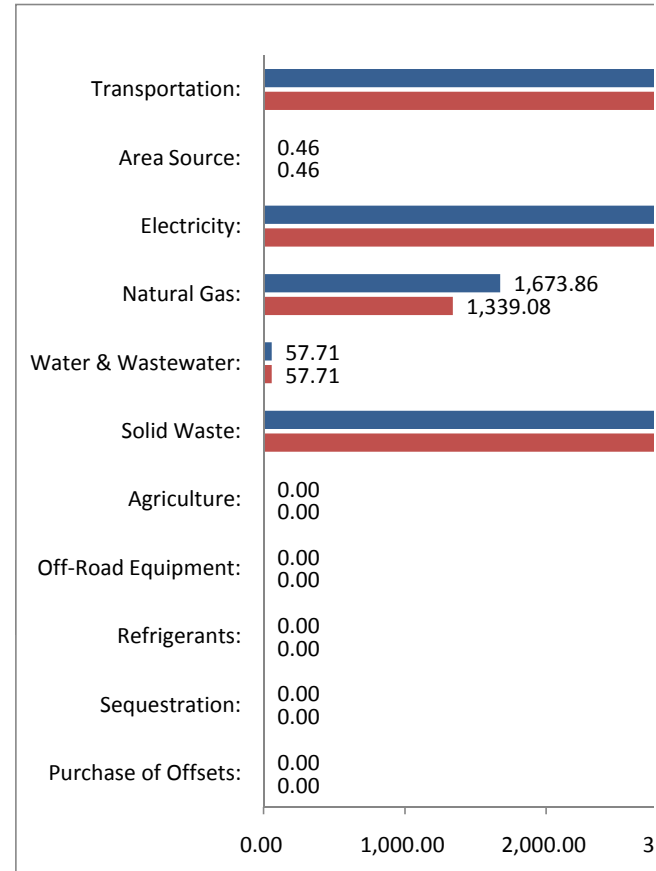
Bay Area Air Quality Management District (BAAQMD). 2010. Air Toxics NSR Program Health Risk Screening Analysis (HRSA) Guidelines. January.

Office of Environmental Health Hazard Assessment (OEHHA). 2009. Technical Support Document for Cancer Potency Factors: Methodologies for derivation, listing of available values, and adjustments to allow for early life stage exposures. May.

Summary Results

Project Name: Transit Tower
 Project and Baseline Years: 2016 N/A

Results	Unmitigated Project-Baseline CO2e (metric tons/year)	Mitigated Project-Baseline CO2e (metric tons/year)
Transportation:	4,522.49	4,522.49
Area Source:	0.46	0.46
Electricity:	7,602.88	6,082.31
Natural Gas:	1,673.86	1,339.08
Water & Wastewater:	57.71	57.71
Solid Waste:	9,424.66	4,712.33
Agriculture:	0.00	0.00
Off-Road Equipment:	0.00	0.00
Refrigerants:	0.00	0.00
Sequestration:	N/A	0.00
Purchase of Offsets:	N/A	0.00
Total:	23,282.07	16,714.38



Baseline is currently: **OFF**
 Baseline Project Name:
 Go to Settings Tab to Turn On Baseline

Detailed Results

Unmitigated	CO2 (metric tpy)	CH4 (metric tpy)	N2O (metric tpy)	CO2e (metric tpy)	% of Total
Transportation*:				4,522.49	19.42%
Area Source:	0.46	0.00	0.00	0.46	0.00%
Electricity:	7,590.74	0.06	0.03	7,602.88	32.66%
Natural Gas:	1,669.58	0.16	0.00	1,673.86	7.19%
Water & Wastewater:	57.62	0.00	0.00	57.71	0.25%
Solid Waste:	68.09	445.55	N/A	9,424.66	40.48%
Agriculture:	0.00	0.00	0.00	0.00	0.00%
Off-Road Equipment:	0.00	0.00	0.00	0.00	0.00%
Refrigerants:	N/A	N/A	N/A	0.00	0.00%
Sequestration:	N/A	N/A	N/A	N/A	N/A
Purchase of Offsets:	N/A	N/A	N/A	N/A	N/A
Total:				23,282.07	100.00%

* Several adjustments were made to transportation emissions after they have been imported from URBEMIS.

After importing from URBEMIS, CO2 emissions are converted to metric tons and then adjusted to account for the "Pavley" regulation. Then, CO2 is converted to CO2e by multiplying by 100/95 to account for the contribution of other GHGs (CH4, N2O, and HFCs [from leaking air conditioning]). Finally, CO2e is adjusted to account for the low carbon fuels rule.

Mitigated	CO2 (metric tpy)	CH4 (metric tpy)	N2O (metric tpy)	CO2e (metric tpy)	% of Total
Transportation*:				4,522.49	27.06%
Area Source:	0.46	0.00	0.00	0.46	0.00%
Electricity:	6,072.59	0.05	0.03	6,082.31	36.39%
Natural Gas:	1,335.66	0.13	0.00	1,339.08	8.01%
Water & Wastewater:	57.62	0.00	0.00	57.71	0.35%
Solid Waste:	34.05	222.78	N/A	4,712.33	28.19%
Agriculture:	0.00	0.00	0.00	0.00	0.00%
Off-Road Equipment:	0.00	0.00	0.00	0.00	0.00%
Refrigerants:	N/A	N/A	N/A	0.00	0.00%
Sequestration:	N/A	N/A	N/A	0.00	0.00%
Purchase of Offsets:	N/A	N/A	N/A	0.00	0.00%
Total:				16,714.38	100.00%

Mitigation Measures Selected:

Transportation: Go to the following tab: [Transp. Detail Mit](#) for a list of the transportation mitigation measures selected (in URBE

Electricity: The following mitigation measure(s) have been selected to reduce electricity emissions.

Natural Gas: The following mitigation measure(s) have been selected to reduce natural gas emissions.

Water and Wastewater: The following mitigation measure(s) have been selected to reduce water and wastewater emissions.

Drought Tolerant Landscaping	68.23 % Reduction Outdoor Use
Low Flush Toilets	68.24 % Reduction Indoor Use

Solid Waste: The following mitigation measure has been selected to reduce solid waste related GHG emissions.

Reduce Solid Waste by the Following Percentage	50 Solid Waste Reduction %
--	----------------------------

Ag: No existing mitigation measures available.

Off-Road Equipment: No existing mitigation measures available.

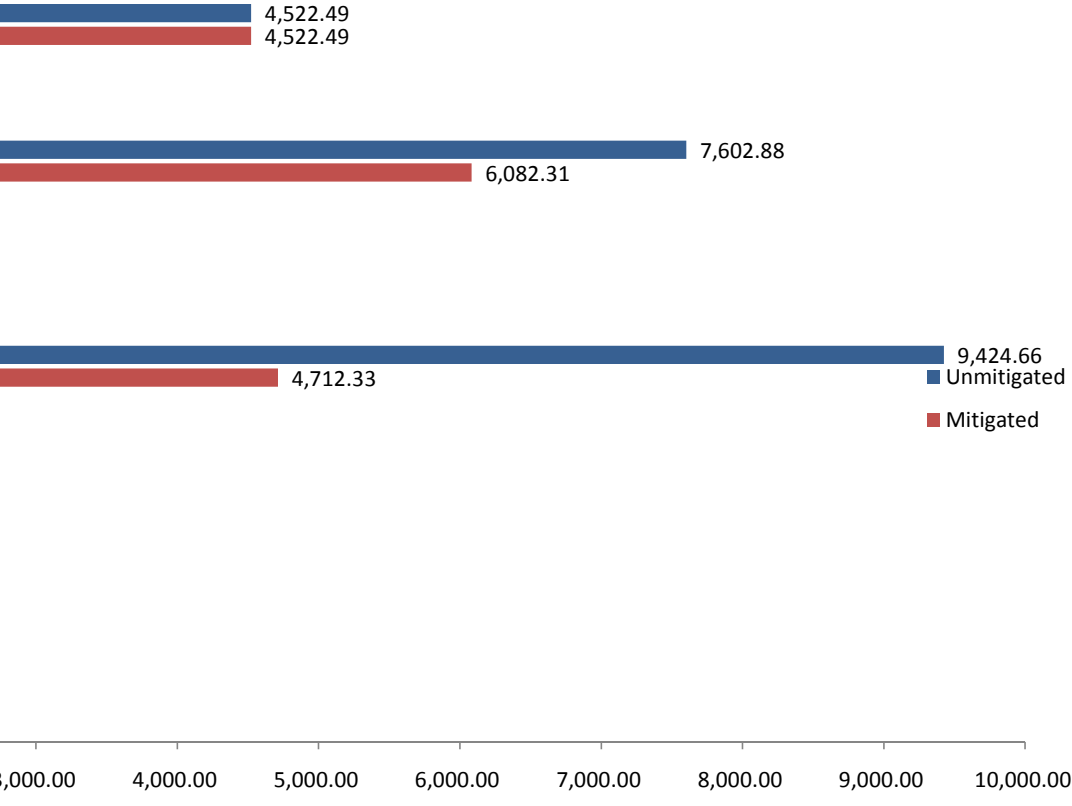
Refrigerants: The following mitigation measure has ben selected to reduce refrigerant emissions:

Carbon Sequestration: Project does not include carbon sequestration through tree planting.

Emission Offsets/Credits: Project does not include purchase of emission offsets/credits.



Project-Baseline CO2e (metric tons/year)





Baseline	CO2 (metric tpy)	CH4 (metric tpy)	N2O (metric tpy)	CO2e (metric tpy)	% of Total
Transportation*:				0.00	N/A
Area Source:	0.00	0.00	0.00	0.00	N/A
Electricity:	0.00	0.00	0.00	0.00	N/A
Natural Gas:	0.00	0.00	0.00	0.00	N/A
Water & Wastewater:	0.00	0.00	0.00	0.00	N/A
Solid Waste:	0.00	0.00	N/A	0.00	N/A
Agriculture:	0.00	0.00	0.00	0.00	N/A
Off-Road Equipment:	0.00	0.00	0.00	0.00	N/A
Refrigerants:	N/A	N/A	N/A	0.00	N/A
Sequestration:	N/A	N/A	N/A	N/A	N/A
Purchase of Offsets:	N/A	N/A	N/A	N/A	N/A
Total:				0.00	0.00%

tioners]).

APPENDIX E

Transit Tower Wind-Tunnel Analysis



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Transbay Tower San Francisco, California

Pedestrian Level Wind Study

RWDI # 1012134
June 24, 2011

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Tables

Table 1:	Comfort Results
Table 2:	Wind Hazard Results

Figures

Figure 1a:	Wind Tunnel Study Model – Existing Configuration
Figure 1b:	Wind Tunnel Study Model – Existing plus Project Configuration
Figure 1c:	Wind Tunnel Study Model – Project plus Cumulative Configuration
Figure 2a to 2c:	Location of Wind Speed Measurements

Appendices

Appendix A:	Drawing List for Model Construction
Appendix B:	San Francisco Planning Code Section 148

1. INTRODUCTION

Rowan Williams Davies & Irwin Inc. (RWDI) was retained by the ESA | Environmental Science Associates to conduct a Pedestrian Wind Study for a portion of the proposed Transit Center District Plan (TCDP) in San Francisco, California. The purpose of the study was to assess the wind environment around the proposed Transbay Tower in terms of pedestrian comfort and hazard relative to wind metrics specified in the San Francisco Planning Code Section 148. The study objective was achieved through wind tunnel testing of a 1:400 (approximately 1 inch = 33 feet) scale model for the following three development configurations:

- A – Existing:** all existing buildings on-site and in the surroundings;
- B – Existing plus Project:** proposed Transbay Tower with existing surrounding buildings; and,
- C – Project plus Cumulative:** proposed Transbay Tower present with existing surrounding buildings, as well as anticipated proposed/future buildings.

The project site is located in the Financial District of San Francisco's downtown core. The development site is located south of Mission Street between 1st and Fremont Streets, and is directly north of the Transit Center Terminal. The proposed tower is a approximately 1070 feet tall. The test model was constructed using the design information and drawings listed in Appendix A.

This report summarizes the methodology used for wind tunnel studies of pedestrian wind conditions, describes the wind comfort and wind hazard criteria associated with wind force, as used in the current study, and presents the test results and recommendations of conceptual wind control measures, where necessary.

The placement of wind measurement locations was based on our experience and understanding of pedestrian usage for this site. These were reviewed by ESA | Environmental Science Associates prior to the wind tunnel testing.

2. PRINCIPAL RESULTS

The results of the tests are discussed in detail in Section 5 of this report and may be summarized as follows:

- Wind comfort conditions for the Existing plus Project Configuration were similar to the existing conditions. Wind speeds increased slightly for the Project plus Cumulative Configuration.
- All test locations met the wind hazard criterion for the Existing and Existing plus Project Configurations. With the cumulative buildings in place (Project plus Cumulative Configuration), wind conditions increased slightly, in that one (1) out of 207 test locations exceeded the hazard criterion.

3. METHODOLOGY

3.1 Wind Tunnel Testing

As shown in Figures 1a through 1c, the wind tunnel model included the project site and all relevant surrounding buildings and topography within a 1600 foot radius of the study site at full scale and 4 feet at model scale. The mean speed profile and turbulence of the natural wind approaching the modelled area were simulated in RWDI's boundary-layer wind tunnel. The model was instrumented with 207 wind speed sensors to measure mean and gust wind speeds at a full-scale height of approximately 5 feet above the local grade. These measurements were recorded for 36 equally incremented wind directions; however, as required by the Planning Code, the analysis focused on the west-southwest, west, west-northwest and northwest wind directions only.

Surface wind speed sensors [1, 2] were used for the current wind-tunnel tests. They were calibrated against the more traditional thermal anemometers (i.e., hot-wire) and are capable of measuring mean speeds and turbulence fluctuations accurately and efficiently. These sensors are sturdy and suitable for a large amount of test points at a fixed height (e.g., 5 feet in full scale). No alignment with wind direction is required due to the axi-symmetric geometry of the surface wind sensor.

Upwind Profiles

Beyond the modelled area, the influence of the upwind terrain on the planetary boundary layer was simulated in the testing by appropriate roughness on the wind tunnel floor and flow conditioning spires at the upwind end of the working section for each wind direction. This simulation, and subsequent analysis of the data from the model, was targeted to represent the appropriate upwind terrain conditions.

The locations and coverage of all 207 wind speed sensors can be seen in Figures 2a through 2c. The scale model being 8 feet in diameter extends well beyond the furthest wind speed sensors from the center of the model. This coverage ensures that measurements are not taken too closely to the outer edge of the scale model where data may be less reliable due to edge and upwind blockage effects.

The methodology used for this wind tunnel study met or exceeded the requirements stated in the ASCE, "Manual of Practice for Wind Tunnel Studies of Buildings and Structures", Manual Number 67, American Society of Civil Engineers, 1999.

Quality Assurance

RWDI considers quality to be an important part of every project. Consequently, our general Quality Control Policy contains the following requirements that are tailored specifically to each project:

- Each project must have a Project Director that is a Principal and/or Specialist whose role is to provide the overall technical direction and leadership and to ensure quality of services is provided. If the Project Director is not the technical expert in a certain area, a Technical Director will be assigned to provide technical direction.

- Each project must have a Project Manager whose role is the primary contact between the Client and the internal team and will ensure that the scope and quality of the services provided are consistent with the proposed objectives and schedule.
- The Project Director / Project Manager will define the scope of work and schedule for each activity in the work program to ensure that all team members are clear on project requirements.
- The Project Manager is supported technically by the Project Director and a Senior Engineer / Coordinator whose main responsibility is to provide technical guidance to the Technical Coordinator(s) performing the work and to conduct quality control reviews at pre-specified intervals throughout the process.
- RWDI project teams are comprised of RWDI staff, and have been selected based on their abilities to provide the specific expertise required to conduct thorough and comprehensive studies.
- Regular team meetings are used to facilitate coordination and information exchange.
- Where appropriate, standardized procedures are applied for completion of technical activities.
- Every study must undergo a review process during which QA/QC check sheets are used to facilitate a review of the work. Forms are developed, signed and dated by every team member upon completion of their critical task. The Senior Specialists and/or Project Director for the project will sign and date the forms once the quality review has been completed and they are satisfied that the level of quality is up to RWDI's standards.

3.2 Local Climate

Average wind speeds in San Francisco are the highest in the summer and lowest in winter. However the strongest peak winds occur in winter. On a daily basis, the highest average wind speeds occur in mid-afternoon and the lowest in the early morning. Westerly to northwesterly winds are the most frequent and strongest winds during all seasons.

Data describing the speed, direction, and frequency of occurrence of winds were gathered at the old San Francisco Federal Building at 50 United Nations Plaza (at a height of 132 feet) during the period of 1945 to 1950. Measurements taken hourly and averaged over one minute have been tabulated in three-hour periods using seven classes of wind speed and 16 compass directions. Analysis of these data shows that during the hours from 6:00 a.m. to 8:00 p.m., about 65% of all winds blow from four of the 16 directions as follows: Northwest (NW), 14%; West-Northwest (WNW), 28%; West (W), 19%; West-Southwest (WSW), 4%; and all other winds account for 35%. Calm conditions occur 4.9% of the time. More than 90% of measured winds over 13 mph blow from these four wind directions. Of the primary wind directions, four have the greatest frequency of occurrence and make up the majority of the strong winds that occur. These winds include the northwest, west-northwest, west and west-southwest.

3.3 San Francisco Planning Code Requirements

This project is located in an area that is subject to the San Francisco Planning Code Section 148, Reduction of Ground-level Wind Currents in C-3 Districts. The Code specifically outlines wind reduction

criteria for the C-3 District. This assessment is performed using the wind testing analysis and evaluation methods to determine conformity with the Code. These requirements are further described in Appendix B.

The Planning Code requires buildings to be shaped so as not to cause ground-level wind currents to exceed defined comfort and hazard criteria. The comfort criteria are that wind speeds will not exceed, more than 10% of the time, 11 mph in substantial pedestrian use areas, and 7 mph in public seating areas. Similarly, the hazard criterion of the Code requires that buildings not cause equivalent wind speeds to reach or exceed the hazard level of 26 mph as averaged from a single full hour of the year. The hazard criterion is based on winds that are measured for one hour and averaged corresponding to a one-minute average of 36 mph, to distinguish between the wind comfort conditions and hazardous winds. The Planning Code defines these wind speeds in terms of equivalent wind speeds, and average wind speed (mean velocity), adjusted to include the level of gustiness and turbulence.

The equivalent wind speeds were calculated according to the specifications in the San Francisco Planning Code Section 14.8, whereby the mean hourly wind speed is increased when the turbulence intensity is greater than 15% according to the following formula [3, 4]:

$$EWS = Vm(2*TI+0.7)$$

Where: EWS = equivalent wind speed
Vm = mean pedestrian-level wind speed
TI = turbulence intensity

3.4 Cumulative Configuration

Anticipated proposed/future buildings are located to the south (TJPA "Parcel F", 524 Howard Street, 41 Tehama St., 181 Fremont Street, and six un-named projects in "Zone 1"), to the west (176 Second St, Howard (N.Side), 222 Second St., 2d/Howard (SE)), and to the north (Golden Gate University Site, 50 First Street).

Projects in the Cumulative Setting

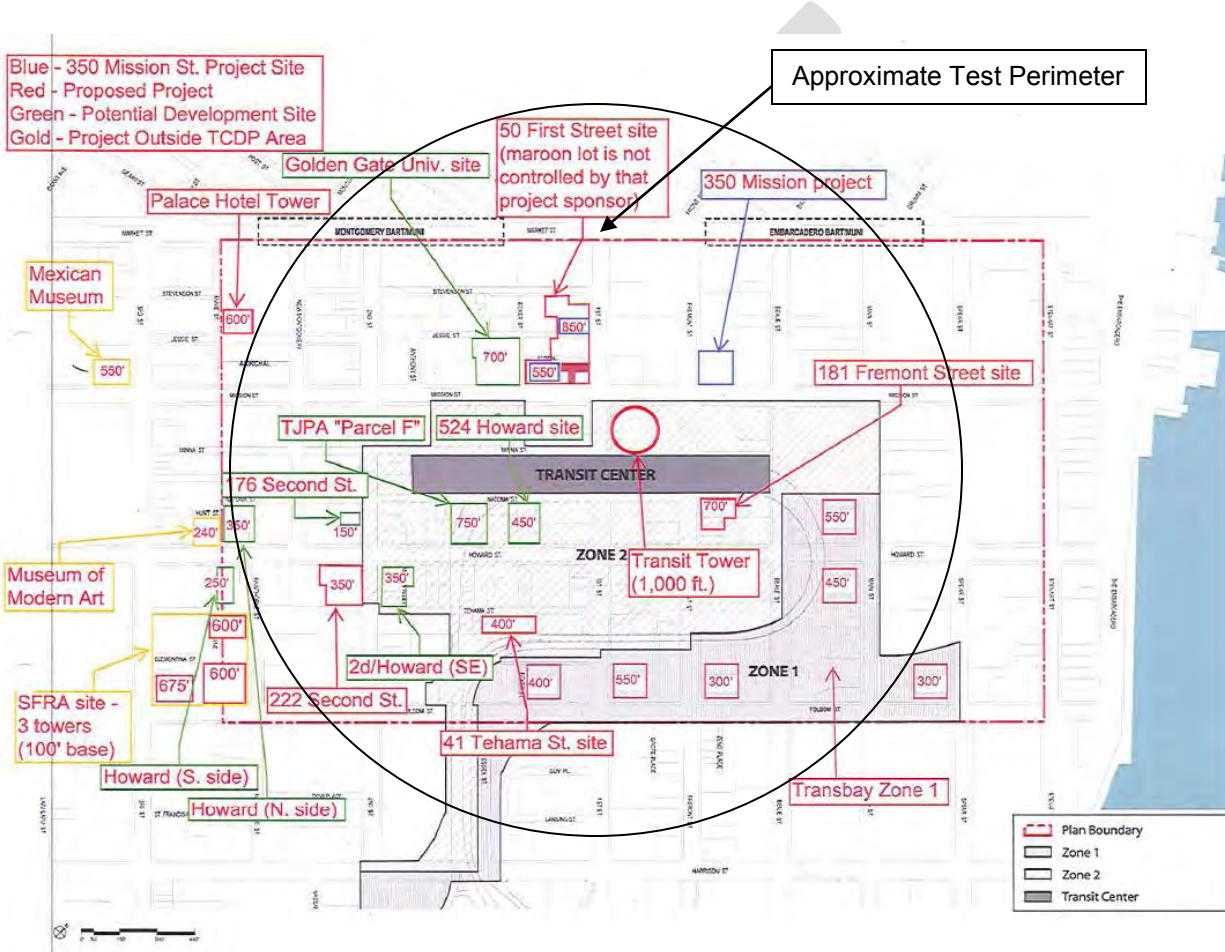


Figure Provided by ESA | Environmental Science Associates

For the Cumulative Configuration, a total of 16 new towers were added to the wind tunnel model, creating a considerable blockage effect in the wind tunnel. One potential impact of this effect is to induce higher wind speeds closer to the outer edge of the model (i.e., between the side walls of the wind tunnel and the large building mass at the center of the model disk). In addition, for the west and west-southwest winds, the sensors on the outer disk were close to the windward edge of the disk and there were not enough upwind buildings to provide shelter as in the actual city setting. Therefore, in the current study, sensors that were originally placed on the outer model disk due to the unusually large size of the Transit Center

(i.e., along 2nd Street, Natoma Street, and Minna Street) were removed to ensure the quality of measurement results presented in this report.

Note that this study involved advanced measurement and analysis techniques to predict wind conditions on and around the development site. Some uncertainty remains in predicting wind comfort and hazard, and this must be kept in mind. For example, the sensation of comfort among individuals can be quite variable. Unforeseen changes in the project area can affect the conditions experienced at the site. Finally, the prediction of wind speeds is necessarily a statistical procedure. The wind speeds reported are for the frequency of occurrence stated (10% of the time or once per year). Higher wind speeds will occur but on a less frequent basis. Any conclusion drawn from a wind tunnel study should be based on not only the comparison of results against the city ordinance and guidelines, but also comparisons of the wind results between various development configurations.

4. TEST RESULTS

Table 1, located in the tables section of this report, presents the wind comfort results for the three development configurations tested. For each measurement point, the measured 10% exceeded (90th percentile) equivalent wind speed and the percentage of time that the wind speed exceeds 11 mph is shown for areas considered to be used primarily for walking. A lower-speed criterion (7 mph exceeded 10% of the time) can also be considered, which applies to “seating” areas, and in most cases refers to publicly accessible (although often privately owned) open spaces with passive pedestrian activities intended.

Table 2 presents the wind hazard results, and lists the predicted wind speed to be exceeded one hour per year. The predicted number of hours per year that the Section 148 wind hazard criterion (one minute wind speed of 36 mph) is exceeded is also provided.

Wind speed measurements were taken at 171 locations for the Existing Configuration, and 206 locations for the Existing plus Project and Project plus Cumulative Configurations. Measurement locations were also included on the roof of the Transbay Transit Terminal (Locations 25 through 74). Figures 2a through 2c depict the sensor locations on and around the project site. Discussions regarding building and sensor locations and direction refer to “Project North”, while wind directionality refers to “True North”.

4.1 Wind Comfort Conditions

Existing Conditions

For the Existing Configuration in the vicinity of the project site, wind activity was generally high with wind speeds averaging 9 mph, and the average percentage of time winds exceed the 11 mph comfort criteria at 5%. The highest wind speeds occurred between Mission and Minna Streets (20 mph at Location 150 in Table 1 and Figure 2b). These high wind speeds were caused by winds downwashing and accelerating between the existing buildings west of the proposed Transbay Tower. Wind speeds at 79 of the 171 test locations currently exceed the Planning Code's 7 and 11 mph pedestrian comfort criteria. For the Existing Configuration, of the 14 test locations immediately adjacent to the project site (Locations 1, 5, 8, 12, 14,

and 16 through 24 in Figure 2c) the 10% wind speeds range from 8 to 16 mph, with ten (Locations 1, 8, 12, 14, 16 through 19, 22 and 24) exceeding pedestrian comfort criterion.

Existing plus Project

For the Existing plus Project Configuration, wind speeds were generally similar to those recorded in the Existing Configuration with average wind speeds increasing slightly from 9 mph to 10 mph. The number of comfort criterion exceedances increased to 101 out of 206 sensor locations. The highest wind speed remained between Mission Street and Minna Street (19 mph at Locations 150 and 151). At test locations adjacent to the project (Locations 1 through 24 in Figure 2c), the 10% wind speeds ranged from 8 to 14 mph, with 20 of the 24 locations exceeding the 7 mph, and 11 mph pedestrian comfort criteria. Overall, the percent of time the winds exceeded 11 mph increased from 5% in the Existing Configuration, to 9% of the time in the Existing plus Project Configuration.

Project plus Cumulative

With the Project plus Cumulative Configuration in place, winds generally increased from the Existing Configuration and the Existing plus Project Configuration; the average wind speed for all test locations increased to 11 mph with winds exceeding the 11 mph criteria for 11% of the time. The highest wind speed area occurred on the top west side of the Transbay Transit Center (20 mph at Location 28). Of the 24 test locations around the project site (Figure 2c), 21 locations had winds that exceeded the pedestrian comfort criteria stipulated in the Planning Code. In the vicinity of the proposed project, wind speeds ranged from 8 to 15 mph, similar to those recorded in the other two configurations. With the Project plus Cumulative Configuration in place, the number of exceedances of the comfort criteria increased from the Existing and Existing plus Project Configurations from 79 out of 171, and 101 out of 206, to 117 out of 206. There was an average speed increase relative to existing conditions of 2 mph.

Summary of Pedestrian Wind Comfort

Overall, as indicated in Table 1, wind conditions were similar for the Existing and Existing plus Project Configurations, with an increase in the number of wind speed exceedances occurring around the tower. This increase was also observed for the Project plus Cumulative Configuration. The average wind speeds increased slightly from the Existing and Existing plus Project Configurations as well as for the Project plus Cumulative Configuration.

4.2 Wind Hazard Conditions

Existing

As indicated in Table 2, all test locations currently meet the wind hazard criterion. The average wind speed exceeded was 18 mph for the Existing Configuration.

Existing plus Project

All test locations met the wind hazard criterion for the Existing plus Project Configuration and the average wind speed exceeded was 19 mph.

Project plus Cumulative

The addition of the cumulative developments resulted in one additional hazardous wind exceedance. This hazardous wind condition was observed on the east side of 1st Street north of Mission Street (Location 101 in Table 2 and Figure 2b). The strong winds in this area were primarily caused by the predominant northwest winds accelerating around the southwest building at the corner of 1st Street and Market Street, and the northwest winds channelling between the buildings on 1st Street. As indicated at the bottom of Table 2, the average wind speed exceeded was 20 mph, slightly higher than those for the Existing (18 mph) and the Existing plus Project (19 mph) Configurations.

4.3 Recommendations

If improved wind comfort is desired at seating areas or areas where passive activities are anticipated, wind mitigation in the form of landscaping, trellises, and/or wind screens could be considered to provide localized protection from the wind (see Images 1 through 4). In addition, the massing of proposed future buildings could be refined (e.g., shape, orientation, tower setbacks, etc.) in an effort to further improve predicted wind conditions for the Project plus Cumulative Configuration.

For the wind hazard exceedance in the Project plus Cumulative Configuration (Location 101 in Figure 2b), wind mitigation should be further investigated during the design of the future building on the west side of 1st Street which is the primary cause for these strong wind conditions.

The model tested in the wind tunnel used the City of San Francisco's standard testing methodology, which does not account for the street furniture, landscaping, etc. present in the area. Depending on the placement and density of such elements, the wind comfort conditions recorded could be improved to be suitable for the intended usage at all but the most extreme cases. The impact of these elements in wind reduction tends to be localized, whereas high wind speeds were predicted in areas both near, and away from the development site. Therefore, it was determined that the potential for effective on-site wind control measures to reduce wind speeds off-site, was limited.

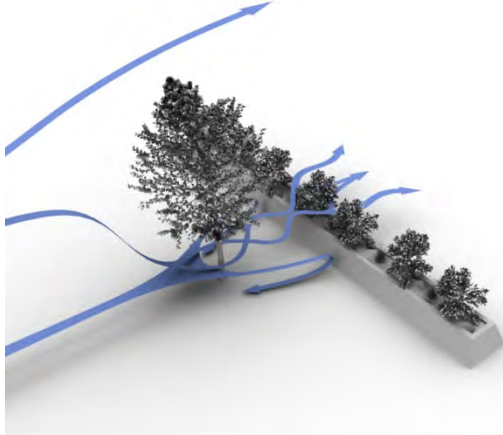


Image 1 – Landscaping



Image 2 – Landscaping on the existing site of the Transit Center Tower building (Image Courtesy of Google Earth™)

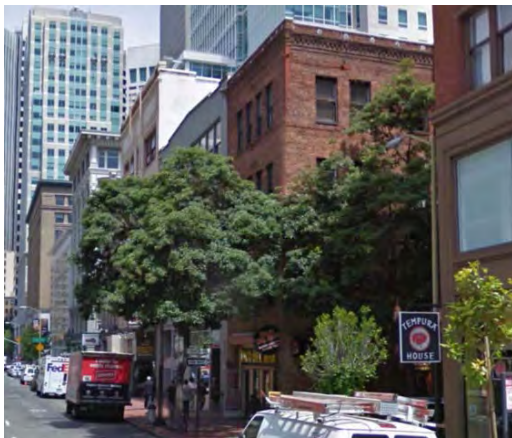


Image 3 – Landscaping at the corner of 2nd Street & Natoma Street (Image Courtesy of Google Earth™)



Image 4 – Example Wind Screen / Shelter

5. APPLICABILITY OF RESULTS

The results presented in this report pertain to the model of the proposed Transbay Tower and a portion of the Transit Center District Plan development constructed using the architectural design drawings listed in Appendix A. Should there be design changes that deviate from this list of drawings, the results presented may change. Therefore, if substantial changes in the design are made, it is recommended that RWDI be contacted and requested to review their potential effects on wind conditions.

6. REFERENCES

- [1] Irwin, H.P.A.H. (1981), "A simple omni-directional sensor for wind-tunnel studies of pedestrian-level winds", *Journal of Wind Engineering and Industrial Aerodynamics*, vol. 7, pp 219-239.
- [2] ASCE Task Committee on Outdoor Human Comfort (2004). *Outdoor Human Comfort and Its Assessment*, 68 pages, American Society of Civil Engineers, Reston, Virginia, USA.
- [3] Arens, E., Ballanti, D, Bennet, C., Guldman, S. And White, B. (1989), "Developing the San Francisco wind ordinance and its guidelines for compliance", *Building and Environment*, vol 24(4), pp 297-303
- [4] White, B.R. (1992), "Analysis and wind tunnel simulation of pedestrian level winds in San Francisco", *Journal of Wind Engineering and Industrial Aerodynamics*, vol. 41-44, pp 2353-2364.
- [5] Irwin, P.A. (1981), *The Design of Spires for Wind Simulation*, *Journal of Wind Engineering and Industrial Aerodynamics*, vol. 7, pp. 361-366.

TABLES

Table 1: Comfort Results

References		Existing			Existing plus Project				Project plus Cumulative			
Location Number	Comfort Criterion Speed (mph)	Wind Speed Exceeded 10% of Time (mph)	Percent of Time Wind Speed Exceeds 11mph	exceeds	Wind Speed Exceeded 10% of Time (mph)	Percent of Time Wind Speed Exceeds 11mph	Speed Change Relative to Existing (mph)	exceeds	Wind Speed Exceeded 10% of Time (mph)	Percent of Time Wind Speed Exceeds 11mph	Speed Change Relative to Existing (mph)	exceeds
1	11	12	14%	e	14	24%	2	e	15	25%	3	e
2	7	-	-		14	23%	-	e	13	20%	-	e
3	7	-	-		9	4%	-	e	9	4%	-	e
4	7	-	-		11	10%	-	e	10	6%	-	e
5	11	10	6%		13	20%	3	e	12	14%	2	e
6	11	-	-		13	21%	-	e	13	20%	-	e
7	11	-	-		13	19%	-	e	13	21%	-	e
8	11	13	15%	e	13	19%	0	e	13	20%	0	e
9	11	-	-		12	13%	-	e	13	19%	-	e
10	11	-	-		10	5%	-		12	13%	-	e
11	7	-	-		14	24%	-	e	14	25%	-	e
12	7	11	10%	e	13	19%	2	e	13	17%	2	e
13	7	-	-		14	21%	-	e	11	10%	-	e
14	7	9	4%	e	12	12%	3	e	9	4%	0	e
15	7	-	-		9	3%	-	e	9	4%	-	e
16	7	11	10%	e	9	2%	-2	e	8	2%	-3	e
17	7	11	10%	e	9	2%	-2	e	8	3%	-3	e
18	7	11	10%	e	8	1%	-3	e	8	1%	-3	e
19	7	11	10%	e	9	2%	-2	e	8	1%	-3	e
20	11	10	6%		13	19%	3	e	12	14%	2	e
21	11	8	1%		10	7%	2		9	4%	1	
22	11	12	12%	e	12	15%	0	e	11	10%	-1	
23	11	9	2%		9	3%	0		9	3%	0	
24	11	16	29%	e	11	10%	-5		13	18%	-3	e
25	7	11	10%	e	13	20%	2	e	17	35%	6	e
26	7	8	1%	e	10	6%	2	e	15	25%	7	e
27	7	9	2%	e	12	12%	3	e	19	39%	10	e
28	7	9	2%	e	11	10%	2	e	20	42%	11	e
29	7	7	0%		6	0%	-1		12	13%	5	e
30	7	7	0%		6	0%	-1		12	14%	5	e

Table 1: Comfort Results

References		Existing			Existing plus Project			Project plus Cumulative				
Location Number	Comfort Criterion Speed (mph)	Wind Speed Exceeded 10% of Time (mph)	Percent of Time Wind Speed Exceeds 11mph	exceeds	Wind Speed Exceeded 10% of Time (mph)	Percent of Time Wind Speed Exceeds 11mph	Speed Change Relative to Existing (mph)	exceeds	Wind Speed Exceeded 10% of Time (mph)	Percent of Time Wind Speed Exceeds 11mph	Speed Change Relative to Existing (mph)	exceeds
31	7	8	1%	e	9	3%	1	e	15	27%	7	e
32	7	8	1%	e	6	0%	-2		9	2%	1	e
33	7	8	0%	e	7	0%	-1		15	25%	7	e
34	7	8	1%	e	9	2%	1	e	19	37%	11	e
35	7	7	0%		8	1%	1	e	19	37%	12	e
36	7	8	1%	e	7	0%	-1		14	22%	6	e
37	7	8	1%	e	7	1%	-1		16	30%	8	e
38	7	8	2%	e	7	0%	-1		14	19%	6	e
39	7	7	0%		7	1%	0		17	32%	10	e
40	7	8	2%	e	8	1%	0	e	15	26%	7	e
41	7	8	3%	e	9	3%	1	e	13	18%	5	e
42	7	8	1%	e	7	1%	-1		16	27%	8	e
43	7	8	1%	e	7	1%	-1		17	31%	9	e
44	7	9	5%	e	11	10%	2	e	14	21%	5	e
45	7	9	3%	e	10	6%	1	e	12	14%	3	e
46	7	9	4%	e	8	1%	-1	e	14	22%	5	e
47	7	8	2%	e	10	5%	2	e	14	20%	6	e
48	7	9	3%	e	11	10%	2	e	7	1%	-2	
49	7	9	2%	e	13	18%	4	e	12	13%	3	e
50	7	10	7%	e	14	22%	4	e	10	6%	0	e
51	7	9	5%	e	13	18%	4	e	13	18%	4	e
52	7	10	6%	e	14	20%	4	e	13	19%	3	e
53	7	9	2%	e	11	10%	2	e	10	4%	1	e
54	7	8	1%	e	10	6%	2	e	8	1%	0	e
55	7	10	6%	e	13	19%	3	e	13	16%	3	e
56	7	10	6%	e	12	15%	2	e	11	10%	1	e
57	7	8	1%	e	10	6%	2	e	10	5%	2	e
58	7	9	2%	e	10	8%	1	e	10	7%	1	e
59	7	8	1%	e	12	16%	4	e	11	10%	3	e
60	7	11	10%	e	12	12%	1	e	10	9%	-1	e

Table 1: Comfort Results

References		Existing			Project			Cumulative				
Location Number	Comfort Criterion Speed (mph)	Wind Speed Exceeded 10% of Time (mph)	Percent of Time Wind Speed Exceeds 11mph	exceeds	Wind Speed Exceeded 10% of Time (mph)	Percent of Time Wind Speed Exceeds 11mph	Speed Change Relative to Existing (mph)	exceeds	Wind Speed Exceeded 10% of Time (mph)	Percent of Time Wind Speed Exceeds 11mph	Speed Change Relative to Existing (mph)	exceeds
61	7	8	1%	e	8	1%	0	e	8	2%	0	e
62	7	10	6%	e	12	13%	2	e	11	10%	1	e
63	7	10	5%	e	12	15%	2	e	13	15%	3	e
64	7	11	10%	e	13	19%	2	e	13	15%	2	e
65	7	8	0%	e	4	0%	-4	e	5	0%	-3	e
66	7	9	2%	e	12	14%	3	e	12	13%	3	e
67	7	10	6%	e	12	16%	2	e	12	12%	2	e
68	7	6	0%	e	8	1%	2	e	6	0%	0	e
69	7	8	1%	e	10	5%	2	e	11	10%	3	e
70	7	9	2%	e	12	14%	3	e	12	12%	3	e
71	7	9	2%	e	11	10%	2	e	10	6%	1	e
72	7	8	2%	e	7	0%	-1	e	6	0%	-2	e
73	7	12	13%	e	10	7%	-2	e	10	9%	-2	e
74	7	10	7%	e	12	13%	2	e	10	4%	0	e
75	11	5	0%	e	4	0%	-1	e	7	0%	2	e
76	11	11	10%	e	9	4%	-2	e	10	5%	-1	e
77	11	9	2%	e	7	1%	-2	e	7	0%	-2	e
78	11	8	1%	e	6	0%	-2	e	6	0%	-2	e
79	11	6	0%	e	7	1%	1	e	8	1%	2	e
80	11	7	0%	e	8	1%	1	e	9	3%	2	e
81	11	7	1%	e	7	1%	0	e	10	4%	3	e
82	11	7	1%	e	4	0%	-3	e	4	0%	-3	e
83	7	-	-	e	13	16%	-	e	13	16%	-	e
84	7	8	1%	e	11	10%	3	e	13	17%	5	e
85	7	11	10%	e	11	10%	0	e	11	10%	0	e
86	7	11	10%	e	13	16%	2	e	14	22%	3	e
87	11	7	0%	e	10	8%	3	e	10	7%	3	e
88	11	9	3%	e	7	1%	-2	e	13	18%	4	e
89	11	8	1%	e	9	2%	1	e	11	10%	3	e
90	11	8	1%	e	9	3%	1	e	12	13%	4	e

Table 1: Comfort Results

References		Existing		exceeds	Existing plus Project			exceeds	Project plus Cumulative			exceeds
Location Number	Comfort Criterion Speed (mph)	Wind Speed Exceeded 10% of Time (mph)	Percent of Time Wind Speed Exceeds 11mph		Wind Speed Exceeded 10% of Time (mph)	Percent of Time Wind Speed Exceeds 11mph	Speed Change Relative to Existing (mph)		Wind Speed Exceeded 10% of Time (mph)	Percent of Time Wind Speed Exceeds 11mph	Speed Change Relative to Existing (mph)	
91	11	9	4%		8	2%	-1	9	2%	0		
92	11	9	4%		9	4%	0	8	3%	-1		
93	11	11	10%		10	6%	-1	9	5%	-2		
94	11	11	10%		12	15%	1	10	7%	-1		
95	11	10	8%		11	10%	1	11	10%	1		
96	11	14	22%	e	15	25%	1	14	23%	0	e	
97	11	-	-		10	4%	-	9	4%	-		
98	11	-	-		11	10%	-	13	17%	-	e	
99	11	-	-		11	10%	-	14	19%	-	e	
100	11	-	-		9	5%	-	12	15%	-	e	
101	7	-	-		15	22%	-	18	37%	-	e	
102	11	-	-		10	8%	-	14	19%	-	e	
103	7	-	-		9	2%	-	8	1%	-	e	
104	7	-	-		17	34%	-	17	34%	-	e	
105	11	-	-		14	20%	-	13	19%	-	e	
106	11	-	-		17	34%	-	17	35%	-	e	
107	7	-	-		13	17%	-	12	16%	-	e	
108	11	-	-		9	2%	-	8	2%	-		
109	11	-	-		14	25%	-	12	15%	-	e	
110	11	-	-		10	5%	-	10	4%	-		
111	11	11	10%		14	23%	3	13	20%	2	e	
112	11	10	7%		12	14%	2	11	10%	1		
113	11	11	10%		12	15%	1	10	5%	-1		
114	11	10	5%		10	6%	0	8	3%	-2		
115	11	10	7%		10	6%	0	9	3%	-1		
116	11	8	1%		7	0%	-1	8	1%	0		
117	11	11	10%		9	4%	-2	9	3%	-2		
118	11	9	4%		8	3%	-1	11	10%	2		
119	11	9	4%		9	6%	0	11	10%	2		
120	11	7	0%		7	0%	0	9	3%	2		

Table 1: Comfort Results

References		Existing		exceeds	Project			exceeds	Cumulative			exceeds
Location Number	Comfort Criterion Speed (mph)	Wind Speed Exceeded 10% of Time (mph)	Percent of Time Wind Speed Exceeds 11mph		Wind Speed Exceeded 10% of Time (mph)	Percent of Time Wind Speed Exceeds 11mph	Speed Change Relative to Existing (mph)		Wind Speed Exceeded 10% of Time (mph)	Percent of Time Wind Speed Exceeds 11mph	Speed Change Relative to Existing (mph)	
121	7	9	4%	e	11	10%	2	11	10%	2	e	
122	11	8	1%		11	10%	3	11	10%	3		
123	11	9	2%		11	10%	2	7	0%	-2		
124	7	10	5%	e	10	5%	0	7	0%	-3		
125	11	7	0%		6	0%	-1	5	0%	-2		
126	11	11	10%		8	1%	-3	7	0%	-4		
127	11	8	1%		8	1%	0	6	0%	-2		
128	11	13	14%	e	6	1%	-7	7	1%	-6		
129	11	8	1%		8	1%	0	7	0%	-1		
130	11	13	16%	e	7	1%	-6	8	2%	-5		
131	11	8	4%		4	0%	-4	4	0%	-4		
132	11	13	10%	e	7	1%	-6	8	2%	-5		
133	11	11	10%		6	1%	-5	7	1%	-4		
134	11	13	10%	e	8	1%	-5	6	0%	-7		
135	11	8	2%		9	3%	1	6	0%	-2		
136	11	12	10%	e	9	4%	-3	9	3%	-3		
137	11	15	23%	e	6	0%	-9	7	1%	-8		
138	7	14	20%	e	11	10%	-3	9	6%	-5	e	
139	11	15	23%	e	10	7%	-5	8	4%	-7		
140	11	-	-		10	5%	-	8	2%	-		
141	11	11	10%		10	7%	-1	9	3%	-2		
142	11	10	8%		10	4%	0	8	1%	-2		
143	11	-	-		12	16%	-	9	4%	-		
144	11	-	-		10	7%	-	9	4%	-		
145	11	-	-		13	17%	-	12	14%	-	e	
146	11	12	14%	e	14	21%	2	16	30%	4	e	
147	11	-	-		13	16%	-	18	36%	-	e	
148	11	16	31%	e	14	22%	-2	16	32%	0	e	
149	11	24	49%	e	19	-45%	-8	18	37%	-6	e	
150	7	20	42%	e	19	42%	-1	17	35%	-3	e	

Table 1: Comfort Results

References		Existing			Existing plus Project				Project plus Cumulative			
Location Number	Comfort Criterion Speed (mph)	Wind Speed Exceeded 10% of Time (mph)	Percent of Time Wind Speed Exceeds 11mph	exceeds	Wind Speed Exceeded 10% of Time (mph)	Percent of Time Wind Speed Exceeds 11mph	Speed Change Relative to Existing (mph)	exceeds	Wind Speed Exceeded 10% of Time (mph)	Percent of Time Wind Speed Exceeds 11mph	Speed Change Relative to Existing (mph)	exceeds
151	7	18	37%	e	19	41%	1	e	17	34%	-1	e
152	7	16	29%	e	17	35%	1	e	17	37%	1	e
153	11	9	2%		9	3%	0		9	2%	0	
154	11	9	4%		10	6%	1		14	20%	5	e
155	11	12	12%	e	12	15%	0	e	15	24%	3	e
156	11	10	4%		9	3%	-1		13	19%	3	e
157	11	8	1%		8	2%	0		11	10%	3	
158	11	8	1%		8	1%	0		11	10%	3	
159	11	10	5%		13	17%	3	e	13	19%	3	e
160	11	9	3%		7	1%	-2		11	10%	2	
161	11	8	3%		7	0%	-1		11	10%	3	
162	11	10	8%		6	0%	-4		8	2%	-2	
163	11	10	4%		7	0%	-3		7	1%	-3	
164	11	14	10%	e	10	7%	-4		8	4%	-6	
165	11	8	1%		5	0%	-3		9	3%	1	
166	11	10	6%		11	10%	1		19	42%	9	e
167	11	8	1%		6	0%	-2		16	30%	8	e
168	11	10	5%		12	14%	2	e	17	34%	7	e
169	11	8	1%		9	3%	1		19	39%	11	e
170	11	7	0%		7	1%	0		14	22%	7	e
171	11	7	0%		8	2%	1		13	18%	6	e
172	11	6	0%		8	1%	2		10	4%	4	
173	11	5	0%		7	0%	2		11	10%	6	
174	11	7	0%		9	3%	2		12	13%	5	e
175	11	6	0%		8	1%	2		12	14%	6	e
176	11	6	0%		5	0%	-1		9	2%	3	
177	11	6	0%		6	0%	0		11	10%	5	
178	11	8	1%		7	0%	-1		10	5%	2	
179	11	16	28%	e	17	36%	1	e	11	10%	-5	
180	11	10	6%		10	4%	0		15	24%	5	e

Table 1: Comfort Results

References		Existing		exceeds	Project			exceeds	Cumulative			exceeds
Location Number	Comfort Criterion Speed (mph)	Wind Speed Exceeded 10% of Time (mph)	Percent of Time Wind Speed Exceeds 11mph		Wind Speed Exceeded 10% of Time (mph)	Percent of Time Wind Speed Exceeds 11mph	Speed Change Relative to Existing (mph)		Wind Speed Exceeded 10% of Time (mph)	Percent of Time Wind Speed Exceeds 11mph	Speed Change Relative to Existing (mph)	
181	11	11	10%		12	12%	1	e	10	7%	-1	
182	11	10	7%		14	22%	4	e	17	33%	7	e
183	11	6	0%		7	0%	1		6	0%	0	
184	7	9	5%	e	10	6%	1	e	7	1%	-2	
185	7	-	-		8	1%	-	e	8	2%	-	e
186	7	7	1%		8	1%	1	e	8	1%	1	e
187	7	7	0%		7	0%	0		6	0%	-1	
188	7	8	2%	e	9	3%	1	e	10	4%	2	e
189	11	6	0%		6	0%	0		4	0%	-2	
190	11	7	0%		7	0%	0		5	0%	-2	
191	11	7	0%		7	0%	0		6	0%	-1	
192	11	5	0%		6	0%	1		4	0%	-1	
193	11	7	0%		7	1%	0		6	0%	-1	
194	11	6	0%		6	0%	0		5	0%	-1	
195	11	7	0%		8	1%	1		7	1%	0	
196	11	6	0%		10	4%	4		7	1%	1	
197	7	-	-		9	2%	-	e	10	5%	-	e
198	11	6	0%		7	1%	1		8	1%	2	
199	11	6	0%		7	0%	1		10	5%	4	
200	11	9	4%		12	12%	3	e	4	0%	-5	
201	11	6	0%		6	0%	0		6	0%	0	
202	11	5	0%		5	0%	0		5	0%	0	
203	11	7	0%		5	0%	-2		4	0%	-3	
204	7	-	-		9	3%	-	e	11	10%	-	e
205	7	-	-		12	16%	-	e	13	17%	-	e
206	11	10	5%		12	12%	2	e	14	19%	4	e
207	7	-	-		11	10%	-	e	10	7%	-	e
Average mph and %		9 mph	5%		10 mph	9%	1 mph		11 mph	11%	2 mph	
Exceedances		Existing	79 of 171		Project		101 of 206		Cumulative		117 of 206	

Table 2: Wind Hazard Results

References		Existing		Project			Cumulative				
Location Number	Wind Speed Exceeded 1hour/year (mph)	Hours per Year Wind Speed Exceeds Hazard Criteria	Exceeds	Wind Speed Exceeded 1hour/year (mph)	Hours per Year Wind Speed Exceeds Hazard Criteria	Hours Change Relative to Existing	Exceeds	Wind Speed Exceeded 1hour/year (mph)	Hours per Year Wind Speed Exceeds Hazard Criteria	Hours Change Relative to Existing	Exceeds
1	21	<1		25	<1	0		25	<1	0	
2	-	-		26	<1	-		24	<1	-	
3	-	-		18	<1	-		24	<1	-	
4	-	-		20	<1	-		18	<1	-	
5	20	<1		24	<1	0		22	<1	0	
6	-	-		23	<1	-		25	<1	-	
7	-	-		23	<1	-		25	<1	-	
8	26	<1		22	<1	0		25	<1	0	
9	-	-		21	<1	-		23	<1	-	
10	-	-		18	<1	-		20	<1	-	
11	-	-		26	<1	-		28	<1	-	
12	19	<1		24	<1	0		24	<1	0	
13	-	-		26	<1	-		23	<1	-	
14	18	<1		22	<1	0		22	<1	0	
15	-	-		17	<1	-		23	<1	-	
16	21	<1		16	<1	0		19	<1	0	
17	19	<1		16	<1	0		19	<1	0	
18	21	<1		14	<1	0		14	<1	0	
19	21	<1		16	<1	0		15	<1	0	
20	20	<1		24	<1	0		22	<1	0	
21	16	<1		19	<1	0		17	<1	0	
22	27	<1		23	<1	0		24	<1	0	
23	16	<1		19	<1	0		17	<1	0	
24	30	<1		22	<1	0		25	<1	0	
25	22	<1		23	<1	0		30	<1	0	
26	17	<1		19	<1	0		25	<1	0	
27	20	<1		22	<1	0		32	<1	0	
28	19	<1		20	<1	0		35	<1	0	
29	13	<1		14	<1	0		20	<1	0	
30	12	<1		13	<1	0		21	<1	0	

Table 2: Wind Hazard Results

References		Existing		Project			Cumulative				
Location Number	Wind Speed Exceeded 1hour/year (mph)	Hours per Year Wind Speed Exceeds Hazard Criteria	Exceeds	Wind Speed Exceeded 1hour/year (mph)	Hours per Year Wind Speed Exceeds Hazard Criteria	Hours Change Relative to Existing	Exceeds	Wind Speed Exceeded 1hour/year (mph)	Hours per Year Wind Speed Exceeds Hazard Criteria	Hours Change Relative to Existing	Exceeds
31	14	<1		17	<1	0		26	<1	0	
32	13	<1		12	<1	0		16	<1	0	
33	15	<1		15	<1	0		28	<1	0	
34	15	<1		17	<1	0		33	<1	0	
35	14	<1		17	<1	0		33	<1	0	
36	14	<1		16	<1	0		24	<1	0	
37	14	<1		18	<1	0		28	<1	0	
38	16	<1		16	<1	0		24	<1	0	
39	14	<1		17	<1	0		29	<1	0	
40	16	<1		18	<1	0		27	<1	0	
41	20	<1		18	<1	0		24	<1	0	
42	15	<1		17	<1	0		27	<1	0	
43	15	<1		17	<1	0		29	<1	0	
44	19	<1		21	<1	0		25	<1	0	
45	17	<1		19	<1	0		21	<1	0	
46	18	<1		17	<1	0		25	<1	0	
47	15	<1		18	<1	0		24	<1	0	
48	17	<1		19	<1	0		16	<1	0	
49	15	<1		22	<1	0		20	<1	0	
50	19	<1		23	<1	0		21	<1	0	
51	18	<1		24	<1	0		22	<1	0	
52	19	<1		27	<1	0		23	<1	0	
53	16	<1		19	<1	0		16	<1	0	
54	15	<1		21	<1	0		15	<1	0	
55	19	<1		25	<1	0		23	<1	0	
56	19	<1		21	<1	0		20	<1	0	
57	15	<1		18	<1	0		18	<1	0	
58	16	<1		23	<1	0		18	<1	0	
59	15	<1		24	<1	0		20	<1	0	
60	19	<1		21	<1	0		19	<1	0	

Table 2: Wind Hazard Results

References		Existing		Project			Cumulative				
Location Number	Wind Speed Exceeded 1hour/year (mph)	Hours per Year Wind Speed Exceeds Hazard Criteria	Exceeds	Wind Speed Exceeded 1hour/year (mph)	Hours per Year Wind Speed Exceeds Hazard Criteria	Hours Change Relative to Existing	Exceeds	Wind Speed Exceeded 1hour/year (mph)	Hours per Year Wind Speed Exceeds Hazard Criteria	Hours Change Relative to Existing	Exceeds
61	14	<1		14	<1	0		15	<1	0	
62	18	<1		23	<1	0		20	<1	0	
63	17	<1		22	<1	0		24	<1	0	
64	19	<1		23	<1	0		23	<1	0	
65	13	<1		7	<1	0		8	<1	0	
66	16	<1		21	<1	0		22	<1	0	
67	18	<1		22	<1	0		22	<1	0	
68	12	<1		17	<1	0		12	<1	0	
69	15	<1		19	<1	0		20	<1	0	
70	17	<1		22	<1	0		22	<1	0	
71	16	<1		20	<1	0		18	<1	0	
72	16	<1		12	<1	0		11	<1	0	
73	25	<1		19	<1	0		19	<1	0	
74	20	<1		22	<1	0		17	<1	0	
75	10	<1		8	<1	0		13	<1	0	
76	19	<1		19	<1	0		18	<1	0	
77	16	<1		15	<1	0		13	<1	0	
78	15	<1		13	<1	0		10	<1	0	
79	11	<1		14	<1	0		14	<1	0	
80	13	<1		15	<1	0		16	<1	0	
81	14	<1		14	<1	0		17	<1	0	
82	17	<1		7	<1	0		7	<1	0	
83	-	-		24	<1	-		22	<1	-	
84	17	<1		20	<1	0		22	<1	0	
85	19	<1		20	<1	0		20	<1	0	
86	21	<1		25	<1	0		25	<1	0	
87	15	<1		19	<1	0		18	<1	0	
88	17	<1		13	<1	0		23	<1	0	
89	14	<1		15	<1	0		19	<1	0	
90	14	<1		16	<1	0		20	<1	0	

Table 2: Wind Hazard Results

References		Existing		Project			Cumulative				
Location Number	Wind Speed Exceeded 1hour/year (mph)	Hours per Year Wind Speed Exceeds Hazard Criteria	Exceeds	Wind Speed Exceeded 1hour/year (mph)	Hours per Year Wind Speed Exceeds Hazard Criteria	Hours Change Relative to Existing	Exceeds	Wind Speed Exceeded 1hour/year (mph)	Hours per Year Wind Speed Exceeds Hazard Criteria	Hours Change Relative to Existing	Exceeds
91	17	<1		15	<1	0		16	<1	0	
92	22	<1		17	<1	0		21	<1	0	
93	24	<1		18	<1	0		23	<1	0	
94	25	<1		25	<1	0		29	<1	0	
95	26	<1		20	<1	0		27	<1	0	
96	25	<1		25	<1	0		24	<1	0	
97	-	-		19	<1	-		22	<1	-	
98	-	-		25	<1	-		27	<1	-	
99	-	-		27	<1	-		30	<1	-	
100	-	-		25	<1	-		28	<1	-	
101	-	-		35	<1	-		37	3		e
102	-	-		22	<1	-		35	<1	-	
103	-	-		16	<1	-		14	<1	-	
104	-	-		29	<1	-		29	<1	-	
105	-	-		24	<1	-		22	<1	-	
106	-	-		30	<1	-		29	<1	-	
107	-	-		22	<1	-		21	<1	-	
108	-	-		16	<1	-		16	<1	-	
109	-	-		26	<1	-		23	<1	-	
110	-	-		18	<1	-		18	<1	-	
111	19	<1		26	<1	0		24	<1	0	
112	21	<1		24	<1	0		19	<1	0	
113	19	<1		22	<1	0		21	<1	0	
114	18	<1		18	<1	0		19	<1	0	
115	18	<1		19	<1	0		20	<1	0	
116	13	<1		13	<1	0		16	<1	0	
117	19	<1		19	<1	0		16	<1	0	
118	17	<1		18	<1	0		21	<1	0	
119	17	<1		20	<1	0		21	<1	0	
120	12	<1		13	<1	0		17	<1	0	

Table 2: Wind Hazard Results

References		Existing		Project			Cumulative				
Location Number	Wind Speed Exceeded 1hour/year (mph)	Hours per Year Wind Speed Exceeds Hazard Criteria	Exceeds	Wind Speed Exceeded 1hour/year (mph)	Hours per Year Wind Speed Exceeds Hazard Criteria	Hours Change Relative to Existing	Exceeds	Wind Speed Exceeded 1hour/year (mph)	Hours per Year Wind Speed Exceeds Hazard Criteria	Hours Change Relative to Existing	Exceeds
121	18	<1		22	<1	0		21	<1	0	
122	16	<1		19	<1	0		21	<1	0	
123	16	<1		19	<1	0		13	<1	0	
124	19	<1		19	<1	0		14	<1	0	
125	13	<1		11	<1	0		9	<1	0	
126	24	<1		15	<1	0		13	<1	0	
127	15	<1		15	<1	0		11	<1	0	
128	27	<1		16	<1	0		16	<1	0	
129	15	<1		15	<1	0		13	<1	0	
130	27	<1		18	<1	0		17	<1	0	
131	18	<1		8	<1	0		8	<1	0	
132	27	<1		17	<1	0		18	<1	0	
133	24	<1		15	<1	0		16	<1	0	
134	28	<1		15	<1	0		13	<1	0	
135	16	<1		16	<1	0		12	<1	0	
136	27	<1		20	<1	0		18	<1	0	
137	30	<1		12	<1	0		15	<1	0	
138	30	<1		22	<1	0		22	<1	0	
139	31	<1		18	<1	0		20	<1	0	
140	-	-		17	<1	-		18	<1	-	
141	31	<1		21	<1	0		20	<1	0	
142	23	<1		17	<1	0		14	<1	0	
143	-	-		24	<1	-		19	<1	-	
144	-	-		19	<1	-		20	<1	-	
145	-	-		23	<1	-		21	<1	-	
146	21	<1		24	<1	0		28	<1	0	
147	-	-		24	<1	-		35	<1	-	
148	29	<1		24	<1	0		28	<1	0	
149	-	-	-	-	-	-		-	-	-	
150	34	<1		33	<1	0		29	<1	0	

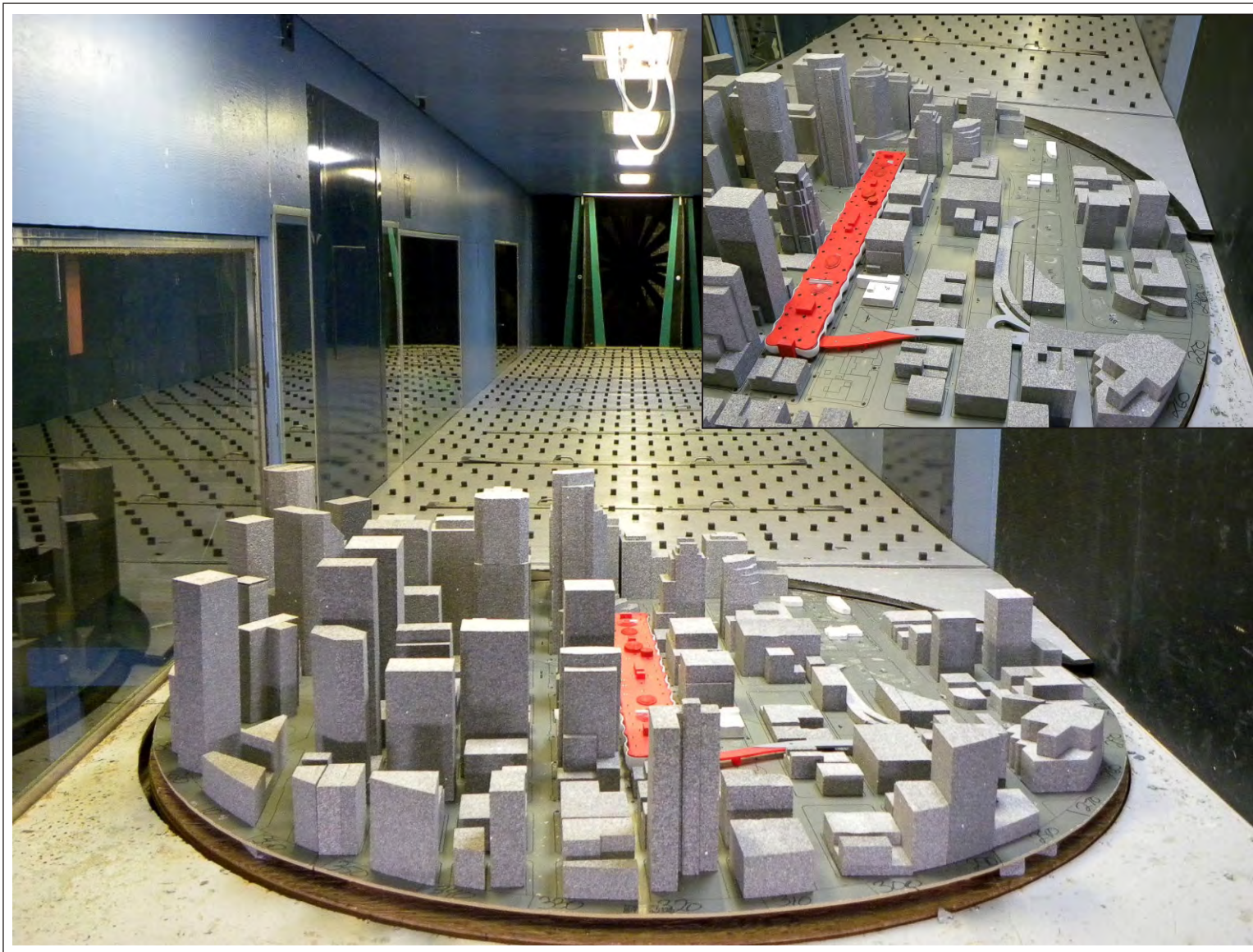
Table 2: Wind Hazard Results

References		Existing		Project			Cumulative				
Location Number	Wind Speed Exceeded 1hour/year (mph)	Hours per Year Wind Speed Exceeds Hazard Criteria	Exceeds	Wind Speed Exceeded 1hour/year (mph)	Hours per Year Wind Speed Exceeds Hazard Criteria	Hours Change Relative to Existing	Exceeds	Wind Speed Exceeded 1hour/year (mph)	Hours per Year Wind Speed Exceeds Hazard Criteria	Hours Change Relative to Existing	Exceeds
151	31	<1		35	<1	0		30	<1	0	
152	28	<1		31	<1	0		30	<1	0	
153	15	<1		17	<1	0		16	<1	0	
154	17	<1		19	<1	0		24	<1	0	
155	20	<1		23	<1	0		26	<1	0	
156	17	<1		18	<1	0		24	<1	0	
157	13	<1		16	<1	0		20	<1	0	
158	15	<1		14	<1	0		21	<1	0	
159	18	<1		22	<1	0		23	<1	0	
160	18	<1		14	<1	0		21	<1	0	
161	19	<1		12	<1	0		19	<1	0	
162	25	<1		13	<1	0		18	<1	0	
163	18	<1		14	<1	0		15	<1	0	
164	26	<1		20	<1	0		24	<1	0	
165	14	<1		10	<1	0		16	<1	0	
166	18	<1		20	<1	0		33	<1	0	
167	15	<1		11	<1	0		28	<1	0	
168	18	<1		21	<1	0		30	<1	0	
169	15	<1		16	<1	0		32	<1	0	
170	14	<1		13	<1	0		26	<1	0	
171	14	<1		15	<1	0		23	<1	0	
172	13	<1		14	<1	0		16	<1	0	
173	11	<1		13	<1	0		20	<1	0	
174	17	<1		16	<1	0		20	<1	0	
175	15	<1		14	<1	0		22	<1	0	
176	12	<1		10	<1	0		15	<1	0	
177	12	<1		11	<1	0		19	<1	0	
178	13	<1		13	<1	0		17	<1	0	
179	28	<1		30	<1	0		19	<1	0	
180	18	<1		17	<1	0		26	<1	0	

Table 2: Wind Hazard Results

References		Existing		Existing plus Project			Project plus Cumulative				
Location Number	Wind Speed Exceeded 1hour/year (mph)	Hours per Year Wind Speed Exceeds Hazard Criteria	Exceeds	Wind Speed Exceeded 1hour/year (mph)	Hours per Year Wind Speed Exceeds Hazard Criteria	Hours Change Relative to Existing	Exceeds	Wind Speed Exceeded 1hour/year (mph)	Hours per Year Wind Speed Exceeds Hazard Criteria	Hours Change Relative to Existing	Exceeds
181	21	<1		21	<1	0		18	<1	0	
182	22	<1		27	<1	0		30	<1	0	
183	11	<1		12	<1	0		10	<1	0	
184	21	<1		18	<1	0		14	<1	0	
185	-	-		14	<1	-		15	<1	-	
186	14	<1		16	<1	0		15	<1	0	
187	13	<1		16	<1	0		15	<1	0	
188	17	<1		19	<1	0		19	<1	0	
189	11	<1		11	<1	0		7	<1	0	
190	13	<1		14	<1	0		9	<1	0	
191	12	<1		14	<1	0		11	<1	0	
192	10	<1		11	<1	0		8	<1	0	
193	12	<1		14	<1	0		11	<1	0	
194	11	<1		12	<1	0		9	<1	0	
195	12	<1		14	<1	0		14	<1	0	
196	11	<1		18	<1	0		16	<1	0	
197	-	-		16	<1	-		17	<1	-	
198	11	<1		15	<1	0		14	<1	0	
199	11	<1		13	<1	0		17	<1	0	
200	21	<1		22	<1	0		7	<1	0	
201	11	<1		11	<1	0		10	<1	0	
202	10	<1		9	<1	0		8	<1	0	
203	12	<1		9	<1	0		7	<1	0	
204	-	-		16	<1	-		19	<1	-	
205	-	-		23	<1	-		25	<1	-	
206	21	<1		20	<1	0		24	<1	0	
207	-	-		19	<1	-		19	<1	-	
Average mph and total hours per year	18 mph	0 hrs		19 mph	0 hrs	0 hrs		20 mph	3 hrs	3 hrs	
Exceedances	Existing	0 of 171		Project	0 of 206			Cumulative	1 of 206		

FIGURES



**Wind Tunnel Study Model
Configuration - Existing**

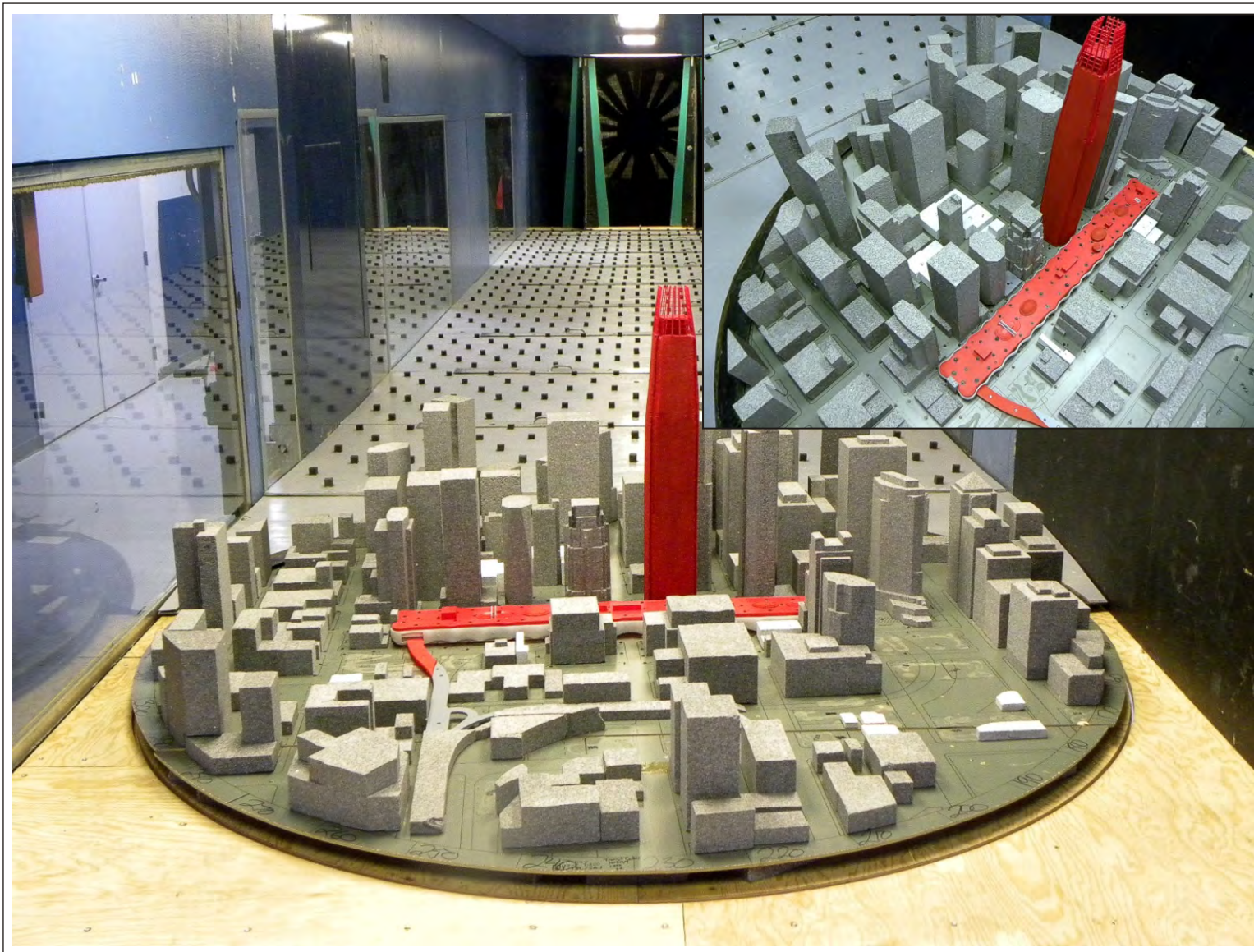
Transit Center District Plan - San Francisco, California

Project #1012134

Figure: 1a

Date: March 31, 2011

RWDI



Wind Tunnel Study Model
Configuration - Existing plus Project

Transit Center District Plan - San Francisco, California

Project #1012134

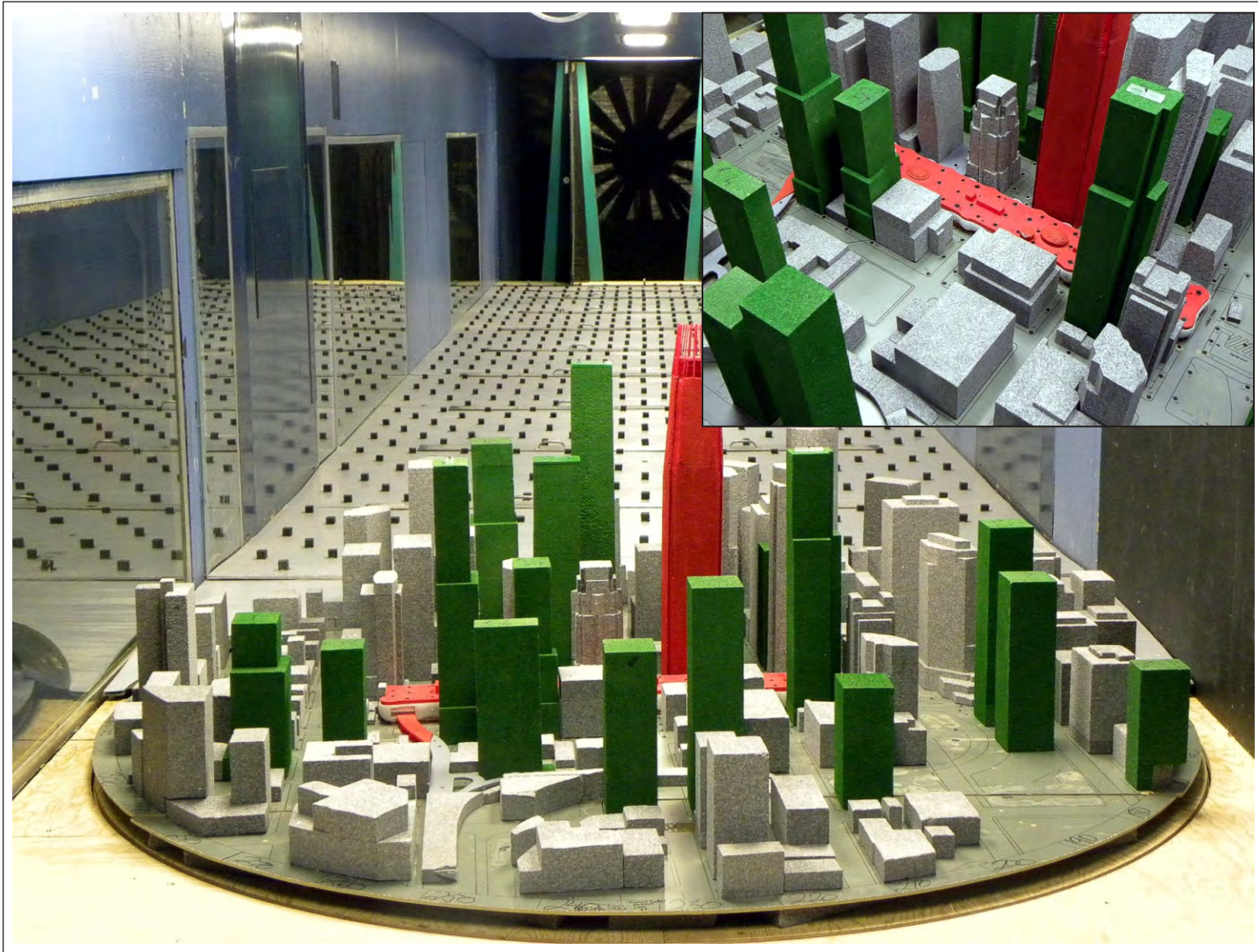
Figure:

1b

Date:

March 31, 2011

RWDI



Wind Tunnel Study Model
Configuration - Project plus Cumulative

Transit Center District Plan - San Francisco, California

Project #1012134

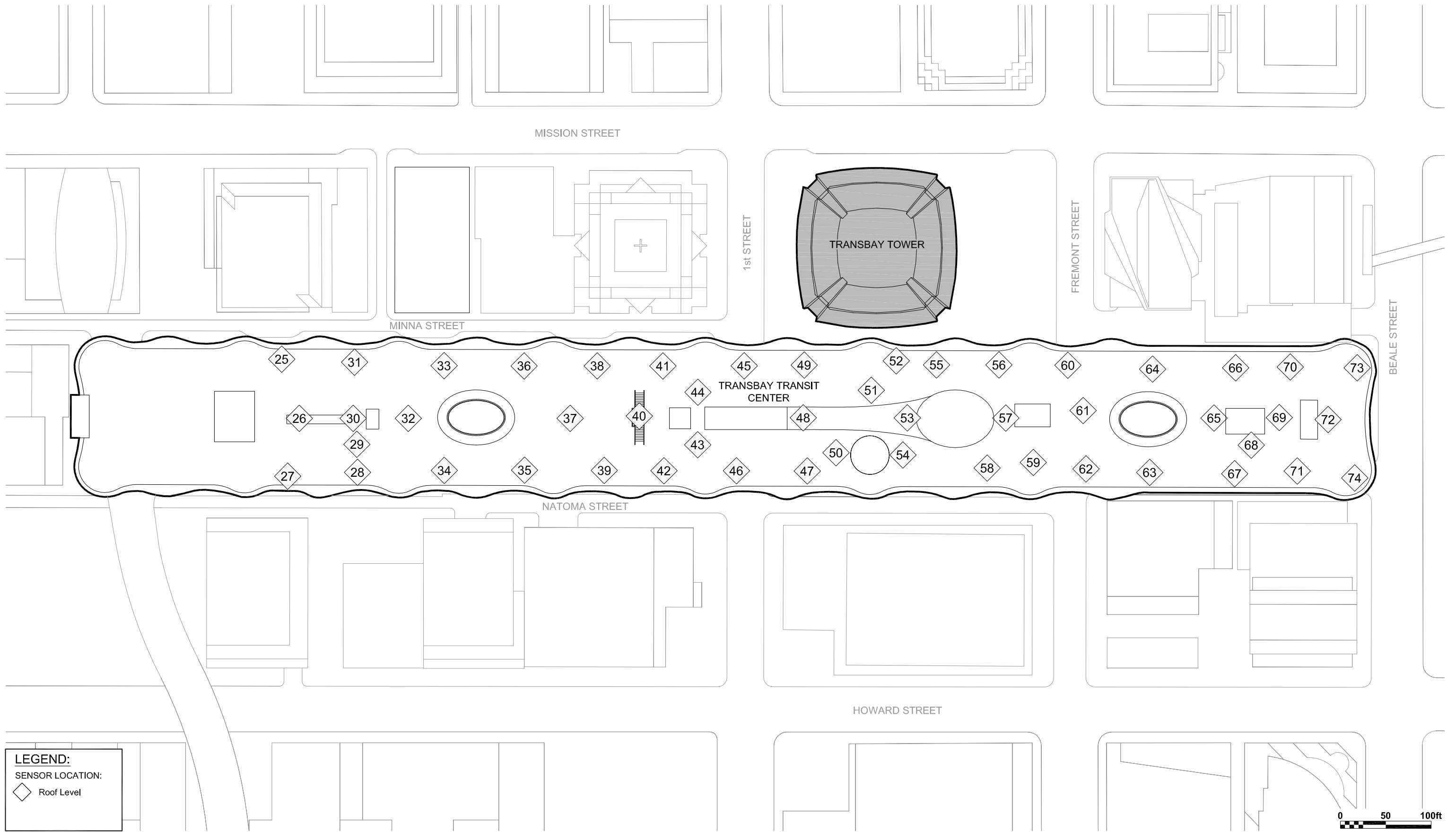
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1c

Date:

March 31, 2011

RWDI

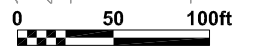


Sensor Location Plan - Transbay Roof Level

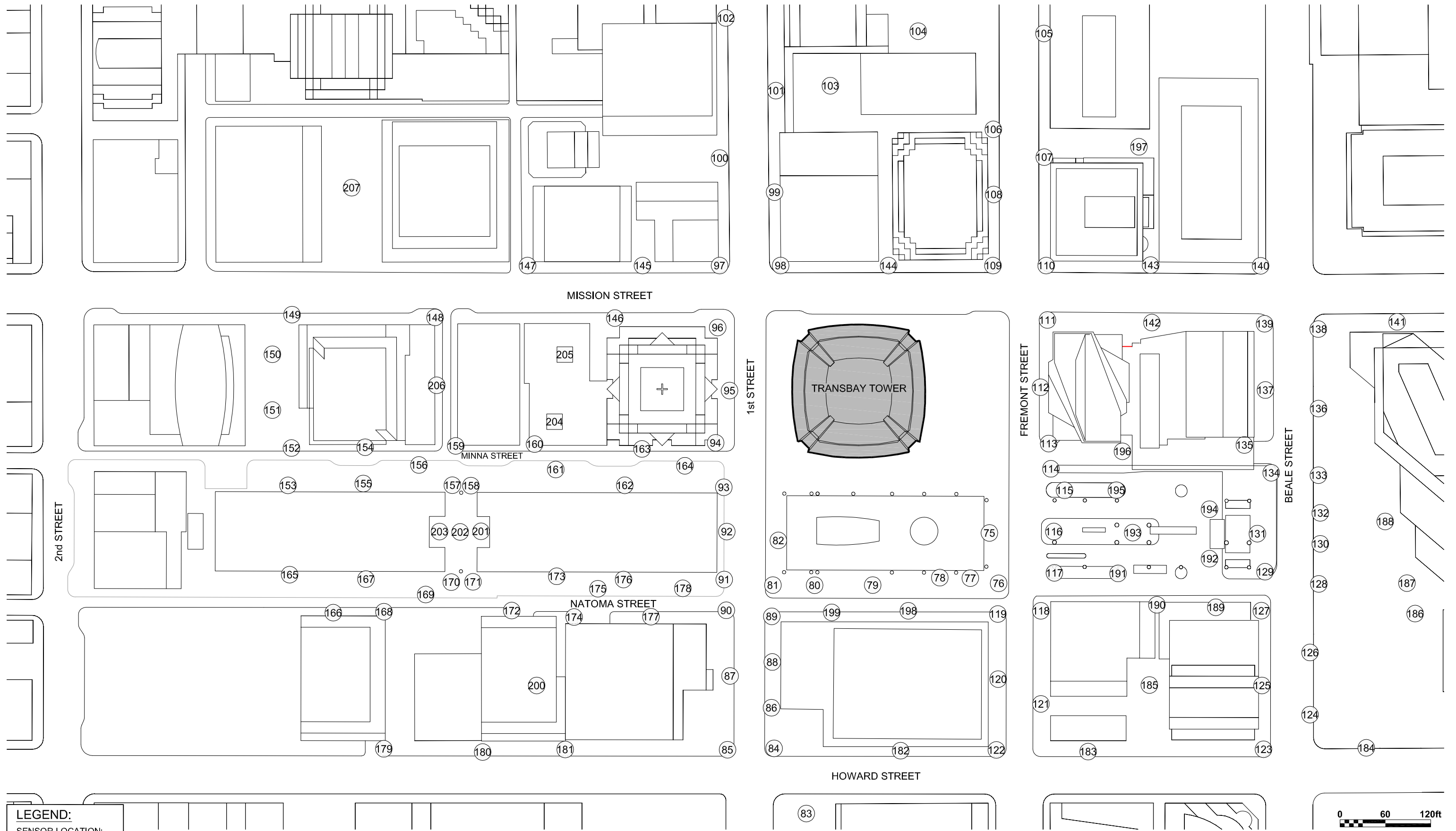
Transit Center District Plan - San Francisco, California



Drawn by: EJS	Figure: 2a
Approx. Scale: 1"=100'	
Date Revised: May 13, 2011	



Project #1012134



LEGEND:
 SENSOR LOCATION:
 ○ Grade Level
 □ Podium Level

Sensor Location Plan - Off Site

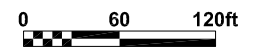
Transit Center District Plan - San Francisco, California



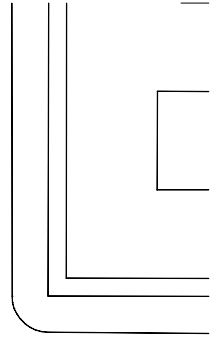
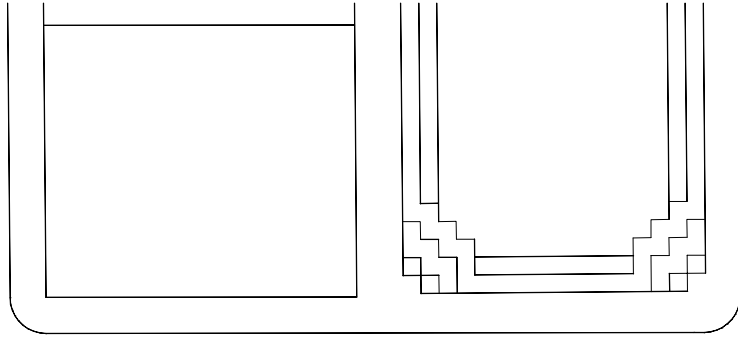
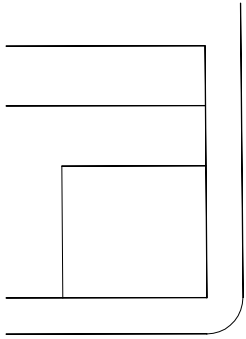
Drawn by: EJS Figure: **2b**

Approx. Scale: 1"=120'

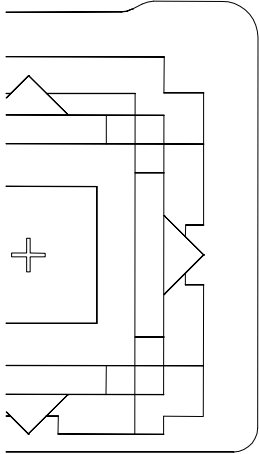
Date Revised: May 13, 2011



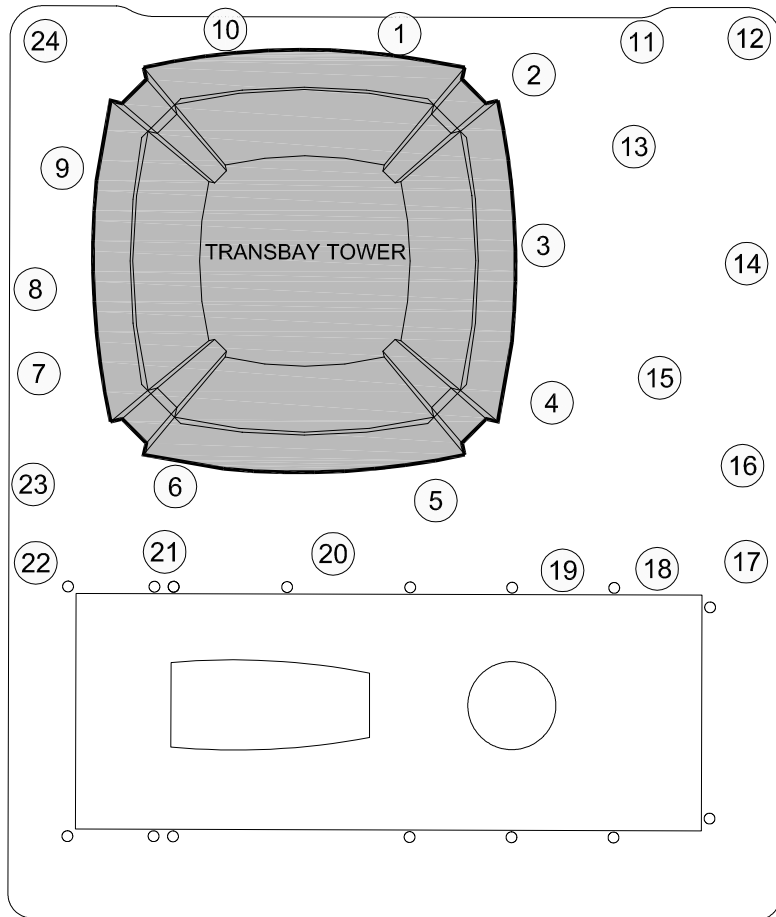
Project #1012134



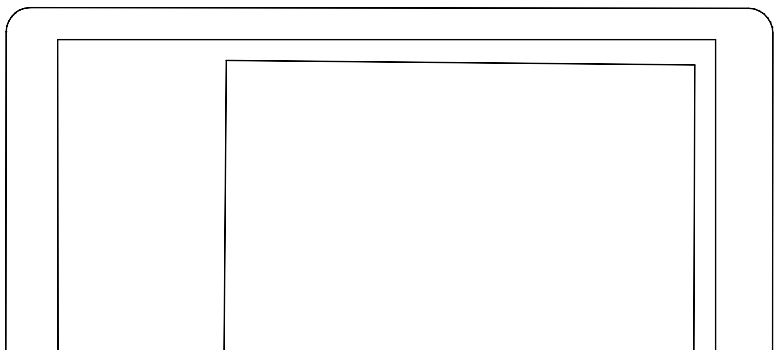
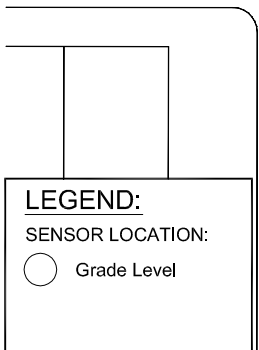
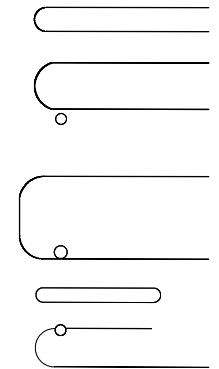
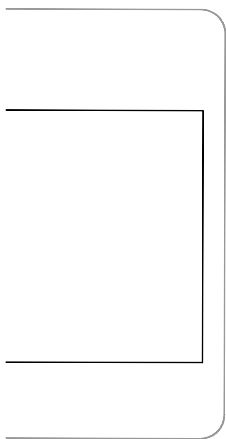
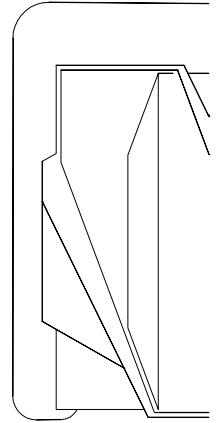
MISSION STREET



1st STREET



FREMONT STREET



LEGEND:

SENSOR LOCATION:

○ Grade Level

Sensor Location Plan - On Site

Project North True North



Drawn by: EJS Figure: 2c

Approx. Scale: 1"=80'

Date Revised: May 13, 2011



APPENDIX A



APPENDIX A: DRAWING LIST FOR MODEL CONSTRUCTION

The drawings and information listed below were received from Environmental Science Associates and were used to construct the scale model of the proposed Transbay Tower. Should there be any design changes that deviate from this list of drawings, the results may change. Therefore, if changes in the design area made, it is recommended that RWDI be contacted and requested to review their potential effects on wind conditions.

File Name	File Type	Date Received (dd/mm/yyyy)
Blk-3708_50First+GGUniv	PDF	09/09/2010
Blk-3710_350Mission	PDF	09/09/2010
Blk-3722_Moma+NoHoward	PDF	09/09/2010
Blk-3735_SFRA+SoHoward	PDF	09/09/2010
Palace_100%25_SD_April_4_2008	PDF	20/10/2010
222 Second elevations	PDF	20/10/2010
TCDP-bulding-sites4_BW_Alts	PDF	11/04/2010
Transbay Tower Design Update	PDF	12/3/2010
Scan of plan	PDF	10/28/2010

APPENDIX B



APPENDIX B: SAN FRANCISCO PLANNING CODE SECTION 148

Reduction of Ground-level Wind Currents in C-3 Districts

- a) **Requirement and Exception.** In C-3 Districts, buildings and additions to existing buildings shall be shaped, or other wind-baffling measures shall be adopted, so that the developments will not cause ground-level wind currents to exceed, more than 10 percent of the time year round, between 7:00 a.m. and 6:00 p.m., the comfort level of 11 m.p.h. equivalent wind speed in areas of substantial pedestrian use and seven m.p.h. equivalent wind speed in public seating areas.

When preexisting ambient wind speeds exceed the comfort level, or when a proposed building or addition may cause ambient wind speeds to exceed the comfort level, the building shall be designed to reduce the ambient wind speeds to meet the requirements. An exception may be granted, in accordance with the provisions of Section 309, allowing the building or addition to add to the amount of time that the comfort level is exceeded by the least practical amount if (1) it can be shown that a building or addition cannot be shaped and other wind-baffling measures cannot be adopted to meet the foregoing requirements without creating an unattractive and ungainly building form and without unduly restricting the development potential of the building site in question, and (2) it is concluded that, because of the limited amount by which the comfort level is exceeded, the limited location in which the comfort level is exceeded, or the limited time during which the comfort level is exceeded, the addition is insubstantial.

No exception shall be granted and no building or addition shall be permitted that causes equivalent wind speeds to reach or exceed the hazard level of 26 miles per hour for a single hour of the year.

- b) **Definition.** The term "equivalent wind speed" shall mean and hourly mean wind speed adjusted to incorporate the effects of gustiness or turbulence on pedestrians.
- c) **Guidelines.** Procedures and Methodologies for implementing this section shall be specified by the Office of Environmental Review of the Department of City Planning. (added by Ord. 414-85, App. 9/17/85)

APPENDIX F

Special-Status Plant and Animal Species

California Department of Fish and Game
Natural Diversity Database
Selected Elements by Scientific Name - Landscape
Database query for SF North 7.5 minute USGS topographic quadrangle

Scientific Name	Common Name	Element Code	Federal Status	State Status	Global Rank	State Rank	CNPS	CDFG
1 <i>Arctostaphylos franciscana</i>	Franciscan manzanita	PDERI040J3			G1	S1	1B.1	
2 <i>Arctostaphylos hookeri</i> ssp. <i>ravenii</i>	Presidio manzanita	PDERI040J2	Endangered	Endangered	G3T1	S1	1B.1	
3 <i>Arenaria paludicola</i>	marsh sandwort	PDCAR040L0	Endangered	Endangered	G1	S1	1B.1	
4 <i>Astragalus tener</i> var. <i>tener</i>	alkali milk-vetch	PDFAB0F8R1			G1T1	S1.1	1B.2	
5 <i>Carex comosa</i>	bristly sedge	PMCYP032Y0			G5	S2?	2.1	
6 <i>Chorizanthe cuspidata</i> var. <i>cuspidata</i>	San Francisco Bay spineflower	PDPGN04081			G2T2	S2.2	1B.2	
7 <i>Cicindela hirticollis</i> <i>gravida</i>	sandy beach tiger beetle	IICOL02101			G5T2	S1		
8 <i>Cirsium andrewsii</i>	Franciscan thistle	PDAST2E050			G2	S2.2	1B.2	
9 <i>Clarkia franciscana</i>	Presidio clarkia	PDONA050H0	Endangered	Endangered	G1	S1.1	1B.1	
10 <i>Collinsia corymbosa</i>	round-headed Chinese-houses	PDSCR0H060			G1	S1.2	1B.2	
11 <i>Collinsia multicolor</i>	San Francisco collinsia	PDSCR0H0B0			G2	S2.2	1B.2	
12 <i>Cordylanthus maritimus</i> ssp. <i>palustris</i>	Point Reyes bird's-beak	PDSCR0J0C3			G4?T2	S2.2	1B.2	
13 <i>Corynorhinus townsendii</i>	Townsend's big-eared bat	AMACC08010			G4	S2S3		SC
14 <i>Danaus plexippus</i>	monarch butterfly	IILEPP2010			G5	S3		
15 <i>Emys marmorata</i>	western pond turtle	ARAAD02030			G3G4	S3		SC
16 <i>Enhydra lutris nereis</i>	southern sea otter	AMAJF09012	Threatened		G4T2	S2		
17 <i>Euphydryas editha bayensis</i>	Bay checkerspot butterfly	IILEPK4055	Threatened		G5T1	S1		
18 <i>Fritillaria liliacea</i>	fragrant fritillary	PMLIL0V0C0			G2	S2.2	1B.2	
19 <i>Gilia capitata</i> ssp. <i>chamissonis</i>	blue coast gilia	PDPLM040B3			G5T2	S2.1	1B.1	
20 <i>Gilia millefoliata</i>	dark-eyed gilia	PDPLM04130			G2	S2.2	1B.2	
21 <i>Grindelia hirsutula</i> var. <i>maritima</i>	San Francisco gumplant	PDAST470D3			G5T2	S2.1	1B.2	
22 <i>Hemizonia congesta</i> ssp. <i>congesta</i>	seaside tarplant	PDAST4R065			G5T2T3	S2S3	1B.2	
23 <i>Hesperolinon congestum</i>	Marin western flax	PDLIN01060	Threatened	Threatened	G2	S2.1	1B.1	
24 <i>Horkelia cuneata</i> ssp. <i>sericea</i>	Kellogg's horkelia	PDROS0W043			G4T1	S1.1	1B.1	
25 <i>Lasiurus blossevillii</i>	western red bat	AMACC05060			G5	S3?		SC
26 <i>Lasiurus cinereus</i>	hoary bat	AMACC05030			G5	S4?		
27 <i>Laterallus jamaicensis coturniculus</i>	California black rail	ABNME03041		Threatened	G4T1	S1		
28 <i>Layia carnosa</i>	beach layia	PDAST5N010	Endangered	Endangered	G2	S2.1	1B.1	
29 <i>Leptosiphon rosaceus</i>	rose leptosiphon	PDPLM09180			G1	S1.1	1B.1	
30 <i>Lessingia germanorum</i>	San Francisco lessingia	PDAST5S010	Endangered	Endangered	G1	S1.1	1B.1	
31 <i>Lichnanthe ursina</i>	bumblebee scarab beetle	IICOL67020			G2	S2		
32 <i>Melospiza melodia samuelis</i>	San Pablo song sparrow	ABPBXA301W			G5T2?	S2?		SC
33 <i>Microseris paludosa</i>	marsh microseris	PDAST6E0D0			G2	S2.2	1B.2	

California Department of Fish and Game
Natural Diversity Database
Selected Elements by Scientific Name - Landscape
Database query for SF North 7.5 minute USGS topographic quadrangle

Scientific Name	Common Name	Element Code	Federal Status	State Status	Global Rank	State Rank	CNPS	CDFG
34 <i>Pentachaeta bellidiflora</i>	white-rayed pentachaeta	PDAST6X030	Endangered	Endangered	G1	S1.1	1B.1	
35 <i>Phalacrocorax auritus</i>	double-crested cormorant	ABNFD01020			G5	S3		
36 <i>Plagiobothrys chorisianus</i> var. <i>chorisianus</i>	Choris' popcorn-flower	PDBOR0V061			G3T2Q	S2.2	1B.2	
37 <i>Plagiobothrys diffusus</i>	San Francisco popcorn-flower	PDBOR0V080		Endangered	G1Q	S1.1	1B.1	
38 <i>Plagiobothrys glaber</i>	hairless popcorn-flower	PDBOR0V0B0			GH	SH	1A	
39 <i>Plebejus icarioides missionensis</i>	Mission blue butterfly	IILEPG801A	Endangered		G5T1	S1		
40 <i>Polemonium carneum</i>	Oregon polemonium	PDPLM0E050			G4	S1	2.2	
41 <i>Rana draytonii</i>	California red-legged frog	AAABH01022	Threatened		G4T2T3	S2S3		SC
42 <i>Riparia riparia</i>	bank swallow	ABPAU08010		Threatened	G5	S2S3		
43 <i>Sanicula maritima</i>	adobe sanicle	PDAPI1Z0D0		Rare	G2	S2.2	1B.1	
44 <i>Scapanus latimanus insularis</i>	Angel Island mole	AMABB02032			G5T1	S1		
45 <i>Silene verecunda</i> ssp. <i>verecunda</i>	San Francisco campion	PDCAR0U213			G5T2	S2.2	1B.2	
46 <i>Speyeria callippe callippe</i>	callippe silverspot butterfly	IILEPJ6091	Endangered		G5T1	S1		
47 <i>Stebbinsoseris decipiens</i>	Santa Cruz microseris	PDAST6E050			G2	S2.2	1B.2	
48 <i>Taxidea taxus</i>	American badger	AMAJF04010			G5	S4		SC
49 <i>Trachusa gummifera</i>	A leaf-cutter bee	IHYM80010			G1	S1		
50 <i>Triphysaria floribunda</i>	San Francisco owl's-clover	PDSCR2T010			G2	S2.2	1B.2	
51 <i>Triquetrella californica</i>	coastal triquetrella	NBMUS7S010			G1	S1	1B.2	
52 <i>Vespericola marinensis</i>	Marin hesperian	IMGASA4140			G2G3	S2S3		
53 <i>Zapus trinotatus orarius</i>	Point Reyes jumping mouse	AMAFH01031			G5T1T3Q	S1S3		SC



United States Department of the Interior
FISH AND WILDLIFE SERVICE

Sacramento Fish and Wildlife Office
2800 Cottage Way, Room W-2605
Sacramento, California 95825



July 30, 2010

Document Number: 100730110200

Martha E. Lowe
Environmental Science Associates
350 Frank H. Ogawa Plaza
Suite 300
Oakland, CA 94612

Subject: Species List for San Francisco Transit Center District Plan and Transit Tower

Dear: Ms. Lowe

We are sending this official species list in response to your July 30, 2010 request for information about endangered and threatened species. The list covers the California counties and/or U.S. Geological Survey 7½ minute quad or quads you requested.

Our database was developed primarily to assist Federal agencies that are consulting with us. Therefore, our lists include all of the sensitive species that have been found in a certain area *and also ones that may be affected by projects in the area*. For example, a fish may be on the list for a quad if it lives somewhere downstream from that quad. Birds are included even if they only migrate through an area. In other words, we include all of the species we want people to consider when they do something that affects the environment.

Please read Important Information About Your Species List (below). It explains how we made the list and describes your responsibilities under the Endangered Species Act.

Our database is constantly updated as species are proposed, listed and delisted. If you address proposed and candidate species in your planning, this should not be a problem. However, we recommend that you get an updated list every 90 days. That would be October 28, 2010.

Please contact us if your project may affect endangered or threatened species or if you have any questions about the attached list or your responsibilities under the Endangered Species Act. A list of Endangered Species Program contacts can be found at www.fws.gov/sacramento/es/branches.htm.

Endangered Species Division



U.S. Fish & Wildlife Service
Sacramento Fish & Wildlife Office

**Federal Endangered and Threatened Species that Occur in
or may be Affected by Projects in the Counties and/or
U.S.G.S. 7 1/2 Minute Quads you requested**

Document Number: 100730110200

Database Last Updated: April 29, 2010

Quad Lists

Listed Species

Invertebrates

Haliotes cracherodii

black abalone (E) (NMFS)

Haliotes sorenseni

white abalone (E) (NMFS)

Icaricia icarioides missionensis

mission blue butterfly (E)

Speyeria callippe callippe

callippe silverspot butterfly (E)

Fish

Acipenser medirostris

green sturgeon (T) (NMFS)

Eucyclogobius newberryi

tidewater goby (E)

Hypomesus transpacificus

delta smelt (T)

Oncorhynchus kisutch

coho salmon - central CA coast (E) (NMFS)

Critical habitat, coho salmon - central CA coast (X) (NMFS)

Oncorhynchus mykiss

Central California Coastal steelhead (T) (NMFS)

Central Valley steelhead (T) (NMFS)

Critical habitat, Central California coastal steelhead (X) (NMFS)

Critical habitat, Central Valley steelhead (X) (NMFS)

Oncorhynchus tshawytscha

Central Valley spring-run chinook salmon (T) (NMFS)

Critical habitat, winter-run chinook salmon (X) (NMFS)

winter-run chinook salmon, Sacramento River (E) (NMFS)

Amphibians

Rana draytonii

California red-legged frog (T)

Birds

Charadrius alexandrinus nivosus

western snowy plover (T)

Diomedea albatrus

short-tailed albatross (E)

Pelecanus occidentalis californicus

California brown pelican (E)

Sternula antillarum (=Sterna, =albifrons) browni

California least tern (E)

Mammals

Arctocephalus townsendi

Guadalupe fur seal (T) (NMFS)

Balaenoptera borealis

sei whale (E) (NMFS)

Balaenoptera musculus

blue whale (E) (NMFS)

Balaenoptera physalus

finback (=fin) whale (E) (NMFS)

Enhydra lutris nereis

southern sea otter (T)

Eubalaena (=Balaena) *glacialis*

right whale (E) (NMFS)

Eumetopias jubatus

Critical Habitat, Steller (=northern) sea-lion (X) (NMFS)

Steller (=northern) sea-lion (T) (NMFS)

Physeter catodon (=macrocephalus)

sperm whale (E) (NMFS)

Reithrodontomys raviventris

salt marsh harvest mouse (E)

Plants

Arctostaphylos hookeri ssp. *ravenii*

Presidio (=Raven's) manzanita (E)

Clarkia franciscana

Presidio clarkia (E)

Hesperolinon congestum

Marin dwarf-flax (=western flax) (T)

Lessingia germanorum

San Francisco lessingia (E)

Quads Containing Listed, Proposed or Candidate Species:

SAN FRANCISCO NORTH (466C)

County Lists

San Francisco County

Listed Species

Invertebrates

Haliotes cracherodii

black abalone (E) (NMFS)

Haliotes sorenseni

white abalone (E) (NMFS)

Icaricia icarioides missionensis

mission blue butterfly (E)

Incisalia mossii bayensis

San Bruno elfin butterfly (E)

Fish

Acipenser medirostris

green sturgeon (T) (NMFS)

Eucyclogobius newberryi

tidewater goby (E)

Oncorhynchus kisutch

coho salmon - central CA coast (E) (NMFS)

Oncorhynchus mykiss

Central California Coastal steelhead (T) (NMFS)

Critical habitat, Central California coastal steelhead (X) (NMFS)

Critical habitat, Central Valley steelhead (X) (NMFS)

Oncorhynchus tshawytscha

Critical habitat, winter-run chinook salmon (X) (NMFS)

winter-run chinook salmon, Sacramento River (E) (NMFS)

Amphibians

Rana draytonii

California red-legged frog (T)

Reptiles

Caretta caretta

loggerhead turtle (T) (NMFS)

Chelonia mydas (incl. agassizi)

green turtle (T) (NMFS)

Dermochelys coriacea

leatherback turtle (E) (NMFS)

Lepidochelys olivacea

olive (=Pacific) ridley sea turtle (T) (NMFS)

Birds

Charadrius alexandrinus nivosus

western snowy plover (T)

Diomedea albatrus

short-tailed albatross (E)

Pelecanus occidentalis californicus

California brown pelican (E)

Rallus longirostris obsoletus

California clapper rail (E)

Mammals

Arctocephalus townsendi

Guadalupe fur seal (T) (NMFS)

Balaenoptera borealis

sei whale (E) (NMFS)

Balaenoptera musculus

blue whale (E) (NMFS)

Balaenoptera physalus

finback (=fin) whale (E) (NMFS)

Eubalaena (=Balaena) glacialis

right whale (E) (NMFS)

Eumetopias jubatus

Critical Habitat, Steller (=northern) sea-lion (X) (NMFS)

Steller (=northern) sea-lion (T) (NMFS)

Megaptera novaeangliae

humpback whale (E) (NMFS)

Physeter catodon (=macrocephalus)

sperm whale (E) (NMFS)

Reithrodontomys raviventris

salt marsh harvest mouse (E)

Plants

Arctostaphylos hookeri ssp. ravenii
Presidio (=Raven's) manzanita (E)

Clarkia franciscana
Presidio clarkia (E)

Hesperolinon congestum
Marin dwarf-flax (=western flax) (T)

Lessingia germanorum
San Francisco lessingia (E)

Key:

(E) *Endangered* - Listed as being in danger of extinction.

(T) *Threatened* - Listed as likely to become endangered within the foreseeable future.

(P) *Proposed* - Officially proposed in the Federal Register for listing as endangered or threatened.

(NMFS) Species under the Jurisdiction of the [National Oceanic & Atmospheric Administration Fisheries Service](#). Consult with them directly about these species.

Critical Habitat - Area essential to the conservation of a species.

(PX) *Proposed Critical Habitat* - The species is already listed. Critical habitat is being proposed for it.

(C) *Candidate* - Candidate to become a proposed species.

(V) Vacated by a court order. Not currently in effect. Being reviewed by the Service.

(X) *Critical Habitat* designated for this species

Important Information About Your Species List

How We Make Species Lists

We store information about endangered and threatened species lists by U.S. Geological Survey 7½ minute quads. The United States is divided into these quads, which are about the size of San Francisco.

The animals on your species list are ones that occur within, **or may be affected by** projects within, the quads covered by the list.

- Fish and other aquatic species appear on your list if they are in the same watershed as your quad or if water use in your quad might affect them.
- Amphibians will be on the list for a quad or county if pesticides applied in that area may be carried to their habitat by air currents.
- Birds are shown regardless of whether they are resident or migratory. Relevant birds on the county list should be considered regardless of whether they appear on a quad list.

Plants

Any plants on your list are ones that have actually been observed in the area covered by the list. Plants may exist in an area without ever having been detected there. You can find out what's in the surrounding quads through the California Native Plant Society's online [Inventory of Rare and Endangered Plants](#).

Surveying

Some of the species on your list may not be affected by your project. A trained biologist and/or botanist, familiar with the habitat requirements of the species on your list, should determine whether they or habitats suitable for them may be affected by your project. We recommend that your surveys include any proposed and candidate species on your list. See our [Protocol](#) and [Recovery Permits](#) pages.

For plant surveys, we recommend using the [Guidelines for Conducting and Reporting Botanical Inventories](#). The results of your surveys should be published in any environmental documents prepared for your project.

Your Responsibilities Under the Endangered Species Act

All animals identified as listed above are fully protected under the Endangered Species Act of 1973, as amended. Section 9 of the Act and its implementing regulations prohibit the take of a federally listed wildlife species. Take is defined by the Act as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect" any such animal.

Take may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or shelter (50 CFR §17.3).

Take incidental to an otherwise lawful activity may be authorized by one of two procedures:

- If a Federal agency is involved with the permitting, funding, or carrying out of a project that may result in take, then that agency must engage in a formal [consultation](#) with the Service.

During formal consultation, the Federal agency, the applicant and the Service work together to avoid or minimize the impact on listed species and their habitat. Such consultation would result in a biological opinion by the Service addressing the anticipated effect of the project on listed and proposed species. The opinion may authorize a limited level of incidental take.

- If no Federal agency is involved with the project, and federally listed species may be taken as part of the project, then you, the applicant, should apply for an incidental take permit. The Service may issue such a permit if you submit a satisfactory conservation plan for the species that would be affected by your project.

Should your survey determine that federally listed or proposed species occur in the area and are likely to be affected by the project, we recommend that you work with this office and the California Department of Fish and Game to develop a plan that minimizes the project's direct and indirect impacts to listed species and compensates for project-related loss of habitat. You should include the plan in any environmental documents you file.

Critical Habitat

When a species is listed as endangered or threatened, areas of habitat considered essential to its conservation may be designated as critical habitat. These areas may require special management considerations or protection. They provide needed space for growth and normal behavior; food, water, air, light, other nutritional or physiological requirements; cover or shelter; and sites for breeding, reproduction, rearing of offspring, germination or seed dispersal.

Although critical habitat may be designated on private or State lands, activities on these lands are not restricted unless there is Federal involvement in the activities or direct harm to listed wildlife.

If any species has proposed or designated critical habitat within a quad, there will be a separate line for this on the species list. Boundary descriptions of the critical habitat may be

found in the Federal Register. The information is also reprinted in the Code of Federal Regulations (50 CFR 17.95). See our [Map Room](#) page.

Candidate Species

We recommend that you address impacts to candidate species. We put plants and animals on our candidate list when we have enough scientific information to eventually propose them for listing as threatened or endangered. By considering these species early in your planning process you may be able to avoid the problems that could develop if one of these candidates was listed before the end of your project.

Species of Concern

The Sacramento Fish & Wildlife Office no longer maintains a list of species of concern. However, various other agencies and organizations maintain lists of at-risk species. These lists provide essential information for land management planning and conservation efforts. [More info](#)

Wetlands

If your project will impact wetlands, riparian habitat, or other jurisdictional waters as defined by section 404 of the Clean Water Act and/or section 10 of the Rivers and Harbors Act, you will need to obtain a permit from the U.S. Army Corps of Engineers. Impacts to wetland habitats require site specific mitigation and monitoring. For questions regarding wetlands, please contact Mark Littlefield of this office at (916) 414-6580.

Updates

Our database is constantly updated as species are proposed, listed and delisted. If you address proposed and candidate species in your planning, this should not be a problem. However, we recommend that you get an updated list every 90 days. That would be October 28, 2010.

California Native Plant Society listed plant species for SF County and SF North USGS 7.5 minute topographic quadrangle

Scientific name	Family	Life form	Bloom period	Communities	Elevation	Status
<i>Arctostaphylos franciscana</i>	Ericaceae	perennial evergreen shrub	Feb-Apr	•Coastal scrub (CoScr)(serpentinite)	60 - 300 meters	List 1B.1
<i>Arctostaphylos hookeri</i> ssp. <i>ravenii</i>	Ericaceae	perennial evergreen shrub	Feb-Mar	•Chaparral (Chprl) •Coastal prairie (CoPrr) •Coastal scrub (CoScr)/serpentinite outcrop	45 - 215 meters	List 1B.1
<i>Arenaria paludicola</i>	Caryophyllaceae	perennial stoloniferous herb	May-Aug	•Marshes and swamps (MshSw)(freshwater or brackish)/sandy, openings	3 - 170 meters	List 1B.1
<i>Astragalus tener</i> var. <i>tener</i>	Fabaceae	annual herb	Mar-Jun	•Playas (Plyas) •Valley and foothill grassland (VFGrs)(adobe clay) •Vernal pools (VnPIs)/alkaline	1 - 60 meters	List 1B.2
<i>Carex comosa</i>	Cyperaceae	perennial rhizomatous herb	May-Sep	•Coastal prairie (CoPrr) •Marshes and swamps (MshSw)(lake margins) •Valley and foothill grassland (VFGrs)	0 - 625 meters	List 2.1
<i>Chorizanthe cuspidata</i> var. <i>cuspidata</i>	Polygonaceae	annual herb	Apr-Jul(Aug) <small>Months in parentheses are uncommon.</small>	•Coastal bluff scrub (CBScr) •Coastal dunes (CoDns) •Coastal prairie (CoPrr) •Coastal scrub (CoScr)/sandy	3 - 215 meters	List 1B.2
<i>Cirsium andrewsii</i>	Asteraceae	perennial herb	Mar-Jul	•Broadleafed upland forest (BUFRs) •Coastal bluff scrub (CBScr) •Coastal prairie (CoPrr) •Coastal scrub (CoScr)/mesic, sometimes serpentinite	0 - 150 meters	List 1B.2
<i>Clarkia franciscana</i>	Onagraceae	annual herb	May-Jul	•Coastal scrub (CoScr) •Valley and foothill grassland (VFGrs)(serpentinite)	25 - 335 meters	List 1B.1
<i>Collinsia corymbosa</i>	Scrophulariaceae	annual herb	Apr-Jun	•Coastal dunes (CoDns)	0 - 20 meters	List 1B.2

California Native Plant Society listed plant species for SF County and SF North USGS 7.5 minute topographic quadrangle

Scientific name	Family	Life form	Bloom period	Communities	Elevation	Status
<i>Collinsia multicolor</i>	Scrophulariaceae	annual herb	Mar-May	•Closed-cone coniferous forest (CCFr) •Coastal scrub (CoScr)/sometimes serpentine	30 - 250 meters	List 1B.2
<i>Cordylanthus maritimus</i> ssp. <i>palustris</i>	Scrophulariaceae	annual herb hemiparasitic	Jun-Oct	•Marshes and swamps (MshSw)(coastal salt)	0 - 10 meters	List 1B.2
<i>Fritillaria liliacea</i>	Liliaceae	perennial bulbiferous herb	Feb-Apr	•Cismontane woodland (CmWld) •Coastal prairie (CoPrr) •Coastal scrub (CoScr) •Valley and foothill grassland (VFGrs)/often serpentine	3 - 410 meters	List 1B.2
<i>Gilia capitata</i> ssp. <i>chamissonis</i>	Polemoniaceae	annual herb	Apr-Jul	•Coastal dunes (CoDns) •Coastal scrub (CoScr)	2 - 200 meters	List 1B.1
<i>Gilia millefoliata</i>	Polemoniaceae	annual herb	Apr-Jul	•Coastal dunes (CoDns)	2 - 30 meters	List 1B.2
<i>Grindelia hirsutula</i> var. <i>maritima</i>	Asteraceae	perennial herb	Jun-Sep	•Coastal bluff scrub (CBScr) •Coastal scrub (CoScr) •Valley and foothill grassland (VFGrs)/sandy or serpentine	15 - 400 meters	List 1B.2
<i>Hemizonia congesta</i> ssp. <i>congesta</i>	Asteraceae	annual herb	Apr-Nov	•Valley and foothill grassland (VFGrs)/sometimes roadsides	20 - 560 meters	List 1B.2
<i>Hesperolinon congestum</i>	Linaceae	annual herb	Apr-Jul	•Chaparral (Chprl) •Valley and foothill grassland (VFGrs)/serpentine	5 - 370 meters	List 1B.1
<i>Horkelia cuneata</i> ssp. <i>sericea</i>	Rosaceae	perennial herb	Apr-Sep	•Closed-cone coniferous forest (CCFr) •Chaparral (Chprl)(maritime) •Coastal dunes (CoDns) •Coastal scrub (CoScr)/sandy or gravelly, openings	10 - 200 meters	List 1B.1
<i>Layia carnosa</i>	Asteraceae	annual herb	Mar-Jul	•Coastal dunes (CoDns) •Coastal scrub (CoScr)(sandy)	0 - 60 meters	List 1B.1
<i>Leptosiphon rosaceus</i>	Polemoniaceae	annual herb	Apr-Jul	•Coastal bluff scrub (CBScr)	0 - 100 meters	List 1B.1
<i>Lessingia germanorum</i>	Asteraceae	annual herb	(Jun)Jul-Nov Months in parentheses are uncommon.	•Coastal scrub (CoScr)(remnant dunes)	25 - 110 meters	List 1B.1

California Native Plant Society listed plant species for SF County and SF North USGS 7.5 minute topographic quadrangle

Scientific name	Family	Life form	Bloom period	Communities	Elevation	Status
<i>Micropus amphibolus</i>	Asteraceae	annual herb	Mar-May	•Broadleafed upland forest (BUFRs) •Chaparral (Chprl) •Cismontane woodland (CmWld) •Valley and foothill grassland (VFGrs)/rocky	45 - 825 meters	List 3.2
<i>Microseris paludosa</i>	Asteraceae	perennial herb	Apr-Jun(Jul) Months in parentheses are uncommon.	•Closed-cone coniferous forest (CCFRs) •Cismontane woodland (CmWld) •Coastal scrub (CoScr) •Valley and foothill grassland (VFGrs)	5 - 300 meters	List 1B.2
<i>Plagiobothrys chorisianus</i> var. <i>chorisianus</i>	Boraginaceae	annual herb	Mar-Jun	•Chaparral (Chprl) •Coastal prairie (CoPrr) •Coastal scrub (CoScr)/mesic	15 - 160 meters	List 1B.2
<i>Plagiobothrys diffusus</i>	Boraginaceae	annual herb	Mar-Jun	•Coastal prairie (CoPrr) •Valley and foothill grassland (VFGrs)	60 - 360 meters	List 1B.1
<i>Polemonium carneum</i>	Polemoniaceae	perennial herb	Apr-Sep	•Coastal prairie (CoPrr) •Coastal scrub (CoScr) •Lower montane coniferous forest (LCFRs)	0 - 1830 meters	List 2.2
<i>Sanicula maritima</i>	Apiaceae	perennial herb	Feb-May	•Chaparral (Chprl) •Coastal prairie (CoPrr) •Meadows and seeps (Medws) •Valley and foothill grassland (VFGrs)/clay, serpentinite	30 - 240 meters	List 1B.1
<i>Silene verecunda</i> ssp. <i>verecunda</i>	Caryophyllaceae	perennial herb	Mar-Jun(Aug) Months in parentheses are uncommon.	•Coastal bluff scrub (CBSCr) •Chaparral (Chprl) •Coastal prairie (CoPrr) •Coastal scrub (CoScr) •Valley and foothill grassland (VFGrs)/sandy	30 - 645 meters	List 1B.2
<i>Stebbinsoseris decipiens</i>	Asteraceae	annual herb	Apr-May	•Broadleafed upland forest (BUFRs) •Closed-cone coniferous forest (CCFRs) •Chaparral (Chprl) •Coastal prairie (CoPrr) •Coastal scrub (CoScr) •Valley and foothill grassland (VFGrs)/open areas, sometimes serpentinite	10 - 500 meters	List 1B.2

California Native Plant Society listed plant species for SF County and SF North USGS 7.5 minute topographic quadrangle

Scientific name	Family	Life form	Bloom period	Communities	Elevation	Status
<i>Triphysaria floribunda</i>	Scrophulariaceae	annual herb	Apr-Jun	<ul style="list-style-type: none"> •Coastal prairie (CoPrr) •Coastal scrub (CoScr) •Valley and foothill grassland (VFGrs)/usually serpentinite 	10 - 160 meters	List 1B.2
<i>Triquetrella californica</i>	Pottiaceae	moss	<ul style="list-style-type: none"> •Coastal bluff scrub (CBScr) •Coastal scrub (CoScr)/soil 	10 - 100 meters	List 1B.2	

CHAPTER VIII

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PLACE
POSTAGE

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TO: San Francisco Planning Department, Environmental Planning

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